

**VSMP GENERAL PERMIT  
FOR SMALL MUNICIPAL  
SEPARATE STORM SEWER SYSTEMS  
(MS4s)**

**PERMIT REGISTRATION NUMBER:  
VAR040053**

**MS4 Program Plan  
Effective July 1, 2014  
Updated October 1, 2014**



City of Winchester, Virginia  
Rouss City Hall  
Department of Public Services  
15 North Cameron Street  
Winchester, VA 22601

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## 1.0 Introduction

The City of Winchester (City) operates a MS4 that is regulated under the federal Clean Water Act and the Virginia State Water Control Law. Under these statutes and their associated regulations, the City is required to develop, implement and maintain a MS4 Program that is designed to meet the following goals:

- Reduce the discharge of pollutants to the “maximum extent practicable” (MEP)
- Protect water quality
- Satisfy the appropriate water quality requirements of the Clean Water Act and regulations

In order to insure that these goals are properly implemented, the City was required to obtain authorization to discharge stormwater from its MS4 by registering under and complying with the General Permit for Discharges of Stormwater from Small MS4s (General Permit). The City’s registration number under the General Permit is VAR040053 and is effective from July 1, 2013 through June 30, 2018. The City will need to reapply for permit coverage ninety (90) days prior to the expiration date of permit coverage.

The General Permit establishes permit conditions and requirements that the City is required to comply with in order to insure that the minimum expectations for implementing a MS4 Program are met. The requirements established by the General Permit include six minimum control measures (MCMs). For each of the MCMs, the City is required to develop, implement, and refine measurable goals, Best Management Practices (BMPs), and schedules, as well as identify the City Departments responsible for each’s implementation.

The six MCMs are:

- Public Education and Outreach on Stormwater Impacts
- Public Involvement/Participation
- Illegal Discharge Detection and Elimination
- Construction Site Stormwater Runoff Control
- Post-Construction Stormwater Management in New Development and Redevelopment
- Pollution Prevention/Good Housekeeping for Municipal Operations

In addition to the six MCMs, the City is required to address two Special Conditions in order to satisfy the appropriate water quality conditions.

These Special Conditions are:

- Special conditions for approved Total Maximum Daily Loads (TMDLs) other than the Chesapeake Bay TMDL
- Special condition for the Chesapeake Bay TMDL.

This MS4 Program Plan details the City’s commitments necessary to comply with the General Permit for each of the MCMs and the Special Conditions. It became effective July 1, 2014 and was updated, effective October 1, 2014, to include the 2014-2015 Public Education and Outreach Plan included in the Permit Year 1 Annual Report. The MS4 Program Plan must be updated annually in conjunction and submission of an MS4 Annual Report to the Virginia Department of Environmental Quality (DEQ). Future MS4 Program Plan updates must include those items identified in Table 1.

**Table 1: Program Update Requirements**

Program Update Requirement	Update Completed By
Update TMDL Action Plans for TMDLs approved before July of 2008	June 30, 2015
Chesapeake Bay TMDL Action Plan Developed	June 30, 2015
Stormwater Management Progressive Compliance and Enforcement Strategy (optional)	
Develop and implement standard operating procedures (SOPs) for controlling pollution from daily municipal operations and activities	
Complete update of MS4 map to incorporate the expanded regulated area as a result of the 2010 U.S. Census	June 30, 2017
Implement Stormwater Pollution Prevention Plans (SWPPPs) on high priority facilities with a high potential for pollutant discharge	June 30, 2017
MS4 Permit reapplication due to DEQ	March 30, 2018
All required Nutrient Management Plans (NMPs) developed and implemented	June 30, 2018*

\*Phased implementation required

## MS4 Program Evaluation

The City must annually evaluate its MS4 Program and MS4 Program Plan to determine:

- Program compliance
- Appropriateness of the identified BMPs
  - Including the effectiveness of BMPs in addressing discharges into waters that are identified as impaired in the 2010 § 305(b)/303(d) Water Quality Assessment Integrated Report
- Progress towards achieving the identified measurable goals

The City must keep records required by the General Permit for at least three years. These records must be submitted to DEQ only upon specific request. In addition, the City must make the records, including a description of the stormwater

management program, available to the public at reasonable times during regular business hours.

## **MS4 Program Modifications**

The MS4 Program is an iterative implementation process based on success of the program to reduce pollutant loadings and protect water quality. MS4 Program modifications are expected throughout the life of the General Permit.

Updates and modifications to the MS4 Program may be made under the General Permit in accordance with the following procedures:

- The City may add, but not eliminate or replace, components, controls, or requirements to the MS4 Program at any time. Additions shall be reported as part of the annual report.
- The City may make updates and modifications to specific standards and specifications, schedules, operating procedures, ordinances, manuals, checklists, and other documents routinely evaluated and modified provided that the updates and modifications are done in a manner that is:
  - Consistent with the conditions of General Permit
  - Follows public notice and participation requirements
  - Documented in the MS4 Annual report
- The City may replace, or eliminate without replacement, any ineffective or infeasible strategies, policies, and BMPs specifically identified in the General Permit with alternate strategies, policies, and BMPs. Such requests must be made in writing to DEQ and signed in accordance with 9VAC25-87-370 and include the following:
  - An analysis of how or why the BMPs, strategies, or policies are ineffective or infeasible, including information on whether the BMPs, strategies, or policies are cost prohibitive
  - Expectations regarding the effectiveness of the replacement BMPs, strategies, or policies
  - An analysis of how the replacement BMPs are expected to achieve the goals of the BMPs replaced
  - A schedule for implementing the replacement BMPs, strategies, and policies
  - An analysis of how the replacement strategies and policies are expected to improve the operator's ability to meet the goals of the strategies and policies being replaced
- The City must follow the public involvement requirements of the General Permit.

### ***Roles and Responsibilities***

The conditions of the General Permit and content of this MS4 Program Plan are enforceable by the United States Environmental Protection Agency (EPA), DEQ, and third parties and are applicable to all City activities and operations. Unless otherwise noted, the City's Engineering Division, led by the City Engineer, is responsible for implementing the commitments in this MS4 Program Plan. For more information regarding roles and responsibilities contact the Engineering Division at:

Phone: 540-667-1815

Fax: 540-662-3351

E-mail: [engineering@winchesterva.gov](mailto:engineering@winchesterva.gov)

### ***Other Specific Roles and Responsibilities***

The City's Department of Fire and Rescue, led by the Fire and Rescue Chief, is responsible for implementation of:

- BMP 3.7: Hazardous Spill Response

The City's Public Works Division, led by the Refuse & Recycling Coordinator, is responsible for the implementation of:

- BMP 3.8: Household Hazardous Waste Collection
- BMP 3.9: Household Waste Reduction

The City's Public Works Division, led by the Public Works Operations Superintendent, is responsible for implementation of:

- BMP 5.5: City-Owned Stormwater Management Facility Maintenance
- BMP 6.8: Street Sweeping



### Signatory Authorization

In accordance with Section III K 2 of the General Permit, the following individuals, listed by job title, are hereby duly authorized to sign all reports and other requested information:

Public Services Director  
City Engineer

### Certification

"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."

Eden E. Freeman

Printed Name

*Eden E. Freeman*

Signature

City Manager

Title

29 September 2014

Date

VAR040053

Permit Number

City of Winchester

MS4 Name

## 2.0 Minimum Control Measures

### MCM 1. Public Education and Outreach on Stormwater Impacts

#### *Summary of the Requirements*

Under the General Permit, the City is required to implement a public education and outreach program that is designed to educate its citizens about the impacts of stormwater on the water quality of our area streams.

The public education and outreach program is designed with consideration of the following goals:

- Increasing knowledge regarding the steps that can be taken to reduce stormwater pollution and its impacts to both our local waters and waters downstream
- Increasing knowledge regarding the hazards associated with illegal discharges and improper disposals, including their potential legal ramifications
- Targeting diverse messages strategically towards the local audiences which are most likely to have specific and significant stormwater impacts

The City's Public Education and Outreach Program on Stormwater Impacts (Public Education and Outreach Program) is centered on information provided on, and distributed through, its Stormwater Website. In addition, the City provides stormwater awareness through participation in public events, occasional mass mailings, and implementation of an educational program for school-aged children.

The City is required to identify three (3) high-priority water quality issues and target audiences in which to concentrate their education and outreach efforts. The City is also required to provide sufficient outreach activities to annually reach 20% of each of the target audiences. The City completed this through development of the Public Education Outreach Plan Review and High-Priority Water Quality Issue Selection Matrix dated June 2014 (Appendix A). Table 2 identifies the high-priority water quality issues and the City's rationale for each issue selected as documented in this matrix. Table 3 identifies the target audiences, to whom the City will concentrate their education and outreach efforts.

**Table 2: High-Priority Water Quality Issues**

High-Priority Water Quality Issue	Selection Rationale
<b>Reduce the amount of sediments and nutrients in area stormwater discharges</b>	Local waters, to which stormwater from the City of Winchester MS4 discharges, are considered "not meeting" water quality standards; this is due to increased levels of sedimentation. In fact, Winchester has two streams that are identified in local sediment-based TMDLs. Further, Winchester is required to reduce the sediment and nutrient loads in stormwater discharges per the Chesapeake Bay TMDL.
<b>Reduce the bacteria levels in City of Winchester streams</b>	Local waters, to which stormwater from the City of Winchester MS4 discharges, are considered "not meeting" water quality standards; this is due to excessive bacteria levels. Winchester has two streams identified in local bacterial TMDLs.
<b>Reduce the number of illicit discharges</b>	The City of Winchester is an established locality that has a significant residential population and a varied business community. As an established community, one effective method to reduce stormwater pollution is to reduce the number of illicit discharges. In order to do this, citizens of Winchester must be able to recognize illicit discharges. In addition, the City has identified two types of commercial establishments, restaurants and car dealerships, toward whom stormwater outreach can be extended during this permit cycle. By concentrating on these two types of establishments, the City intends to address contributions of fats, oils, and greases (FOG) to the storm drainage facilities; reduce sanitary sewer overflows (SSO); and reduce the number of discharges from commercial car wash activities that do not have authorization under the VPDES General Permit.

**Table 3: High-Priority Water Quality Issues - Target Audience(s)**

High-Priority Water Quality Issue	Target Audience(s)	Methodology for Determining Target Audience Population(s)	Estimated Target Audience Population	20% of Estimated Population
<b>Reduce the amount of sediments &amp; nutrients in area stormwater discharges</b>	Residential property owners and tenants	Number of Single Family Residential (SFR) parcels in City GIS	7,700	1,540
	Contractors, including landscaping companies, conducting work in Winchester	Number of contractors obtaining business licenses in the City of Winchester	641	128
<b>Reduce bacteria levels in City of Winchester streams</b>	Dog owners	Annual number of dog licenses sold by the City Treasurer's Office	3,000	600
	Properties using septic systems	Number of properties served by septic systems	200	40

High-Priority Water Quality Issue	Target Audience(s)	Methodology for Determining Target Audience Population(s)	Estimated Target Audience Population	20% of Estimated Population
Reduce the number of illicit discharges	Residential property owners and tenants	Number of SFR parcels in City GIS	7,700	1,540
	School aged children	Number of 6th grade students	300	60
	Commercial establishments	Number of fast food and full service restaurants	140	28
	Commercial establishments	Number of car dealerships and car rental facilities	35	7

### *Measurable Goals*

The City has identified the following measurable goals for evaluating compliance with the General Permit:

- The City will disseminate public education and outreach messages to the target audiences identified in its High-Priority Water Quality Issue Selection Matrix.
- The City will identify and conduct sufficient public education and outreach activities designed to reach an equivalent 20% of each high-priority issue target audience annually. Annual public education and outreach activities for the next reporting cycle will be identified in an annual Public Education and Outreach Plan included in the MS4 Annual Report. The 2014-2015 Public Education and Outreach Plan (Appendix B) is included for the respective year.
- The City will make adjustments to its Public Education and Outreach Program based upon any observed weaknesses or shortcomings. This includes modifications to the identified annual activities when shortcomings, such as failure to reach an estimated 20% of a target audience, are observed.
- The City will, as necessary, develop new messages or modify existing ones to more appropriately address the identified target audiences.
- The City will provide for public input in the re-evaluation of its Public Education and Outreach Program prior to reapplication for MS4 Permit Coverage in Permit Year 5.

### *BMPs Selected for Implementation*

The City will implement the City of Winchester 2014-2015 Public Education and Outreach Plan in order to meet the identified measurable goals identified above.

In addition, the City has the following BMPs to select from in developing each year’s annual Public Education Outreach Plan:

- BMP 1.1: City Stormwater Webpage
- BMP 1.2: Social Media
- BMP 1.3: Public Events
- BMP 1.4: Publications (Print and Electronic)
- BMP 1.5: Watershed and Stormwater Educational Opportunities Program
- BMP 1.6: Other Message Delivery
- BMP 1.7: Educational Materials

Specific information regarding each BMP including a narrative description and reporting items can be found in Appendix C. The City can and will add to this list of BMPs as necessary, if during the permit cycle it determines there are significant weaknesses or shortcomings.

The Measurable Goal/BMP Relationship Matrix in Table 4 demonstrates which BMPs are expected to be used to meet each measurable goal for MCM 1.

**Table 4: Measurable Goal/BMP Relationship Matrix – MCM 1**

Measurable Goals	BMP 1.1	BMP 1.2	BMP 1.3	BMP 1.4	BMP 1.5	BMP 1.6	BMP 1.7
The City will disseminate public education and outreach messages to the target audiences identified in its High-Priority Water Quality Issue Selection Matrix.	X	X	X	X	X	X	X
The City will identify and conduct sufficient education and outreach activities designed to reach an equivalent 20% of each high-priority issue target audience annually.	X	X	X	X	X	X	X
The City will make adjustments to its Public Education and Outreach Program based upon any observed weaknesses or shortcomings. This includes modifications to the identified annual activities when shortcomings, such as failure to reach an estimated 20% of a target audience, are observed.		X	X	X	X	X	X
The City will, as necessary, develop new messages or modify existing ones to more appropriately address the identified target audiences.		X		X		X	X

Measurable Goals	BMP 1.1	BMP 1.2	BMP 1.3	BMP 1.4	BMP 1.5	BMP 1.6	BMP 1.7
The City will provide for public input in the re-evaluation of its Public Education and Outreach Program prior to reapplication for MS4 Permit Coverage in Permit Year 5.	X	X		X		X	

### ***MS4 Annual Reporting***

The City must include the following as part of its MS4 Annual Report:

#### ***General Permit Reporting Requirements***

- A list of the education and outreach activities conducted during the reporting period for each high-priority water quality issue, the estimated number of people reached, and an estimated percentage of the target audience or audiences that were reached.
- A list of the education and outreach activities that will be conducted during the next reporting period for each high-priority water quality issue, the estimated number of people that will be reached, and an estimated percentage of the target audience or audiences that will be reached.
- The City must detail any modifications to the Public Education and Outreach Program resulting from observed weaknesses or shortcomings in the MS4 Annual Report.

#### ***BMP Specific Reporting Requirements***

In addition to the General Permit reporting requirements, the MS4 Annual Report must include the specific BMP reporting items identified in Appendix C.

#### ***Documentation***

The following information should be recorded for each public education and outreach activity:

- Date of the activity
- Location/event
- Target audience
- Approximate number of audience
- Message delivered

Documentation of all public education and outreach publications should be kept on file in the City Engineer’s office. This includes copies of publications in the Cit-E newsletter, social media, Winchester Star and other media. Links to the City stormwater webpage and associated links should remain current and be updated as part of the MS4 Annual Report development.

## ***MS4 Program Plan MCM 1 Specific Update Requirements***

### ***Requirement # 1 (Due: June 30, 2015) – Enhance the Public Education and Outreach Program to Promote Methods to Eliminate/Minimize TMDL WLA Pollutant Discharges***

The City's MS4 has been allocated wasteloads, or limits, in the following TMDLs:

- Opequon Watershed TMDLs for Benthic Impairments: Abrams Creek and Lower Opequon Creek, Frederick and Clarke Counties, Virginia
  - Approved by the State Water Control Board on June 28, 2005
  - Pollutant: Sediment
- Bacteria TMDLs for Abrams Creek and Upper and Lower Opequon Creek Located in Frederick and Clarke Counties, Virginia
  - Approved by the State Water Control Board on December 20, 2005
  - Pollutant: E. coli

As these TMDLs were approved by the State Water Control Board prior to July 1, 2008, the City must enhance the Public Education and Outreach Program so as to promote methods to eliminate or minimize the pollutants identified in the TMDL wasteloads.

### ***Requirement# 2 (Due: December 31, 2017) – Evaluate the Public Education and Outreach Program***

Prior to application for continued state permit coverage, the City is required to evaluate the public education and outreach program for:

- Appropriateness of the high-priority stormwater issues
- Appropriateness of the selected target audiences for each high-priority stormwater issue
- Effectiveness of the message(s) being delivered
- Effectiveness of the delivery mechanism(s) employed in reaching target audiences

## **MCM 2. Public Involvement/Participation**

### ***Summary of the Requirements***

Under the General Permit, the City is required to promote and encourage public involvement and participation. Involving the public requires that the City provide access to, and ability to comment on, the City's MS4 Program Plan and MS4 Annual Reports, as well as, follow public notice requirements. The City is also required to promote public participation in programs that are aimed at increasing public participation to reduce stormwater pollutant loads; improve water quality; and support local restoration and clean-up projects, programs, groups, meetings, or other similar opportunities.

### ***Measurable Goals***

The City has identified the following measurable goals for evaluating compliance with the General Permit:

- The City will continue to comply with the applicable public notice requirements.
- The City will maintain a MS4 Program Plan that is updated at least once a year in conjunction with development of the MS4 Annual Report.
- The City will post a copy of its updated MS4 Program Plan on-line within thirty (30) days of submittal of its MS4 Annual Report to DEQ.
- The City will post a copy of its updated MS4 Annual Report on-line within thirty (30) days of its submittal to DEQ.
- The City will notify the public and provide for receipt of comment of the proposed MS4 Program Plan that will be submitted as part of its reapplication for coverage in Permit Year 5.
- The City will continue to annually promote a minimum of four (4) local activities aimed at increasing public participation to reduce stormwater pollutant loads; improve water quality; and support local restoration and clean-up projects, programs, groups, meetings, or other opportunities for public involvement.

At a minimum, the City will promote the following activities during the 2014/15 reporting cycle:

- Adopt-A-Stream
- Household Hazardous Waste Recycling
- Earth Day
- Adopt-A-Tree
- Illicit Discharge Reporting Hotline



### ***BMPs Selected for Implementation***

The City has selected the following BMPs to implement in order to meet the measurable goals for MCM 2. Specific information regarding each BMP including a narrative description and reporting items can be found in Appendix D.

Selected BMPs are as follows:

- BMP 2.1: Public Announcements
- BMP 2.2: Public MS4 Program Information Access
- BMP 2.3: Stormwater Complaint Hotline
- BMP 2.4: Promotion of the Local Environmental Events
- BMP 2.5: Promotion of the Household Hazardous Waste Collection Days
- BMP 2.6: Sponsorship of Adopt-A-Stream Program

In order to meet the measurable goals identified for MCM 2, the City will also utilize the following BMPs:

- BMP 1.1: Stormwater Webpage
- BMP 1.2: Social Media
- BMP 1.3: Public Events
- BMP 1.4: Publications (Print and Electronic)
- BMP 1.7: Educational Materials

The Measurable Goal/BMP Relationship Matrix in Table 5 demonstrates which BMPs will be used to meet each measurable goal for MCM 2.

**Table 5: Measurable Goal/BMP Relationship Matrix – MCM 2**

<b>Measurable Goals</b>	<b>BMP 1.1</b>	<b>BMP 1.2</b>	<b>BMP 1.3</b>	<b>BMP 1.4</b>	<b>BMP 1.7</b>	<b>BMP 2.1</b>	<b>BMP 2.2</b>	<b>BMP 2.3</b>	<b>BMP 2.4</b>	<b>BMP 2.5</b>	<b>BMP 2.6</b>
The City will continue to comply with the applicable public notice requirements.	X	X		X	X	X	X				
The City will maintain a MS4 Program Plan that is updated at least once a year in conjunction with development of the MS4 Annual Report.	X			X		X	X				

Measurable Goals	BMP 1.1	BMP 1.2	BMP 1.3	BMP 1.4	BMP 1.7	BMP 2.1	BMP 2.2	BMP 2.3	BMP 2.4	BMP 2.5	BMP 2.6
The City will post a copy of its updated MS4 Program Plan on-line within thirty (30) days of submittal of its MS4 Annual Report to DEQ.	X			X		X	X				
The City will post a copy of its updated MS4 Annual Report on-line within thirty (30) days of its submittal to DEQ.	X			X		X	X				
The City will notify the public and provide for receipt of comment of the proposed MS4 Program Plan that will be submitted as part of its reapplication for coverage in Permit Year 5.	X			X		X	X				
The City will continue to annually promote a minimum of four (4) local activities aimed at increasing public participation to reduce stormwater pollutant loads; improve water quality; and support local restoration and clean-up projects, programs, groups, meetings, or other opportunities for public involvement.	X	X	X	X	X	X	X	X	X	X	X

### ***MS4 Annual Reporting***

The City must include the following as part of its MS4 Annual Report:

#### ***General Permit Reporting Requirements***

- A web link to the MS4 Program Plan and MS4 Annual Report
- Documentation of compliance with the public participation requirements of this section
- The list of public participation activities promoted, sponsored or participated in by the City, their dates and description of the City's involvement

### ***BMP Specific Reporting Requirements***

In addition to the General Permit reporting requirements, the MS4 Annual Report must include the specific BMP reporting items identified in Appendix D.

### ***MS4 Program Plan MCM 2 Specific Update Requirements***

#### ***Requirement # 1 (Due: March 30, 2018) – General Permit Reapplication***

The City is required to submit application for continued General Permit coverage ninety (90) days prior to the expiration of the current General Permit. Ninety days prior to June 30, 2018 is Sunday, April 2, 2017. As such, the reapplication should be submitted to DEQ no later than Friday, March 30, 2018. Prior to application submission, the City is required to notify the public and receive comments on the proposed MS4 Program Plan that is going to be submitted with the reapplication package. The City must also detail how it considered the comments that it received regarding the proposed MS4 Program Plan.

## **MCM 3. Illicit Discharge Detection and Elimination**

### ***Summary of the Requirements***

Under the General Permit, the City of Winchester is required to develop procedures and tools in the design and implementation of the MS4 Program Plan for detection, identification, and elimination of all illicit and illegal discharges to the area streams and river.

The Illicit Discharge Detection and Elimination (IDDE) program is designed to:

- Maintain and update the City's storm sewer system map and inventory of all regulated outfalls
- Prohibit, through City Ordinance, non-stormwater discharges into the MS4 to the extent allowable under federal, state, and local law
- Maintain, implement, and update written procedures to detect, identify, and address unauthorized non-stormwater discharges
- Increase citizen knowledge regarding potential sources of illegal discharges and improper disposals, as means to reduce unintentional illicit discharges
- Encourage public participation in identifying potential illicit discharges and illegal dumping

### ***Measurable Goals***

The City has identified the following measurable goals for evaluating compliance with the General Permit:

- The City will maintain a storm sewer system map and information table that includes all MS4 outfalls located within the boundaries identified as "urbanized" areas in the 2010 Decennial Census.
- The City will maintain a copy of the current storm sewer system map and outfall information table for review upon request.
- The City will continue to identify other points of discharge.
- The City will notify, in writing, MS4 operators of any known City points of discharge that enter the downstream MS4 prior to discharge into an MS4 outfall.
- The City will maintain legal authority to investigate and require elimination of illicit discharges and illegal dumping, identified as entering its MS4 system.
- The City will develop, implement, and update, when appropriate, written procedures to detect, identify, and address unauthorized non-stormwater discharges, including illicit discharges and illegal dumping, to the small MS4.
- The City will develop a prioritized list of, and conduct dry weather field screening on, fifty (50) MS4 Outfalls annually.

- The City will conduct follow-up on any suspect discharges identified during dry-weather field screening.
- The City will investigate any citizen complaints regarding potential illicit discharges or illegal dumping into the MS4 system.
- The City will track all investigations and document the date that the illicit discharge was observed and reported, the results of the investigation, any required follow-up, resolution of the investigation, and the date that the investigation was closed.
- The City will maintain a Stormwater Management hotline for reporting of stormwater related issues including illicit discharges and illegal dumping.
- The City will provide emergency response to reported hazardous material spills and accidental releases.
- The City will provide household hazardous waste collection services to City residents.
- The City will provide scheduled trash and waste collection services to City residents.
- The City will continue efforts to eliminate sanitary sewer seepage from entering into the MS4 system.

### ***BMPs Selected for Implementation***

The City has selected the following BMPs to implement in order to meet the measurable goals for MCM 3. Specific information regarding each BMP including a narrative description and reporting items can be found in Appendix E.

Selected BMPs are as follows:

- BMP 3.1: Storm Sewer Infrastructure and Outfall Mapping
- BMP 3.2: MS4 Operator Coordination
- BMP 3.3: Legal Authority
- BMP 3.4: IDDE Investigation and Follow-Up
- BMP 3.5: MS4 Outfall Dry Weather Field Screening
- BMP 3.6: Illicit Discharge Tracking and Documentation
- BMP 3.7: Hazardous Spill Response
- BMP 3.8: Household Hazardous Waste Collection
- BMP 3.9: Household Waste Reduction
- BMP 3.10: Elimination of Sanitary Sewage Seepage from Public Sewers

In order to meet the measurable goals identified for IDDE, the City will also utilize the following BMPs:

- BMP 2.3: Stormwater Complaint Hotline
- BMP 6.5: Staff Training

The Measurable Goal/BMP Relationship Matrix in Table 6 demonstrates which BMPs are expected to be used to meet each measurable goal for MCM 3.

**Table 6: Measurable Goal/BMP Relationship Matrix – MCM 3**

Measurable Goals	BMP 2.3	BMP 3.1	BMP 3.2	BMP 3.3	BMP 3.4	BMP 3.5	BMP 3.6	BMP 3.7	BMP 3.8	BMP 3.9	BMP 3.10	BMP 6.5
The City will maintain a storm sewer system map and information table that includes all MS4 outfalls located within the boundaries identified as "urbanized" areas in the 2010 Decennial Census.		X				X	X				X	X
The City will maintain a copy of the current storm sewer system map and outfall information table for review upon request.		X										
The City will continue to identify other points of discharge.	X	X			X	X	X	X			X	X
The City will notify, in writing, MS4 operators of any known City points of discharge that enter the downstream MS4 prior to discharge into an MS4 outfall.		X	X		X	X						
The City will maintain legal authority to investigate and require elimination of illicit discharges and illegal dumping, identified as entering its MS4 system.	X			X	X		X	X			X	X
The City will develop, implement, and update, when appropriate, written procedures to detect, identify, and address unauthorized non-stormwater discharges, including illicit discharges and illegal dumping, to the small MS4.	X	X		X	X	X	X				X	X
The City will develop a prioritized list of, and conduct dry weather field screening on, fifty (50) MS4 Outfalls annually.	X	X				X					X	X

<b>Measurable Goals</b>	<b>BMP 2.3</b>	<b>BMP 3.1</b>	<b>BMP 3.2</b>	<b>BMP 3.3</b>	<b>BMP 3.4</b>	<b>BMP 3.5</b>	<b>BMP 3.6</b>	<b>BMP 3.7</b>	<b>BMP 3.8</b>	<b>BMP 3.9</b>	<b>BMP 3.10</b>	<b>BMP 6.5</b>
The City will conduct follow-up on any suspect discharges identified during dry-weather field screening.		X		X	X	X	X				X	X
The City will investigate any citizen complaints regarding potential illicit discharges or illegal dumping into the MS4 system.	X			X	X		X	X			X	X
The City will track all investigations and document the date that the illicit discharge was observed and reported, the results of the investigation, any required follow-up, resolution of the investigation, and the date that the investigation was closed.	X	X		X	X		X				X	X
The City will maintain a Stormwater Management hotline for reporting of stormwater related issues including illicit discharges and illegal dumping.	X	X		X	X		X	X			X	
The City will provide emergency response to reported hazardous material spills and accidental releases.	X	X		X	X			X				
The City will provide household hazardous waste collection services to City residents.						X	X		X	X		
The City will provide scheduled trash and waste collection services to City residents.						X	X		X	X		
The City will continue efforts to eliminate sanitary sewer seepage from entering into the MS4 system.	X	X	X	X	X	X					X	X



## ***MS4 Annual Reporting***

The City must include the following as part of its MS4 Annual Report:

### ***General Permit Reporting Requirements***

- A list of any written notifications of physical interconnection given by the operator to other MS4s
- The total number of outfalls screened during the reporting period, the screening results, and detail of any follow-up actions necessitated by the screening results
- A summary of each investigation conducted by the operator of any suspected illicit discharge. The summary must include:
  - Date that the suspected discharge was observed, reported, or both
  - Investigation resolution, including any follow-up
  - Resolution of the investigation and the date the investigation was closed

### ***BMP Specific Reporting Requirements***

In addition to the General Permit reporting requirements, the MS4 Annual Report must include the specific BMP reporting items identified in Appendix E.

## ***MS4 Program Plan MCM 3 Specific Update Requirements***

### ***Requirement # 1 (Due: June 30, 2017) – Updated MS4 Outfall Map and Information Table***

The City must have an updated MS4 Outfall map and information table that includes all MS4 outfalls located within the boundaries identified as "urbanized" areas in the 2010 Decennial Census. The updated information table must be submitted as an appendix in the MS4 Annual Report that is required to be submitted prior to October 1, 2017.

## **MCM 4. Construction Site Stormwater Runoff Control**

### ***Summary of the Requirements***

Under the General Permit, the City is required to implement a Construction Site Stormwater Runoff Control Program that is designed to address discharges entering the MS4 from the following land disturbing activities:

- Land-disturbing activities as defined in § 62.1-44.15:51 of the Code of Virginia that result in the disturbance of 10,000 square feet or greater.
- Land-disturbing activities that disturb less than the minimum square footage, but require an erosion and sediment control (ESC) plan per the state regulations or City Ordinance. In the City this minimum square footage has been reduced to 5,000 square feet or greater.
- Land-disturbing activities on individual residential lots or sections of residential developments being developed by different property owners and where the total aggregate land disturbance is 10,000 square feet or greater.

The Construction Site Stormwater Runoff Control Program shall specifically include:

- A description of the legal authorities utilized to ensure compliance with the MCM in Section II of the General Permit related to construction site stormwater runoff control such as ordinances, permits, orders, specific contract language, and inter-jurisdictional agreements.
- Written plan review procedures and all associated documents utilized in plan review.
- Written inspection procedures and all associated documents utilized during inspection including the inspection schedule.
- Written procedures for compliance and enforcement, including a progressive compliance and enforcement strategy, where appropriate.

Documents and other reference materials used by the City for implementation of the Construction Site Stormwater Runoff Control Program are listed in Table 12 and Table 13.

### ***Measurable Goals***

The following measurable goals are included in the updated MS4 Program Plan for MCM 4:

- The City's ESC Program will be found consistent during any programmatic Evaluation by DEQ.
- The City will review ESC plans for land disturbing activities for compliance with Article 9 Chapter 2 of the Winchester City Code.

- The City will require an agreement in lieu of plan for single family residential land disturbing activities.
- City employees will maintain the appropriate certifications required for plan review, inspection and administration of the City's ESC Program.
- All regulated land disturbing activities will be required to identify a Responsible Land Developer.
- The City will use its legal authority to require that a land disturbing activity has an approved ESC Plan or agreement in lieu of plan prior to land disturbance.
- The City will maintain the stormwater complaint hotline as the mechanism for the public to report citizen complaints regarding construction stormwater.
- The City will respond to citizen complaints regarding construction site related stormwater runoff.
- The City will continue to implement a land disturbing activity inspection schedule in accordance with Article 9 Chapter 2 of the Winchester City Code.
- The City will use its legal authority to require control of construction wastes at land disturbing activities.
- The City will require that land disturbing activities regulated under the Virginia Stormwater Management Program (VSMP) Construction Stormwater Program obtain VPDES Permit coverage prior to land disturbance.

### ***BMPs Selected for Implementation***

The City has selected the following BMPs to implement in order to meet the measurable goals for MCM 4. Specific information regarding each BMP including a narrative description and reporting items can be found in Appendix F.

Selected BMPs are as follows:

- BMP 4.1: Legal Authority
- BMP 4.2: Land Disturbing Activity Plan Review
- BMP 4.3: VPDES Construction Activity Permit Coordination
- BMP 4.4: Land Disturbing Activity Inspections
- BMP 4.5: Land Disturbing Activity Tracking and Recordkeeping

In order to meet the measurable goals identified for MCM 4, the City will also utilize the following BMPs:

- BMP 2.3: Stormwater Complaint Hotline
- BMP 6.5: Staff Training

The Measurable Goal/BMP Relationship Matrix in Table 7 demonstrates which BMPs will be used to meet each Measurable Goal for MCM 4.

**Table 7: Measurable Goal/BMP Relationship Matrix – MCM 4**

Measurable Goals	BMP 2.3	BMP 4.1	BMP 4.2	BMP 4.3	BMP 4.4	BMP 4.5	BMP 6.5
The City’s ESC Program will be found consistent during any programmatic Evaluation by DEQ.			X	X	X	X	X
The City will review ESC plans for land disturbing activities for compliance with Article 9 Chapter 2 of the Winchester City Code.		X	X			X	
The City will require an agreement in lieu of plan for single family residential land disturbing activities.			X	X		X	
City employees will maintain the appropriate certifications required for plan review, inspection and administration of the City’s ESC Program.			X			X	X
All regulated land disturbing activities will be required to identify a Responsible Land Developer.			X		X	X	
The City will use its legal authority to require that a land disturbing activity has an approved ESC Plan or agreement in lieu of plan prior to land disturbance.		X	X	X	X	X	
The City will maintain the stormwater complaint hotline as the mechanism for the public to report citizen complaints regarding construction stormwater.	X					X	
The City will respond to citizen complaints regarding construction site related stormwater runoff.	X					X	X
The City will continue to implement a land disturbing activity inspection schedule in accordance with Article 9 Chapter 2 of the Winchester City Code.					X	X	X
The City will use its legal authority to require control of construction wastes at land disturbing activities.		X				X	
The City will require that land disturbing activities regulated under the Virginia Stormwater Management Program (VSMP) Construction Stormwater Program obtain VPDES Permit coverage prior to land disturbance.				X		X	

## ***MS4 Annual Reporting***

The City must include the following as part of its MS4 Annual Report:

### ***General Permit Reporting Requirements***

The City shall track regulated land-disturbing activities and submit the following information in all annual reports:

- Total number of regulated land-disturbing activities
- Total number of acres disturbed
- Total number of inspections conducted
- A summary of the enforcement actions taken, including the total number and type of enforcement actions taken during the reporting period

### ***BMP Specific Reporting Requirements***

In addition to the General Permit reporting requirements, the MS4 Annual Report must include the specific BMP reporting items identified in Appendix F.

## ***MS4 Program Plan MCM 4 Specific Update Requirements***

As of July 1, 2014, there are no mandated updates to MCM 4 identified in the MS4 General Permit scheduled for the duration of the permit cycle.

## **MCM 5. Post-Construction Stormwater Management in New Development and Redevelopment**

### ***Summary of the Requirements***

Under the General Permit, the City is required to implement a Post-Construction Stormwater Management Program for New Development and Redevelopment designed to address discharges entering the MS4.

The Post-Construction Stormwater Management Program for New Development and Redevelopment shall specifically include:

- A list of the legal authorities such as ordinances, permits, orders, specific contract language, and inter-jurisdictional agreements to ensure compliance with the MCM in Section II of the General Permit related to post-construction stormwater management in new development and development on prior developed lands.
- Written policies and procedures utilized to ensure that stormwater management facilities are designed and installed in accordance with Section II B 5 b.
- Written inspection policies and procedures utilized in conducting inspections.
- Written procedures for inspection, compliance and enforcement to ensure maintenance is conducted on private stormwater facilities to ensure long-term operation in accordance with approved design.
- Written procedures for inspection and maintenance of operator-owned stormwater management facilities.
- The roles and responsibilities of each of the operator's departments, divisions, or subdivisions in implementing the MCM in Section II of the General Permit related to construction site stormwater runoff control.

MCM 5 is closely related to having a VSMP that is consistent with the requirements of Virginia Stormwater Management Act (§ 62.1-44.15:24 et seq).

### ***Measurable Goals***

The following measurable goals are included for MCM 5:

- The City's VSMP will be found consistent during any programmatic evaluation by DEQ.
- The City will review stormwater management plans for compliance with Article 9 Chapter 3 of the Winchester City Code.
- The City will use its legal authority to require that a land disturbing activity has an approved stormwater management plan prior to land disturbance.
- The City will inspect regulated land disturbing activities for implementation of a SWPPP.

- The City will inspect land disturbing activities for implementation of an approved stormwater management plan.
- The City will require Maintenance Agreements for stormwater management facilities approved as part of a stormwater management plan.
- The City will conduct annual inspections on stormwater management facilities that it operates.
- The City will conduct maintenance on its stormwater management facilities when identified as part of an annual inspection.
- Inspections will be conducted on private stormwater management facilities at a minimum of once every five (5) years.
- The City will use its legal authority to ensure that required maintenance is completed when identified as part of an inspection.

### ***BMPs Selected for Implementation***

The City has selected the following BMPs to implement in order to meet the measurable goals for MCM 5. Specific information regarding each including a narrative description and specific BMP reporting items can be found in Appendix G.

Selected BMPs are as follows:

- BMP 5.1: Legal Authority
- BMP 5.2: Private Stormwater Management Facility Inspections
- BMP 5.3: Maintenance Agreements
- BMP 5.4: City-Owned Stormwater Management Facility Inspections
- BMP 5.5: City-Owned Stormwater Management Facility Maintenance
- BMP 5.6: Tracking and Documentation

In order to meet the measurable goals identified for MCM 5, the City will also utilize the following BMPs:

- BMP 4.2: Land Disturbing Activity Plan Review
- BMP 4.3: VPDES Construction Activity Permit Coordination
- BMP 4.4: Land Disturbing Activity Inspections

The Measurable Goal/BMP Relationship Matrix in Table 8 demonstrates which BMPs will be used to meet each measurable goal for MCM 5.

**Table 8: Measurable Goal/BMP Relationship Matrix – MCM 5**

<b>Measurable Goals</b>	<b>BMP 4.2</b>	<b>BMP 4.3</b>	<b>BMP 4.4</b>	<b>BMP 5.1</b>	<b>BMP 5.2</b>	<b>BMP 5.3</b>	<b>BMP 5.4</b>	<b>BMP 5.5</b>	<b>BMP 5.6</b>
The City's VSMP will be found consistent during any programmatic evaluation by DEQ.	X	X	X	X	X	X	X	X	X
The City will review stormwater management plans for compliance with Article 9 Chapter 3 of the Winchester City Code.	X			X			X	X	X
The City will use its legal authority to require that a land disturbing activity has an approved stormwater management plan prior to land disturbance.	X	X	X	X					X
The City will inspect regulated land disturbing activities for implementation of a SWPPP.			X						X
The City will inspect land disturbing activities for implementation of an approved stormwater management plan.			X				X	X	X
The City will require Maintenance Agreements for stormwater management facilities approved as part of a stormwater management plan.			X	X	X	X	X	X	X
The City will conduct annual inspections on stormwater management facilities that it operates.			X				X	X	X
The City will conduct maintenance on its stormwater management facilities when identified as part of an annual inspection.			X			X		X	X
Inspections will be conducted on private stormwater management facilities at a minimum of once every five (5) years.			X		X	X			X
The City will use its legal authority to ensure that required maintenance is completed when identified as part of an inspection.				X		X		X	X



## ***MS4 Annual Reporting***

The City must include the following as part of its MS4 Annual Report.

### ***General Permit Reporting Requirements***

The City will track, collect and submit to DEQ in its MS4 Annual Report the following items regarding MCM 5:

- An updated electronic database of all known operator-owned and privately-owned stormwater management facilities that discharge into the MS4. The database shall include the following information:
  - Stormwater management facility type
  - General description of the facility's location, including either/or:
    - o Address
    - o Latitude and longitude
  - Acres treated by the facility, including:
    - o Total acres
    - o Breakdown of pervious and impervious acres
  - Date the facility was brought online (MM/YYYY) or alternative noted in General Permit, if applies
  - Sixth order hydrologic unit code (HUC) in which the stormwater management facility is located
  - Name of any impaired water segments within each HUC listed in the 2010 § 305(b)/303(d) Water Quality Assessment Integrated Report to which the stormwater management facility discharges
  - Whether the stormwater management facility is operator-owned or privately-owned
  - Whether a maintenance agreement exists, if privately owned
  - Date of the operator's most recent inspection
- A report with the total number of inspections completed and, when applicable, the number of enforcement actions taken to ensure long-term maintenance.
- An electronic database or spreadsheet of all stormwater management facilities brought online during each reporting year with the appropriate annual report. If DEQ provides the City access to a statewide web-based reporting electronic database or spreadsheet, the City must utilize that database to complete the pertinent reporting requirements identified in the General Permit.

***BMP Specific Reporting Requirements***

In addition to the General Permit reporting requirements, the MS4 Annual Report must include the specific BMP reporting items identified in Appendix G.

***MS4 Program Plan MCM 5 Specific Update Requirements***

As of July 1, 2014, there are no mandated updates to MCM 5 identified in the MS4 General Permit scheduled for the duration of the permit cycle.

## **MCM 6. Pollution Prevention/Good Housekeeping for Municipal Operations**

### ***Summary of the Requirements***

Under the General Permit, the City is required to implement a Pollution Prevention/Good Housekeeping Program to reduce the amount of pollutants discharged in stormwater runoff from municipal operations and activities. In addition to site specific pollution prevention planning, MCM 6 requires the City to implement NMPs on certain properties, develop SOPs for daily city operations, and implement stormwater training to appropriate City staff.

### ***Measurable Goals***

The following measurable goals are included in the updated MS4 Program Plan for MCM 6:

- The City will develop and implement written SOPs for daily activities as described in Section II B 6 a-c of the General Permit by June 30, 2015.
- The City will continue coverage of the City Yards facility under the VPDES General Permit for the Discharge of Stormwater from Industrial Activities.
- The City will develop and implement a SWPPP for the Parks and Recreation equipment storage and maintenance facility located at Jim Barnett Park by June 30, 2017.
- The City will develop and implement NMPs on the City properties identified in the NMP Facility Evaluation by June 30, 2016.
- The City will not use nutrients such as phosphorus and nitrogen as deicing agents as part of their snow removal strategies.
- The City will implement the biennial training schedule for relevant employees found in the City of Winchester Stormwater Training Plan beginning in Permit Year 2.
- City employees will maintain the appropriate certifications required for plan review, inspection, and administration of the City's ESC Program.
- City employees and contractors will maintain the appropriate certifications required for pesticide application as required under the Pesticide Act.

### ***BMPs Selected for Implementation***

The City has selected the following BMP's to implement in order to meet the measurable goals for MCM 6. Specific information regarding each including a narrative description and specific BMP reporting items can be found in Appendix H.

Selected BMPs are as follows:

- BMP 6.1: Standard Operating Procedures
- BMP 6.2: Stormwater Pollution Prevention Plans
- BMP 6.3: Nutrient Management Plans
- BMP 6.4: Pollution Prevention Inspections
- BMP 6.5: Staff Training
- BMP 6.6: Street Sweeping
- BMP 6.7: VPDES Industrial Stormwater Permit Compliance Coordination
- BMP 6.8: Tracking and Documentation

The Measurable Goal/BMP Relationship Matrix in Table 9 demonstrates which BMPs will be used to meet each Measurable Goal for MCM 6.

**Table 9: Measurable Goal/BMP Relationship Matrix – MCM 6**

Measurable Goals	BMP 6.1	BMP 6.2	BMP 6.3	BMP 6.4	BMP 6.5	BMP 6.6	BMP 6.7	BMP 6.8
The City will develop and implement written SOPs for daily activities as described in Section II B 6 a-c of the General Permit by June 30, 2015.	X	X	X	X	X	X	X	X
The City will continue coverage of the City Yards facility under the VPDES General Permit for the Discharge of Stormwater from Industrial Activities.							X	X
The City will develop and implement a SWPPP for the Parks and Recreation equipment storage and maintenance facility located at Jim Barnett Park by June 30, 2017.		X			X			X
The City will develop and implement NMPs on the City properties identified in the NMP Facility Evaluation by June 30, 2016.			X		X			X
The City will not use nutrients such as phosphorus and nitrogen as deicing agents as part of their snow removal strategies.	X	X			X			X

Measurable Goals	BMP 6.1	BMP 6.2	BMP 6.3	BMP 6.4	BMP 6.5	BMP 6.6	BMP 6.7	BMP 6.8
The City will implement the biennial training schedule for relevant employees found in the City of Winchester Stormwater Training Plan beginning in Permit Year 2.	X				X			X
City employees will maintain the appropriate certifications required for plan review, inspection, and administration of the City's ESC Program.	X				X			X
City employees and contractors will maintain the appropriate certifications required for pesticide application as required under the Pesticide Act.	X				X			X

### ***MS4 Annual Reporting***

The City must include the following as part of its MS4 Annual Report:

#### ***General Permit Reporting Requirements***

- A summary report on the development and implementation of the daily operational procedures
- A summary report on the development and implementation of the required SWPPPs
- A summary report on the development and implementation of the turf and landscape nutrient management plans that includes:
  - Total acreage of lands where turf and landscape nutrient management plans are required
  - Acreage of lands upon which turf and landscape nutrient management plans have been implemented
- A summary report on the required training, including:
  - A list of training events
  - The training date
  - The number of employees in attendance
  - The objective of the training

#### ***BMP Specific Reporting Requirements***

In addition to the General Permit reporting requirements, the MS4 Annual Report must include the specific BMP reporting items identified in Appendix H.

## ***MS4 Program Plan MCM 6 Specific Update Requirements***

### ***Requirement # 1 (Due: June 30, 2015) – Complete SOPs for Daily Operational and Maintenance Activities***

The City must develop and implement SOPs for controlling stormwater runoff pollution from daily operations. The SOPs must be incorporated into the staff training program.

### ***Requirement # 2 (Due: June 30, 2017) – SWPPPs for High Priority Facilities with High Potential to Discharge Pollutants***

The City must develop and implement a SWPPP for the Jim Barnett Park Equipment Storage and Maintenance Facility by June 30, 2017.

### ***Requirement #3 (Due: June 30, 2016) – NMPs***

The City will develop and implement NMPs on the properties identified in Table 10 by June 30, 2016.

**Table 10: Sites Identified as Requiring NMPs**

<b>Address</b>	<b>Notes Regarding Use</b>	<b>Turf Acreage</b>	<b>Latitude</b>	<b>Longitude</b>
1001 E Cork St.	Jim Barnett Park	71.6	39.1727797	-78.1548890
623 North Pleasant Valley Rd.	Friendship Park	9.3	39.1899529	-78.1508964
900 Whittier Ave.	Whittier Park	5.9	39.1911247	-78.1779289
167 Bruce Dr.	Weaver Neighborhood Park	5.1	39.149049	-78.1757645
2024 Harvest Dr.	Park Place Public Park	4.0	39.1659935	-78.1887412
805 Crestview Terrace St.	West Ridge & Harvest Ridge Park	1.4	39.1585249	-78.1931146

## Special Conditions

As a result of approved TMDLs, the following General Permit Special Conditions are applicable to the City:

- Special conditions for approved TMDLs other than the Chesapeake Bay TMDL
- Special condition for the Chesapeake Bay TMDL

Table 11 identifies those TMDLs in which the City has wasteload allocations (WLAs).

**Table 11: TMDLs with Wasteloads Allocated to the City of Winchester**

TMDL	Approval Date	Pollutant of Concern	WLA
Opequon Watershed TMDLs for Benthic Impairments: Abrams Creek and Lower Opequon Creek, Frederick and Clarke Counties, Virginia	6/28/2005	Sediment	442.7 tons/year of sediment to Abrams Creek <sup>1</sup>
			269.2 tons/year of sediment to the Lower Opequon Creek <sup>1</sup>
Bacteria TMDLs for Abrams Creek and Upper and Lower Opequon Creek Located in Frederick and Clarke County, Virginia	12/20/2005	E. Coli	310x10 <sup>10</sup> cfu/year of E. coli to Abrams Creek
Chesapeake Bay TMDL for Nitrogen, Phosphorus and Sediment	12/29/2010 <sup>2</sup>	Sediment	Pollutant reduction calculations for sediment, phosphorus and nitrogen will be calculated with development of the Chesapeake Bay Action Plan
		Phosphorus	
		Nitrogen	

<sup>1</sup> WLA Aggregated with VDOT MS4

<sup>2</sup> Approved by EPA

Previously, in response to the Opequon Creek Watershed TMDL Implementation Plan, which was approved by the Virginia State Water Control Board on March 23, 2007, the City has incorporated the following pollutant reduction efforts into its operations:

- Reduced the threshold for regulated land disturbing activities from 10,000 ft<sup>2</sup> to 5,000 ft<sup>2</sup> under Chapter 9 Article 2
- Instituted stream buffer protection under Chapter 9 Article 4
- Prohibited feeding of waterfowl under Chapter 5 Article 3
- Continued its program to eliminate entry of sanitary sewage into the storm system

In addition, many of the BMPs implemented under this MS4 Program Plan address, either directly or indirectly, those pollutants identified in the allocated wasteloads. However, as many of these BMPs are programmatic in implementation, it is impossible to quantify numerically their contribution to pollutant reduction as they do not directly eliminate or reduce the pollutant loads. The City will review these

BMPs as part of the Opequon Creek Watershed TMDL Action Plan development required in Permit Year 2.

### ***MS4 Program Plan Special Conditions Specific Update Requirements***

#### ***Requirement # 1 (Due: June 30, 2015) – Update TMDL Action Plans for Non-Chesapeake Bay TMDLs***

The City must update its MS4 Program Plan to include a TMDL Action Plans for the following TMDLs:

- Opequon Creek Watershed TMDLs for Benthic Impairments: Abrams Creek and Lower Opequon Creek, Frederick and Clarke Counties, Virginia
- Bacteria TMDLs for Abrams Creek and Upper and Lower Opequon Creek Located in Frederick and Clarke County, Virginia

#### ***Requirement # 2 (Due: June 30, 2015) – Develop Chesapeake Bay TMDL Action Plan***

The City must develop a TMDL Action Plan for the Chesapeake Bay TMDL.



## Documents Incorporated by Reference

Documents identified in Table 12 are considered part of the MS4 Program Plan. These documents provide policy, procedure and guidance for implementation of certain BMPs and measurable goals.

**Table 12: Documents Incorporated into the MS4 Program Plan by Reference**

Title	Date	Location
City Code Chapter 9-Water Quality	06/10/2014	<a href="http://www.winchesterva.gov/sites/default/files/documents/government/city_code/CH09.pdf">http://www.winchesterva.gov/sites/default/files/documents/government/city_code/CH09.pdf</a>
Public Services Standards Manual	04/2012	<a href="http://www.winchesterva.gov/sites/default/files/documents/engineering/PS-Standards-Manual-2012.pdf">http://www.winchesterva.gov/sites/default/files/documents/engineering/PS-Standards-Manual-2012.pdf</a>
VSMP Permit Application Package	07/2014	<a href="http://www.winchesterva.gov/sites/default/files/documents/engineering/vsmp_2014_-_fillable.pdf">http://www.winchesterva.gov/sites/default/files/documents/engineering/vsmp_2014_-_fillable.pdf</a>
Land Disturbance Application Package	07/2014	<a href="http://www.winchesterva.gov/sites/default/files/documents/engineering/ldp_application_2014_fillable.pdf">http://www.winchesterva.gov/sites/default/files/documents/engineering/ldp_application_2014_fillable.pdf</a>
Land Disturbance Package-Single Family Dwellings	07/2014	<a href="http://www.winchesterva.gov/sites/default/files/documents/engineering/ldp_application_-_sf_2014_-_fillable.pdf">http://www.winchesterva.gov/sites/default/files/documents/engineering/ldp_application_-_sf_2014_-_fillable.pdf</a>
Public Education Outreach Plan Review and High-Priority Water Quality Issue Selection Matrix	06/2014	Appendix A
2014-2015 Public Education and Outreach Plan	07/2014	Appendix B
Illicit Discharge Detection and Elimination (IDDE) Standard Operating Procedures Manual	06/2014	Appendix I
Public Stormwater Management Facility Inspection Standard Operating Procedures Manual	06/2014	Appendix J
Municipal High Priority Facility Determination	06/2014	Appendix K
Nutrient Management Plan Facility Determination	06/2014	Appendix L
City of Winchester Stormwater Training Plan	06/2014	Appendix M

## Additional MS4 Program Reference Materials

In addition to the documents incorporated into the MS4 Program Plan in Table 13, the City of Winchester has additional reference materials available for use in implementation of the MS4 Program as necessary and are not considered part of the MS4 Program Plan itself.

**Table 13: Additional MS4 Program Reference Materials**

Available Materials	Expected Usage for MCMs:						Location
	1	2	3	4	5	6	
Brochure/Flyer "Adopting a Stream in Winchester is Easy"	X	X					<a href="http://www.winchesterva.gov/sites/default/files/documents/engineering/Six%20Steps%20Flyer.pdf">http://www.winchesterva.gov/sites/default/files/documents/engineering/Six%20Steps%20Flyer.pdf</a>
Brochure/Flyer "Do Not Feed the Geese in the Park"	X	X					<a href="http://www.winchesterva.gov/sites/default/files/documents/engineering/geese20brochure201-12-09.pdf">http://www.winchesterva.gov/sites/default/files/documents/engineering/geese20brochure201-12-09.pdf</a>
Presentation "What is a Watershed?" by EPA/The Weather Channel	X						Direct link from Winchester Stormwater page: <a href="https://www.youtube.com/watch?v=PazndNOcXPQ">https://www.youtube.com/watch?v=PazndNOcXPQ</a>
Presentation "How to Make Your Own Rain Barrel"	X	X					Direct link from Winchester Stormwater page: <a href="http://www.winchesterva.gov/sites/default/files/documents/engineering/rain-barrel-workshop-presentation.pdf">http://www.winchesterva.gov/sites/default/files/documents/engineering/rain-barrel-workshop-presentation.pdf</a>
Brochure/Flyer "It's Your Doodie" (Pet Waste)	X	X					<a href="http://www.winchesterva.gov/sites/default/files/documents/engineering/pet-waste-brochure.pdf">http://www.winchesterva.gov/sites/default/files/documents/engineering/pet-waste-brochure.pdf</a>
City Stormwater Webpage	X	X					<a href="http://www.winchesterva.gov/engineering/stormwater">www.winchesterva.gov/engineering/stormwater</a>
City Calendar Webpage	X	X	X				<a href="http://www.winchesterva.gov/calendar">http://www.winchesterva.gov/calendar</a>
Brochure/Flyer "Stormwater Complaint Hotline"	X	X	X	X			<a href="http://www.winchesterva.gov/sites/default/files/documents/engineering/Stormwater%20Complaint%20Hotline%20v2.pdf">http://www.winchesterva.gov/sites/default/files/documents/engineering/Stormwater%20Complaint%20Hotline%20v2.pdf</a>
Brochure/Flyer "Recycling Is Easy in Winchester"		X	X				<a href="http://www.winchesterva.gov/sites/default/files/documents/public-works/recycling_diagram_0.pdf">http://www.winchesterva.gov/sites/default/files/documents/public-works/recycling_diagram_0.pdf</a>
Annual Report		X					<a href="http://www.winchesterva.gov/engineering/stormwater">www.winchesterva.gov/engineering/stormwater</a>
Brochure/Flyer "Yard Waste"		X	X				<a href="http://www.winchesterva.gov/sites/default/files/documents/public-works/Yard%20Waste%20Notice%20-%20new.pdf">http://www.winchesterva.gov/sites/default/files/documents/public-works/Yard%20Waste%20Notice%20-%20new.pdf</a>
Brochure/Flyer "Adopt-a-Stream"		X					<a href="http://www.winchesterva.gov/engineering/adopt-a-stream">http://www.winchesterva.gov/engineering/adopt-a-stream</a>
"Unwanted Items" Webpage		X	X				<a href="http://www.winchesterva.gov/public-works/unwanted-items">http://www.winchesterva.gov/public-works/unwanted-items</a>
"Refuse and Recycling" Webpage		X	X				<a href="http://www.winchesterva.gov/public-works/refuse">http://www.winchesterva.gov/public-works/refuse</a>
Virginia Erosion and Sediment Control Handbook				X			<a href="http://www.deq.virginia.gov/Programs/Water/StormwaterManagement/Publications/ESCHandbook.aspx">http://www.deq.virginia.gov/Programs/Water/StormwaterManagement/Publications/ESCHandbook.aspx</a>
Virginia Erosion and Sediment Control Law (§62.1-44.15:51 et. seq.)				X			<a href="http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+62.1-44.15C51">http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+62.1-44.15C51</a>

Available Materials	Expected Usage for MCMs:						Location
	1	2	3	4	5	6	
Virginia Stormwater Management Handbook (2013-Draft)					X		<a href="http://www.deq.virginia.gov/files/share/wps/2013_SWM_Handbook/">http://www.deq.virginia.gov/files/share/wps/2013_SWM_Handbook/</a>
City BMP Spreadsheet					X		City Engineering Division Office
BMP Inspection Reports					X		City Engineering Division Office
City Yards SWPPP						X	Physically located at Winchester City Yards/301 E Cork Street/Winchester, VA 22601
Training Module 1: Recognition and Reporting of Illicit Discharges						X	City Engineering Division Office
Training Module 2: Pollution Prevention Practices used in Road, Street, and Parking Lot Maintenance						X	City Engineering Division Office
Training Module 3: Pollution Prevention Practices used for Fleet and Facility Operations						X	City Engineering Division Office
Training Module 4: Minimizing Stormwater Pollution from Parks and Grounds Maintenance						X	City Engineering Division Office
MS4 Annual Report, Year 1	X	X	X	X	X	X	Posted on City's Stormwater Web Page

# Appendix A

Public Education Outreach Plan Review and High-Priority Water Quality Issue  
Selection Matrix

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# Public Education Outreach Plan Review and High-Priority Water Quality Issue Selection Matrix



prepared by



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## 1.0 VPDES PERMIT REQUIREMENTS

The VPDES General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) (General Permit) requires that the City of Winchester (City) revise its MS4 Public Education Program (Program) to include the following:

- Identify a minimum of three high-priority water quality issues that contribute to the stormwater pollution and provide rationale for their selection.
- Identify target audience(s) that are most likely to have significant impacts for each high-priority water quality issue and estimate each target audience population size.
- Develop relevant message(s) and associated educational and outreach materials for distribution to the selected target audiences.
- Provide for public participation during Program development.

Once developed, conduct sufficient education and outreach activities to reach an equivalent of 20% of each high-priority issue target audience and provide adjustment to the target audiences and messages in order to address any observed weaknesses or shortcomings.

Additionally, the General Permit Special Conditions for Approved Total Maximum Daily Loads (TMDLs), other than the Chesapeake Bay TMDL, requires the City to enhance its Program to promote methods to eliminate and reduce pollutants identified in TMDL waste loads allocated to the City's MS4. Currently, there are two TMDLs in which the City has been allocated waste loads by the State Water Control Board (SWCB). These TMDLs are:

- Opequon Watershed TMDLs for Benthic Impairments: Abrams Creek and Lower Opequon Creek, Frederick and Clarke Counties, Virginia
- Bacteria TMDLs for Abrams Creek and Upper and Lower Opequon Creek Located in Frederick and Clarke County, Virginia

The identified pollutants in these TMDLs are sediment and bacteria. Although Program enhancement to address TMDLs is not required until later in this permit cycle, the City should address it while updating the Program so as to eliminate the City's need to revise the Program again during the permit cycle.

## 2.0 IDENTIFICATION OF PROPOSED HIGH-PRIORITY WATER QUALITY ISSUES AND THE RATIONALE FOR THEIR SELECTION

Given the City’s land use composition and population demographics, it is apparent that the most effective stormwater public education and outreach program should concentrate on increasing awareness of the City’s residential population. The impact of increasing citizen awareness will not only result in a potential modification to citizen behavior but will also provide a greater overall public awareness as citizens travel through the City daily. As a result, Table 1 recommends three high-priority water quality issues for the City to consider.

**Table 1: Potential High Priority Water Quality Issues**

High-Priority Water Quality Issue	Selection Rationale
<b>Reduce the amount of sediments and nutrients in area stormwater discharges</b>	Local waters, to which stormwater from the City of Winchester MS4 discharges, are considered "not meeting" water quality standards; this is due to increased levels of sedimentation. In fact, Winchester has two streams that are identified in local sediment-based TMDLs. Further, Winchester is required to reduce the sediment and nutrient loads in stormwater discharges per the Chesapeake Bay TMDL.
<b>Reduce the bacteria levels in City of Winchester streams</b>	Local waters, to which stormwater from the City of Winchester MS4 discharges, are considered "not meeting" water quality standards; this is due to excessive bacteria levels. Winchester has two streams identified in local bacterial TMDLs.
<b>Reduce the number of illicit discharges</b>	The City of Winchester is an established locality that has a significant residential population and a varied business community. As an established community, one effective method to reduce stormwater pollution is to reduce the number of illicit discharges. In order to do this, citizens of Winchester must be able to recognize illicit discharges. In addition, the City has identified two types of commercial establishments, restaurants and car dealerships, toward whom stormwater outreach can be extended during this permit cycle. By concentrating on these two types of establishments, the City intends to address contributions of fats, oils, and greases (FOG) to the storm drainage facilities; reduce sanitary sewer overflows (SSO); and reduce the number of discharges from commercial car wash activities that do not have authorization under the VPDES General Permit.



### 3.0 IDENTIFICATION OF TARGET AUDIENCES AND ESTIMATED POPULATIONS

A review of the City's population demographics was conducted in order to identify target audiences for each of the high-priority water quality issues. This review included an evaluation of the demographics to identify minorities, disadvantaged populations, or minors that may predominate in the City. GKY used the latest available information from the U.S. Census Bureau, City-Data.com, and the City of Winchester and Winchester Public Schools official websites to develop a demographic summary of the City. The demographic summary found that:

- The City's population can be characterized as younger than the Virginia average (median age 35.1 years vs. state average of 43.4), slightly below the Virginia average for educational attainment (81.9% high school graduates [86.9% in Virginia]), slightly lower college attainment (29.5% have at least a Bachelor's degree [34.7% in Virginia]), and predominantly working class (43.5% are employed in a manufacturing, retail, construction, or agriculture / forestry / hunting / fishing field).
- The median income of Winchester households is estimated to be \$45,959 (2008-2012), well below the Virginia average of \$63,636 over the same period. Over 20% of the population lives below the federal poverty level (20.4%), well over the Virginia average of 11.1%.
- The City has approximately 11,885 housing units, of which 69% are detached single family residential units. Approximately 50.5% of the housing units are rented, exceeding the Virginia average of 32.2%.
- The City's racial profile is 70% White, 2.4% Asian, 14.3% Hispanic, and 10.8% African-American. Approximately 17.6% of the City's residents speak a language other than English at home.
- The City has an independent school district consisting of six schools and serving approximately 4,295 students during the 2013-2014 school-year.

Based on the demographic breakdown of the City's residents, there does appear to be significant language, racial, and economic divides which require the City's specific attention when developing its stormwater public education and outreach program. As such, along with addressing school-aged children, the City will need to utilize a specialized approach to reach its minority and disadvantaged populations as the Program continues to evolve in the current MS4 permit cycle.

Table 2 provides the City proposed target audiences and estimated populations for each of the proposed high-priority water quality issues. Audiences were selected based on those populations most likely to have significant impacts on each high-priority water quality issues. The identified target audiences appear to be consistent with those that the City has previously provided outreach as part of its Program.

**Table 2: Potential Target Audiences for High Priority Water Quality Issues**

High-Priority Water Quality Issue	Target Audience(s)	Methodology for Determining Target Audience Population(s)	Estimated Target Audience Population	20% of Estimated Population
<b>Reduce the amount of sediments and nutrients in area stormwater discharges</b>	Residential property owners and tenants	Number of Single Family Residential (SFR) parcels in City GIS	7,700	1,540
	Contractors, including landscaping companies, conducting work in Winchester	Number of contractors obtaining business licenses in the City of Winchester	641	128
<b>Reduce bacteria levels in City of Winchester streams</b>	Dog owners	Annual number of dog licenses sold by the City Treasurer's Office	3,000	600
	Properties using septic systems	Number of properties served by septic systems	200	40
<b>Reduce the number of Illicit Discharges</b>	Residential property owners and tenants	Number of SFR parcels in City GIS	7,700	1540
	School aged children	Number of 6th grade students	300	60
	Commercial establishments	Number of fast food and full service restaurants	140	28
		Number of car dealerships, car rental facilities	35	7

## **4.0 RELEVANT MESSAGES AND ASSOCIATED OUTREACH MATERIALS**

The City's current Program is comprised of many messages delivered via numerous delivery mechanisms (Appendix 1) directed primarily at residents. By continuing to use multiple methods of delivery, the City will reach a broader cross-section of the residential target audiences. Based on the target audiences identified under the High Priority Water Quality Issue to Reduce the Number of Illicit Discharges, it is recommended that the messages continued to be delivered to school aged children as part of the on-going outreach program. In addition, it is recommended that both tenants and owners of single family residences should also be part of any outreach activities. As such, given the relatively high Spanish-speaking population, the City should consider providing messages which are directed towards residential homeowners and tenants in Spanish.

The City should look at coordinating efforts with other Departments such as the Department of Parks and Recreation (Parks) as their outreach efforts often have the same goals as those of the stormwater outreach program. For example, Parks continuously maintains signs at the City's Dog Park regarding proper disposal of pet waste. While their rationale may not be water quality, their message is the same. The City should also expand their outreach efforts to include a more direct approach towards certain business activities that have been identified as contributors to illicit discharges in the City. A matrix demonstrating the proposed high-priority water quality issues and the potential relationship to the City's existing Program is found in Appendix 2.

## 5.0 NEXT STEPS

There are several next steps that the City must take. First, the City must identify a method by which the public can participate in development of the Public Education and Outreach Program. This can range from something as simple as allowing the public to comment on the proposed high-priority water quality issues during a City Council meeting to something as sophisticated as utilizing the City's Environmental Services Council as a sounding board during the rebranding of the City's existing Program.

Once the City has decided upon its high-priority water quality issues and determined the level of public participation, the City should develop and implement a Plan of Action, including schedules and deadlines, to re-prioritize the existing Program in such a manner as to annually reach 20% of the identified target populations. Compliance with the General Permit may then be evaluated as proposed in Appendix 2. The end result of the Plan of Action should result in a concise, consistent, coordinated Stormwater Public Education and Outreach Program that can be efficiently implemented as well as provide effective outreach.

**Appendix 1: Summary of Current City of Winchester Public Education and Outreach Program**

Delivery Mechanism	Delivery Name	Additional Information	Delivery Schedule	Message(s)	Water Quality Issue	Target Audience(s)
Local Electronic Newsletter	CitE-News	<a href="http://www.winchesterva.gov/news">http://www.winchesterva.gov/news</a>	Variable	<i>Variable, Stormwater Management-related</i>	Numerous	Households
Public Events	Wellness Festival	Additional public presentations on an ad hoc basis	Once a year	<i>Complaint Hotline Awareness, Stormwater Management, Proper Pet Waste Management, Geese Management, Rain Barrel Applications, and Stream Adoption Opportunities</i>	Bacteria, Illicit Discharge Detection, Stormwater Management, Watershed Stewardship	General population
	Public Presentations	N/A	Variable	<i>Water quality and stormwater management topics</i>	General Stormwater	General population
School Presentations	Enviroscape Watershed Model/ Watershed and Stormwater Educational Opportunities Program	N/A	Variable	<i>Water Conservation, the Water Cycle, Watersheds, Environmental Stewardship</i>	General Stormwater	Middle School (4th-7th Grade) Children
Public Access Television	Winchester Community Television, Cable Channel 6	N/A	Variable	<i>City Council Meetings Broadcast live and re-broadcast the Thursday following each meeting</i>	Numerous	General population
Web Page	City of Winchester	<a href="https://www.winchesterva.gov/engineering/stormwater">https://www.winchesterva.gov/engineering/stormwater</a>	Continuous	<i>Complaint Hotline Awareness, Stormwater Management, Proper Pet Waste Management, Geese Management, Rain Barrel Applications, and Stream Adoption Opportunities</i>	Numerous	General population
Social Media	Facebook	<a href="https://www.facebook.com/pages/City-of-Winchester-VA-Local-Government/304282746054">https://www.facebook.com/pages/City-of-Winchester-VA-Local-Government/304282746054</a>	Variable	<i>Numerous</i>	Numerous	General population
	Twitter	<a href="https://twitter.com/wincvagov">https://twitter.com/wincvagov</a>	Variable	<i>Numerous</i>	Numerous	General population

Appendix 2: Proposed Matrix for Winchester MS4 Public Education and Outreach Program

High-Priority Water Quality Issue	Rationale for High-Priority Water Issue Selection	Target Audience(s)	Methodology for Determining Target Audience Population(s)	Estimated Target Audience Population	20% of the Target Audience	Strategies for Meeting 20% of the Target Audience	Potential Messages for Delivery	Methods of Delivery Available	Method for Measuring Amount of Population Reached	Method of Evaluation	Other General Comments
Reduce the amount of sediments and nutrients in area stormwater discharges	Local waters, to which stormwater from the City of Winchester MS4 discharges, are considered "not meeting" water quality standards; this is due to increased levels of sedimentation. In fact, Winchester has two streams that are identified in local sediment-based TMDLs. Further, Winchester is required to reduce the sediment and nutrient loads in stormwater discharges per the Chesapeake Bay TMDL.	Residential property owners and tenants	Number of Single Family Residential (SFR) parcels in City GIS	7,700	1,540	Deliver a coordinated message via numerous delivery methods: Make messages should be clear and concise and concentrate on one or two basic ideas. Direct reach households rather than individuals. Consider messages such as appropriate fertilizer application, composting, planting guides, etc.	Healthy Lawn and Gardens	City web page	Number of visits	This is a coordinated effort, which combines the estimated number for all of methods of distribution in order to determine the total target audience reached. Note: Social Media hits are counted as the number of Twitter followers and the number of posts "liked" on Facebook.	The City should consider delivery in multiple languages, in order to address minority populations. The City should look to coordinate messages with Parks and Recreation, Northern Shenandoah Valley Master Gardeners, and Virginia Cooperative Extension Services.
		Contractors, including landscaping companies, conducting work in Winchester	Number of contractors obtaining business licenses in the City of Winchester	641	128	Contractors are required to obtain land disturbing permits and building permits from the City. This provides an easy opportunity to reach this target audience. By providing handouts to the contractors, the City can lead them to an updated City website with tools to help them comply and assist the City in keeping excess sediment and nutrients from discharging during storm events		Implementing Effective Pollution Prevention	Presentations at the Top of Virginia Building Association		
Reduce bacteria levels in City of Winchester streams	Local waters, to which stormwater from the City of Winchester MS4 discharges, are considered "not meeting" water quality standards; this is due to excessive bacteria levels. Winchester has two streams identified in local bacterial TMDLs.	Dog owners	Annual number of dog licenses sold by the City Treasurer's Office	3,000	600	Develop a mail insert that will be sent out as part of the dog license reminder. Dog licenses are valid for one year.	Clean Up Your Dog Waste	Dog license renewals	Number mailed	Document the number of Dog License renewals mailed to dog owners each year, with an inserted message to clean up after your dog. This message needs to reach 20% of the target population, annually; with additional options available to augment the target population reached.	There are an estimated 3,000 dog licenses issued annually, with licenses are valid for one year.
						Continue distribution of the Pet Waste pamphlet, and track the number of pamphlets distributed.		Pamphlets	Number distributed		
						Re-enforce the message, through additional methods of delivery, in an attempt to reach those households currently not getting dog licenses.		Social media	Number of hits	This is a coordinated effort, which combines the estimated number for all of methods of distribution in order to determine the total target audience reached. Note: Social Media hits are counted as the number of Twitter followers and the number of posts "liked" on Facebook.	All outreach efforts should be coordinated under one message or theme; each message should refer to one central point for information.
		Utilize Dog Park membership and requirements as an educational tool. Members are a subset of Winchester dog owners.	Electronic newsletter	Number signed up to receive							
Properties using septic systems	Number of properties served by septic systems	200	40	Coordinate the development of a message with the VA Health Department to send to property owners whose properties are served by septic systems. The message will focus on reminding owners to pump out and otherwise maintain these systems according to VDH standards.	Maintain Your Septic Tank	Joint notice with VDH	Number mailed	Document the number of VDH notices mailed to properties served by septic systems each year. The joint maintenance reminder needs to reach 20% of the target population, annually, with additional options available to augment the target population reached, as needed.	Approximately 200 properties in the City are served by septic systems.		
								City web page	Number of hits		
								Signage	Number of Dog Park memberships (Approximately 250)	By utilizing the Dog Park as a draw and educational tool, the City can reach approximately 8% of the total number of current total dog owners.	As a requirement of Dog Park membership, dog owners are required to clean up after their pets. Waste bags and signs are provided at the park.

Appendix 2: Proposed Matrix for Winchester MS4 Public Education and Outreach Program (Continued)

High-Priority Water Quality Issue	Rationale for High-Priority Water Issue Selection	Target Audience(s)	Methodology for Determining Target Audience Population(s)	Estimated Target Audience Population	20% of the Target Audience	Strategies for Meeting 20% of the Target Audience	Potential Messages for Delivery	Methods of Delivery Available	Method for Measuring Amount of Population Reached	Method of Evaluation	Other General Comments								
Reduce the number of Illicit Discharges	The City of Winchester is an established locality that has a significant residential population and a varied business community. As an established community, one effective method to reduce stormwater pollution is to reduce the number of illicit discharges. In order to do this, citizens of Winchester must be able to recognize illicit discharges. In addition, the City has identified two types of commercial establishments, restaurants and car dealerships, toward whom stormwater outreach can be extended during this permit cycle. By concentrating on these two types of establishments, the City intends to address contributions of fats, oils, and greases (FOG) to the storm drainage facilities; reduce sanitary sewer overflows (SSO); and reduce the number of discharges from commercial car wash activities that do not have authorization under the VPDES General Permit.	Residential property owners and tenants	Number of SFR parcels in City GIS	7,700	1540	Develop a coordinated effort directing everyone to an updated City web page regarding Illicit Discharges, which would allow the City to look at various methods of delivery and combining their reach. By focusing attention on the web page, the number of hits can be counted as a mechanism to evaluate the effectiveness of your outreach program. Consider using social media to ask for information regarding identified illicit discharges, perhaps through development of an on-line electronic reporting form. Coordinate promotion of the Stormwater Complaint Hotline.	Identifying and Reporting Illicit Discharges	City Web Page	Number of visits	This is a coordinated effort, which combines the estimated number for all of methods of distribution in order to determine the total target audience reached. The final evaluation will be established once the final message distribution modes are established. Note: Social Media hits are counted as the number of Twitter followers and the number of posts "liked" on Facebook.	This should be coordinated with Illicit Discharge Reporting Number. The City should consider delivery in multiple languages in order to address minority populations. Given the relatively high Hispanic population in the City, they should consider promoting the Stormwater Hotline and other messages in Spanish.								
								Public events	Number attending										
								Social media	Number of hits										
								Electronic newsletter	Number of subscribers										
		Proper Disposal of Household Hazardous Wastes	Develop a coordinated effort that promotes a unified message regarding household hazardous waste and household recycling, which would allow the City to look at various methods of delivery and combining their reach. Currently, it is very difficult to locate the specifics regarding household hazardous waste collection. Link outreach efforts to one another.							City web page	Number of visits	This is a coordinated effort, which combines the estimated number for all of methods of distribution in order to determine the total target audience reached. The final evaluation will be established once the final message distribution modes are established. Note: Social Media hits are counted as the number of Twitter followers and the number of posts "liked" on Facebook.	Coordinate with Frederick County to promote the Household Recycling Days and Household Hazardous Waste Collection Days.						
										Public events	Number attending								
										Local newspaper	City circulation								
										Agency coordination	Count "touches" based on coordinated effort								
										Social media	Number of hits								
		Electronic newsletter	Number of subscribers																
School aged children	Number of 6th grade students	300	60	The Engineering Division offers educational talks on stormwater and related issues - - such as water pollution, water conservation, the water cycle, and watersheds - - through its Watershed and Stormwater Educational Opportunities Program. The City will continue to pursue opportunities with City schools to educate students about stormwater management and related issues, including illicit discharges.	Identifying Illicit Discharges	Direct presentations	Total number of students attending presentations	Incorporate illicit discharge identification and reporting into program.	The effort reported by the City of Winchester in the Year 5 Annual Report showed that 290 students in this age group were reached.										
										Commercial establishments	Number of fast food and full service restaurants	140	28	Coordinate with Lord Fairfax Health Department to promote good housekeeping practices during restaurant inspections. Develop a pamphlet for distribution to restaurants, as part of inspections, which addresses both Health Department issues and Stormwater issues.	Proper Storage and Disposal of Fats, Oils and Greases (FOGs)	Site visits	Number of restaurant inspections	By coordinating with the Lord Fairfax Health Department, the City's outreach program will reach every restaurant that is inspected. A coordinated message of sanitary cleanliness and stormwater pollution prevention may provide more resonance than stormwater alone.	Virginia Health Departments inspect restaurants at least 1-4 times a year. Their regulations also address waste disposal. Improper storage and disposal of FOGs also lead to stormwater contamination.
Commercial establishments	Number of car dealerships, car rental facilities	35	7	Develop a list of establishments, and schedule site visits with 20% a year. Develop a pamphlet or handout describing the state requirements that must be met in order to conduct commercial car washing.	Regulatory Requirements of Commercial Car Washes	Pamphlet	Number of facilities visited	Compliance with meeting the 20% is met by scheduling a minimum of 10 site visits a year.	DEQ has issued a general permit for the discharge of process water from vehicle washing. The City can provide assistance to its businesses by helping make sure that they comply.										
						Site visits													

# Appendix B

City of Winchester 2014-2015 Public Education and Outreach Plan

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## City of Winchester 2014-2015 Public Education and Outreach Plan

### High Priority Water Quality Issue: Reduce the Amount of Sediments and Nutrients in Area Stormwater Discharges

**Target Audience:** Single family residences  
**Target Audience:** 7,700  
**20% of Target Audience:** 1,540

- Activity 1: BMP 1.7 – Develop a new or refine an existing message designed to inform residents how their actions can help reduce sediment and nutrient loads being discharged into Winchester waters. Produce this message in both digital and hard copy formats.
- Activity 2: BMP 1.3 – Participate in the 2015 Wellness Festival. Distribute message created in Activity 1. It is estimated that will reach approximately 250 single family residences. (Cumulative total: 3.25%)
- Activity 3: BMP 1.1 – Place message created in Activity 1 on City Web Page by January 1, 2015. Based on 2014 unique hits to City Stormwater web page, estimated number of hits for one-half of a year will be 150. (Cumulative total: 5.2%)
- Activity 4: BMP 1.4 – Incorporate message developed in Activity 1 into Cit-E newsletter once during reporting cycle. Based on number of subscriptions to Cit-E Newsletter (840) and a conservative estimate that one-half of the subscriptions are to City residents, the newsletter will reach a conservative estimate of 420 single family residences. (Cumulative total: 10.7%)
- Activity 5: BMP 1.2 – Incorporate message developed in Activity 1 into message delivered by both Facebook and Twitter accounts. Based on estimate that the City has 6,200 Facebook and 1,100 Twitter followers and a conservative estimate that one-quarter of the followers are adult City residents, the use of social media will reach approximately 1,825 additional single family households. (Cumulative total 34.4%)

**Target Audience:** Contractors  
**Target Audience:** 641  
**20% of Target Audience:** 128

- Activity 1: BMP 1.7 – Develop a new or refine an existing message applicable for delivery to contractor community.
- Activity 2: BMP 1.6 – Obtain e-mail addresses of contractors from business license applications in City Treasurer's Office. Deliver message via direct e-mail to contracting community. (Cumulative total: 100%)

## High Priority Water Quality Issue: Reduce the Bacteria Levels in City of Winchester Streams

**Target Audience:** Dog owners  
**Target Audience:** 3,000  
**20% of Target Audience:** 600

- Activity 1: BMP 1.6 – Maintain signage at Dog Park requiring pick up of dog waste. The City sells approximately 250 memberships to the Dog Park annually. (Cumulative total: 8.3%)
- Activity 2: BMP 1.1 – Maintain current message on City Web Page. The City has approximately 3,000 dogs for 7,700 single family residences. Based on 2014 unique hits to City Stormwater web page and percentage of dog owners, this will reach an additional 118 dog owners over the full year. (Cumulative total: 12.3%)
- Activity 3: BMP 1.3 – Participate in the 2015 Wellness Festival. Distribute “It’s Your Doodie” message. It is estimated that will reach approximately 97 dog owners. (Cumulative total: 15.5%)
- Activity 4: BMP 1.4 – Incorporate “It’s Your Doodie” message into Cit-E newsletter once during reporting cycle. Based on number of subscriptions to Cit-E Newsletter (840), 327 dog owners will be reached through the residents the newsletter. (Cumulative total: 26.2%)
- Activity 5: BMP 1.2 – Incorporate “It’s Your Doodie” message into message delivered by both Facebook and Twitter accounts. Based on estimate that the City has 6,200 Facebook and 1,100 Twitter followers, the conservative estimate that one-quarter of all followers are City residents and that dogs are in 39% of the single family homes (3,000 dogs/7,700 SFR), the use of social media will reach approximately 712 dog owners. (Cumulative total: 50.1%)

**Target Audience:** Septic tank owners  
**Target Audience:** 200  
**20% of Target Audience:** 40

- Activity 1: BMP 1.7 – Develop a new or refine an existing message designed to inform residents how maintenance of their septic tanks can help reduce sediment and nutrient loads being discharged into Winchester waters. Produce this message in both digital and hard copy formats.
- Activity 2: BMP 1.6 – Obtain the mailing address of those on septic systems from Utilities. Deliver message via direct mail to 20% of those on the obtained list. (Cumulative total: 100%)

## High Priority Water Quality Issue: Reduce the Number of Illicit Discharges

**Target Audience:** Single family residences  
**Target Audience:** 7,700  
**20% of Target Audience:** 1,540

- Activity 1: BMP 1.7 – Develop a new or refine an existing message designed to inform residents how their actions can help reduce illicit discharges. Produce this message in both digital and hard copy formats.
- Activity 2: BMP 1.3 – Participate in the 2015 Wellness Festival. Distribute message created in Activity 1. It is estimated that will reach approximately 250 single family residences. (Cumulative total: 3.25%)
- Activity 3: BMP 1.1 – Place message created in Activity 1 on City Web Page by January 1, 2015. Based on 2014 unique hits to City Stormwater web page, estimated number of hits for one-half of a year will be 150. (Cumulative total: 5.2%)
- Activity 4: BMP 1.4 – Incorporate message developed in Activity 1 into Cit-E newsletter once during reporting cycle. Based on number of subscriptions to Cit-E Newsletter (840) and a conservative estimate that one-half of the subscriptions are to City residents, the newsletter will reach a conservative estimate of 420 single family residences. (Cumulative total: 10.7%)
- Activity 5: BMP 1.2 – Incorporate message developed in Activity 1 into message delivered by both Facebook and Twitter accounts. Based on estimate that the City has 6,200 Facebook and 1,100 Twitter followers and a conservative estimate that one-quarter of the followers are adult City residents, the use of social media will reach approximately 1,825 additional single family households. (Cumulative total 34.4%)

**Target Audience:** School-aged children (6<sup>th</sup> Grade)  
**Target Audience:** 300  
**20% of Target Audience:** 60

- Activity 1: BMP 1.5 – Incorporate illicit discharge awareness into the Watershed and Stormwater Educational Opportunities Program. The City Engineer conducts presentations to the 6<sup>th</sup> Grade students annually. (Cumulative total: 100%)

**Target Audience:** Commercial establishments  
Fast food and full service restaurants  
**Target Audience:** 140  
**20% of Target Audience:** 28

- Activity 1: BMP 1.7 – Develop a new or refine an existing message designed to inform restaurant owners can help reduce illicit discharges and properly dispose of fats, oils and greases. Produce this message in both digital and hard copy formats.
- Activity 2: BMP 1.6— Coordinate delivery with the Lord Fairfax Health District for delivery during routine health inspections. Restaurants are inspected on average between one and four times a year. Using a conservative estimate of one inspection a year, message delivery beginning on January 1 will result in approximately 70 restaurants being reached. (Cumulative total 50%)

**Target Audience:**                      **Commercial establishments**  
   **Car dealerships and car rental facilities**

**Target Audience:**                      **35**

**20% of Target Audience:**            **7**

- Activity 1: BMP 1.7 – Develop a new or refine an existing message designed to inform car dealerships and car rental facilities how they help reduce illicit discharges regarding commercial car washes. Produce this message in both digital and hard copy formats.
- Activity 2: BMP 1.6 – City staff will visit 20% of the known car dealerships and car rental facilities during the reporting cycle. City staff will inform facilities of regulatory requirements for washing vehicles on a commercial facility. (Cumulative total 20%)

# Appendix C

Detailed Descriptions of BMPs Selected for Implementation  
MCM 1: Public Education and Outreach for Stormwater Impacts

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<b>BMP</b>	<b>Names</b>	<b>Description</b>	<b>Reporting Items</b>
1.1	City Stormwater Webpage	The City will maintain a web page dedicated to the City's stormwater management program. The MS4 Program Plan, MS4 Annual Reports and other information will be made available to the public through this website. Once a year in conjunction with development of the MS4 Annual Report, the City will insure the validity of all links to stormwater information included on the web page.	Date current MS4 Program Plan posted/updated on Stormwater webpage; Number of hits on City Stormwater Webpage
1.2	Social Media	The City will use its Facebook and Twitter accounts as necessary to distribute stormwater related information to its citizens in order to meet the annual requirement to reach 20% of its target audiences. Expected use of social media will be identified as part of the intended MS4 Public Education and Outreach Program for the next reporting year in the applicable MS4 Annual Report.	Number of individual followers of City's Facebook and Twitter Accounts.
1.3	Public Events	The City will participate in public events such as the Community Wellness Festival as necessary to distribute stormwater related information to its citizens in order to meet the annual requirement to reach 20% of its target audiences. Expected public events will be identified as part of the intended MS4 Public Education and Outreach Program for the next reporting year in the applicable MS4 Annual Report.	List of events/presentations participated in during current reporting period (including date, approximate number reached, and target audience)
1.4	Publications (Print and Electronic)	The City will use publications such as its Cit-E newsletter as necessary to distribute stormwater related information to its citizens in order to meet the annual requirement to reach 20% of its target audiences. Expected use of publications will be identified as part of the intended MS4 Public Education and Outreach Program for the next reporting year in the applicable MS4 Annual Report.	Approximate number of informational materials distributed; List of events/presentations participated in during current reporting period (including date, approximate number reached, and target audience)

BMP	Names	Description	Reporting Items
1.5	Watershed and Stormwater Educational Opportunities Program	The City will continue to implement its Watershed and Stormwater Opportunities Education Program directed at students in Winchester City Public Schools. The City will concentrate on delivery of this program to sixth grade students in a manner necessary to insure that high priority water quality issues are addressed to the target audiences.	Approximate number of informational materials distributed; List of events/presentations participated in during current reporting period (including date, approximate number reached, and target audience)
1.6	Other Message Delivery	The City will utilize other types of message delivery as necessary such as "Clean Up After Your Dog" signage at the City's Dog Park to reach the target audiences identified in its Public Education and Outreach matrix. These types of message delivery will be identified as part of the intended MS4 Public Education and Outreach Program for the next reporting year in the applicable MS4 Annual Report.	List of events/presentations participated in during current reporting period (including date, approximate number reached, and target audience)
1.7	Educational Materials	The City will retain copies (electronic or hard copy) of educational materials utilized in delivery of its messages regarding high priority water quality issues to target audiences. As part of the stormwater education and outreach program review required prior to reapplication for coverage under the MS4 General Permit in FY2017/18, the City will review the appropriateness of the message contained in these educational materials.	Approximate number of informational materials distributed; List of events/presentations participated in during current reporting period (including date, approximate number reached, and target audience)

# Appendix D

Detailed Descriptions of BMPs Selected for Implementation  
MCM 2: Public Involvement/Participation

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BMP	Names	Description	Reporting Items
2.1	Public Announcements	The City will provide public notification of all public meetings and hearings in accordance with any applicable federal, state, and local public notice requirements.	N/A
2.2	Public MS4 Program Information Access	The City will provide public access to the MS4 Program Plan and MS4 Annual Reports by placing copies of the updated MS4 Program Plan and MS4 Annual Report on the City's Stormwater Webpage (BMP 1.1). Copies of each year's annual report will be retained on-line for the length of the current General Permit.	Link to the City webpage containing the MS4 Program Plan and MS4 Annual Report
2.3	Stormwater Complaint Hotline	The City will maintain its current stormwater complaint hotlines to encourage public reporting and involvement. The City promotes 540-662-4131 for reporting urgent issues such as illegal dumping and spills. The City promotes 540-542-1346 for reporting of less urgent issues such as maintenance issues and erosion and sediment control complaints.	Number of Calls/Complaints received via Stormwater Complaint Hotline (Detailed: Illicit discharge complains/Construction Stormwater complaints)
2.4	Promotion of the Local Environmental Events	The City will annually promote a total of four events encouraging public participation and involvement including Household Hazardous Collection Days and Adopt-A-Stream. The City will promote these activities through use of its public education and outreach BMPs such as 1.1 City Stormwater Webpage, 1.4 Publications and 1.6 Other Message Delivery.	Identify four local environmental events (how promoted, date promoted)

<b>BMP</b>	<b>Names</b>	<b>Description</b>	<b>Reporting Items</b>
2.5	Promotion of the Household Hazardous Waste Collection Days	<p>The City will continue to promote the joint Frederick County /Winchester Household Hazardous Waste Collection Days program. The City will promote the Household Hazardous Waste Collection Days as one of its four local participation programs and will contribute to its implementation by providing pick-up and disposal of trash and debris collected by the participants.</p>	Dates of household hazardous waste collection days
2.6	Sponsorship of Adopt-A-Stream Program	<p>The City will continue to promote Adopt-A-Stream program by sponsoring an annual stream clean-up day. In addition, the City will sponsor an Adopt-A-Stream Stream Clean-Up Day as one of its four local participation programs and will contribute to its implementation by providing pick-up and disposal of trash and debris collected by the participants.</p>	Date of Adopt-A-Stream Clean-Up Day

# Appendix E

Detailed Descriptions of BMPs Selected for Implementation  
MCM 3: Illicit Discharge Detection and Elimination

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BMP	Names	Description	Reporting Items
3.1	Storm Sewer Infrastructure and Outfall Mapping	<p>The City will maintain a stormwater infrastructure layer as part of its overall GIS program. The General Public will be able to access the stormwater infrastructure layer using the City's interactive mapping program. The City will maintain an MS4 Outfall layer that identifies the location of the City's MS4 outfalls. Digital maps can be requested by completion of the GIS User Agreement found at <a href="http://www.winchesterva.gov/sites/default/files/documents/gis/gis-user-agreement.pdf">http://www.winchesterva.gov/sites/default/files/documents/gis/gis-user-agreement.pdf</a>. The requestor must pay any associated fees prior to delivery of the digital information.</p>	The MS4 Outfall Map and Information Table are available by request.
3.2	MS4 Operator Coordination	<p>The City will provide written notification to downstream MS4 operators where it identifies that the City's MS4 infrastructure is physically connected. At this time, the only local MS4s are may the Frederick County Schools MS4 and the Virginia Department of Transportation.</p>	Name of MS4 Operator notified and date of notification
3.3	Legal Authority - IDDE	<p>The City will maintain legal authority prohibiting illicit discharges into the MS4 system. The legal authority will also identify those non-stormwater discharges allowed to be discharged into the MS4 system. This legal authority is established at Chapter 9, Section III of the Code of Winchester.</p>	N/A
3.4	IDDE Investigation and Follow-Up	<p>The City will investigate and conduct follow-up on suspect discharges in accordance to procedures included in the Illicit Discharge Detection and Elimination (IDDE) Standard Operating Procedures Manual, June 2014 edition.</p>	Number of Illicit Discharges investigated; Number of Illicit Discharges reported; Summary of follow-ups for suspect discharges as a result of field screening
3.5	MS4 Outfall Dry Weather Field Screening	<p>The City will conduct dry weather screening on fifty (50) MS4 outfalls annually using procedures included in the Illicit Discharge Detection and Elimination (IDDE) Standard Operating Procedures Manual, June 2014 edition.</p>	Number of outfalls screened; Number of outfalls with suspect discharges as a result of field screening

BMP	Names	Description	Reporting Items
3.6	Illicit Discharge Tracking and Documentation	The City will track and document suspect and illicit discharges, as well as, City investigation, follow-up and enforcement actions in accordance to procedures included in the Illicit Discharge Detection and Elimination (IDDE) Standard Operating Procedures Manual, June 2014 edition.	Summary of IDDE results
3.7	Hazardous Spill Response	The City, in cooperation with Frederick County, will provide emergency response to hazardous material spills and accidental chemical releases.	N/A
3.8	Household Hazardous Waste Collection	The City, in cooperation with Frederick County, will continue to provide household hazardous waste collection opportunities for its residents. The collection schedule will be promoted through use of the City's social media and Cit-E newsletter.	List collection dates
3.9	Household Waste Reduction	The City will continue to provide weekly waste collection services for City residents. In addition, the City will continue to provide fall leaf collection services, yard waste collection services and bulky waste collection services to City residences. Schedules for these services will be placed on the City's Public Works web page regarding refuse and recycling ( <a href="http://www.winchesterva.gov/public-works/refuse">http://www.winchesterva.gov/public-works/refuse</a> ).	Approximate tonnage of household waste collected; Approximate tonnage of recycled materials (paper/cardboard, bottles/cans/plastic, scrap metal); Approximate tonnage of yard waste collected; Number of Recycling bins provided
3.10	Elimination of Sanitary Sewage Seepage from Public Sewers	The City will continue, as part of its sanitary sewer utilities program, implementation of its inflow and infiltration program to replace or slipline sanitary sewers to prevent illicit discharge. The level of implementation of this BMP each year will be established by the City Council as part of annual budget approval.	Approximate number of linear feet of sewer line replaced; Approximate number of sanitary sewer pipe sliplined; Number of Sanitary sewer manholes repaired/replaced

# Appendix F

Detailed Descriptions of BMPs Selected for Implementation  
MCM 4: Construction Site Stormwater Runoff Control

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BMP	Names	Description	Reporting Items
4.1	Legal Authority -ESC	The City will maintain legal authority for implementation of a local erosion and sediment control program consistent with 9VAC25-840-10 et. seq. This legal authority is established at Chapter 9, Section III of the Code of Winchester.	N/A
4.2	Land Disturbing Activity Plan Review	The City will require submission of complete Land Disturbance Permit Application and Virginia Stormwater Management Program Permit Packages for regulated land disturbance activities. The City will review the packages for compliance with Chapter 9, Article 2 of the City Code (Erosion Control) and Chapter 9, Article 3 of the City Code (Stormwater Management) by reviewing the checklists included in the permit application packages. Approval for land disturbance will not be given by the City until an application is approved.	Number of Land-disturbance plans submitted; Number of Land-disturbance plans reviewed; Number of Land-disturbance plans approved
4.3	VPDES Construction Activity Permit Coordination	The City will not authorize initiation of land disturbance activities until it receives evidence that the applicant has applied for and obtained coverage under the Virginia General Permit for Discharges of Stormwater from Construction Activities for construction activity, including a completed general permit registration statement as required under City Code Section 9-50.	Number of VPDES General Permit for the Discharge of Stormwater from Construction Activities permits required
4.4	Land Disturbing Activity Inspections	The City will maintain a land disturbance inspection program that is consistent with the requirements of Section 9-39 of the City Code. In addition, as part of these inspections, the City will inspect sites for compliance with Section 9-58 of the City Code requiring implementation of a pollution prevention plan and Section 9-67 of the City Code requiring compliance with the approved stormwater management plan. The City will enforce these requirements as authorized and in accordance to Chapter 9 of the City Code.	Number of inspections; Number of and type of enforcement actions taken
4.5	Land Disturbing Activity Tracking and Recordkeeping	The City has an existing program to track land disturbance activities to provide the necessary information for routine inspections, as-built inspections, surveys, and determining which areas may be most likely to incur heavier than normal sediment loading. Plan approval records and inspections will be tracked and documented in the City's digital records system, SunGard.	Number of Land-disturbance plans submitted; Number of Land-disturbance plans reviewed; Number of Land-disturbance plans approved

# Appendix G

Detailed Descriptions of BMPs Selected for Implementation  
MCM 5: Post Construction Stormwater Management in New Development and  
Redevelopment

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BMP	Names	Description	Reporting Items
5.1	Legal Authority-SWM	The City will maintain legal authority necessary to implement a VSMP that is consistent with 9VAC25-870-10 et. seq. This legal authority is established at Chapter 9, Section III of the Code of Winchester.	N/A
5.2	Private Stormwater Management Facility Inspections	<p>The City will maintain a post development stormwater management facility inspection program in accordance with Section 9-67 of the City Code. Inspections on such facilities will be conducted at least once every five (5) years.</p> <p>Under required maintenance agreements executed by and between a private landowner (BMP 5.3), the City is provided with right-of-access to the private property on which a stormwater BMP is located, confers responsibility for construction and maintenance to the private landowner or property owners' association, and ensures that the City can undertake steps to maintain a facility should an inspection identify any deficiencies or problems. Maintenance agreements are recorded with the title to the property, providing the City with an enforceable legal instrument should a private landowner neglect to maintain a stormwater management facility constructed on his or her property. Inspection records will be kept on file with the City Engineer's Division.</p>	Number of inspections; Number of and type of enforcement actions taken; Number of SWM Facilities needing follow-up maintenance
5.3	Maintenance Agreements	The City will require executed maintenance agreements for stormwater management facilities in accordance to Chapter 9, Article 63. The agreement shall be recorded in the office of the Clerk of the Circuit Court for the City of Winchester. A copy of the City of Winchester Stormwater Facilities/BMP Maintenance Agreement is included in the Virginia Stormwater Management Program Permit Application.	Number of maintenance agreements (SWM Facilities)
5.4	City-Owned Stormwater Management Facility Inspections	The City Division of Engineering will inspect stormwater management facilities owned/operated by the City annually using procedures identified in the Public Stormwater Management Facility Inspection Standard Operating Procedures Manual, June 2014 edition. Copies of the inspections will be kept on file with the City Engineer's Division.	Number of inspections; Number of SWM Facilities needing follow-up maintenance
5.5	City-Owned Stormwater Management Facility Maintenance	The City Division of Public Works will conduct maintenance on City-Owned Stormwater Management Facilities as necessary and in response to Division of Engineering inspections.	Summary of maintenance activities (SWM Facilities)

<b>BMP</b>	<b>Names</b>	<b>Description</b>	<b>Reporting Items</b>
5.6	Tracking and Documentation	The City will track and document permanent stormwater management facilities in the City's BMP spreadsheet maintained by the City Engineering Division.	Submission of excel spreadsheet detailing new stormwater management facilities

# Appendix H

Detailed Descriptions of BMPs Selected for Implementation  
MCM 6: Pollution Prevention/Good Housekeeping for Municipal Operations

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<b>BMP</b>	<b>Names</b>	<b>Description</b>	<b>Reporting Items</b>
6.1	Standard Operating Procedures	The City will develop and implement standard operating procedures and pollution prevention methods for its daily operational activities. THIS BMP WILL BE DEVELOPED AND IMPLEMENTED BY JUNE 30, 2015.	
6.2	Stormwater Pollution Prevention Plans	The City will develop a stormwater pollution prevention plan (SWPPP) for the equipment and maintenance facility located at Jim Barnett Park. THIS BMP WILL BE DEVELOPED AND IMPLEMENTED BY JUNE 30, 2017.	
6.3	Nutrient Management Plans	NMPs will be developed by a certified turf and landscape nutrient management planner in accordance with § 10.1-104.2 of the Code of Virginia. NMPs must be renewed every three years. Copies of the nutrient management plans will be incorporated by reference into the MS4 Program Plan upon approval. THIS BMP WILL BE DEVELOPED AND IMPLEMENTED BY JUNE 30, 2016.	Summary of NMP Program (# of acres requiring NMPs, # of acres under an NMP)
6.4	Pollution Prevention Inspections	The City will conduct an annual pollution prevention inspection at the equipment and maintenance facility located at Jim Barnett Park. THIS BMP WILL BE IMPLEMENTED IN CONJUNCTION WITH DEVELOPMENT AND IMPLEMENTATION OF THE FACILITY'S SWPPP BY JUNE 30, 2017.	Date of Inspection
6.5	Staff Training	The City will conduct staff training in accordance with the training schedule and training modules included in the City of Winchester Stormwater Training Plan, June 2014 edition. The City will ensure necessary certifications identified in the training plan are maintained.	List of Training Events (including dates, # attending, training objective)
6.8	Street Sweeping	The City will continue its street sweeping program and track amount of litter and debris removed.	Number of lane miles swept
6.9	VPDES Industrial Stormwater Permit Compliance Coordination	As part of the MS4 Program, the City will confirm that the City Yards maintains a current Stormwater Pollution Prevention Plan (SWPPP) as required under the Virginia General Permit for Discharge of Stormwater from Industrial Activities.	Confirmation of continued Industrial Stormwater Permit Coverage; Date of Industrial SWPPP

# Appendix I

Illicit Discharge Detection and Elimination (IDDE) Standard Operating Procedures  
Manual

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# Illicit Discharge Detection and Elimination (IDDE) Standard Operating Procedures Manual

*June 2014 Edition*



Department of Public Services  
Engineering Division  
15 North Cameron St.  
Winchester, VA 22601  
Phone (540) 667-1815

This manual was prepared by GKY & Associates, Inc. under contract to City of Winchester Department of Public Services.

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Information regarding the applicability, use, and content of this manual should be directed to:

City of Winchester  
Department of Public Services  
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## Referenced Spreadsheets

Winchester IDDE Tracking and Documentation Spreadsheet, June 2014 edition

Winchester Outfall Prioritization Spreadsheet, June 2014 edition

## Chapter

## 1

# 1 Introduction

## 1.1 Overview

The City of Winchester operates a municipal separate storm sewer system (MS4) that is regulated under the federal Clean Water Act. As a result, discharges from the City's MS4 *OUTFALLS*<sup>1</sup> into downstream waterbodies are authorized under the Virginia General Permit for Stormwater Discharges from Small MS4s (MS4 General Permit) issued by the Virginia Department of Environmental Quality (DEQ). As a condition of the General Permit, the City is required to develop and implement a program to detect and eliminate *ILLICIT DISCHARGES*<sup>2</sup> to their MS4.

In order to address illicit discharges, the City is required to eliminate illicit discharges from entry into the MS4, promote citizen reporting of illicit discharges, and conduct follow-up inspections. In addition to responding to complaints, the City is required to proactively identify and eliminate additional illicit discharges by conducting annual dry weather screening and follow-ups.

The standard operating procedure (SOP) included in this manual outlines the responsibilities and procedures that are to be implemented by the City in order to comply with the MS4 General Permit conditions regarding Illicit Discharge Detection and Elimination (IDDE).

This SOP manual is applicable to the City of Winchester employees and its contractors assigned to inspect stormwater infrastructure for evidence of illicit discharges. This SOP manual is published by authority of the Department of Public Services (DPS).

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<sup>1</sup> *OUTFALL*, when used in reference to municipal separate storm sewer systems (MS4s), is a stationary discharge location (point source) where a MS4 discharges to surface waters and does not include open conveyances connecting two MS4s, or pipes, tunnels or other conveyances which connect segments of the same stream or other surface waters and are used to convey surface waters.

<sup>2</sup> *ILLICIT DISCHARGE* is defined as any flow to the stormwater system that is not composed entirely of stormwater, except discharges pursuant to a VPDES permit or discharges resulting from firefighting activities. This definition shall not include the discharges listed in § 9-91 of the City Code unless such discharges are identified by the City as sources of pollutants to waters of the United States.

## 1.2 Authority

The City of Winchester regulates illicit discharges under Chapter 9, Article 5 of the City Code, via the following sections:

- § 9-91 outlines prohibited illicit discharges;
- § 9-94 outlines the authority to inspect and monitor stormwater outfalls or other parts of the storm sewer system; and
- § 9-95 authorizes the City to correct any violations with written notification of non-compliance, issuance of penalties, and other legal means detailed in this SOP's section 6.3.

## 1.3 Chapter Overview

This manual establishes City policies and procedures for detecting and eliminating illicit discharges, conducting dry weather screening, addressing citizen complaints, documenting activities, and reporting illicit discharges. The manual is comprised of the following chapters:

*Chapter 1: Introduction:* This chapter states the purpose and authority of this document, provides an overview of the manual, and reviews the roles and responsibilities of the City.

*Chapter 2: Outfall Prioritization:* The criteria provided in this chapter define the City's methodology for prioritizing MS4 outfalls for annual dry weather screening. Utilization of these criteria identifies those City MS4 outfalls most likely to contain a discharge that is *SUSPECT*.

*Chapter 3: Conducting Field Screening:* This chapter contains the City procedures for conducting annual dry weather screening and includes such guidance as the roles and responsibilities of DPS staff, creating field maps, and completing initial field screening and water quality testing tasks. Pre-site visit, site visit, and post-site visit tasks are given. Procedures for collecting and handling water samples are also discussed. The procedures are those required by equipment manual instructions, laboratory protocols, and evidence chain of custody requirements.

*Chapter 4: Complaint Investigation:* This chapter contains procedures to address citizen complaints regarding illicit discharges.

*Chapter 5: Determining the Source of a Suspected Illicit Discharge:* The procedures provided in this chapter detail how to successfully complete illicit discharge source determination tasks.

*Chapter 6: Follow-Up and Elimination:* The procedures provided in this chapter provide guidance regarding how to eliminate suspect illicit discharges in accordance with City Code and the MS4 General Permit.

*Chapter 7: Contacting Regulatory and Emergency Agencies:* This chapter provides guidance for contacting the appropriate regulatory and emergency agencies. Information is also given on indications to call and what to report.

*Chapter 8: Safety:* This chapter provides guidance for providing a safe work environment.

## **1.4 Roles and Responsibilities**

It is the responsibility of DPS to lead the City's efforts in addressing illicit discharges. DPS oversees dry weather screening, addresses citizen complaints, and coordinates efforts with other City divisions when necessary. Finally, DPS is responsible for documentation and recordkeeping in order to demonstrate compliance with the MS4 General Permit.

## Chapter

## 2

## 2 Outfall Prioritization

### 2.1 Introduction

The MS4 General Permit requires that the City annually conduct dry weather screening at a minimum of fifty (50) MS4 outfalls under its ownership and/or operation. In preparation of each year's dry weather screening activities, DPS staff will utilize the prioritization criteria included in this chapter to select the outfalls that will be screened in a given year.

### 2.2 Prioritization Criteria

The City has developed these priority criteria in order to identify those outfalls that have the highest potential to impact downstream water quality resulting from illicit discharges. DPS staff will utilize these criteria when identifying which outfalls are to undergo dry weather screening. DPS staff will select the outfalls for each year utilizing the automatic and prioritized selection processes below.

#### 2.2.1 Automatic Outfall Selection

The following outfalls will be automatically selected for the given year's field screening efforts:

- Any outfall where an *OBVIOUS*<sup>3</sup> or *SUSPECT*<sup>4</sup> discharge was identified during the previous year's dry weather screening
- Any outfall associated with a documented illicit discharge as a result of a citizen complaint during the previous 12-months
- Any outfall the City deems *HIGH RISK*<sup>5</sup> shall be placed on the list to be screened

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<sup>3</sup> An OBVIOUS discharge is an illicit discharge that did not require sample collection for confirmation and was marked as OBVIOUS on the previous year's Outfall Reconnaissance Inventory/Sample Collection Field Sheet (ORI) in (Box 38).

<sup>4</sup> A SUSPECT discharge is where a flowing discharge had a physical indicator with a severity of three (3) and was marked as SUSPECT on the previous year's ORI (Box 38).

- Any outfall associated with an illicit discharge resulting from a citizen complaint

### 2.2.2 Prioritized Outfall Selection

DPS staff will select the remainder of the fifty (50) outfalls for the given year's dry weather screening using the following selection criteria:

- Priority Watershed-Outfalls shall be prioritized in the watershed following order:
  - Abrams Creek
  - Town Run
  - Buffalo Lick
  - Hoge Run
  - Redbud Run
- Date of Last Inspection-Priority shall be given to those outfalls in which the longest time has passed since the last field screening

When more than fifty outfalls meet the prioritized outfall selection criteria, DPS staff shall utilize best professional judgment to select the necessary outfalls. It is recommended that staff select outfalls in such a manner as to minimize expenditure of resources. This can be accomplished by selecting outfalls that are relatively close in proximity in order to minimize travel time.

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<sup>5</sup> HIGH RISK is defined as an outfall that has been identified as being more likely to produce an illicit discharge.

## 2.3 Outfall Selection

The following procedures guide the prioritization of outfalls using the *Winchester IDDE Outfall Prioritization Spreadsheet*:

**Step 1:** DPS staff shall make sure that the spreadsheet has been updated to include:

- All new outfalls identified by the City during the previous year
- All past field screening dates (Column I)
- All illicit discharges or suspect discharges identified in the past twelve months
  - Column G should be marked 'Yes'

**Step 2:** Using the updated spreadsheet, DPS staff shall use Excel's 'custom sort' to organize the spreadsheet by the following levels:

- Level 1—'Automatic Selection'
  - (Column G) should be sorted by 'Yes, No'
- Level 2—'Watershed Priority'
  - (Column H) should be sorted by 'Smallest to Largest'
- Level 3—'Date of Last Screening'
  - (Column I) should be sorted by 'Oldest to Newest'

**Step 3:** DPS staff shall select the first fifty (50) outfalls identified as a result of Step 2 in which to conduct field screening for the given year. If Step 2 results in more than fifty (50) outfalls being identified as identical, DPS staff shall use best professional judgment to identify those to be screened.

Five (5) additional outfalls should be selected as alternate outfalls in case access cannot be obtained to one or more of the selected outfalls.



## Chapter

## 3

## 3 Dry Weather Field Screening

### 3.1 Introduction

As described in Chapter 2, the City of Winchester is required to conduct dry weather field screening as a condition of its MS4 General Permit coverage. Chapter 3 incorporates the City procedures for conducting dry weather field screening.

In preparation for dry weather screening, DPS staff shall use the prioritized list of outfalls created utilizing Chapter 2 procedures.

The procedures provided in this chapter define the roles and responsibilities of DPS staff, create field maps, and provide complete initial screening and water quality testing tasks. Pre-site visit, site visit, and post-site visit tasks are given. Procedures for collecting and handling water samples are also discussed. The procedures within this chapter are those required by equipment manual instructions, laboratory protocols, and evidence chain of custody requirements.

### 3.2 Preparation for Field Screening

#### 3.2.1 Roles and Responsibilities during Field Screening Activities

The following descriptions identify the roles and responsibilities of individual DPS staff while conducting field screening activities:

City Engineer:

- Disseminate this SOP to appropriate DPS staff
- Periodically review and update this SOP to account for changes in activities or regulatory requirements
- Provide the materials and equipment necessary to carry out the requirements of this SOP
- Provide appropriate training to employees undertaking the inspection tasks
- Ensure that safety procedures are followed
- Approve the annual list of outfalls selected for field screening
- Take appropriate action when inspection reports indicate evidence of illicit discharge

#### DPS Supervisor:

- Develop a prioritized list of outfalls and associated field packages using this SOP
- Ensure that all equipment is calibrated and maintained in working condition
- Conduct pre-task briefings to ensure readiness of equipment and DPS staff to safely undertake the assigned inspection operations
- Ensure safety precautions are observed by all DPS staff
- Manage data following an inspection operation
- Ensure that data is provided to the appropriate DPS staff that it can be entered into the City's GIS database system
- Report to the supervisors any emergencies and hazardous situations
- Report to the supervisors and other appropriate agencies if evidence of an illicit discharge is discovered

#### DPS Staff:

- Follow the guidelines contained in this SOP
- Follow the direction of the DPS Supervisor
- Conduct inspections using the procedures outlined in this SOP
- Conduct water quality testing of observed dry weather discharges
- Determine the likely source of any suspected illicit discharge
- Document findings made during inspections
- Report to the supervisor any emergencies, *HAZARDS*<sup>6</sup>, and suspected illicit discharges

### 3.2.2 Preparing Field Packages

The DPS Supervisor will prepare field package(s) for use during field screening. The field package(s) will contain a field map detailing those items identified in 3.2.2.1. and Outfall Reconnaissance Inventory/Sample Collection Field Sheets (ORI) for all outfalls.

DPS staff will utilize the most recent GIS data available to create field maps for each of the fifty (50) outfalls identified using the procedures included in Chapter 2. Each field map will identify the location of one or more selected outfall(s) and the extent of storm sewer that flows to the outfall(s).

In addition, field maps should include the information noted in SOP sections 3.2.2.1 and 3.2.2.2, below, when possible.

#### 3.2.2.1 Required Data

- MS4 Outfall<sup>7</sup>
- Watershed/Sub-watershed
- *2010 Aerials*
- *Edge of Road & Streets by Type*

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<sup>6</sup> HAZARDS are defined as situations that pose potential harm to persons, property, or the environment.

<sup>7</sup> Winchester GIS layer names are in italics.

- *Storm*
  - *Manhole*
  - *Drop Inlet*
  - *Storm Line*
- *Stormwater BMPs*
- *Nearby Waterbodies*
- *Streams*
- *Wetlands*

### 3.2.2.2 Recommended Data

- *Zoning Districts*
- *Buildings*
- *Water*
- *Water Line*
- *Sewer*
  - *Manhole*
  - *Cleanout*
  - *Laterals*
  - *Flow Direction*
  - *Sewer Line*
- *Two-foot contours*

## 3.3 Procedures for Selecting Appropriate Field Screening Days

The purpose of conducting dry weather field screening is to identify illicit discharges being discharged into the MS4 system. As such, sufficient time must have passed since the last rain event in order to provide distinction between stormwater runoff and any illicit discharges. DPS staff must only conduct field screening on *DRY WEATHER*<sup>8</sup> days. The following procedure should be followed to determine dry weather days:

1. The Supervisor should research the National Weather Service website (<http://www.weather.gov>) and complete the following:
  - a. Enter “Winchester, VA” into the “Local forecast by ‘city, St’ or ZIP code” box and press enter.
    - i. A web page for Winchester will open.
  - b. Under the “Current Conditions” section, click the “3 Day History” link to check for hourly estimated rainfall at the KOKV Observation Site station at the Winchester Regional Airport within the past 48 hours.

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<sup>8</sup> DRY WEATHER is defined as a period in which there has been recorded less than 0.10 inch of rainfall within the preceding 48 hours.

- c. Calculate the sum of the hourly rainfall values (the 1-hr. column under the Precipitation heading) to determine the total hourly rainfall over the past 48 hours.
  - i. If the sum of the total rainfall over the previous 48-hours is less than 0.1-inch, it is a dry weather day and field screening may proceed.
  - ii. If the sum of the total rainfall over the previous 48-hours is 0.1-inch or greater, field screening must be postponed for the day.
- d. The amount of rainfall should be provided to the field team for documentation on the ORI Form (**Box 6**).

## 3.4 Field Screening Preparation

### 3.4.1 Logistics

The DPS supervisor should conduct a pre-task briefing to ensure readiness of team and equipment to perform field inspections, ensuring the following tasks are completed:

1. Gather the equipment, and check that it is working properly.
2. Check the batteries in all equipment.
3. Check the amount of memory storage in all digital camera memory cards.
4. Make sure that the reagent kits have not passed their expiration dates.

### 3.4.2 Preparing Equipment and Materials

DPS staff is responsible for water quality testing sample cells and testing equipment. As such, DPS staff must:

1. Prepare sample cells and dipper ladles for sampling as follows:
  - a. Clean the sample cells and ladles with laboratory detergent.
  - b. Rinse the equipment well with tap water.
  - c. Rinse well with deionized water at least three times.
  - d. Allow the equipment to air dry.
2. Calibrate the OAKTON Waterproof pH Testr 10 meter before use and periodically thereafter, as instructed in the instruction documents included with the meter.

## 3.5 Conducting Field Screening

### 3.5.1 Introduction and Accessibility

DPS staff must complete field screening on a minimum of fifty (50) outfalls. Outfalls that were automatically selected for field screening **MUST** be screened. DPS staff must obtain permission to access structures that are located on private property. This can be accomplished via preliminary site visit or certified mail. If accessibility cannot be obtained, DPS staff should note such on the ORI Form (**Box 9**) and select a substitute outfall from the list of alternates provided. Some structures may be located in inaccessible areas, such as those with thick vegetation or steep slopes. DPS staff should not risk injury in order to gain access to such structures. Procedures should be worked out with the supervisor and division heads to provide safe access for the inspection team. Staff must follow the safety procedures outlined in Chapter 8.

DPS staff should conduct field screening activities by completing an Outfall Reconnaissance Inventory Sample/Collection Field Sheet (ORI) following these procedures:

#### 3.5.1.1 ORI Form Section 1: Background Data

DPS staff should complete *Section 1: Background Data* of the ORI Form as follows:

1. Note the Outfall ID number (**Box 1**).
2. Note the date of the screening (**Box 2**).
3. Note the time of the screening (**Box 3**).
4. Note the DPS staff members present (**Box 4**).
5. Note the outdoor ambient air temperature on the day of the inspection (**Box 5**).
6. Note the rainfall amount for the previous 48 hours (**Box 6**).
7. Note the camera serial number (**Box 7**).<sup>9</sup>
8. Note the photo numbers taken at the outfall (**Box 8**).
9. Note any comments the DPS staff may have (**Box 9**).

#### 3.5.1.2 ORI Form Section 2: Outfall Description

DPS staff should complete *Section 2: Outfall Description* of the ORI Form as follows:

1. Note the outfall type, material, shape, dimensions, and whether or not it is submerged (**Boxes 11, 12, 13 and 14**).

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<sup>9</sup> Staff may choose to enter the information in **Boxes 1-7** in the office prior to or after field activities.

2. Note whether the flow is coming from the outfall (**Box 15**).
  - a. If flow is present, photo document the outfall and evidence using a digital camera.
    - i. Record the photo numbers in **Box 8**
    - ii. Complete steps 3 and 4 of this section
    - iii. Proceed to *ORI Section 3: Quantitative Characterization*
  - b. If flow is not present (or insufficient flow exists to collect a sample), photo document the outfall and evidence using a digital camera.
    - i. Record the photo numbers in **Box 8** and proceed to *ORI Section 4: Physical Indicators Present in the Flow*
  - c. If flow exists but there is insufficient discharge to collect a sample, note absence of flow in **Box 15** and add “wet but not flowing” to **Box 17**.
3. If flow is present, note the flow description (**Box 16**).
4. If flow is present, estimate the flow (**Box 17**).
  - a. Flow should be estimated by measuring the number of seconds that it takes to fill a one liter container.
    - i. Note: The equivalent to one (1) gallon per minute is approximately one (1) liter per 16 seconds.

### 3.5.1.3 ORI Form Section 3: Quantitative Characterization

DPS staff should complete *Section 3: Quantitative Characterization* of the ORI Form as follows:

1. Collect a sample of discharge using the sampling dipper fitted with a ladle.
2. Place 100 mL of the collected sample into a beaker for field sampling as follows:
  - a. Follow the directions included with the OAKTON Waterproof pH Testr 10 Meter to obtain the sample temperature, and record the temperature (**Box 18**).
  - b. Follow the directions included with the OAKTON Waterproof pH Testr 10 Meter to obtain the sample pH, and record the pH (**Box 19**).
    - i. Most discharge flow types are neutral, having a pH value around 7; although, groundwater concentrations can be somewhat variable.
    - ii. The pH value is a reasonably good indicator for liquid wastes from industries, which can have very high or low pH (ranging from 3 to 12).
    - iii. The pH of residential wash water tends to be rather basic (pH of 8 or 9).

- iv. Although pH data is often not conclusive by itself, it can identify problem outfalls that merit follow-up investigations using more effective indicators.
    - c. Follow the directions included in the HACH Nitrogen, Ammonia (Model NI-8) test kit to measure the amount of total chlorine in the sample, and record the results (**Box 20**).
      - i. Ammonia is a good indicator of sewage; since its concentration is much higher there than in groundwater or tap water.
      - ii. High ammonia concentrations may also indicate liquid wastes from some industrial sites.
      - iii. Ammonia is relatively simple and safe to analyze; although, some challenges include the tendency for ammonia to volatilize (i.e., turn into a gas and become non-conservative), and its potential generation from non-human sources, such as pets or wildlife.
    - d. Follow the directions included in the Total Chlorine Color Disc (Model CN-66T) test kit to measure the amount of total chlorine in the sample, and record the results (**Box 21**).
      - i. Chlorine is used throughout the country to disinfect tap water, except where private wells provide the water supply. Chlorine concentrations in tap water tend to be significantly higher than most other discharge types.
      - ii. Unfortunately, chlorine is extremely volatile, and even moderate levels of organic materials can cause chlorine levels to drop below detection levels.
      - iii. Because chlorine is non-conservative, it is not a reliable indicator; although, if very high chlorine levels are measured, it is a strong indication of a water line break, swimming pool discharge, or industrial discharge from a chlorine bleaching process.
3. Rinse the sample cells with deionized water at least three times after each test.
  - a. A reagent blank correction subtracts the color absorbed when running a test with deionized water from the sample result to correct for any background color due to reagents.
4. Rinse the beakers with deionized water at least three times when finished with the sample.
5. Place used reagent packets in a waste bag, which can later be thrown away as normal trash.
6. Clean inspection area and make sure that all equipment is removed from the area prior to leaving.

### 3.5.1.4 ORI Form Section 4: Physical Indicators for Flowing Outfalls Only

DPS staff should complete *Section 4: Physical Indicators for Flowing Outfalls Only* of the ORI Form as follows:

1. Note whether any physical indicators are present in the flow (**Box 22**).
  - a. If none are present, proceed to Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls of the ORI form.
  - b. If physical indicators are present, continue on to step 2.
    - i. DPS staff should use a severity index of three (3), to score the potential impact of the suspect discharge.
2. Note and score any odor (**Box 23**).
  - a. Since noses have different sensitivities, the entire DPS staff should reach consensus about whether an odor is present and how severe it is.
    - i. A severity score of one means that the odor is faint or the crew cannot agree on its presence or origin.
    - ii. A score of two indicates a moderate odor within the pipe.
    - iii. A score of three is assigned if the odor is so strong that the crew smells it a considerable distance away from the outfall.
  - b. Make sure the origin of the odor is the outfall.
3. Note and score color (**Box 24**).
  - a. The color of the discharge can be clear, slightly tinted, or intense, and it often helps identify industrial discharges.
  - b. The best way to measure color is to collect the discharge in a clear sample bottle and hold it up to the light.
  - c. DPS staff should also look for downstream plumes of color that appear to be associated with the outfall.
    - i. Figure 1 illustrates the spectrum of colors that may be encountered during an ORI survey, and offers insight on how to rank the relative intensity or strength of discharge color.
4. Note and score any turbidity (**Box 25**).
  - a. Turbidity is a measure of the cloudiness of the water.
  - b. Like color, turbidity is best observed in a clear sample bottle, and can be quantitatively measured using field probes.
    - i. Do not confuse turbidity with color, as they are related but not the same.



- ii. Turbidity is a measure of how easily light can penetrate through the sample bottle, whereas color is defined by the tint or intensity of the color observed.
    - iii. Figure 1 provides some examples of how to distinguish turbidity from color, and how to rank its relative severity.
  - c. DPS staff should also look for turbidity in the plunge pool below the outfall, and note any downstream turbidity plumes that appear to be related to the outfall.
5. Note and score any floatables at the outfall (**Box 26**).
  - a. Sewage, oil sheen, and suds are examples of floatable indicators; trash and debris are generally not in the context of the ORI.
  - b. The presence of floatable materials is determined visually, and some guidelines for ranking their severity are provided in Figure 2.
  - c. Sewage should automatically be assigned a severity score of three (3).
  - d. Surface oil sheens are ranked based on their thickness and coverage.
    - i. In some cases, surface sheens may not be related to oil discharges, but instead are created by in-stream processes, such as those shown in Figure 2.
    - ii. A thick or swirling sheen associated with a petroleum-like odor may be diagnostic of an oil discharge.
  - e. Suds are rated based on their foaminess and staying power.
    - i. A severity score of 3 is designated for thick foam that travels many feet before breaking up.
    - ii. Suds that break up quickly may simply reflect water turbulence, and do not necessarily have an illicit origin; some streams have naturally occurring foam due to the decay of organic matter.
    - iii. Suds that are accompanied by a strong organic or sewage-like odor may indicate a sanitary sewer leak or connection.
    - iv. If the suds have a fragrant odor, they may indicate the presence of laundry water or similar wash waters.
6. Photograph the outfall and any issues in the area using the digital camera. Record photo numbers and descriptions on the ORI (**Box 8**).







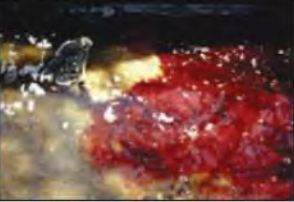






 <p>Color: Brown; Severity: 2 Turbidity Severity: 2</p>	 <p>Color: Blue-green; Severity: 3 Turbidity Severity: 2</p>	 <p>Highly Turbid Discharge Color: Brown; Severity: 3 Turbidity Severity: 3</p>	
 <p>Sewage Discharge Color: 3 Turbidity: 3</p>	 <p>Paint Color: White; Severity: 3 Turbidity: 3</p>	 <p>Industrial Discharge Color: Green; Severity: 3 Turbidity Severity: 3</p>	
 <p>Blood Color: Red; Severity: 3 Turbidity Severity: None</p>	 <p>Failing Septic System: Turbidity Severity: 3</p>	 <p>Turbidity in Downstream Plume Turbidity Severity: 2 (also confirm with sample bottle)</p>	
 <p>High Turbidity in Pool Turbidity Severity: 2 (Confirm with sample bottle)</p>	 <p>Iron Floc Color: Reddish Orange; Severity: 3 (Often associated with a natural source)</p>	 <p>Slight Turbidity Turbidity: 1 (Difficult to interpret this observation; May be natural or an illicit discharge)</p>	
<p>Construction Site Discharge Turbidity Severity: 3</p>			<p>Discharge of Rinse from Floor Sanding (Found during wet weather) Turbidity Severity: 3</p>

Figure 1. Color and Turbidity Severity Examples

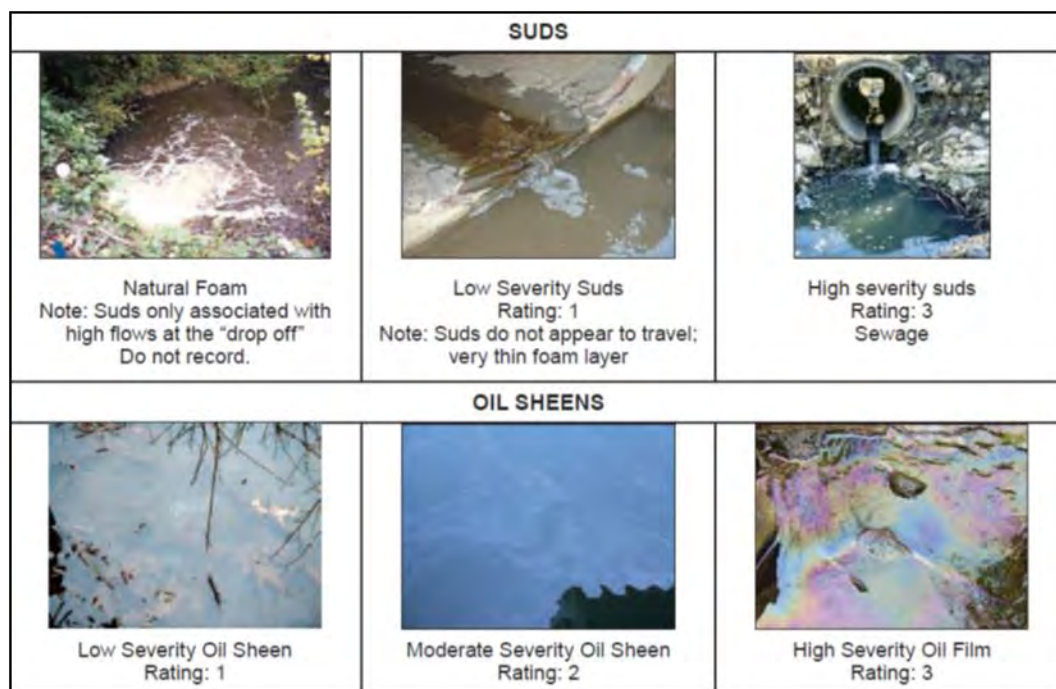


Figure 2. Foams and Sheen Severity Examples

### 3.5.1.5 ORI Form Section 5: Physical Indicators for both Flowing and Non-Flowing Outfalls

DPS staff should complete *Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls* of the ORI form.

1. Note whether any physical indicators are related to flow (**Box 27**).
  - a. If not, move onto *Section 6: Outfall Characterization* of the ORI form.
  - b. Figures 3 and 4 provide some examples of abnormal vegetation and physical indicators related to flow which may be encountered during an inspection.
2. Note any outfall damage (**Box 28**).
3. Note any deposits or stains at the outfall (**Box 29**).
4. Note any abnormal vegetation at the outfall (**Box 30**).
5. Note poor pool quality at the outfall (**Box 31**).
6. Note any pipe benthic growth at the outfall (**Box 32**).



Figure 3. Abnormal Vegetation Examples



Figure 4. Physical Indicator Examples

### 3.5.1.6 ORI Form Section 6: Outfall Characterization.

DPS staff should complete *Section 6: Outfall Characterization* of the ORI form using the following guidelines:

1. DPS staff should compare results from *Section 3: Quantitative Characterization* and *Section 4: Physical Indicators for Flowing Outfalls Only* with the pass criteria contained in Table 3.1.
  - a. DPS staff should use their best professional judgment to interpret temperature results in comparison with recent ambient air temperatures.

<b>Table 3.1: Water Quality Parameter Indicator Criteria</b>			
<b>Parameter</b>	<b>Unit</b>	<b>Method</b>	<b>Pass Criteria</b>
Temperature	°F	Quantitative	<b>Best professional judgment</b>
pH		Quantitative	<b>6-9</b>
Ammonia	mg/L	Quantitative	<b>&lt; 1.0</b>
Total Chlorine	mg/L	Quantitative	<b>&lt; 0.1</b>
Turbidity	Severity Index	Physical	<b>Severity Index Less than 3*</b>
Odor	Severity Index	Physical	<b>Severity Index Less than 3*</b>
Color	Severity Index	Physical	<b>Severity Index Less than 3*</b>
Floatables	Severity Index	Physical	<b>Severity Index Less than 3*</b>

\*Field observations will be rated by the relative severity using a scale from 1 to 3; a rating of 1 indicating no visual evidence of potential illicit discharge and 3 indicating obvious signs of potential illicit discharge activity<sup>10</sup>.

2. Check the appropriate box regarding the likelihood of an Illicit Discharge (**Box 33**).
  - a. Check the **Unlikely** Box when there is no evidence of flow or, if flow is present, the flow passes all Quantitative Indicators and less than two Physical Indicators are present.
  - b. Check the **Potential** Box when flow is present, the flow passes all Quantitative Indicators, but there are two or more Physical Indicators present with a Relative Severity Index Score of less than three.
  - c. Check the **Suspect** Box when flow is present, the flow passes all Quantitative Indicators, but a Physical Indicator has a Relative Severity Index Score of 3.
    - i. DPS staff may also check this box if, in their best professional judgment, they feel that there is a high probability of an illicit discharge; even though, the sampling results do not show it.
  - d. Check the **Obvious** Box when flow is present, and the flow does not pass one or more of the Quantitative Indicators.

### 3.5.1.7 ORI Form Section 7: Water Quality Sampling Data Collection.

DPS staff should complete *Section 7: Water Quality Sampling Data Collection* of the ORI form using the following guidelines:

1. Note whether samples were gathered for laboratory analysis (**Box 34**).
2. If lab samples were gathered, note from where the samples were taken (**Box 35**).

<sup>10</sup> Brown, Edward, Deb Caraco, and Robert Pitt. *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments*; Water Permits Division, US EPA Office of Water and Wastewater, Washington, D.C., 2004, p.103-106

### 3.5.1.8 ORI Form Section 8: Additional Information.

1. Complete *Section 8: Additional Information* of the ORI form as follows:
  - a. Note any non-illicit discharge concerns (**Box 36**).

## 3.6 Follow-Up and Next Steps

### 3.6.1 Addressing Suspect Discharges

If the outfall is identified as suspect and the source of the suspect discharge is *not obvious*, the supervisor shall report the discharge to the City Engineer for follow-up by DPS staff using procedures outlined in Chapter 5.

If the outfall is identified as suspect and the source of the suspect discharge is *obvious*, the supervisor shall report the discharge to the City Engineer for follow-up by DPS staff using procedures outlined in Chapter 6.

In addition, the following should be completed:

- The supervisor must immediately refer any suspect discharge involving sanitary sewage to the City Engineer.
  - The City Engineer shall report any suspect discharge that has reached or has the potential to reach receiving waters to DEQ in accordance with Chapter 7.
  - The supervisor must immediately refer any suspect discharge involving a failed septic tank to Frederick / Winchester Health Department at (540) 722-3470.

### 3.6.2 Equipment and Housekeeping

The supervisor should ensure that the following tasks are completed daily after field screening:

- All trash, such as empty reagent packs, should be disposed into a City dumpster
- All water quality testing equipment should be cleaned as follows:
- Clean the sample cells and ladles with laboratory detergent.
- Rinse well with tap water.
- Rinse well with deionized water at least three times.
- Equipment should be allowed to air dry.
- Properly store all equipment, once dry.

### 3.6.3 Documentation

The *Winchester IDDE Outfall Prioritization Spreadsheet* must be updated to include the date in which the field screening was completed.

Outfalls with suspect discharges should be recorded in the City of Winchester IDDE Tracking and Documentation Spreadsheet for follow-up in accordance with Chapters 5 and 6.

All collected data, including any field screening documentation, ORI Forms and the storage location of any photos should be kept filed together in the City Engineering Division office.



## Chapter

## 4

## 4 Addressing Complaints

### 4.1 Introduction

In addition to identifying suspect discharges as part of dry weather screening activities, DPS is responsible for investigating complaints regarding suspect discharges from citizens and other DPS staff. Citizens and other DPS staff are encouraged to report potential illicit discharges by calling the Stormwater Complaint Hotline at (540) 542-1346. For suspect discharges that require a more urgent response, citizens and DPS staff should call (540) 662-4131.

It is important that sufficient information be collected in order for DPS staff to follow-up on the received complaint. As such, the following information should be collected from the complainant:

- Date that the complaint was received
- Name of the complainant
  - Not required if the complainant wishes to remain anonymous
- Contact phone number for the complainant
  - Not required if the complainant wishes to remain anonymous
- Street address of the complaint
  - Not required if the complainant wishes to remain anonymous
- General location of the suspect discharge (e.g., back of property, curb inlet in alley, etc.)
- Description of the Suspect Discharge (e.g., color, odor, etc.)
- When the suspect discharge was first noticed

Potential emergency situations or threats to health and safety should immediately be referred to emergency services. Complaints involving the discharge of sanitary sewage or leaking public water lines should be prioritized for their immediate follow-up. Complaints involving failed septic systems should be referred to the Frederick/Winchester Health Department. Suspect discharges being discharged through a Virginia Department of Transportation (VDOT) outfall should also be reported to VDOT. Contact information for these agencies is found in Chapter 7.

Records of all complaints received and associated follow-up information shall be entered into the *Winchester IDDE Tracking and Documentation spreadsheet* in accordance with Chapter 6.5.

## 4.2 Complaint Investigation

### 4.2.1 Initial Site Visits

DPS staff should conduct an initial site visit to investigate complaints, as soon as practical, within three (3) business days of receiving the complaint. DPS staff must obtain permission from the property owner to access private property when investigating complaints. If permission is not obtained, DPS staff should note that they were unable to obtain permission to access the property and document their observations from public property.

When investigating a complaint, DPS staff may encounter one of the following suspect discharges:

- A continuous, active discharge
- If a continuous active discharge is observed, and the source of the discharge is not obvious, DPS staff should utilize the procedures included in Chapter 5.
- If a continuous active discharge is observed, and the source of the discharge is obvious, DPS staff should utilize the procedures outlined in Chapter 6.
- No active discharge but evidence of a previous discharge exists
- If the source of the discharge is not obvious, DPS staff should follow procedures in Chapter 5 in order to conduct follow-inspections.
- If the source of the previous discharge is obvious, DPS staff should follow procedures outlined in Chapter 6.
- No evidence of a discharge
- DPS staff shall document that there is no evidence of a discharge.

### 4.2.2 Documentation and Recordkeeping

Documentation of the complaint and the information collected should be entered into the *Winchester IDDE Tracking and Documentation spreadsheet* for follow-up.

DPS staff should document the following information in a field notebook during site visits and investigations:

- Date of site visit
- Name of DPS staff conducting the site visit
- Observed conditions
- Additional comments, such as observed sources
- Documentation photographs
- Photographs should be taken, using a digital camera, in order to document any observed conditions.
- Photo numbers and descriptions should be recorded as part of the documentation.

Information documented in the field notebook should be utilized to enter the information into the *Winchester IDDE Tracking and Documentation spreadsheet*, *IDDE Tracking-Complaint worksheet* upon return to the office.

## **4.3 Follow-Up and Reporting**

### **4.3.1 Suspect Discharge Follow-Up**

DPS staff shall conduct follow-up in accordance to Chapter 5 and Chapter 6 of this SOP manual.

### **4.3.2 Reporting**

DPS staff must follow any necessary reporting procedures provided in Chapter 7.



## Chapter

## 5

## 5 Determining the Source of Suspect Discharges

### 5.1 Introduction

As a condition of the MS4 General Permit, the City is legally obligated to investigate suspect discharges that it determines are being discharged into its stormwater system. The City can become aware of suspect discharges as a result of a complaint, DPS staff observation, or while conducting field screening activities. DPS is tasked with identifying the sources of suspect discharges. This chapter provides guidance in identifying suspect discharge sources.

### 5.2 Preparing to Investigate Suspect Discharges

When preparing to investigate suspect discharges, DPS staff should familiarize themselves with the composition and activities of the upstream drainage area as well as the nature of the suspect discharge. Both of these may provide valuable clues in identifying the source of upstream suspect discharges.

DPS staff should coordinate through the City Engineer in order to conduct certain activities such as dye testing, smoke testing, and water quality sampling requiring lab analysis.

### 5.3 Investigating Suspect Discharges

All attempts should be made to investigate suspect discharges within three (3) business days of DPS becoming aware of them. The investigation can be in conjunction with the complaint investigation described in Chapter 4.

Unless a potential source has not been identified, DPS staff should begin their investigation where the suspect discharge was first identified and track the discharge methodically up the stormwater system, following the safety guidelines established in Chapter 8.

If the suspect discharge is intermittent or no longer present, DPS staff should attempt to determine the source by tracking the source using remaining evidence such as deposits and stains.

If the source of an intermittent suspect discharge cannot be identified, DPS staff must conduct a minimum of two (2) follow-up investigations in an attempt to identify the source.

If known, DPS staff should attempt to conduct field activities during the same day of the week and approximate time as when the initial suspect discharge was identified. If after six (6) months, the source of the suspect discharge has not been identified and the suspect discharge has not been observed, reported, or identified another time, DPS staff may close the investigation and document its closure in the IDDE Tracking and Documentation spreadsheet.

## 5.4 Follow-Up Documentation

Documentation is very important when attempting to identify suspect discharge sources. As such, all activities and observations should be documented in a field notebook. Each entry should include, at a minimum, the:

- Date and time of entry
- DPS staff names
- Location of the activity (e.g., manhole at 123 E. Main St.)
- Activity (e.g., inspected manhole for flow)
- Observations (e.g., flow is still present; chlorine reading 1.5 ppm)
- Any photos taken
- If photos are taken, record the photo numbers and photo descriptions.
- All photographs should be uploaded to the designated location from a digital camera, using the digital camera hardware and software instructions.

Documentation not only assists DPS staff in tracking the progress of determining the source, but it also provides a valuable tool if future formal enforcement activities are employed as described in Chapter 6. Documentation is also extremely important as a tool to ensure accurate entry and recordkeeping tracking as required in Chapter 6.5.

Collected documentation should be used to complete the necessary information in the *Winchester IDDE Tracking and Documentation spreadsheet*, *IDDE Tracking-Inspections worksheet*.

## 5.5 Follow-Up and Next Steps

Once a source is identified, DPS staff should coordinate with the appropriate regulatory agency as identified in Chapter 7. DPS staff should note on the IDDE Tracking and Documentation spreadsheet if the suspect discharge is being referred to another agency for follow-up. DPS staff should follow-up with agency within thirty (30) days to ensure that the suspect discharge was addressed.

## Chapter

## 6

## 6 Elimination of Illicit Discharges

### 6.1 Introduction

Under the MS4 General Permit, the City is required to eliminate illicit discharges from entry into the MS4. The City has several options for ensuring elimination of these illicit discharges once the source has been located.

### 6.2 Authorized Discharges

The first objective to eliminating illicit discharges is to determine if the suspect discharge is an actual illicit discharge. Winchester City Code § 9-91 authorizes certain non-stormwater discharges to be discharged into the City stormwater system, provided they are not found to be discharging sewage, industrial wastes, or other wastes into the stormwater system. These authorized discharges are:

- Water line flushing
- Landscape irrigation
- Diverting stream flows or rising groundwater, or infiltration of uncontaminated groundwater
- Public safety activities, including, but not limited to, law enforcement and fire fighting
- Pumping of uncontaminated groundwater from potable water sources, foundation drains, irrigation waters, springs, or water from crawl spaces or footing drains
- Lawn watering
- Individual car washing on residential properties
- De-chlorinated swimming pool discharges (less than 1 PPM chlorine)
- Street washing
- Any activity authorized by a valid National Pollutant Discharge Elimination System (NPDES) permit, waiver or discharge order, a Virginia Pollutant Discharge Elimination System (VPDES) permit (see Appendix 9.4 for a list of Facilities with a VPDES permit within the city limits), waiver or discharge order, or a Virginia Pollution Abatement (VPA) permit
- Any activity by a governmental entity - in accordance with Federal, state, and local regulations and standards - for the maintenance or repair of

- drinking water reservoirs or drinking water treatment or distribution systems
- Any activity by the City, its employees and agents - - in accordance with federal, state and local regulations and standards - - for the maintenance of any component of its stormwater management system
  - Discharges specified in writing by the director as being necessary to protect public health and safety
  - Dye testing, following notification to the City engineer

Winchester City Code § 9-91 provides that if any of the discharges above are found to be sources of pollutants to public waters, the City may choose to notify the person responsible for the discharges and order the discharges be stopped or conducted in such manner as to avoid the discharge of pollutants. Authorized Discharges are not considered illicit discharges and no additional activity is required. DPS staff should update the *Winchester IDDE Tracking and Documentation spreadsheet*, *IDDE Resolution worksheet* and consider the issue resolved.

## 6.3 Methods for the Elimination of Illicit Discharges

Suspect discharges that are not authorized are considered illicit discharges and must be eliminated. Under Chapter 9 of the City Code, the City has numerous options available in order to ensure their elimination. These options include:

### 6.3.1 Education and Outreach

Many responsible parties are unaware that what they are doing is illegal and may not even recognize that they are the source of an illicit discharge. As a first step in elimination of an illicit discharge, DPS staff should attempt to attain voluntary compliance through the use of education and outreach.

### 6.3.2 Notice to Comply

When public education and outreach has failed to eliminate the illicit discharge within a reasonable time frame or the City determines that the illicit discharge is severe enough to not employ education and outreach; the City may choose to issue a Notice to Comply. This notice orders the responsible party to stop the illicit discharge or to discharge in such a manner as to avoid the discharge of sewage, industrial wastes, or other wastes into the stormwater sewer system. A Notice to Comply must include a time frame by which the illicit discharge is eliminated or prevented from entering into the City stormwater system.

As a Notice to Comply is the first step in formal enforcement actions, DPS staff must coordinate with all appropriate City Divisions or Offices (e.g., City Attorney's Office) in order to ensure proper protocol is followed. A Notice to Comply should be sent via



certified mail, with a return receipt requested, in order to provide documentation that the Notice to Comply was received by the responsible party.

### 6.3.3 Citation to Court

If the responsible party fails to eliminate the illicit discharge from entering into the City stormwater system, the City may choose to pursue legal methods through citation to court<sup>11</sup> in accordance with Winchester City Code § 9-95. Such actions may include, but are not limited to, misdemeanor charges, civil penalties, cease and desist orders, etc.

DPS must coordinate with all appropriate City Divisions or Offices (e.g., City Attorney's Office) in order to ensure proper protocol is followed and necessary documentation is provided. Collaboration with other City Departments should be coordinated through the City Engineer.

### 6.3.4 City Intervention

If the discharge is considered a public nuisance and the responsible party has failed to eliminate the illicit discharge after receiving a written Notice to Comply, the City is authorized to eliminate the discharge and charge and collect the City's cost for abating the illicit discharge. DPS staff must coordinate with all appropriate City Divisions or Offices (e.g., City Attorney's Office) in order to ensure proper protocol is followed, as this type of action may require legal action as well as reliance on other City authorities.

## 6.4 Confirmation of Elimination

Regardless of the action used to eliminate the illicit discharge, DPS staff must confirm that the illicit discharge has been eliminated. DPS staff should schedule a site visit to document that the illicit discharge has been eliminated. If the site visit may be confrontational, DPS staff should not attempt to contact the responsible party. Instead, confirmation should be made from public property. If a hostile situation arises, DPS staff should leave the area and contact the City Engineer for guidance.

If the elimination of the illicit discharge is ordered by a Court, DPS staff should obtain confirmation of elimination through the appropriate City authorities rather than attempting to conduct a site visit.

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<sup>11</sup> Citation to Court for violations must be done by City staff with appropriate authority such as the Winchester Police Department. As such, any potential court citations must be coordinated through the City Engineer's office.

Outfalls associated with illicit discharges shall be automatically selected for dry weather field screening as part of the next year's field screening activities. Notation should be made on the IDDE Outfall Prioritization spreadsheet.

## **6.5 Recordkeeping**

The following records should be entered into the IDDE Tracking and Documentation spreadsheet:

### **6.5.1 Complaint Records**

- Unique Suspect Discharge Identifier
- Associated Outfall Number
- Date of complaint
- Name of complainant
- Contact number
- Street address of complaint
- General location of Suspect Discharge
- Description of Suspect Discharge

### **6.5.2 Investigation Records**

- Initial inspection date
- Initial inspection Inspector
- Initial inspection observations
- If follow-up investigations are required, the following should be noted for each trip:
  - Follow-up date
  - Follow-up inspection Inspector
  - Follow-up inspection observations

### **6.5.3 Resolution Records**

- Enforcement action type
- Enforcement action date
- Date resolved
- Responsible party
- Responsible party address
- Identification as an authorized discharge or an illicit discharge
- Description of issue resolution

## 7 Contacting Other Agencies

### 7.1 Introduction

As discussed throughout this SOP manual, other agencies often have the necessary legal authorities and responsibilities to address suspect discharges. This chapter provides contact information for these agencies, indicators that a call is required, and what items to report.

The City promotes two phone numbers for reporting stormwater issues. For spills, releases and other stormwater issues requiring urgent response, staff should contact Emergency Services using the non-emergency number (540) 662-4131. For all other stormwater related issues, staff should report all other stormwater related issues using the Stormwater Reporting Hotline at (540) 542-1346.

### 7.2 Other Agencies

#### 7.2.1 Frederick -Winchester Health Department

Responsibilities:	Failed Septic Systems
Address:	10 Baker Street, Winchester, VA 22601
Phone Number:	(540) 722-3470

#### 7.2.2 DEQ

Responsibilities:	Suspect or Illicit Discharges Not Associated with the City of Winchester Storm Sewer System; Discharges Regulated Under the Virginia Pollutant Discharge Elimination System Permitting Program
Address:	Valley Regional Office 4411 Early Road/ P.O. Box 3000 Harrisonburg, VA 22801
Phone Number:	(540) 574-7800

### 7.2.3 VDOT

Responsibilities:	Illicit Discharges from VDOT Right-of-Way; VDOT MS4 Outfalls; VDOT MS4 Permit Compliance
Address:	Staunton District Office 811 Commerce Road Staunton, VA 24402-2249
Phone Number:	(540) 332-9075

## 7.3 Reporting Illicit Discharges Not Entering the City Stormwater System

If an illicit discharge is found but does not enter into the City's MS4, then the DEQ Valley Regional Office should be contacted as soon as possible. When contacting DEQ, DPS staff should be ready to provide the following information to DEQ:

- The location of the illicit discharge
- When the discharge was found
- The quantity of discharge found
- The parameters that were found at unacceptable levels and their test results
- The likely source of pollution

## 7.4 Reporting Discharges to Receiving Waters from City Outfalls

If an illicit discharge is found to be entering into the City stormwater system and is discharging to or has the potential to reasonably discharge to receiving waters, then division heads must contact the DEQ Valley Regional Office no later than 24-hours from the discovery of the discharge.

The City must also follow-up, within five (5) days of the notification, with a written report to the DEQ Valley Regional Office. This report should contain the following information:

- A description of the nature and location of the discharge
- The cause of the discharge
- The date on which the discharge occurred
- The length of time that the discharge continued
- The volume of the discharge
- If the discharge is continuing, the expected duration of continuation
- If the discharge is continuing, the expected total volume of the discharge

- Any steps that the City has planned or taken to reduce, eliminate, and prevent reoccurrence of the present discharge or any future discharges



## 8 Safety

### 8.1 Introduction

Safety procedures must be followed by all inspection staff. Specific health and safety hazards which DPS staff may encounter include:

- Exposure to hazardous waste and materials
- Removal of manhole covers
- Confined space entry
- Exposure to traffic operations
- Exposure to insects and wildlife
- Exposure to reagents used in water quality testing

### 8.2 General Safety

DPS staff should take general safety precautions during all activities. These include the following:

- Activities such as field screening and follow-up illicit discharge detection inspections should not be completed in less than teams of two.
- DPS staff should wear a City-issued safety vests at all times.
- DPS staff should visually survey the area attempting to be accessed in order to identify all potential hazards and should take all available efforts to minimize their exposure to those hazards.
- If exposure to an identified hazard cannot be eliminated or minimized, the DPS staff should contact their division head for guidance and not enter into a hazardous situation.
- DPS staff must follow Occupational Safety and Health Administration (OSHA) work safety standards and other applicable guidelines.
- DPS staff should direct any questions concerning safety to their immediate supervisor.

### 8.3 Hazardous Materials

DPS staff should avoid direct contact with hazardous materials at all times. Safety procedures and best professional judgment should be used to minimize exposure to hazardous materials.

### **8.3.1 Dangerous Gases**

Dangerous gases, which are combustible or harmful if inhaled, can collect in confined spaces such as culverts. DPS staff is most likely to encounter these gases when removing manhole covers. DPS staff should be aware of the dangers of confined spaces and accumulating gases. DPS inspectors should not enter confined spaces as part of routine inspections. If a confined space must be entered, OSHA regulations shall be followed.

### **8.3.2 Water Quality Sampling Materials**

When testing for water quality parameters using chemical reagents, DPS staff must follow the safety rules below:

- Follow test procedures carefully and observe all precautionary measures.
- Read the entire procedure carefully before beginning.
- Review material safety data sheets (MSDSs) for each reagent chemical used during testing.
- Do not smoke, eat, or drink in an area where toxic or irritating chemicals are used.
- Use reagents and equipment only as directed in the test procedure.
- Do not use damaged bottles or broken equipment.
- Minimize all chemical exposures.
- Do not breathe vapors or let chemicals touch your skin.
- Wear clothing that covers skin.
- Wear nitrile gloves.
- Wear safety goggles.
- DPS staff should become familiar with using portable eyewash units and carry one during all site visits.

## **8.4 Physical Hazards**

### **8.4.1 Removing Manhole Covers**

The following safety measures should be followed to avoid injury while opening manhole covers:

- Bend at the knees, not at the waist.
- Do not lift the manhole cover with your back muscles.
- Use leg muscles and avoid twisting.
- Wear steel-toed boots or safety shoes to protect feet.
- Do not move manhole covers with hands or fingers.
- Do not enter manholes as part of the routine inspection process.
- Confined space entry must only be done by properly trained and equipped persons, so any necessary entry must be coordinated with or through the City Engineer.

## 8.4.2 Traffic Safety

DPS staff should take extreme caution when working near moving traffic. At a minimum, staff should

- Mark the lane with traffic cones and/or signs to give adequate time and space for drivers to react and move around the work area.
- Wear safety vests and/or reflective clothing so that you will be visible to traffic.
- When access is required in extreme situations (e.g., busy highways, sharp turns), DPS staff should coordinate with the City Engineer in order to request assistance from the City of Winchester Police to direct traffic and provide additional safety.

## 8.5 If an Emergency Occurs

Immediately notify division heads using the most effective available mode of communication (cell phone, etc.) if any of the following situations arise:

- Any person is seriously injured or is in immediate danger of injury or death for any reason
- The gas monitor indicates hazardous or combustible gas
- The team suspects or discovers any situation requiring the immediate attention of emergency response teams

Division heads will call 911 and coordinate an emergency response. If contacting the division head first appears to pose an unacceptable risk, DPS staff should call 911 directly prior to contacting the division head. DPS staff should then move to a safe location, and wait for emergency responders to arrive.

When calling 911, callers should be prepared to provide the following information and remain on scene until emergency responders arrive:

- Reason for calling (injury, combustible gas, etc.)
- Name of caller
- Location of caller including address and nearest cross street
- Obvious details of the emergency situation
- Any other information requested by the 911 dispatcher



## Appendix 1

### Required Field Screening Equipment and Materials

<b>Function</b>	<b>Item</b>	<b>Purpose</b>
Structure Access	Manhole hook	Removes manhole cover
	Sledge hammer	Removes manhole cover
	High powered lamps/flashlights	View structure contents
	Field Map	Locate structures
Sample Collection	Long-handled sampling dipper	Collects samples from structure
	Medium-sized plastic waste bag	To dispose waste material
	250 mL Nalgene polypropylene beakers (one for each structure to be inspected)	Contains sample
Screening Samples	OAKTON Waterproof pH Testr 10 Meter	Test for pH and temperature
	HACH Nitrogen, Ammonia (Model NI-8) test kit	Test for ammonia
	HACH Total Chlorine Color Disc (Model CN-66T) test kit	Test for total chlorine
	Scissors or nail clippers	Opens reagent “powder pillow” packets
	Filtered deionized water and wash bottle	Calibration and cleaning between samples
	Buffer solution (pH 4.01, pH 7.00 and pH 10.01)	For OAKTON Waterproof pH Testr Tester calibration
	Extra batteries	For OAKTON Waterproof pH Testr Tester and camera
	Dipper ladle with extension pole	Collect sample when flow is in a confined space
	One liter plastic bottle and stop watch	Estimate flow
Record Data	Outfall Reconnaissance Inventory (ORI) form	Provided in appendices
	Log book	For general notes
	Digital camera with sufficient memory	For pictures at all structures
	Waterproof pen	For notes
Safety	Traffic cones	Traffic control
	High Visibility safety vests	For inspection team employees
	Portable eyewash kit	In case of chemical emergency
	Nitrile gloves	For collecting and testing samples
	Full coverage clothing (pants, long sleeves)	Should be worn at all times
	Eye goggles	Should be worn when using chemical reagents
	Steel-toed boots or safety shoes	Should be worn at all times

## Appendix 2

### Outfall Reconnaissance Inventory Field Sheet (ORI)

CITY OF WINCHESTER  
OUTFALL RECONNAISSANCE INVENTORY FIELD SHEET

**Section 1: Background Data**

1. Outfall ID:	
2. Today's date:	3. Time      a.m. / p.m. (circle)
4. Staff Present:	
5. Temperature (°F):	6. Rainfall (in.): Last 48 hours:
7. Camera:	8. Photo #s:
9. Comments: / Notes (e.g., origin of outfall, if known):	

**Section 2: Outfall Description**

10. TYPE	11. MATERIAL	12. SHAPE	13. DIMENSIONS (IN.)	14. SUBMERGED
<input type="checkbox"/> Closed Pipe	<input type="checkbox"/> RCP <input type="checkbox"/> CMP <input type="checkbox"/> PVC <input type="checkbox"/> HDPE <input type="checkbox"/> Steel <input type="checkbox"/> Other: _____	<input type="checkbox"/> Circular <input type="checkbox"/> Single <input type="checkbox"/> Elliptical <input type="checkbox"/> Double <input type="checkbox"/> Box <input type="checkbox"/> Triple <input type="checkbox"/> Other: _____ <input type="checkbox"/> Other: _____	Diameter/Dimensions: _____	In Water: <input type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Fully  With Sediment: <input type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Fully
	<input type="checkbox"/> Open drainage	<input type="checkbox"/> Concrete <input type="checkbox"/> Earthen <input type="checkbox"/> Rip-rap <input type="checkbox"/> Other: _____	<input type="checkbox"/> Trapezoid <input type="checkbox"/> Parabolic <input type="checkbox"/> Other: _____	Depth: _____ Top Width: _____ Bottom Width: _____
15. Is Flow Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <i>If No, Skip to Section 5</i>			
16. Flow Description (If present)	<input type="checkbox"/> Trickle <input type="checkbox"/> Moderate <input type="checkbox"/> Substantial			
	Volume, 1 liter	1 liter	<b>17. Estimated Flow, Liters/Second</b>	
Time to Fill, seconds				

**Section 3: Quantitative Characterization**

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER	RESULT	UNIT	PASSING CRITERIA	EQUIPMENT
18. Temperature		°F	Best Professional Judgment	OAKTON Waterproof pH Testr 10 Meter
19. pH		pH Units	6.0 -9.0	OAKTON Waterproof pH Testr 10 Meter
20. Ammonia, total		mg/L	< 1.0	HACH Nitrogen, Ammonia Test Kit, Model NI-8
21. Chlorine, total		mg/L	< 0.1	HACH Total Chlorine Color Disc Test Kit, Model CN-66T

CITY OF WINCHESTER  
OUTFALL RECONNAISSANCE INVENTORY FIELD SHEET

Section 4: Physical Indicators for Flowing Outfalls Only

22. Are Any Physical Indicators Present in the flow?  Yes  No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
23. Odor	<input type="checkbox"/>	<input type="checkbox"/> Sewage <input type="checkbox"/> Rancid/sour <input type="checkbox"/> Petroleum/gas <input type="checkbox"/> Sulfide <input type="checkbox"/> Other: _____	<input type="checkbox"/> 1 – Faint	<input type="checkbox"/> 2 – Easily detected	<input type="checkbox"/> 3 – Noticeable from a distance
24. Color	<input type="checkbox"/>	<input type="checkbox"/> Clear <input type="checkbox"/> Brown <input type="checkbox"/> Gray <input type="checkbox"/> Yellow <input type="checkbox"/> Green <input type="checkbox"/> Orange <input type="checkbox"/> Red <input type="checkbox"/> Other: _____	<input type="checkbox"/> 1 – Faint colors in sample bottle	<input type="checkbox"/> 2 – Clearly visible in sample bottle	<input type="checkbox"/> 3 – Clearly visible in outfall flow
25. Turbidity	<input type="checkbox"/>	See severity	<input type="checkbox"/> 1 – Slight cloudiness	<input type="checkbox"/> 2 – Cloudy	<input type="checkbox"/> 3 – Opaque
26. Floatables -Does Not Include Trash!!	<input type="checkbox"/>	<input type="checkbox"/> Sewage (Toilet Paper, etc.) <input type="checkbox"/> Suds <input type="checkbox"/> Petroleum (oil sheen) <input type="checkbox"/> Other: _____	<input type="checkbox"/> 1 – Few/slight; origin not obvious	<input type="checkbox"/> 2 – Some; indications of origin (e.g., possible suds or oil sheen)	<input type="checkbox"/> 3 – Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for both Flowing and Non-Flowing Outfalls

27. Are physical indicators that are not related to flow present?  Yes  No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
28. Outfall Damage	<input type="checkbox"/>	<input type="checkbox"/> Spalling, Cracking or Chipping <input type="checkbox"/> Peeling Paint <input type="checkbox"/> Corrosion	
29. Deposits/Stains	<input type="checkbox"/>	<input type="checkbox"/> Oily <input type="checkbox"/> Flow Line <input type="checkbox"/> Paint <input type="checkbox"/> Other:	
30. Abnormal Vegetation	<input type="checkbox"/>	<input type="checkbox"/> Excessive <input type="checkbox"/> Inhibited	
31. Poor pool quality	<input type="checkbox"/>	<input type="checkbox"/> Odors <input type="checkbox"/> Colors <input type="checkbox"/> Floatables <input type="checkbox"/> Oil Sheen <input type="checkbox"/> Suds <input type="checkbox"/> Excessive Algae <input type="checkbox"/> Other:	
32. Pipe benthic growth	<input type="checkbox"/>	<input type="checkbox"/> Brown <input type="checkbox"/> Orange <input type="checkbox"/> Green <input type="checkbox"/> Other:	

Section 6: Outfall Characterization

33. Likelihood of Illicit Discharge

Unlikely  Potential (presence of two or more indicators)  Suspect (one or more indicators with a severity of 3)  Obvious

Section 7: Water Quality Sampling Data Collection

34. Sample for the lab?	<input type="checkbox"/> Yes <input type="checkbox"/> No
35. If yes, collected from:	<input type="checkbox"/> Flow <input type="checkbox"/> Pool

Section 8: Additional Information

36. Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)? \_\_\_\_\_

## Appendix 3

### VPDES Permits Issued Within the City of Winchester (June 2014)

<b>Permit Number</b>	<b>Discharge Type</b>	<b>Facility Name</b>	<b>Facility Address</b>	<b>Zip</b>
VA0076384	Individual-Industrial	Federal Mogul Products Inc. - Winchester	2410 Paper Mill Rd	22601
VA0051373	Individual-Industrial	National Fruit Product Co Inc.	550 Fairmont Ave	22601
VA0088722	Individual-Municipal	Stonebrook Club	2342 Jones Road	22602
VAG401146	General-Domestic Sewage	Shenandoah Gas Company	350 Hillandale Lane	22602
VAR050810	General-Industrial Stormwater	O'Sullivan Films Inc.	1944 Valley Ave	22601
VAR050822	General-Industrial Stormwater	Winchester Public Works Department City Yards	301 E Cork St	22601
VAR050891	General-Industrial Stormwater	Con-Way Freight-NWR	700 North Cameron Street	22601
VAR050935	General-Industrial Stormwater	Quarles Petroleum - Winchester Bulk Plant	779 Smithfield Avenue	22601
VAR050962	General-Industrial Stormwater	Winchester Regional Airport	491 Airport Road	22601
VAR050972	General-Industrial Stormwater	Cives Steel Company - Mid-Atlantic Division	210 Cives Ln	22601
VAR050978	General-Industrial Stormwater	Rubbermaid Commercial Products LLC	3124 Valley Avenue	22601
VAR051342	General-Industrial Stormwater	FedEx Freight East Inc. Winchester Customer Center	388 Front Royal Pike	22602
VAR051650	General-Industrial Stormwater	Trex Co Inc.-Poly Processing	181 Battalie Drive	22603

# Appendix J

Public Stormwater Management Facility Inspection Standard Operating  
Procedures Manual

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# Public Stormwater Management Facility Inspection Standard Operating Procedures Manual

*June 2014 Edition*



Department of Public Services  
Engineering Division  
15 North Cameron St.  
Winchester, VA 22601  
Phone (540) 667-1815

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This manual was prepared by GKY & Associates, Inc. under contract to  
City of Winchester Department of Public Services

Information regarding the applicability, use, and content of this manual should be directed to:

City of Winchester  
Department of Public Services  
Engineering Division  
15 North Cameron St.  
Winchester, VA 22601  
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## Referenced Checklists

SWM Inspection Checklist # 1	Bioretention Practices including Rain Gardens
SWM Inspection Checklist # 2	Filtering Practices
SWM Inspection Checklist # 3	Constructed Wetlands
SWM Inspection Checklist # 4	Wet Ponds including Detention Ponds
SWM Inspection Checklist # 5	Extended Detention Ponds
SWM Inspection Checklist # 6	Underground Detention Facilities

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## 1.1 Overview

The City of Winchester operates numerous stormwater management facilities as part of their stormwater management program. As a result, the City has the responsibility to maintain these facilities in order to ensure that they function as designed. In addition, as the City's stormwater management infrastructure is regulated under the federal Clean Water Act and Virginia State Water Control Law as a municipal separate storm sewer system (MS4), the City is required to implement certain procedures in order to comply with the associated regulations including the Virginia General Permit for Stormwater Discharges from Small MS4s (MS4 General Permit). This document establishes the Standard Operating Procedures (SOPs) for ensuring that the City's publically owned and / or operated stormwater management facilities are operated and maintained in a manner compliant with the General Permit.

## 1.2 Requirements

As the owner and / or operator of stormwater management facilities, the City has an obligation to ensure their proper operation. The City must do this in accordance to the following MS4 General Permit requirements (§II.5):

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

The development and implementation of the SOPs contained in this document allows the City to operate a public stormwater management facility inspection and maintenance program that is compliant with the MS4 General Permit.

## 1.3 Roles and Responsibilities

The following roles and responsibilities are established in this SOP.

### 1.3.1 Inspections

The Department of Public Services, Engineering Division (DPSE) is responsible for conducting inspections on all stormwater management facilities owned and / or operated by the City. Inspections shall be conducted annually on all facilities. However, the use of

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close circuit TV to conduct a more intensive inspection of underground detention facilities is only required on an as-necessary basis as determined by the DPSE inspector.

Prior to the inspection, the DPSE inspector should obtain a copy of the original design or as-built drawings of the stormwater management facility for review and use during the inspection. The DPSE inspector shall complete the appropriate SWM Inspection Checklist listed in Table 1 for each inspection completed, to document the results of the inspection. The DPSE inspector shall complete the appropriate Portions of the SWM Inspection Checklist that are not applicable to the inspection should be left blank. In addition to the SWM Inspection Checklist, the

**Table 1: Public Stormwater Management Facilities Checklists**

<b>Checklist Number</b>	<b>Checklist Title</b>
SWM Inspection Checklist #1	Bioretention Practices including Rain Gardens
SWM Inspection Checklist #2	Filtering Practices
SWM Inspection Checklist #3	Constructed Wetlands
SWM Inspection Checklist #4	Wet Ponds including Retention Ponds
SWM Inspection Checklist #5	Extended Detention Ponds
SWM Inspection Checklist #6	Underground Detention Facilities

The DPSE inspector shall note in the comments section when maintenance is required. When a stormwater management facility requires maintenance, the DPSE inspector shall forward copies of the SWM Inspection Checklist to the City of Winchester Division of Public Works (DPW). The DPSE inspector's name and contact number must be included on the Inspection Form so that DPW can contact the inspector if they have any additional questions.

Upon notification that DPW has completed the required maintenance, the DPSE inspector will conduct a follow-up inspection of the stormwater management facility to document that the required maintenance has been completed. Documentation that the required maintenance has been completed must be made on the original inspection checklist. This shall be accomplished by initialing and dating the maintenance completion denotation beside the location where the maintenance requirement was originally noted by the DPSE inspector.

### **1.3.2 Maintenance**

DPW is responsible for conducting all required maintenance on stormwater management facilities. Upon receipt of notification that maintenance on a stormwater management facility is required, DPW will attempt to conduct the required maintenance within ninety

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(90) days. If the required maintenance is going to take longer than ninety (90) days, DPW shall notify the DPSE inspector for documentation purposes.

Once DPW has conducted the required maintenance, DPW shall notify the DPSE inspector so that the inspector may document that the required maintenance has been completed. It is recommended that the notification be conducted via e-mail.

## **1.4 Inspection and Maintenance Records and Documentation**

Documentation of inspection and maintenance is very important in demonstrating MS4 General Permit compliance. Copies of all inspection checklists and associated documentation must be maintained by DPS. It is recommended that all documentation be organized by individual SWM Facility. For the purposes of this SOP, the date of the last inspection is the date of the inspection unless a follow-up site visit is required to document that maintenance has been completed. When a follow-up visit is necessary, the date of the follow-up site visit should be used as the date of the last inspection.

## **1.5 Safety**

Safety procedures must be followed by all inspection and maintenance staff. Specific health and safety hazards which staff may encounter include, but are not limited to:

- Exposure to hazardous waste, gases and materials
- Heavy lifting (e.g., removal of manhole covers)
- Confined space entry
- Exposure to traffic operations
- Exposure to insects and wildlife

### **1.5.1 General Safety**

Staff should take general safety precautions during all activities. These include the following:

- Activities such as field screening and follow-up illicit discharge detection inspections should not be completed in less than teams of two.
- Staff should wear a City-issued safety vests at all times.
- Staff should visually survey the area attempting to be accessed in order to identify all potential hazards and should take all available efforts to minimize their exposure to those hazards.
- If exposure to an identified hazard cannot be eliminated or minimized, staff should contact their division head for guidance and not enter into a hazardous situation.
- Staff must follow Occupational Safety and Health Administration (OSHA) work safety standards and other applicable guidelines.
- Staff should direct any questions concerning safety to their division head.

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## **1.5.2 Hazardous Materials**

Staff should avoid direct contact with hazardous materials at all times. Safety procedures and best professional judgment should be used to minimize exposure to hazardous materials.

Dangerous gases, which are combustible or harmful if inhaled, can collect in confined spaces such as culverts. Staff is most likely to encounter these gases when removing manhole covers. Staff needs to be aware of the dangers of confined spaces and accumulating gases. DPSE inspectors shall not enter confined spaces as part of routine stormwater management facility inspections. If a confined space must be entered, OSHA regulations shall be followed.

## **1.5.3 Physical Hazards**

### **1.5.3.1 Removing Manhole Covers**

The following safety measures should be followed to avoid injury while opening manhole covers:

- Bend at the knees, not at the waist.
  - Do not lift the manhole cover with your back muscles.
  - Use leg muscles and avoid twisting.
- Wear steel-toed boots or safety shoes to protect feet.
- Do not move manhole covers with hands or fingers.
- Do not enter manholes as part of the routine inspection process.
  - Confined space entry must only be done by properly trained and equipped persons, so any necessary entry must be coordinated with or through the City Engineer.

### **1.5.3.2 Traffic Safety**

Staff should take extreme caution when working near moving traffic. At a minimum, the following safety measures should be followed:

- Mark the lane with traffic cones and/or signs to give adequate time and space for drivers to react and move around the work area.
- Wear safety vests and/or reflective clothing so that you will be visible to traffic.
- When access is required in extreme situations (e.g., busy highways, sharp turns), staff should coordinate with their division head in order to request assistance from City of Winchester Police to direct traffic and provide additional safety.

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#### 1.5.4 If an Emergency Occurs

Immediately notify division heads using the most effective available mode of communication (cell phone, etc.) if any of the following situations arise:

- Any person is seriously injured or is in immediate danger of injury or death for any reason
- Staff suspects or discovers any situation requiring the immediate attention of emergency response teams

Division heads will call 911 and coordinate an emergency response. If contacting the division head first appears to pose an unacceptable risk, staff should call 911 directly prior to contacting the division head. Staff should then move to a safe location, and wait for emergency responders to arrive.

When calling 911, callers should be prepared to provide the following information and remain on scene until emergency responders arrive:

- Reason for calling (injury, combustible gas, etc.)
- Name of caller
- Location of caller, including address and nearest cross street
- Obvious details of the emergency situation
- Any other information requested by the 911 dispatcher



## 1.6 Public Stormwater Management Facilities

The current list of existing SWM Management Facilities is included in Table 2. This Table must be updated a minimum of once a year in conjunction with preparation of the MS4 Annual Report.

**Table 2: City of Winchester Public Stormwater Management Facilities as of July 1, 2014**

SWM Facility Type	BMP Number	Tax Map #	Project	Property Address	HUC6	Waterbody	Acres Treated
Rain Garden	0142	253-01--1-	War Memorial Building	1001 East Cork Street	PU17	Abrams Creek	0.5
Rain Garden	0059 0060	234-01-- 14-	History and Tourism Center	1400 S. Pleasant Valley Rd.	PU17	Abrams Creek	3.4
SWM Pond	0025	230-05-A- 130-	Cottages at Willow Lawn	Corner of Sterling and Harvest Drives	PU17	Abrams Creek	40.6
SWM Pond	0025	311-1--20-	Frederick Douglas School	100 West Cedarmeade Ave.	PU16	Buffalo Lick Run	78.9
SWM Pond	0041	175-1-- 23B-	Friendship Fire Hall	627 North Pleasant Valley Road	PU17	Abrams Creek	50.5
SWM Pond	0067	270-01--8- D	Hope Drive Subdivision	230 Hope Drive	PU17	Abrams Creek	66.0
SWM Pond	0100	250-04-B- 89-	Park Place	760 Beehive Way	PU17	Abrams Creek	33.1
SWM Pond	0107	289-07--1-	Rolling Hills Park	702 Kennedy Drive	PU16	Buffalo Lick Run	4.5
SWM Pond	0110	172-01-- 17->A	Selma Medical	124 Selma Drive	PU17	Abrams Creek	7.5
SWM Pond	0143	269-04--A-	Westridge Section 1	2505 Goldenfield Lane	PU17	Abrams Creek	9.2
SWM Pond	0144	289-04-C- 60-	Westridge Section 2	2653 Windwood Drive	PU17	Abrams Creek	15.1
SWM Pond	0146	171-6--A-, 171-6--C-	Whittier Ponding Basin	206 Walker Street	PU17	Abrams Creek	124.7
SWM Pond	0094	154-10-B- 115-	Orchard Terrace	282 Green Street	PU18	Redbud Run	6.4
Underground Detention	0016	193-1-N-5-	Castleman Subdivision	Mosby Street ROW	PU17	Abrams Creek	6.39
Wetlands, Retention Pond	0093	188-06-- 61-	Morlyn Hills Subdivision	1643 Meadowbranch Avenue	PU17	Abrams Creek	--

# Appendix J.1

## Checklist 1 Bioretention Practices

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Bioretention Practices-Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<b>Contributing Drainage Area</b>	Inadequate vegetation	Supplement as necessary			
	There is excessive trash/debris	Remove as soon as possible			
	There is evidence of erosion and / or bare or exposed soil	Depending on severity, monitor or stabilize the area (reseed/revegetate)			
	There are excessive landscape waste or yard clippings	Remove as soon as possible and recycle or compost			
	Oil, grease or other unauthorized substances are entering the facility	Identify and control the source of this pollution. It may be necessary to erect fences, signs, etc.			
<b>Pre-Treatment</b>	There is inadequate access to the pre-treatment facility	Establish adequate access			
	Stormwater discharge is ponding at point of disconnection	Remove as soon as possible			
	There is evidence of clogging (standing water, noticeable odors, water stains, algae or floating aquatic vegetation, or oil/grease)	Identify and eliminate the source of the problem. If necessary, remove and clean or replace the clogged material			
	There is evidence of erosion and / or exposed soil	Depending on severity, monitor or stabilize the area (reseed/revegetate)			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Bioretention Practices-Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<i>Pre-Treatment</i>	There is dead vegetation/exposed soil in the grass filter	Restabilize and revegetate as necessary			
	<i>Inlets</i>	Check for sediment build-up at curb cuts, gravel diaphragms or pavement edges that prevent flow from getting into the bed, and check for bypassing	Remove sediment and correct any other problems that block inflow		
		There is excessive trash/debris/sediment	Remove as soon as possible		
		There is evidence of erosion and / or bare or exposed soil at or around the inlet	Depending on severity, monitor or stabilize the area (reseed/revegetate)		
	Inflow is hindered by trees and/or shrubs	Remove woody vegetation from points of inflow and directly above underdrains (Trees and shrubs may be located closer to the perimeter)			
<i>Side Slopes</i>	There is evidence of rill or gully erosion or bare soil	Identify the source of erosion damage and prevent it from recurring. Depending on severity, monitor or stabilize the area (reseed/revegetate)			
	There is excessive sediment accumulation	Remove as soon as possible			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Bioretention Practices-Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<i>Side Slopes</i>	Side slopes support nuisance animals	Animal burrows must be backfilled and compacted. Burrowing animals should be humanely removed from the area			
	Plant composition is inconsistent with the approved plans and any stakes or wires are in good condition	Determine if existing plant materials are at least consistent with general Bioretention design criteria and replace inconsistent species			
	There should be 75- 90% cover (mulch plus vegetation), and the mulch cover should be 2-3 inches deep	Supplement vegetation and mulch as needed			
<i>Vegetation</i>	There is evidence of hydrocarbons or other deleterious materials, resulting in unsatisfactory plant growth or mortality,	Replace contaminated mulch. If problem persists, test soils for hydrocarbons and other toxic substances. If excess levels are found, the soils, plants, and mulch may all need to be replaced in accordance with the approved construction plans			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Bioretention Practices-Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<b>Vegetation</b>	Invasive species or weeds make up at least 10% of the facility's vegetation	Remove invasive species and excessive weeds as soon as possible and replace vegetation as needed			
	The grass is too high	Mow within a week. Grass species should be selected that have dense cover, are relatively slow growing, and require the least mowing and chemical inputs. Grass should be from 6-10 inches high			
	Vegetation is diseased, dying or dead	Remove and replace. Increase watering, but avoid using chemical fertilizers, unless absolutely necessary			
	Winter-killed or salt-killed vegetation is present	Replace with hardier species			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Bioretention Practices-Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<i>Filter Media</i>	The filter media is too low, too compacted, or the composition is inconsistent with design specifications	Raise the level, loosen and amend or replace the media, as needed, to be consistent with the state design criteria for Bioretention (85-88% sand, 8-12% soil fines, 3-5% organic matter in form of leaf compost). Other remediation options are described in the maintenance section of the state design criteria for Bioretention			
	The mulch is older than 3 years or is otherwise in poor condition	The mulch must be replaced every 2-3 years			
	There is evidence that chemicals, fertilizers, and/or oil/grease are present	Remove undesirable chemicals from media and facility as soon as possible. Replace mulch or media as needed			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Bioretention Practices-Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<i>Filter Media</i>	There is excessive trash/debris/sediment accumulation	Remove trash and debris as soon as possible. Check plant health and, without damaging plants, manually remove the sediment, especially if the depth exceeds 20% of the facility's design depth			
	There is evidence of concentrated flows, erosion or exposed soil	Identify the source of erosion damage and prevent it from recurring. Depending on severity, monitor or stabilize the area (reseed/revegetate)			
	The filter bed is clogged and/or filled inappropriately	Redistribute the soil substrate and remove sediment within 2 weeks			
	The topsoil is in poor condition (e.g., the pH level is not 6-7, the composition is inappropriate, etc.)	Ensure a 3-inch surface depth of topsoil consistent with the state design criteria for Bioretention (loamy sand or sandy loam texture, with less than 5% clay content, and organic matter content of at least 2%). If the pH is less than 6.5, spread limestone			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:



BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Bioretention Practices-Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<i>Underdrain/ Proper Drainage</i>	The perforated pipe is not conveying water as designed	Determine if pipe is clogged with debris or if woody roots have pierced pipe, as necessary, clean out or replace the pipe			
	The underlying soil interface is clogged (there is evidence on the surface of soil crusting, standing water, the facility does not dewater between storms, or water ponds on the surface of basin for more than 48 hours after an event)	Measure draw-down rate of the observation well for 3 days following a storm event in excess of 1/2 inches in depth. After 3 days, if there is standing water on top but not in the underdrain, this indicates a clogged soil layer. If standing water is both on the surface and in the underdrain, then underdrain is probably clogged. This should be promptly investigated and remediated to restore proper filtration. Grading changes or underdrain repairs may be needed. The filter media may need to be raked, excavated, cleaned, or replaced to correct the problem. Holes inconsistent with design, allowing water to flow directly through a planter to the ground, must be plugged			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Bioretention Practices-Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<i>Planters</i>	The planter is unable to receive or detain stormwater prior to infiltration Water does not drain from the reservoir within 3- 4 hours of after a storm event	Identify and correct sources of clogging. Topsoil and sand/peat layer may need to be amended with sand or replaced all together			
	The planter has structural deficiencies, including rot, cracks, and failure, or the planter is unable to contain the filter media or vegetation	Make needed repairs as soon as possible			
<i>Outlet/ Overflow Spillway</i>	Outlets are obstructed or erosion and soil exposure is evident below the outlet	Remove obstructions and stabilize eroded or exposed areas			
	There is excessive trash/debris/sediment accumulation	Remove as soon as possible			
	Any grates present are in good condition	Repair or replace as necessary			
<i>Observation Well</i>	Is the observation well still capped?	Repair, as necessary			
	Access to the Infiltration facility or its components is inadequate	Establish adequate access. Remove woody vegetation and debris that may block access. Ensure that hardware can be opened and operated			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Bioretention Practices-Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<b>Overall</b>	There is evidence of standing water	Fill in low spots and stabilize. Correct flow problems causing ponding			
	Mosquito proliferation	Eliminate stagnant pools and establish vegetation; treat for mosquitoes as needed. If sprays are considered, then a mosquito larvicide (such as Bacillus thurendensis or Altoside formulations) can be applied, only if absolutely necessary			
	Complaints from local residents	Correct real problems			
	Encroachment on the bioretention area or easement by buildings or other structures	Inform involved property owners of BMPs status, and clearly mark the boundaries of the receiving pervious area, as needed			

Additional Notes/Comments:

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

# Appendix J.2

## Checklist 2 Filtering Practices

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Filtering Practices Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<b>Contributing Drainage Area and Side Slopes</b>	Inadequate vegetation	Supplement as necessary			
	There is excessive trash/debris	Remove as soon as possible			
	There is evidence of erosion and / or bare or exposed soil	Depending on severity, monitor or stabilize the area (reseed/revegetate)			
	There are excessive landscape waste or yard clippings	Remove as soon as possible, and recycle or compost			
<b>Pre-Treatment</b>	There is inadequate access to the pre- treatment facility	Establish adequate access			
	Excessive trash/debris/sediment	Remove as soon as possible			
	There is evidence of erosion and / or bare or exposed soil	Depending on severity, monitor or stabilize the area (reseed/revegetate)			
	There is dead vegetation	Replace dead vegetation as necessary			
	Perimeter turf (or a grass filter strip) is too high	Mow at least 4 times a year to keep the grass at a height of 4" to 9". Remove grass clippings after mowing			
	There is evidence of oil, grease, clogging (standing water, noticeable odors, water stains, algae)	Identify and eliminate the source of the problem. If necessary, remove and clean, or replace the clogged material			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Filtering Practices Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<i>Inlets</i>	The inlet provides a stable conveyance into the swale	Stabilize as soon as possible and as needed, and clear blockages			
	There is excessive trash/debris/sediment	Remove as soon as possible			
	There is evidence of erosion and / or bare or exposed soil at or around inlet	Depending on severity, monitor or stabilize the area (reseed/revegetate)			
<i>Sedimentation Chambers</i>	There is excessive trash/sediment	Remove as soon as possible (wet and dry chambers)			
<i>Filter Media</i>	If facility takes longer than 48 hours to drain or filter media is discolored, the media is probably clogged	Replace the top sand layer of an enclosed filter (typically done every 5 years). Till or aerate the surface to improve infiltration and grass cover of an open filter (also typically done every 5 years)			
<i>Oil and Grease</i>	Evidence of filter surface clogging	Clean or replace filter media, as necessary			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Filtering Practices Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<i>Underdrain</i>	The underdrain is not conveying water as designed	To determine if the pipe is clogged, measure the draw-down rate of the observation well for three days following a storm event in excess of 1/2 inches in depth. After three days, if there is standing water on top but not in the underdrain, this indicates a clogged sand layer that must be replaced. If standing water is both on the surface and in the underdrain, then the underdrain is probably clogged. As soon as possible, clean out the pipe manually or, if needed, use a high-pressure hose. Replace the underdrain if it is structurally damaged			
<i>Observation Well</i>	Is the observation well still capped?	Repair, as necessary			
	The outlet provides stable conveyance	Remove blockages and stabilize, as needed			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Filtering Practices Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<i>Outlet</i>	Evidence of flow bypassing facility	Repair as soon as possible			
	Outlets are obstructed or erosion and soil exposure is evident below the outlet	Remove obstructions and stabilize eroded or exposed areas			
<i>Structural Components</i>	Evidence of structural deterioration	Repair as necessary			
	Evidence of spalling or cracking of structural components	Depending on severity, patch or repair as soon as possible			
	Grates are not in good condition	Repair or replace, as necessary			
<i>Pump (where applicable)</i>	Catalog cuts and wiring diagram for pump available	If missing, obtain replacements			
	Waterproof conduits for wiring appear to be intact	Repair as necessary			
	Panel box is well marked	If not, mark it correctly			
	No evidence of pump failure (excess water in pump well, etc.)	Repair as necessary			
<i>Overall</i>	Access to the facility or its components is adequate	Establish adequate access. Remove woody vegetation and debris that may block access. Ensure that hardware can be opened and operated			
	Condition of hydraulic control components	Repair, as necessary			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:



BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Filtering Practices Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<b>Overall</b>	Complaints from local residents	Correct real problems			
	Noticeable odors outside facility	Determine source and eliminate it			
	Mosquito proliferation	Eliminate stagnant pools if feasible, and treat for mosquitoes as needed. If sprays are considered, then a mosquito larvicide (such as Bacillus thurendensis or Altoside formulations) can be applied, only if absolutely necessary			
	Encroachment on the filter or easement by buildings or other structures	Inform involved property owners of BMPs status. Clearly mark the boundaries of the receiving pervious area, as needed			

Additional Notes/Comments:

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

# Appendix J.3

## Checklist 3 Constructed Wetlands

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_ / \_\_\_\_ / 20 \_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Constructed Wetlands Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<b>Contributing Drainage Area</b>	Inadequate vegetation	Supplement as needed			
	There is excessive trash/debris	Remove as soon as possible			
	There is evidence of erosion and/or bare or exposed soil	Depending on severity, monitor or stabilize the area (reseed/revegetate)			
	There are excessive landscape waste and yard clippings	Remove as soon as possible and recycle or compost			
<b>Pre-Treatment</b>	There is inadequate access to the pre- treatment facility	Establish adequate access			
	There is excessive trash/debris	Remove as soon as possible			
	There is evidence of erosion and/or bare or exposed soil	Depending on severity, monitor or stabilize the area (reseed/revegetate)			
	Sediment deposits are 50% or more of forebay capacity	Dredge the sediment to restore the design capacity; sediment should be dredged from forebays at least every 5 years			
	The sediment marker is not vertical	Adjust the sediment depth marker to a vertical alignment			
	There is dead vegetation	Revegetate, as needed			
<b>Inlets</b>	The inlet does not provide a stable conveyance	Stabilize as soon as possible and as needed, and clear blockages			

Follow-up Inspection Date: \_\_\_\_ / \_\_\_\_ / 20 \_\_\_\_

Follow-up Notes/Comments:

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Constructed Wetlands Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<b>Inlets</b>	There is excessive trash/debris/sediment	Remove as soon as possible			
	There is evidence of erosion/undercutting at or around the inlet	Depending on severity, monitor or stabilize the area (reseed/revegetate)			
	There is cracking, bulging, erosion or sloughing of the forebay dam	Repair and restabilize as soon as possible			
	There is woody growth on the forebay dam	Remove within 2 weeks of discovery			
	There is evidence of nuisance animals	Animal burrows must be backfilled and compacted. Burrowing animals should be humanely removed from area			
<b>Vegetation (trees, shrubs, aquatic plants)</b>	Plant composition is inconsistent with the approved plans	Determine if existing plant materials are at least consistent with the general "Constructed Wetland" design criteria, and replace inconsistent species			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Constructed Wetlands Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<i>Vegetation (trees, shrubs, aquatic plants)</i>	Invasive species are present	Remove invasive species as soon as possible, and replace vegetation as needed. As a general rule, control of undesirable invasive species (e.g., cattail and Phragmites) should commence when their coverage exceeds more than 15% of a wetland cell area. Although the application of herbicides is not recommended, some types - - such as Glyphosate - -have been used to control cattails with some success. Extended periods of dewatering may also work, since early manual removal provides only short-term relief from invasive species			
	Vegetation is dead or reinforcement planting is needed	Remove and replace dead or dying vegetation			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Constructed Wetlands Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<i>Vegetation (trees, shrubs, aquatic plants)</i>	Trees planted in the buffer and on wetland islands and peninsulas need watering during the first growing season	Consider watering every 3 days for first month, and then weekly during first year (April – October), depending on rainfall			
	Practice has become overgrown and is not developing into a mature wetland	Harvest vegetation periodically if the wetland becomes overgrown or to guide maturing of forested wetlands (typically 5 and 10 years after construction)			
<i>Wetland Cells and Pools</i>	Sediment accumulation is 50% or more of capacity	Dredge the sediment to restore the design capacity			
	There is evidence of floating debris, sparse vegetative cover, erosion or slumping of side slopes	Remove debris. Repair and stabilize, as soon as possible			
	Open water is becoming overgrown	Harvest the unwanted vegetation			
	There is evidence of nuisance animals	Animal burrows must be backfilled and compacted. Burrowing animals should be humanely removed from the area			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Constructed Wetlands Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<i>Riser/Principle Spillway and Low-Flow Orifice(s)</i>	There is inadequate access to riser for maintenance	Establish adequate access			
	Pieces of the riser are deteriorating, misaligned, broken or missing	Repair as soon as possible			
	Adjustable control valves are accessible and operational	Repair, as needed			
	Reverse-slope pipes and flashboard risers are in good condition	Repair, as needed			
	There is excessive trash/debris/other obstructions in the trash rack	Remove as soon as possible			
	Seepage into conduit	Seal the conduit			
<i>Berm/Dam/ Embankment and Abutments</i>	There is sparse veg cover, settlement, cracking, bulging, misalignment, erosion rills deeper than 2 inches, or sloughing of the dam	Repair and restabilize as soon as possible			
	There are soft spots, boggy areas, seepage or sinkholes present	Reinforce, fill and stabilize as soon as possible			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Constructed Wetlands Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<i>Berm/Dam/ Embankment and Abutments</i>	There is evidence of nuisance animals	Animal burrows must be backfilled and compacted. Burrowing animals should be humanely removed form area			
	There is woody vegetation on the embankment	Removal of woody species near or on the embankment and maintenance access areas should be done when discovered, but at least every 2 years			
<i>Emergency Spillway</i>	There is woody growth on the spillway	Removal of woody species near or on the emergency spillway should be done when discovered, but at least every 2 years			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:



BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Constructed Wetlands Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<i>Emergency Spillway</i>	There is excessive trash/debris/other obstructions	Remove as soon as possible			
	There is evidence of erosion/back-cutting	Depending on severity, monitor or stabilize the area (reseed/revegetate)			
	There are soft spots, seepage or sinkholes	Reinforce, fill and stabilize as soon as possible			
<i>Outlet</i>	The outlet provides stable conveyance from the wetland	Stabilize as needed			
	There is excessive sediment accumulation	Remove as soon as possible			
	Released water is causing undercutting, erosion or displaced rip-rap at or around the outlet	Repair, reinforce or replace rip rap as needed, and restabilize			
	Woody growth within 5 feet of the outlet pipe barrel	Prune vegetation back to leave a clear discharge area			
	There is excessive trash/debris/other obstructions	Remove as soon as possible			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Constructed Wetlands Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<b>Overall</b>	Access to the facility or its components is inadequate	Establish adequate access. Remove woody vegetation and debris that may block access. Ensure that hardware can be opened and operated			
	Water levels in one or more cells are abnormally high or low	Clear blockages of the riser or orifice(s), and make other adjustments needed to meet the approved design specifications			
	Complaints from local residents	Correct real problems			
	Mosquito proliferation	Eliminate stagnant pools if feasible, and treat for mosquitoes as needed. If sprays are considered, then a mosquito larvicide (such as Bacillus thurendensis or Altoside formulations) can be applied, only if absolutely necessary. Can also stock the basin with mosquito fish to provide natural mosquito & midge control			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_ / \_\_\_\_ / 20 \_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Constructed Wetlands Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<i>Overall</i>	Encroachment on the wetland or easement by buildings or other structures	Inform involved property owners of BMPs status ; clearly mark the boundaries of the receiving pervious area, as needed			
	Safety signage is not adequate	Provide sufficient, legible safety signage			

Additional Notes/Comments:

Follow-up Inspection Date: \_\_\_\_ / \_\_\_\_ / 20 \_\_\_\_

Follow-up Notes/Comments:

# Appendix J.4

## Checklist 4 Wet Ponds

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Wetponds Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<b>Contributing Drainage Area</b>	Inadequate vegetation	Supplement as needed			
	There is excessive trash/debris	Remove as soon as possible			
	There is evidence of erosion and/or bare or exposed soil	Depending on severity, monitor or stabilize the area (reseed/revegetate)			
	There are excessive landscape waste and yard clippings	Remove as soon as possible and recycle or compost			
<b>Pre-Treatment</b>	There is inadequate access to the pre- treatment facility	Establish adequate access			
	There is excessive trash/debris	Remove as soon as possible			
	There is evidence of erosion and/or bare or exposed soil	Depending on severity, monitor or stabilize the area (reseed/revegetate)			
	Sediment deposits are 50% or more of forebay capacity	Dredge the sediment to restore the design capacity; sediment should be dredged from forebays at least every 5-7 years (earlier if performance is being affected)			
	The sediment marker is not vertical	Adjust the sediment depth marker to a vertical alignment			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Wetponds Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<i>Pre-Treatment</i>	There is evidence of clogging	Clear blockages of the riser or orifice(s), and make other adjustments needed to meet the approved design specifications			
	There is dead vegetation	Revegetate, as needed			
<i>Inlet</i>	The inlet provides a stable conveyance into the pond	Stabilize as soon as possible and as needed, and clear blockages			
	There is excessive trash/debris/sediment	Remove as soon as possible			
	There is evidence of erosion/undercutting at or around the inlet	Depending on severity, monitor or stabilize the area (reseed/revegetate)			
	There is cracking, bulging, erosion or sloughing of the forebay dam	Repair and restabilize as soon as possible			
	There is woody growth on the forebay dam	Remove within 2 weeks of discovery			
	There is evidence of nuisance animals	Animal burrows must be backfilled and compacted. Burrowing animals should be humanely removed from the area.			
	There is more than 1 inch of settlement	Add fill material and compact the soil to the design grade			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Wetponds Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<i>Inlet</i>	The inlet alignment is incorrect	Correct as soon as possible			
	Plant composition is inconsistent with the approved plans	Determine if existing plant materials are consistent with the general Wet Pond design criteria, and replace inconsistent species			
	Invasive species are present	Remove invasive species as soon as possible and replace vegetation as needed			
	Trees planted in the buffer and on wetland islands and peninsulas need watering during the first growing season	Consider watering every 3 days for first month, and then weekly during first year (April – October), depending on rainfall			
	Grass around the facility is overgrown	Mow (at least twice a year) to a height of 4"-9" high and remove grass clippings			
	Vegetation is dead or reinforcement planting is needed	Remove and replace dead or dying vegetation			
<i>Permanent Pool and Side Slopes</i>	There is excessive trash/debris	Remove as soon as possible			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Wetponds Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<i>Permanent Pool and Side Slopes</i>	There is evidence of sparse vegetative cover, erosion or slumping side slopes	Depending on severity, monitor or stabilize the area (reseed/revegetate)			
	There is evidence of nuisance animals	Animal burrows must be backfilled and compacted. Burrowing animals should be humanely removed from the area			
	There is excessive sediment accumulation	Conduct a bathymetric study to determine the impact to design volumes, and dredge if necessary			
<i>Riser/Principle Spillway and Low-Flow Orifice(s)</i>	There is inadequate access to the riser for maintenance	Establish adequate access			
	Pieces of the riser are deteriorating, misaligned, broken or missing	Repair as soon as possible			
	Adjustable control valves are accessible and operational	Repair, as needed			
	Reverse-slope pipes and flashboard risers are in good condition	Repair, as needed			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:



BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Wetponds Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<i>Riser/Principle Spillway and Low-Flow Orifice(s)</i>	There is evidence of clogging	Clear blockages of the riser or orifice(s), and make other adjustments needed to meet the approved design specs			
	Seepage into conduit	Seal the conduit			
	There is excessive trash/debris/other obstructions in the trash rack	Remove as soon as possible			
<i>Dam/ Embankment and Abutments</i>	There is sparse veg cover, settlement, cracking, bulging, misalignment, erosion rills deeper than 2 inches, or sloughing of the dam	Repair and restabilize as soon as possible, especially after major storms			
	There are soft spots, seepage, boggy areas or sinkholes present	Reinforce, fill and stabilize as soon as possible			
	There is evidence of nuisance animals	Animal burrows must be backfilled and compacted. Burrowing animals should be humanely removed from area			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Wetponds Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<i>Dam/ Embankment and Abutments</i>	There is woody vegetation on the embankment	Removal of woody species near or on the embankment and maintenance access areas should be done when discovered, but at least every 2 years			
<i>Overflow/ Emergency Spillway</i>	There is woody growth on the spillway	Removal of woody species near or on the emergency spillway should be done when discovered, but at least every 2 years			
	There is excessive trash/debris/other obstructions	Remove as soon as possible			
	There is evidence of erosion/back cutting	Depending on severity, monitor or stabilize the area (reseed/revegetate)			
	There are soft spots, seepage or sinkholes	Reinforce, fill, and stabilize as soon as possible			
	Only one layer of stone armoring exists above the native soil	Reinforce rip-rap or other armoring materials			
<i>Outlet</i>	The outlet provides a stable conveyance from the pond	Stabilize as soon as possible and as needed, and clear blockages			
	There is woody growth within 5 feet of the outlet pipe barrel	Prune vegetation back to leave a clear discharge area			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Wetponds Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<i>Outlet</i>	There is excessive trash/debris/other obstructions	Remove as soon as possible			
	There is excessive sediment accumulation at the outlet	Remove sediment			
	Discharge is causing undercutting, erosion or displaced rip-rap at or around the outlet	Repair, reinforce or replace rip rap as needed, and restabilize			
<i>Overall</i>	Access to the facility or its components is inadequate	Establish adequate access. Remove woody vegetation and debris that may block access. Ensure that hardware can be opened and operated			
	Fences are inadequate	Collapsed fences must be restored to an upright position. Jagged edges and damaged fences must be repaired or replaced			
	Water levels in one or more cells are abnormally high or Complaints from local residents	Clear blockages of the riser or orifice(s), and make other Correct real problems			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Wetponds Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<i>Overall</i>	Mosquito proliferation	Eliminate stagnant pools, and stock the basin with mosquito fish to provide natural mosquito & midge control. Treat for mosquitoes, as needed. If spraying, then use mosquito larvicide(e.g., Bacillus thurendensis or Altoside formulations), only if absolutely necessary			
	Encroachment on the pond or easement by buildings or other structures	Inform involved property owners of BMPs status, and clearly mark the boundaries of the receiving pervious area, as needed			
	Safety signage is not adequate	Provide sufficient, legible safety signage			

Additional Notes/Comments:

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

# Appendix J.5

Checklist 5 Extended Detention

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BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Extended Detention Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<b>Contributing Drainage Area</b>	Inadequate vegetation	Supplement as needed			
	There is excessive trash/debris	Remove as soon as possible			
	There is evidence of erosion and/or bare of exposed soil	Depending on severity, monitor or stabilize the area (reseed/revegetate)			
	There is excessive landscape waste and yard clippings	Remove as soon as possible			
<b>Pre-Treatment</b>	There is inadequate access to the pre- treatment facility	Establish adequate access			
	There is excessive trash/debris	Remove as soon as possible			
	There is evidence of erosion and/or bare of exposed soil	Depending on severity, monitor or stabilize the area (reseed/revegetate)			
	Sediment deposits are 50% or more of forebay capacity	Dredge the sediment to restore the design capacity; sediment should be dredged from forebays at least every 5-7 years (earlier when needed)			
	The sediment marker is not vertical	Adjust the sediment depth marker to a vertical alignment			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Extended Detention Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<i>Pre-Treatment</i>	There is evidence of clogging	Clear blockages of the riser or orifice(s), and make other adjustments needed to meet the approved design specifications			
	There is dead vegetation	Revegetate, as needed			
<i>Inlet</i>	The inlet provides a stable conveyance into the pond	Stabilize as soon as possible and as needed, and clear blockages			
	There is excessive trash/debris/sediment	Remove as soon as possible			
	There is evidence of erosion/undercutting at or around the inlet	Repair erosion damage and restabilize			
	There is cracking, bulging, erosion or sloughing of the forebay dam	Repair and restabilize as soon as possible			
	There is woody growth on the forebay dam	Remove within 2 weeks of discovery			
	There is evidence of nuisance animals	Animal burrows must be backfilled and compacted. Burrowing animals should be humanely removed from the area			
	There is more than 1 inch of settlement	Add fill material and compact the soil to the design grade			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Extended Detention Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<i>Inlet</i>	The inlet alignment is incorrect	Correct as soon as possible			
<i>Vegetation</i>	Plant composition is inconsistent with the approved plans	Determine if existing plant materials are consistent with the general Wet Pond design criteria, and replace inconsistent species			
	Invasive species are present	Remove invasive species as soon as possible, and replace vegetation as needed			
	Trees planted in the buffer and on wetland islands and peninsulas need watering during the first growing season	Consider watering every 3 days for first month, and then weekly during first year (April – October), depending on rainfall			
	Grass around the facility is overgrown	Mow (at least twice a year) to a height of 4"-9" high and remove grass clippings			
	Vegetation is dead or reinforcement planting is needed	Remove and replace dead or dying vegetation			
<i>Permanent Pool and Side Slopes</i>	There is excessive trash/debris	Remove as soon as possible			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:



BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Extended Detention Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<i>Permanent Pool and Side Slopes</i>	There is evidence of sparse vegetative cover, erosion or slumping side slopes	Repair and stabilize physical damage, and reseed or plant additional vegetation			
	There is evidence of nuisance animals	Animal burrows must be backfilled and compacted. Burrowing animals should be humanely removed from the area.			
	There is excessive sediment accumulation	Conduct a bathymetric study to determine the impact to design volumes, and dredge if necessary			
<i>Riser/Principle Spillway and Low-Flow Orifice(s)</i>	There is inadequate access to the riser for maintenance	Establish adequate access			
	Pieces of the riser are deteriorating, misaligned, broken or missing	Repair as soon as possible			
	Adjustable control valves are accessible and operational	Repair, as needed			
	Reverse-slope pipes and flashboard risers are in good condition	Repair, as needed			
	Seepage into conduit	Seal conduit			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Extended Detention Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<i>Riser/Principle Spillway and Low-Flow Orifice(s)</i>	There is evidence of clogging	Clear blockages of the riser or orifice(s) and make other adjustments needed to meet the approved design specs			
	There is excessive trash/debris/other obstructions in the trash rack	Remove as soon as possible			
<i>Dam/ Embankment and Abutments</i>	There is sparse veg cover, settlement, cracking, bulging, misalignment, erosion rills deeper than 2 inches, or sloughing	Repair and restabilize as soon as possible, especially after major storms			
	There are soft spots, seepage, boggy areas or sinkholes	Reinforce, fill and stabilize as soon as possible			
	There is evidence of nuisance animals	Animal burrows must be backfilled and compacted. Burrowing animals should be humanely removed from the area			
	There is woody vegetation on the embankment	Removal of woody species near or on the embankment and maintenance access areas should be done when discovered, but at least every 2 years			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Extended Detention Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<b>Overflow/ Emergency Spillway</b>	There is woody growth on the spillway	Removal of woody species near or on the emergency spillway should be done when discovered, but at least every 2 years			
	There is excessive trash/debris/other obstructions	Remove as soon as possible			
	There is evidence of erosion/back cutting	Repair erosion damage and reseed			
	There are soft spots, seepage or sinkholes	Reinforce, fill and stabilize as soon as possible			
	Only one layer of stone armoring exists above the native soil	Reinforce rip-rap or other armoring materials			
<b>Outlet</b>	The outlet provides a stable conveyance from the pond	Stabilize as soon as possible and as needed, and clear blockages			
	There is woody growth within 5 feet of the outlet pipe barrel	Prune vegetation back to leave a clear discharge area			
	There is excessive trash/debris/other obstructions	Remove as soon as possible			
	There is excessive sediment accumulation at the outlet	Remove sediment			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Extended Detention Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<i>Outlet</i>	Discharge is causing undercutting, erosion or displaced rip-rap at or around the outlet	Repair, reinforce or replace rip rap as needed, and restabilize			
	Access to the facility or its components is inadequate	Establish adequate access. Remove woody vegetation and debris that may block access. Ensure that hardware can be opened and operated			
<i>Overall</i>	Fences are inadequate	Collapsed fences must be restored to an upright position Jagged edges and damaged fences must be repaired or replaced			
	Water levels in one or more cells are abnormally high or low	Clear blockages of the riser or orifice(s) and make other adjustments needed to meet the approved design specifications			
	Complaints from local residents	Correct real problems			

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.  
\*per VSMP Handbook, July 13 ed (draft)

BMP Type: Extended Detention Operation & Maintenance			Checked?	Maint.	Comments
BMP Elements	Problems	Recommended Solution*	(Y/N)	Req'd.?	
<i>Overall</i>	Mosquito proliferation	Eliminate stagnant pools and stock the basin with mosquito fish to provide natural mosquito & midge control. Treat for mosquitoes as needed. If spraying, then use mosquito larvicide (e.g., Bacillus thurendensis or Altoside formulations), only if absolutely necessary			
	Encroachment on the pond or easement by buildings or other structures	Inform involved property owners of BMPs status, and clearly mark the boundaries of the receiving pervious area, as needed			
	Safety signage is not adequate	Provide sufficient, legible safety signage			

Additional Notes/Comments:

Follow-up Inspection Date: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Follow-up Notes/Comments:

# Appendix J.6

Checklist 6 Underground Detention Facility

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BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_ / \_\_\_\_ / 20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.

BMP Type: Underground Detention Facility			Checked? (Y/N)	Maint. Req'd.?	Comments	
BMP Elements	Problems	Recommended Solution				
<b>Contributing Drainage Area</b>	There is excessive trash and debris	Remove as soon as possible				
	<b>Inflows</b>	There is excessive trash / Debris / Sediment	Remove as soon as possible			
		There is a _____% Blockage	Remove blockage			
		There is spalling	Depending on severity, patch or repair as soon as possible			
		There is erosion	Depending on severity, monitor or stabilize the area (reseed/revegetate)			
		There is undermining	Depending on severity, monitor or repair the area			
		There is a damaged joint (Separation / Failure)	Repair/replace damaged pipe as soon as possible			
		There is a tree over / near the structure	Remove the tree, and cut so stump is flush with the ground			
<b>Detention Pipe/ Chamber / Vault</b>	There is excessive trash /debris /sediment	Remove as soon as possible				
	There is spalling	Depending on severity, patch or repair as soon as possible				
	There is erosion	Depending on severity, monitor or stabilize the area (reseed/revegetate)				

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_ / \_\_\_\_ / 20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.

BMP Type: Underground Detention Facility			Checked? (Y/N)	Maint. Req'd.?	Comments
BMP Elements	Problems	Recommended Solution			
<i>Detention Pipe / Chamber / Vault</i>	There is undermining	Depending on severity, monitor or repair the area			
	There is a damaged joint (Separation / Failure)	Repair/replace damaged pipe as soon as possible			
	There is a tree over / near the structure	Remove the tree, and cut so stump is flush with the ground			
	Ladder / Steps are in poor condition	Repair/replace ladder steps as needed			
	There are access issues	Ensure all manholes and/or access doors are operable			
<i>Control Structure</i>	There is excessive trash /debris /sediment	Remove as soon as possible			
	There is spalling	Depending on severity, patch or repair as soon as possible			
	There is erosion	Depending on severity, monitor or stabilize the area (reseed/revegetate)			
	There is undermining	Depending on severity, monitor or repair the area			
	There is a damaged joint (Separation / Failure)	Repair as soon as possible			
	The Flow Restrictor is damaged	Repair or replace, as needed			



BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_ / \_\_\_\_ / 20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.

BMP Type: Underground Detention Facility			Checked? (Y/N)	Maint. Req'd.?	Comments
BMP Elements	Problems	Recommended Solution			
<b>Control Structure</b>	The Flow Restrictor is missing	Replace missing Flow Restrictor			
	The Flow Restrictor is blocked/buried (_____%)	Remove blockage as soon as possible			
	The Trash Rack is damaged	Repair or replace, as needed			
	The Trash Rack is missing	Replace missing Trash Rack			
	The Trash Rack is Blocked/Buried (_____%)	Remove blockage as soon as possible			
	There are access issues	Ensure all manholes and/or access doors are operable			
<b>Outfall</b>	There is excessive trash / debris /sediment	Remove as soon as possible			
	There is a _____% Blockage	Remove blockage			
	There is spalling	Depending on severity, patch or repair as soon as possible			
	There is erosion	Depending on severity, monitor or stabilize the area (reseed/revegetate)			
	There is undermining	Depending on severity, monitor or repair the area			
	There is a damaged joint (Separation / Failure)	Repair/replace damaged pipe as soon as possible			



CITY OF WINCHESTER, VA

Rouss City Hall \* 15 North Cameron Street \* 22601  
540-667-1815 \* www.winchesterva.gov

BMP #: \_\_\_\_\_

Tax Map #: \_\_\_\_\_

Date: \_\_\_\_ / \_\_\_\_ / 20\_\_\_\_

Project Name: \_\_\_\_\_

Inspector: \_\_\_\_\_

Note: Leave section blank, if item N/A.

BMP Type: Underground Detention Facility			Checked? (Y/N)	Maint. Req'd.?	Comments
BMP Elements	Problems	Recommended Solution			
<i>Outfall</i>	There is a tree over / near the structure	Remove the tree, and cut so stump is flush with the ground			

Additional Notes/Comments:

# Appendix K

Municipal High Priority Facility Determination

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# Municipal High Priority Facility Determination

*June 2014*



Department of Public Services  
Engineering Division  
15 North Cameron St.  
Winchester, VA 22601  
Phone (540) 667-1815

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This report was prepared by GKY & Associates, Inc. under contract to City of Winchester Department of Public Services.

Information regarding the applicability, use, and content of this manual should be directed to:

City of Winchester  
Department of Public Services  
Engineering Division  
15 North Cameron St.  
Winchester, VA 22601  
Phone (540) 667-1815

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## Appendices

Appendix 1	Timbrook Center Municipal High Priority Facility Site Visit Evaluation Form
Appendix 2	City Yards Municipal High Priority Facility Site Visit Evaluation Form
Appendix 3	Jim Barnett Park Municipal High Priority Facility Site Visit Evaluation Form

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## 1.1 Introduction

Under the Virginia Pollutant Discharge Elimination System (VPDES) MS4 General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4 General Permit), the City of Winchester must evaluate its facilities using a two-tier assessment process by June 30, 2014. The first step requires the City to determine which of its facilities meet the definition of a High-Priority Facility. High-Priority Facilities include:

- Composting facilities
- Equipment storage and maintenance facilities
- Materials storage yards
- Pesticide storage facilities
- Public works yards
- Recycling facilities
- Salt storage facilities
- Solid waste handling and transfer facilities
- Vehicle storage and maintenance yards

Secondly, facilities identified as High-Priority Facilities must then be evaluated to determine if they have a high potential to discharge pollutants. High-Priority Facilities are considered to have a high potential to discharge pollutants if any of the following materials are expected to have exposure to stormwater resulting from rain/snow/snowmelt/or runoff present; are not covered under a separate VPDES permit, and any of the following materials or activities occur:

- Areas where residuals from using, storing or cleaning machinery or equipment remain and are exposed to stormwater
- Materials or residuals on the ground or in stormwater inlets from spills or leaks
- Material handling equipment (except adequately maintained vehicles)
- Materials or products that would be expected to be mobilized in stormwater runoff during loading/unloading or transporting activities (e.g., rock, salt, fill dirt)
- Materials or products stored outdoors (except final products intended for outside use where exposure to stormwater does not result in the discharge of pollutants)
- Materials or products that would be expected to be mobilized in stormwater runoff contained in open, deteriorated or leaking storage drums, barrels, tanks, and similar containers
- Waste material except waste in covered, non-leaking containers (e.g., dumpsters)

- 
- Application or disposal of process wastewater (unless otherwise permitted)
  - Particulate matter or visible deposits of residuals from roof stacks, vents or both not otherwise regulated (i.e., under an air quality control permit) and evident in the stormwater runoff

City of Winchester-owned facilities that meet the definition of a High-Priority Facility and are considered to have the high potential for pollutant discharge must be identified by June 30, 2014 for inclusion in the MS4 Annual Report. The City must develop and implement individual Stormwater Pollution Prevention Plans (SWPPP) for these facilities by June 30, 2017.

The City of Winchester contracted with GKY & Associates, Inc. (GKY) to identify and evaluate City facilities to determine those meeting the definition of High-Priority Facilities with a high potential to discharge pollutants and thus requiring a separate SWPPP.

## **1.2 City Facility Evaluation Protocol**

City facilities were evaluated using the following protocols:

1. City parcels were identified using the latest GIS data supplied by the City of Winchester.
  - a. Parcels owned by separate authorities or joint authorities were not included.
2. The 2010 Winchester aerial photography and latest available Google Earth photography were used to conduct desktop evaluation of City Facilities and identify which were potential High-Priority Facilities.
3. Staff conducted on-site reconnaissance of the potential High-Priority Facilities identified in the desktop evaluation to determine if those facilities actually met the definition of a High-Priority Facility.
  - a. If so, staff further evaluated if there was a high potential for pollutant discharge.
  - b. Evaluation forms were completed for each facility visited.



---

## 1.3 City Facility Evaluation Results

Review of the City Tax Parcel data identified eighty-two (82) parcels potentially owned by the City of Winchester. Of the eighty-two (82) parcels, twenty-four (24) parcels were owned by a separate public authority, joint public entity, or a non-profit organization, which were not included in the desktop evaluation.

Desktop analysis of the remaining fifty-eight (58) parcels (Figure 1) identified three (3) parcels containing potential High-Priority Facilities:

- 231 East Piccadilly St.
- 301 - 303 E Cork St
- 1001 E Cork St.

On June 20, 2014, GKY staff conducted visual inspections at the three potential High-Priority Facilities to evaluate and confirm whether the facilities met the definition of High-Priority Facilities and, if so, met the regulatory threshold for having a High Potential for Pollution Discharge. Findings of the site visits are provided in Table 1. An individual site visit evaluation form is for each facility (see Appendices 1 through 3). Facility summaries are provided below.

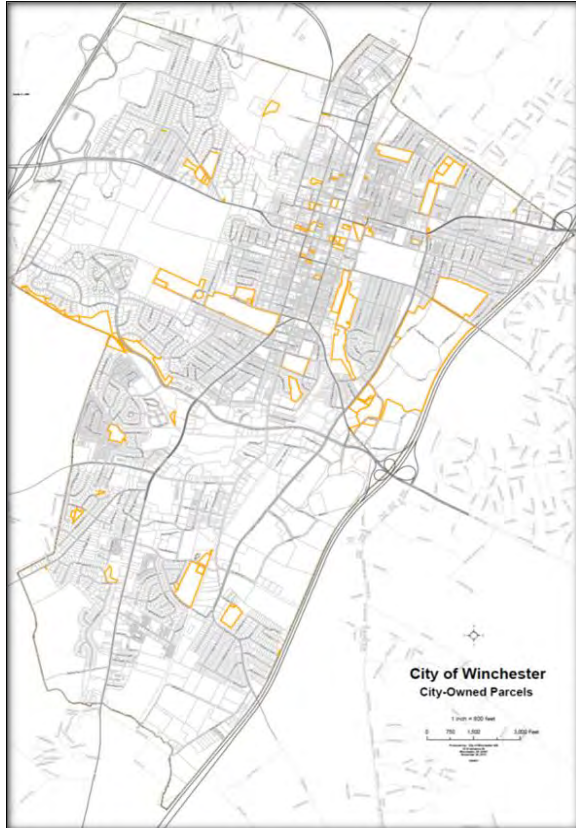


Figure 1- Winchester City-Owned Parcels

### 1.3.1 Timbrook Center - 231 East Piccadilly Street

This facility includes police vehicle storage but does not appear to include vehicle maintenance (Appendix 1). As such, the facility does not meet the definition of a High-Priority Facility. The facility is well maintained, and there is no evidence of leaking vehicles.

### 1.3.2 City Yards - 301 - 303 E Cork Street

This two-parcel facility comprises the City Yards Facility. This facility meets the definition of a High-Priority Facility and has the High Potential for Pollutant Discharge (Appendix 2). However, as this facility is covered under a separate VPDES permit for industrial discharges (Permit #VAR050822); a separate SWPPP is not required under the MS4 General Permit.

In accordance with 9VAC25-890-20.F. of the MS4 General Permit, portions of Winchester’s small MS4 that are covered under separate VPDES permits for industrial stormwater discharges shall follow the conditions established under the separate VPDES permit. If the City terminates separate VPDES permit coverage, a separate SWPPP will be required under the MS4 General Permit.

**1.3.3 Jim Barnett Park – 1001 E. Cork Street**

The primary use of this property is a park; however, the park equipment storage and maintenance facility is also located on this property (Appendix 3). The facility includes outside storage and has the High Potential for Pollutant Discharge. As such, a separate SWPPP, per the MS4 General Permit requirements, must be developed and implemented by June 30, 2017.

**Table 1: Results of Site Visit Evaluations of Identified Potential High Priority Facilities**

Address	Parcel Id. No.	High Priority Facility?	Reason	High Potential for Pollutant Discharge?	Reason	MS4 SWPPP Required?	Reason
231 East Piccadilly St.	173-01-Q-1	No	Vehicle storage only. No evidence of on-site maintenance.	—	—	—	—
301 - 303 E Cork St.	213-01-1	Yes	City Yards facility including vehicle maintenance and equipment storage	Yes	Outside equipment and material storage	No	Separate VPDES Industrial Permit Coverage
	213-01-1A						
1001 E Cork St.	253-01-1	Yes	Park Maintenance Facility	Yes	Outside equipment and material storage	Yes	Outside vehicle and material storage

---

## 1.4 High Priority Facilities with a High Pollutant Discharge Potential

The City of Winchester must develop and implement a SWPPP for the Parks and Recreation Division's equipment storage and maintenance facility located at Jim Barnett Park, 1001 E. Cork St., by June 30, 2017.

At a minimum, the SWPPP must contain:

- A site description which includes a site map identifying all outfalls, direction of flows, existing source controls, and receiving water bodies
- A discussion and checklist of potential pollutants and pollutant sources
- A discussion of all potential non-stormwater discharges
- Written procedures designed to reduce and prevent pollutant discharge
- A description of the applicable training as required under Section II B 6 d of the MS4 General Permit
- Procedures to conduct an annual comprehensive site compliance evaluation
- An inspection and maintenance schedule for site specific source controls
  - The date of each inspection and associated findings and follow-up shall be logged in each SWPPP.
- Documentation of any SWPPP modifications, as necessary to accurately reflect any discharge, release, or spill from the high priority facility reported in accordance with Section III G
  - For each such discharge, release, or spill, the SWPPP must include the following information:
    - Date of incident
    - Material discharged, released, or spilled
    - Quantity discharged, released or spilled

A copy of the SWPPP shall be kept at the facility, updated as necessary, and used as part of the training program required in Section II B 6 d of the MS4 General Permit.





Please fill in your Site information and then review each assessment section, below. If the determination for an assessment section is “Yes”, then continue to the next assessment. If the determination for an assessment section is “No”, then skip to the Final Determination section and complete. Please attach any site photos, if available, and submit your form to the location noted on the attached cover letter.

**Facility Name: Timbrook Center      Date: June 20, 2014**

**Location: W S 231 East Piccadilly Street      Tax ID: 173-01-Q-1- >**

**Site Reviewer: Jason George and Alexandra Everhart**

<b>Assessment 1-High-Priority Facility Determination</b>	<b>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></b>
Please check any uses/activities, in this section, which are located at this facility. If more than one box is checked, then this facility is considered a high-priority facility. Mark appropriate determination box	

- |   |   |
|---|---|
| <input type="checkbox"/> Compost facilities<br><input type="checkbox"/> Materials storage yards<br><input type="checkbox"/> Public works yards<br><input type="checkbox"/> Salt storage facilities<br><input type="checkbox"/> Recycling facilities | <input type="checkbox"/> Vehicle storage and maintenance yards<br><input type="checkbox"/> Equipment storage & maintenance facilities<br><input type="checkbox"/> Pesticide storage facilities<br><input type="checkbox"/> Solid waste handling & transfer facilities |
|---|---|

<b>Assessment 2-High Potential for Pollutant Discharge Determination</b>	<b>Yes <input type="checkbox"/></b>
Please check any uses/items, in this section, which are present or whose presence may be expected to be present at any given time at this facility. If more than one box is checked, then there is the high potential for pollutant discharge. Mark appropriate determination box.	
	<b>No <input type="checkbox"/></b>
	<b>N/A <input checked="" type="checkbox"/></b>

- Areas where residuals from using, storing or cleaning machinery or equipment remain and are exposed to stormwater;
- Materials or residuals on the ground or in stormwater inlets from spills or leaks;
- Material handling equipment (except adequately maintained vehicles);
- Materials or products that would be expected to be mobilized in stormwater runoff during loading/unloading or transporting activities (e.g., rock, salt, fill dirt);
- Materials or products stored outdoors (except final products intended for outside use where exposure to stormwater does not result in the discharge of pollutants);
- Materials or products that would be expected to be mobilized in stormwater runoff contained in open, deteriorated or leaking storage drums, barrels, tanks, and similar containers;
- Waste material except waste in covered, non-leaking containers (e.g., dumpsters);
- Application or disposal of process wastewater (unless otherwise permitted); or,
- Particulate matter or visible deposits of residuals from roof stacks, vents or both not otherwise regulated (i.e., under an air quality control permit) and evident in the stormwater runoff.

<b>Assessment 3-Permit status</b>	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>
-----------------------------------	--

Are discharges from this facility covered under a separate VPDES permit (Mark appropriate determination box.)?

If "Yes", note permit # - \_\_\_\_\_

<b>FINAL DETERMINATION</b>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
----------------------------	---

Does a Stormwater Pollution Prevention Plan need to be developed for this site under the MS4 General Permit? Mark appropriate determination box.

- If the first two assessments were "Yes", but there is no VPDES permit, then an MS4 Stormwater Pollution Prevention Plan will need to be developed under the MS4 General Permit.
- 
- If all three assessments were "Yes", then you have coverage under a separate industrial permit and you must follow the Stormwater Pollution Prevention Plan developed under the permit listed in Assessment 3. (Mark "NO" for General Permit SWPPP required.)

<h3>Site/Aerial Photos</h3>
-----------------------------

On the following page(s) Please insert or attach any site/aerial photos you have, using the noted format. Once completed, submit your form to the location noted on the attached cover letter.



**Photo 1.1 Title-Timbrook**  
**Description-Parking**  
**Date Taken-6/20/2014**



**Photo 1.2 Title-Timbrook**  
**Description-Parking**  
**Date Taken-6/20/2014**



**Photo 1.3 Title-Timbrook**  
**Description-Back of Property**  
**Date Taken-6/20/2014**



**Photo 1.4 Title-Timbrook**  
**Description-Covered Waste Containers**  
**Date Taken-6/20/2014**



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## **Appendix 2**

# **City Yards Municipal High Priority Facility Site Visit Evaluation Form**

Please fill in your Site information and then review each assessment section, below. If the determination for an assessment section is "Yes", then continue to the next assessment. If the determination for an assessment section is "No", then skip to the Final Determination section and complete. Please attach any site photos, if available, and submit your form to the location noted on the attached cover letter.

**Facility Name: City Yard      Date: June 20, 2014**

**Location: 301 E Cork Street    Tax ID: 213-01- - 1- >; 213-01- - 1A- >**

**Site Reviewer: Jason George and Alexandra Everhart**

**Assessment 1-High-Priority Facility Determination** Yes  No   
 Please check any uses/activities, in this section, which are located at this facility. If more than one box is checked, then this facility is considered a high-priority facility. Mark appropriate determination box.

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Compost facilities</li> <li><input checked="" type="checkbox"/> Materials storage yards</li> <li><input checked="" type="checkbox"/> Public works yards</li> <li><input checked="" type="checkbox"/> Salt storage facilities</li> <li><input checked="" type="checkbox"/> Recycling facilities</li> </ul> | <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Vehicle storage and maintenance yards</li> <li><input checked="" type="checkbox"/> Equipment storage &amp; maintenance facilities</li> <li><input checked="" type="checkbox"/> Pesticide storage facilities</li> <li><input checked="" type="checkbox"/> Solid waste handling &amp; transfer facilities</li> </ul> |
|--|---|

**Assessment 2-High Potential for Pollutant Discharge Determination** Yes   
No   
N/A   
 Please check any uses/items, in this section, which are present or whose presence may be expected to be present at any given time at this facility. If more than one box is checked, then there is the high potential for pollutant discharge. Mark appropriate determination box.

- Areas where residuals from using, storing or cleaning machinery or equipment remain and are exposed to stormwater;
- Materials or residuals on the ground or in stormwater inlets from spills or leaks;
- Material handling equipment (except adequately maintained vehicles);
- Materials or products that would be expected to be mobilized in stormwater runoff during loading/unloading or transporting activities (e.g., rock, salt, fill dirt);
- Materials or products stored outdoors (except final products intended for outside use where exposure to stormwater does not result in the discharge of pollutants);
- Materials or products that would be expected to be mobilized in stormwater runoff contained in open, deteriorated or leaking storage drums, barrels, tanks, and similar containers;
- Waste material except waste in covered, non-leaking containers (e.g., dumpsters);
- Application or disposal of process wastewater (unless otherwise permitted); or,
- Particulate matter or visible deposits of residuals from roof stacks, vents or both not otherwise regulated (i.e., under an air quality control permit) and evident in the stormwater runoff.

<b>Assessment 3-Permit status</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>
-----------------------------------	--

Are discharges from this facility covered under a separate VPDES permit (Mark Appropriate determination box.)?

*If "Yes", note permit # -* VAR050822

<b>FINAL DETERMINATION (MS4 SWPPP required for General Permit)</b>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---

Does a Stormwater Pollution Prevention Plan need to be developed for this site under the MS4 General Permit? Mark appropriate determination box.

- If the first two assessments were "Yes", but there is no VPDES permit, then an MS4 Stormwater Pollution Prevention Plan will need to be developed under the MS4 General Permit.
- 
- If all three assessments were "Yes", then you have coverage under a separate industrial permit and you must follow the Stormwater Pollution Prevention Plan developed under the permit listed in Assessment 3. (Mark "NO" for General Permit SWPPP required.)

<b>Site/Aerial Photos</b>
---------------------------

On the following page(s) Please insert or attach any site/aerial photos you have, using the noted format. Once completed, submit your form to the location noted on the attached cover letter.



**Photo 1.1 Title-City Yards**  
Description- Vehicle Storage  
Date Taken-6/20/2014



**Photo 1.2 Title-City Yards**  
Description-Road Paint  
Date Taken-6/20/2014



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Please fill in your Site information and then review each assessment section, below. If the determination for an assessment section is “Yes”, then continue to the next assessment. If the determination for an assessment section is “No”, then skip to the Final Determination section and complete. Please attach any site photos, if available, and submit your form to the location noted on the attached cover letter.

**Facility Name: Jim Barnett Park      Date: June 20, 2014**

**Location: 1001 E Cork Street Tax ID: 253-01- - 1- >**

**Site Reviewer: Jason George and Alexandra Everhart**

<b>Assessment 1-High-Priority Facility Determination</b>	<b>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></b>
Please check any uses/activities, in this section, which are located at this facility. If more than one box is checked, then this facility is considered a high-priority facility. Mark appropriate determination box	

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Compost facilities<br><input checked="" type="checkbox"/> Materials storage yards<br><input type="checkbox"/> Public works yards<br><input type="checkbox"/> Salt storage facilities<br><input type="checkbox"/> Recycling facilities | <input checked="" type="checkbox"/> Vehicle storage and maintenance yards<br><input checked="" type="checkbox"/> Equipment storage & maintenance facilities<br><input type="checkbox"/> Pesticide storage facilities<br><input type="checkbox"/> Solid waste handling & transfer facilities |
|---|---|

<b>Assessment 2-High Potential for Pollutant Discharge Determination</b>	<b>Yes <input checked="" type="checkbox"/></b>
Please check any uses/items, in this section, which are present or whose presence may be expected to be present at any given time at this facility. If more than one box is checked, then there is the high potential for pollutant discharge. Mark appropriate determination box.	
	<b>No <input type="checkbox"/></b>
	<b>N/A <input type="checkbox"/></b>

- Areas where residuals from using, storing or cleaning machinery or equipment remain and are exposed to stormwater;
- Materials or residuals on the ground or in stormwater inlets from spills or leaks;
- Material handling equipment (except adequately maintained vehicles);
- Materials or products that would be expected to be mobilized in stormwater runoff during loading/unloading or transporting activities (e.g., rock, salt, fill dirt);
- Materials or products stored outdoors (except final products intended for outside use where exposure to stormwater does not result in the discharge of pollutants);
- Materials or products that would be expected to be mobilized in stormwater runoff contained in open, deteriorated or leaking storage drums, barrels, tanks, and similar containers;
- Waste material except waste in covered, non-leaking containers (e.g., dumpsters);
- Application or disposal of process wastewater (unless otherwise permitted); or,
- Particulate matter or visible deposits of residuals from roof stacks, vents or both not otherwise regulated (i.e., under an air quality control permit) and evident in the stormwater runoff.



<b>Assessment 3-Permit status</b>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/>
-----------------------------------	--

Are discharges from this facility covered under a separate VPDES permit (Mark appropriate determination box.)?

*If "Yes", note permit # - \_\_\_\_\_*

<b>FINAL DETERMINATION (MS4 SWPPP required for General Permit)</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
--	---

Does a Stormwater Pollution Prevention Plan need to be developed for this site under the MS4 General Permit? Mark appropriate determination box.

- If the first two assessments were "Yes", but there is no VPDES permit, then an MS4 Stormwater Pollution Prevention Plan will need to be developed under the MS4 General Permit.
- 
- If all three assessments were "Yes", then you have coverage under a separate industrial permit and you must follow the Stormwater Pollution Prevention Plan developed under the permit listed in Assessment 3. (Mark "NO" for General Permit SWPPP required.)

### Site/Aerial Photos

On the following page(s) Please insert or attach any site/aerial photos you have, using the noted format. Once completed, submit your form to the location noted on the attached cover letter.



**Photo 1.1 Title-Jim Barnett Park Maintenance Facility**  
**Description-Parking Area**  
**Date Taken-6/20/2014**



**Photo 1.2 Title-Jim Barnett Park Maintenance Facility**  
**Description-Equipment & Materials Storage**  
**Date Taken-6/20/2014**



**Photo 1.3 Title-Jim Barnett Park Maintenance Facility**

**Description-Outside Waste Storage**

**Date Taken-6/20/2014**

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# Appendix L

Nutrient Management Plan Facility Determination

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# Nutrient Management Plan Facility Determination

*June 2014*



Department of Public Services  
Engineering Division  
15 North Cameron St.  
Winchester, VA 22601  
Phone (540) 667-1815

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This report was prepared by GKY & Associates, Inc. under contract to City of Winchester Department of Public Services.

Information regarding the applicability, use, and content of this manual should be directed to:

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Department of Public Services  
Engineering Division  
15 North Cameron St.  
Winchester, VA 22601  
Phone (540) 667-1815

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1.4	Nutrient Management Planning .....	2

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## **1.1 Introduction**

Under the Virginia Pollutant Discharge Elimination System (VPDES) MS4 General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4 General Permit), the City of Winchester must identify all applicable lands where nutrients are applied to a contiguous area of more than one acre by June 30, 2014. For each area, the City must provide a latitude and longitude in its MS4 Annual Report, which is due by October 1, 2014.

This evaluation identifies those areas for which nutrients are applied to more than one acre. For the purposes of this analysis, “contiguous” was attributed to whole tax parcels and not to portions of individual parcels, themselves. For example, a parcel that had two one-half acre turf areas separated by a sidewalk would be considered to have one-acre nutrient application. Similarly, if two (2) parcels were contiguous to each other and each had nutrients applied to one-half acre, they would be considered to have one-acre of nutrient application.

## **1.2 City Property Evaluation Protocol**

City facilities were evaluated using the following protocols:

1. Parcels greater than 1.0 acre in size, owned by the City of Winchester or by the City of Winchester Public Schools, were identified using the latest GIS data supplied by the City of Winchester.
  - a. Parcels owned by separate authorities or joint authorities were not included.
2. The estimated turf acreage for each parcel was calculated through GIS analysis of the 2010 City of Winchester aerial imagery.
3. A list of City parcels and City School parcels with turf estimated to be greater than 1.0 acre were submitted to the City of Winchester for review.
4. The City of Winchester identified those parcels upon which nutrients were applied.

## **1.3 City Nutrient Management Evaluation Results**

Analysis of the City’s aerial imagery identified nineteen (19) City of Winchester-owned parcels in which more than one-acre of turf was observed (Table 1). In addition, seven (7) City of Winchester Public School-owned parcels were also identified (Table 2).

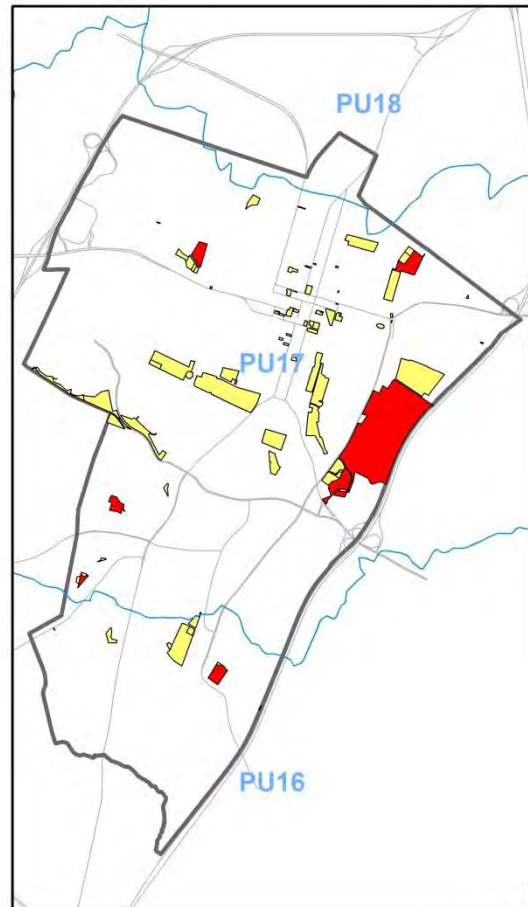


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Of the twenty-six (26) identified parcels, the following six (6) parcels were confirmed to have nutrients applied on a routine schedule:

- Jim Barnett Park, 1001 E. Cork Street, (39.1727797, -78.154889), 71.6 acres
- Friendship Park, 623 N. Pleasant Valley Rd, (39.1899529, -78.1508964), 9.3 acres
- Whittier Park, 900 Whittier Avenue, (39.1911247, -78.1779289), 5.9 acres
- Weaver Neighborhood Park, 167 Bruce Drive, (39.149049, -78.1757645), 5.1 acres
- Park Place Public Park, 2014 Harvest Drive, (39.1659935, -78.1887412), 4.0 acres
- West Ridge and Harvest Ridge Park, 805 Crestview Terrace SS, (39.1585249, -78.1931146), 1.4 acres

Figure 1 provides a geographic view of these locations identified in red.



**Figure 1: City-Owned Parcels Requiring Nutrient Management Plans**

## **1.4 Nutrient Management Planning**

Turf and landscape area Nutrient Management Plans for the six (6) identified City properties must be developed by a certified turf and landscape nutrient management planner, in accordance with § 10.1-104.2 of the Code of Virginia, and implemented by the City, in accordance with the following measurable goals:

- By June 30, 2015, Nutrient Management Plans must be developed and implemented on at least 15% of the identified acreage (14.6 acres).
- By June 30, 2016, Nutrient Management Plans must be developed and implemented on at least 40% of the identified acreage (38.9 acres).
- By June 30, 2017, Nutrient Management Plans must be developed and implemented on at least 75% of the identified acreage (73.0 acres).
- By June 30, 2018, Nutrient Management Plans must be developed and implemented on 100% of the identified acreage (97.3 acres).

---

Given the fact that almost three-quarters of the acreage requiring Nutrient Management Plans is located at the Jim Barnett Park, with the remaining acreage scattered among the five other properties, the following development and implementation schedule is recommended:

- The City of Winchester should develop and implement a master Nutrient Management Plan for all turf and landscaped land uses on the six properties during Fiscal Year 2016 so as to have 100% of the required Nutrient Management Plans developed and implemented by June 30, 2016.
  - Duplicative information that would apply to all six properties would only need to be included once in the master Nutrient Management Plan. Individual site requirements would be included in individual chapters.
    - This would save the City considerable time and effort in updating the Nutrient Management Plans in the future.
  - Developing all six Nutrient Management Plans at the same time during Fiscal Year 2016 will likewise allow the City to address the associated development expenses during one budgeting cycle while also meet the MS4 General Permit conditions, as the MS4 General Permit states that the operator (City of Winchester) shall not fail to meet the measurable goals for two consecutive years.

**Table 1: City of Winchester Public Properties with Greater than One (1.0) Acres of Turf\***

<b>Parcel ID No.</b>	<b>Address</b>	<b>Notes Regarding Use</b>	<b>Turf Acreage</b>	<b>Nutrients Applied</b>	<b>Latitude</b>	<b>Longitude</b>
253-01- 1	1001 E Cork St	Jim Barnett Park	71.6	Yes	39.1727797	-78.1548890
175-01--23A	623 North Pleasant Valley Rd	Friendship Park	9.3	Yes	39.1899529	-78.1508964
171-01--11B	900 Whittier Ave	Whittier Park	5.9	Yes	39.1911247	-78.1779289
311-01-18	167 Bruce Dr	Weaver Neighborhood Park	5.1	Yes	39.149049	-78.1757645
250-04-B89	2024 Harvest Dr	Park Place Public Park	4.0	Yes	39.1659935	-78.1887412
269-05-B86	805 Crestview Terrace SS	West Ridge & Harvest Ridge Park	1.4	Yes	39.1585249	-78.1931146
209-01- 1	1643 Meadow Branch Ave	Abrams Creek Wetland Preserve	4.5	No	39.1738085	-78.1632222
188-06-61	1511 Stone House Court	Abrams Creek Wetland Preserve	3.1	No	39.1780701	-78.1961193
213-01- 2	301 East Pall Mall St	Shawnee Springs Preserve	2.4	No	39.1775122	-78.1625733
171-07- 3	853 Whittier Ave	Open parcel for Town Run	2.2	No	39.1901562	-78.1791487
291-01--5E1	100 West Tevis St	Retention Basin	2.1	No	39.1543132	-78.1786967
289-07- 1	702 Kennedy Dr	Retention Basin	2.0	No	39.1527912	-78.1895305
213-01- 1	301 303 E Cork St	City Yards	1.5	No	39.1762981	-78.1905257
233-07-E A	50 Montague Circle	Stormwater Conveyance	1.4	No	39.1700675	-78.1685056
234-01-14	1400 S Pleasant Valley Rd	Public Park	1.3	No	39.1685538	-78.1613155
253-01- 1 1	1360 S Pleasant Valley Rd	Public Park	1.3	No	39.1695974	-78.1602963
151-16- 1	1105 Whittier Ave (Rear Lot)	Open parcel for Town Run	1.2	No	39.1909314	-78.1801839
193-01-U14	215 East Cork St	Green Circle	1.2	No	39.1791061	-78.1632282
291-01--5E2	101 West Tevis St	Retention Basin	1.1	No	39.1533418	-78.1792227

\*Shaded entries do not have nutrients applied on a routine schedule and do not currently require Nutrient Management Plans.

**Table 2: City of Winchester Public Schools with Greater than One (1.0) Acres of Turf\***

<b>Parcel ID No.</b>	<b>Address</b>	<b>Notes Regarding Use</b>	<b>Turf Acreage</b>	<b>Nutrients Applied</b>	<b>Latitude</b>	<b>Longitude</b>
211-01-1	425 Handley Boulevard	High School	17.8	No	39.1772319	-78.174353
190-01-2	536 Jefferson St	Elementary School	6.4	No	39.1798863	-78.1814772
215-01-2	48 South Purcell Ave	Middle School	17.4	No	39.1786764	-78.1499246
311-01- 20	100 West Cedarmeade Ave	Elementary School	10.0	No	39.1519455	-78.1805058
232-01-B	1300-1310 South Loudoun St	Elementary School	5.0	No	39.1724858	-78.1684497
154-01-I 1	598 North Kent St	Elementary School	4.5	No	39.1920587	-78.1571287
175-06- 8B	550 Virginia Ave	Elementary School	4.5	No	39.1878189	-78.1532206

\*Shaded entries do not have nutrients applied on a routine schedule and do not currently require Nutrient Management Plans.

# Appendix M

City of Winchester Stormwater Training Plan

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# City of Winchester Stormwater Training Plan

*June 2014 Edition*



Department of Public Services  
Engineering Division  
15 North Cameron St.  
Winchester, VA 22601  
Phone: (540) 667-1815

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This manual was prepared by GKY & Associates, Inc. under contract to  
City of Winchester Department of Public Services

Information regarding the applicability, use, and content of this manual should be directed to:

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Engineering Division  
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## 1 Introduction

As a locality operating a small municipal separate storm sewer system (MS4) under the terms of the reissued Virginia Stormwater Management Program (VSMP) General Permit for Discharges from Small MS4s (MS4 General Permit), the City of Winchester is required to implement a written Training Schedule and Program to address the requirements of Minimum Control Measure #6 (Pollution Prevention/Good Housekeeping for Municipal Operations) by July 1, 2014. This document includes the:

- Pollution prevention training schedule and presentations for relevant personnel on these topics:
  - a. Illicit discharge recognition and reporting
  - b. Roads, streets and parking lot maintenance
  - c. Fleet and facility operations
  - d. Park and grounds maintenance
- Other certification and training requirements, including the:
  - a. Summary of the emergency response training and certification program
  - b. Provisions under the erosion and sediment control act
  - c. Provisions under the Virginia Pesticides Act
  - d. Provisions under the Virginia Fertilizer Act

## 2 Pollution Prevention Training

### 2.1 MS4 Permit Requirements

The MS4 General Permit requires that the City of Winchester develop a staff training program to address pollution prevention for City activities and increases City employee knowledge of identifying and reporting illicit discharges. Specifically, the City's training program must include a schedule of training events and provide documentation of each training event, documenting that the City has provided biennial training to relevant employees in:

- *The recognition and reporting of illicit discharges*
- *Good housekeeping and pollution prevention practices that are to be employed during road, street, and parking lot maintenance*
- *Good housekeeping and pollution prevention practices that are to be employed in and around maintenance and public works facilities*
- *Good housekeeping and pollution prevention practices that are to be employed in and around recreational facilities*

## 2.2 Stormwater Training Modules and Schedule

The Department of Public Services has developed a short training module in PowerPoint format for each of the four topics identified in Section 2.1. These four modules are:

- *Module 1: Recognition and Reporting of Illicit Discharges* (Appendix 1)
  - Objective: Make City staff more aware of the City's focus and procedures to prevent, detect, and eliminate illicit discharges.
- *Module 2: Pollution Prevention Practices (PPP) used in Road, Street, and Parking Lot Maintenance* (Appendix 2)
  - Objective: Provide City employees an understanding on how to prevent stormwater pollution during the City's street, parking, and drainage operations by adhering to SOPs and good housekeeping practices.
- *Module 3: Pollution Prevention Practices used for Fleet and Facility Operations* (Appendix 3)
  - Objective: Increase employee awareness on how to reduce stormwater pollution from daily fleet and facility operations by adhering to SOPs and good housekeeping practices.
- *Module 4: Minimizing Stormwater Pollution from Parks and Grounds Maintenance* (Appendix 4)
  - Objective: Increase awareness on how to minimize stormwater pollution from parks and ground operation/maintenance activities by adhering to good housekeeping practices.

These training modules should be kept current and updated, when necessary, to include the most current information available.

## 2.3 Relevant Employee Identification and Training Requirements

The City has identified the relevant employees, by job titles, which are required to take specified training module(s). Table 1 identifies employee job titles and applicable training to each of those positions. In addition, Table 1 includes a training schedule for each Division Number which corresponds and aligns with the training schedule design detailed in Table 2. The training schedule is designed to spread the training over the two-year timetable required by the permit. Employees that are unable to attend the training provided for their Division and new employees should be allowed to attend another training session of the same Module, as soon as possible.

**Table 1: City of Winchester Relevant Staff Requiring Stormwater Training**

<b>Div. No.</b>	<b>Department / Division</b>	<b>Job Titles</b>	<b>Training Schedule</b>
4231	Refuse	Sanitation Worker, Crew Leader, Crew Supervisor, Refuse/Recycling Coordinator	<b>a</b>
4324	Facilities Maintenance	Facilities Director, Maintenance Tech, Laborer, Custodian	<b>a</b>
7121	Parks & Rec Maintenance	Maintenance Coordinator, Maintenance Tech 1, Park Projects Coordinator	<b>b</b>
4151	Arborist	City Arborist, Maintenance Tech 1	<b>b</b>
3421	Inspections	Building Official, Combination Inspector, Senior Code Compliance Inspector, Code Compliance Inspector	<b>b</b>
4802	Utilities - Source of Supply	Facility Manager, Chief Operator, Laboratory Supervisor, Operator, Facility Mechanic, Electrician/Instrument Tech	<b>c</b>
4803	Utilities - Transmission	Utility Service Mechanic, Sr. Utility Service Mechanic, Crew Supervisor, Maintenance Supervisor, Facility Mechanic	<b>c</b>
4701	Winchester Parking Authority Parking	Maintenance Tech 1, Maintenance Tech 2, Enforcement Officer	<b>d</b>
4121 / 4133	Streets / Snow & Ice	Supervisor, Maintenance Tech 1, Maintenance Tech 2, Maintenance Tech 3	<b>d</b>
4142	Hwy Maintenance Traffic	Signs & Marking Maintenance Tech, Signal Tech, Traffic Supervisor	<b>d</b>
4810	Utilities - Engineering	City Engineer, Engineer 1, Construction Inspector, Engineering Inspector	<b>*</b>

\* Engineering Staff will annually participate in each Training Module

**Table 2: City of Winchester Training Schedule for Relevant Staff**

<b>Training Module</b>	<b>FY2015</b>	<b>FY2016</b>	<b>FY2017</b>	<b>FY2018</b>
Recognition and Reporting of Illicit Discharges	<b>a, c</b>	<b>b, d</b>	<b>a, c</b>	<b>b, d</b>
PPP used in Road, Street and Parking Lot Maintenance	<b>c</b>	<b>d</b>	<b>c</b>	<b>d</b>
PPP used in and around Maintenance and Public Works Facilities	<b>a, c</b>	<b>b, d</b>	<b>a, c</b>	<b>b, d</b>
PPP used in and around Parks and Recreation Facilities	<b>a</b>	<b>b</b>	<b>a</b>	<b>b</b>

## **2.4 Delivery and Documentation**

Each training module includes delivery notes for the presenter and has been designed to be delivered during routine staff meetings. Supervisors should plan for a maximum of 45-minutes for delivery, discussion, and question/answer period regarding each presentation. The City Engineer's office will coordinate training events with the appropriate supervisors. To prepare for a training presentation, the presenter will need: a computer, projector, screen, sign-in sheet, and a room large enough to fit all of those attending the training session.

Each training module includes a sign-in sheet, with the stated training objective, in order to document all individuals present during the training presentation. The presenter should make sure that everyone attending the training session signs the sign-in sheet. Completed sign-in sheets should be filed with the Division of City Engineering for incorporation into a summarized training report, as required by the MS4 General Permit. Completed sign-in sheets must be kept for a minimum of three years after each training event.

## **3 Other MS4 General Permit Training & Certification Requirements**

In addition to pollution prevention training for relevant employees, the MS4 General Permit requires training, certification, and documentation of other specified employees. Indicated certifications include those required under the Virginia Erosion and Sediment Control Act and the Virginia Pesticide Act. In addition, training for emergency responders must be noted and summarized in the annual report for the first Permit year, under the MS4 General Permit.

### **3.1 Erosion and Sediment Control Certifications**

#### **3.1.1 MS4 General Permit Requirement**

The MS4 General Permit requires that *“The operator (City of Winchester) shall ensure that employees and contractors employed as plan reviewers, inspectors, program administrators, and construction site operators obtain the appropriate certifications as required under the Virginia Erosion and Sediment Control Law and its attendant regulations.”*

#### **3.1.2 Applicability**

The City currently operates a Virginia Erosion and Sediment Control Program under Chapter 840 of the Virginia Administrative Code (Erosion and Sediment Control Regulations). As such, City staff responsible for implementation of this program must maintain the appropriate certifications for plan review, inspection, and program administration.

#### **3.1.3 Current City Staff**

The City has one program administrator, one combined administrator, and three inspectors on staff; all of whom were previously certified by the Virginia Soil and Water Conservation Board. In accordance with § 62.1-44.15:53 B. of the Code of Virginia, these City staff have

met the necessary requirements for certification under the Virginia DEQ Erosion and Sediment Control training and certification program. Certifications will need to be renewed in accordance to requirements established by the State Water Control Board. For more information, staff should see the relevant information contained here: <http://www.deq.virginia.gov/connectwithdeq/trainingcertification.aspx>.

The City also has two professional engineers on staff that are qualified to review ESC plans under the program. In accordance with § 62.1-44.15:53 B., professional registration in the Commonwealth pursuant to Article 1 (§ 54.1-400 et seq.) of Chapter 4 of Title 54.1 meets the certification requirements, for the purposes of renewals.

### **3.1.4 Contractor Responsible Land Developer (RLD)**

City Code (Section 9-38) requires that contractors have the required certificate of competence (RLD) as described in Virginia Code §62.1-44.15:58. The person in charge of and responsible for a land disturbing activity must be designated prior to the commencement of any land disturbing activity.

### **3.1.5 Documentation**

Copies of current certifications issued by the State Water Control Board for program administrators, combined administrators, plan reviewers, and inspectors should be kept with the MS4 Program Plan.

Documentation of the designated RLD for each land disturbing activity should be kept with the Land Disturbing Permit Application.

## **3.2 Pesticide Application**

### **3.2.1 MS4 Permit Requirement**

The MS4 General Permit requires that *“The operator (City of Winchester) shall ensure that employees, and require that contractors, who apply pesticides and herbicides are properly trained or certified in accordance with the Virginia Pesticide Control Act (§3.2-3900 et seq. of the Code of Virginia).”*

### **3.2.2 Applicability**

City employees that use pesticides as a government representative must obtain and retain certification under the Virginia Pesticide Control Act. No other City employee may apply pesticides as part of their job duties. Certification may require testing, on the job training, and classroom education. Information regarding certifications can be found at the Virginia Department of Agriculture and Consumer Services (VDACS) website, below, or by contacting VDACS directly at:

Virginia Department of Agriculture and Consumer Services  
Pesticide Services  
102 Governor Street, 1st Floor  
Richmond, VA 23219  
PHONE - 804.786.3798, FAX - 804.786.9149  
<http://www.vdacs.virginia.gov/pesticides/>

### **3.2.3 City Employee Certifications under the Virginia Pesticide Control Act**

As of June 13, 2014, the City has a total of five (5) individuals certified to apply pesticides as either a commercial applicator not for hire (government employee) or a technician.

### **3.2.4 Contractors**

Businesses that apply pesticides for compensation must be registered with VDACS, and their employees must hold the appropriate certifications. As part of the City's procurement process, the City will require any business that it hires to provide documentation that the required registration and certifications have been satisfied.

### **3.2.5 Documentation**

In conjunction with the MS4 General Permit required annual MS4 compliance evaluation / assessment and annual report development, the City Engineer will review the most recent list of certified applicators provided by the Virginia Department of Agriculture and Consumer Services (VDACS) (<http://www.vdacs.virginia.gov/pesticides/pdf/files/reports-applicators.pdf>) to ensure that any employees applying pesticides have current certifications. Copies of current certifications issued under the Virginia Pesticide Control Act should be kept as part of the MS4 Program Plan.

Documentation demonstrating contractor compliance with the Virginia Pesticide Control Act will be kept as part of any contracting documents and will not be kept as part of the MS4 Program Plan.

## **3.3 Emergency Response Training Summary**

### **3.3.1 MS4 Permit Requirement**

The MS4 General Permit requires that *"The appropriate emergency response employees shall have training in spill responses. A summary of the training or certification program provided to emergency response employees shall be included in the first annual report."*

### **3.3.2 Summary of Emergency Response Training**

The City of Winchester Fire & Rescue Department (FRD) is a combination department consisting of four volunteer fire departments with staffing supplemented by career City fire department staff. The Fire Departments operate under the Incident Command System (ICS), which is an organized approach to effectively control and manage operations at emergency incidents, required under Paragraph 1910.120(q)(3)(ii) of the federal

Occupational Safety and Health Standards. As part of implementing its ICS Program, FRD has established minimum training certification standards. The minimum certification level for firefighters and Emergency Medical Service (EMS) providers is certification in Hazardous Materials Awareness, with higher certification levels encouraged. Under OSHA, those certified under the Awareness level must have:

- An understanding of hazardous substances and the risks associated with such substances in an emergency
- An understanding of the potential outcomes associated with an emergency created when hazardous substances are present
- The ability to recognize the presence of hazardous substances in an emergency
- An understanding of the role of the first responder at the awareness level, including site security / control and use of the U.S. Department of Transportation's emergency response guidebook
- The ability to realize the need for additional resources and to provide good information to the communication center

### **3.3.3 Documentation**

The FRD's training program is defined and regulated under separate federal and state regulations. SOPs and training events are designed and implemented in order to comply with those regulations. Training documentation will be maintained by the appropriate volunteer fire company or the FRD.

## **4 Other Applicable Training / Certification**

The following training and certification programs are applicable to City staff; however, these programs are currently not identified in the MS4 General Permit

### **4.1 Virginia Stormwater Management Program Certifications**

The City currently operates a Virginia Stormwater Management Program (VSMP) under Chapter 870 of the Virginia Administrative Code VSMP Regulation. As such, City staff responsible for implementation of this program must maintain the appropriate certifications for plan review, inspection, and program administration. Training and certification is handled by DEQ.

Information regarding the DEQ training program is available at:

<http://www.deq.virginia.gov/connectwithdeq/trainingcertification.aspx>

## 4.2 Fertilizer Application

Virginia Administrative Code 2 VAC 5-405 (Regulations for the Application of Fertilizer to Nonagricultural Lands) requires training for local entities engaged in the commercial application of fertilizers to nonagricultural lands. Certified Fertilizer Applicators (CFAs) may apply fertilizer to nonagricultural land as part of their official duties. Trained Applicators under the control and instruction of CFAs may apply fertilizer without the CFA being physically present. Untrained employees may only apply fertilizer if they are under the direct supervision of a CFA. The City must maintain copies of all training for Trained Applicators.

Information regarding certifications and training is available at:  
<http://www.vdacs.virginia.gov/plant&pest/cfa.shtml>.



## 5 APPENDICES

## **Module 1: Recognition and Reporting of Illicit Discharges**

# Winchester Employee Stormwater Training



## Module 1 Recognition and Reporting of Illicit Discharges

Prepared By:  
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### Goals of this module:

- What is an illicit discharge?
- Why do we care about illicit discharges?
- How to identify an illicit discharge
- The effects of illicit discharges
- How to respond to illicit discharges
- How to report an illicit discharge

## Oh, No!! It's a Quiz

1. The City's storm sewer system is connected to the sanitary sewer.  
True or false?
2. It is acceptable to dump oil and antifreeze down the storm drain.  
True or false?
3. If an illicit discharge is suspected or identified, and is NOT an emergency, you should contact:
  - A. Stormwater Hotline
  - B. 911
  - C. Local Hardware Store
  - D. Local News Outlet
4. Which of the following scenarios are NOT an indicator of an illicit discharge?
  - A. Grey/discolored water, toilet paper/feces and foul odor
  - B. Oily sheen with petroleum/gasoline odor
  - C. Clear water occurring during a rain event
  - D. White pleasant smelling bubbles

A quiz to test existing knowledge.

Answers:

- 1.) False
- 2.) False
- 3.) A
- 4.) C

## Why Are We Here Today?



- Discharges from the City's storm sewer system are regulated by the Virginia Department of Environmental Quality (DEQ) under the federal Clean Water Act.
- It is the responsibility of all employees to ensure that the City complies with its stormwater permit.
- A key component of ensuring compliance is to prevent, detect, and eliminate illicit connections and discharges at City facilities and throughout the City.

We are here today:

- To gain an understanding of the procedures to follow to minimize stormwater pollution.
- DEQ regulates the City's discharges from the storm sewer systems and we are responsible to ensure that the City complies.
  - Therefore we must gain an understanding of the procedures to

## What is an Illicit Discharge?

Any discharge to a municipal separate storm sewer (MS4) that is not composed entirely of stormwater, with some exceptions as allowed by the City Ordinance.



All discharges to a municipal separate storm sewer (MS4) are released back in to the environment . They do not get treated with sanitary sewer discharges.

Examples of what an illicit discharge may look like and what everyone should keep an eye out for during day-to-day activities.

## What is an Illicit Discharge?

### Examples:

Used oil, pet waste, paint, sewage, chemicals, trash, dewatering discharges, cleaning products and solvents, and vehicle/equipment wash water



### Exceptions:

Water line flushing, VPDES permitted discharges, irrigation/lawn watering, residential car washing, firefighting water, and air conditioning condensate

Here are examples of typical illicit discharges and the exceptions as per the City's ordinance.

Here is an example of white pleasant smelling bubbles.

## Why do we care about illicit discharges?

- The City is required by their MS4 Permit to “develop, implement, and enforce a program to detect and eliminate illicit discharges.”
- Reduced illicit discharges also minimize pollutant impacts on downstream water bodies.
- Eliminating illicit discharges is a critical component to restoring and protecting urban waters.



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### Why do we care about illicit discharges?

- Comply with the MS4 Permit
- Discharges can have many adverse effects on plants, fish, animals, and people, including:
  - Can create immediate health hazards from hazardous chemicals
  - Excess nutrients in discharges can cause algae blooms. Then, when the algae die, they sink to the bottom and decompose in a process that removes oxygen from the water. Fish and other aquatic organisms can't exist in water with low dissolved oxygen levels.
  - Household hazardous wastes like insecticides, pesticides, paint, solvents, used motor oil, and other auto fluids can poison aquatic life. People and land animals can become sick from eating affected aquatic life or ingesting polluted water.

Here is an example of discolored water from an illicit discharge



## Identifying Illicit Discharges?

Indications of potential illicit discharges include:

- Presence of flow during dry weather
- Unusual flow during wet or dry weather
  - Color
  - Odor
  - Turbidity
  - Sheen
  - Floatable liquids
  - Dead fish
  - Algal blooms



You will typically identify illicit discharges during dry weather. The identification may occur at or near the source, at a storm drain, or at the end of the storm drain line at the outfall.

Picture: Illicit discharge because of the sheen on the liquid. The unusual flow characteristic would be considered an illicit discharge in wet or dry weather.

## What Can You Do?

How can City staff help prevent illicit discharges?

- Ensure chemicals are properly managed.
- Protect storm drain inlets during activities that cause potential pollutants:
  - Concrete cutting
  - Soil disturbing activities
  - Material stockpile storage
  - Salt storage
- Identify activities that may result in illicit discharges.
- Report pollution or questionable discharges to the storm sewer system or local waterways.



City staff can help prevent illicit discharges by following all SOPs, prevention plans, and General Good Housekeeping Practices. These include ensuring all chemicals are properly used and stored, protecting storm drain inlets during work activities, and reporting and logging all illicit discharges to the storm sewer system or local waterways to the appropriate channels.

City staff should be knowledgeable of all activities that may cause illicit discharge including concrete cutting and soil disturbing activities.

City staff can report activities of private citizens, businesses, and other staff members that cause

## Common Illicit Discharges: Commercial Car Washes



Example of a common illicit discharge – commercial car wash including mobile washing at car dealerships and rental offices. Cleaning chemicals and solvents drain into the storm sewer systems. Commercial car wash water must either be collected and discharged to the sanitary sewer or be authorized under a VPDES permit.

Residential car washings are considered an exception by the City Ordinance. Best Management Practices should be used to minimize the discharges including:

- Using a commercial car wash.
- Washing cars on gravel, grass, or other permeable surfaces.
- Blocking off the storm drain during charity carwash events or using a insert to catch wash water.
- Pumping soapy water from car washes into a sanitary sewer drain.
- If pumping into a drain is not feasible, pumping car wash water onto grass or landscaping to provide filtration.
- Using hoses with nozzles that automatically turn off when left unattended.
- Using only biodegradable soaps.

[http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=factsheet\\_results&view=specific&bmp=96](http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=factsheet_results&view=specific&bmp=96)

## Common Illicit Discharges: Commercial/Industrial Facilities



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Common illicit discharges can come from commercial and industrial facilities, which can drain chemicals, paint, trash, dewatering wash water, and

## Common Illicit Discharges: Food Establishments



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Common illicit discharges can come from food establishments, which can drain trash, grease, and oil into the storm sewer systems.

## Common Illicit Discharges: Construction Activities



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Common illicit discharges can come from **property yards related to construction activities. Grass clippings, trash, pet waste, and excess nutrients from over fertilization can enter the storm sewer systems from such property yards.** Construction and maintenance to a yard may attribute to land disturbing activities, which can lead to an excessive amount of sediment entering the storm drain.

## Common Illicit Discharges: Concrete Cutting



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Common illicit discharges come from concrete cutting.

- Solids that are improperly disposed of can clog storm drain pipes and cause flooding.
- pH is extremely high

## Common Illicit Discharges: Concrete Washout



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After concrete is poured at a construction site, the chutes from pump trucks must be washed out to remove the remaining concrete before it hardens. Concrete washout water is often very alkaline with a pH near 12. If it were to migrate into waterbodies via storm drains or overland flow, it could raise the pH of these waters and harm aquatic life.

The suspended solids in the slurry will ultimately become sediment after evaporation of the slurry water. If not properly disposed of, these sediments can migrate to local and state waters due to stormwater runoff. Sediment in surface water reduces water clarity making the water body unsuitable for recreation or for desirable fish populations. The suspended sediment in the water column interferes with plant photosynthesis, animal respiration, and the ability of fish to feed properly.



## Common Illicit Discharges: Dumping



Coastal Waccamaw Stormwater Education Consortium

Illicit discharge can come from illegal dumping. Illegal dumping is the disposal of waste in an unpermitted area, such as a back area of a yard, along a stream bank, along some other off-road area, or directly down storm drains.

Illegal dumping can be reported via the City's Illegal Dumping/Stormwater Complaint Hotline at (540) 662-4131.

## Common Illicit Discharges: Swimming Pools



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Common illicit discharges can come from swimming pools. Swimming pool water contains a range of treatment products such as chlorine and acid. An average swimming pool holds 19,000 gallons of highly chlorinated water, which is toxic to wildlife and fish. In addition, the water contains dirt particles (sediments), wind-blown materials such as leaves and lawn cuttings, and sunscreen residues. (EPA information on chlorinated water discharges- <http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=103>). City Code allows for the discharge of swimming pool water if the chlorine level is less than 1.0 ppm. This is high. DEQ guidance sets the level at 0.10 ppm.

In the normal operation of swimming pools, these materials are collected by the filtration system and captured or contained in the filter. To work efficiently, swimming pool filters need to be cleaned by backwashing all the captured materials out of the filter. Backwash water should be discharged to the sanitary sewer, but that does not always happen.

## Effects of Illicit Discharges



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As mentioned previously, illicit discharge can have many adverse effects on downstream waterbodies as shown in the picture.

## Effects of Illicit Discharges



Public Broadcasting System (PBS)

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Fish and other aquatic organisms cannot survive in water with low dissolved oxygen levels, which is caused by excess nutrients in the water.

Household hazardous wastes like insecticides, pesticides, paint, solvents, used motor oil, and other auto fluids can also poison aquatic life.

## Reporting Illicit Discharges?

- If an illicit discharge and/or connection is found in the city drainage system (MS4) and/or is impacting Waters of the State, notify:
  - Stormwater Complaint Hotline (540-662-4131)
    - Spills and urgent responses (540-5421346)
    - All other references
  - Department of Public Utilities (DPU) (540-667-1815)
    - Any discharge into the storm sewer, regardless of size or material
  - DEQ Valley Regional Office PREP Coordinator (540-574-7800)
    - All spills and illicit discharges that discharge, or have the potential to reasonably discharge, to receiving waters regardless of size or material
  
- If an illicit discharge smells and/or appears to contain petroleum and/or an other unknown/hazardous chemical(s)
  - Call 911 and DPU or DEQ



All illicit discharges that reaches a storm drain and/or a waterway must be reported to the appropriate agencies within the specified timelines. The nature and quantity of the illicit discharge will dictate which Federal, State, and Local agencies must be contacted. The incident must be reported immediately or within 24 hours of being notified of the event. Illicit discharges that enter the City’s storm sewer system should be reported to the Department of Public Utilities (DPU). DPU is responsible for reporting these discharges to DEQ. If the discharge does not enter the City’s storm sewer system, the discharge should be reported to DEQ directly.

## Reporting Illicit Discharges?

- What information do I need for reporting?
  - If reported to you, record the informant's contact information.
  - Who discharged the material?
  - Is anyone cleaning it up?
  - What was/is being discharged?
  - How much appears to have been discharged?
  - Where is the discharge?
  - When did the material spill?
  - Were any photos taken? (if so, provide copies)

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In addition to reporting the illicit discharge, document as many details of illicit discharge and the subsequent response as possible. All information listed here and all personnel and agencies notified should be kept on record.

# Summary

- **What is an illicit discharge?**
  - Any discharge to a MS4 that is not composed entirely of stormwater (with some exceptions) is an illicit discharge. What are some examples?
- **Why do we care about illicit discharges?**
  - Reducing illicit discharges is a critical component to restoring and protecting urban waters and for MS4 compliance.
- **How to identify an illicit discharge?**
  - Identification can be an observation of the presence of flow during dry weather or unusual flow during wet or dry weather. What are some examples of unusual flow?
- **How to respond to illicit discharges?**
  - Notify DPU, DEQ, and/or 911 depending on the nature of the discharge.
- **How much information do I need to report an illicit discharge?**
  - As many details as possible. What are some examples?

What is an illicit discharge? Any discharge to a municipal separate storm sewer (MS4) that is not composed entirely of stormwater, with some exceptions as allowed by the City Ordinance. Examples: used oil, paint, sewage, chemicals, trash, dewatering, cleaning products and solvents, and vehicle/equipment wash water.

Why do we care about illicit discharges? The City is required by their MS4 Permit to develop, implement, and enforce a program to detect and eliminate illicit discharges, to minimize pollutant impact on downstream water bodies, and eliminating illicit discharges is a critical component to restoring and protecting urban waters.

How to identify an illicit discharge? Indications of potential illicit discharges include: Presence of flow during dry weather or unusual flow during wet or dry weather such as color, odor, turbidity, sheen, floatable liquids, dead fish, algae blooms.

How to respond to illicit discharges? Stormwater Complaint Hotline for spills and urgent responses (540-662-4131). Stormwater Complaint Hotline all other references (540-5421346). DPU for any discharge into the storm sewer, regardless of size or material (540-667-1815). DEQ Valley Regional Office PREP Coordinator (540-574-7800) for all spills and illicit discharges that discharge, or have the potential to reasonably discharge, to receiving waters regardless of size or material. 911 for emergencies.

How much information do I need to report an illicit discharge? Examples: Who discharged the material? Is anyone cleaning it up? What was/is being discharged? How much appears to have been discharged? Where is the discharge? When did the material spill? Photos?

## Oh, Yes!! It's another Quiz!

1. The City's storm sewer system is connected to the sanitary sewer.  
True or false?
2. It is acceptable to dump oil and antifreeze down the storm drain.  
True or false?
3. If an illicit discharge is suspected or identified, and is NOT an emergency, you should contact:
  - A. Stormwater Hotline
  - B. 911
  - C. Local Hardware Store
  - D. Local News Outlet
4. Which of the following scenarios are NOT an indicator of an illicit discharge?
  - A. Grey/discolored water, toilet paper/feces and foul odor
  - B. Oily sheen with petroleum/gasoline odor
  - C. Clear water occurring during a rain event
  - D. White pleasant smelling bubbles

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A quiz to test see what everyone has learned.

Answers:

- 1.) False
- 2.) False
- 3.) A
- 4.) C



## Last Question

Can anyone think of  
an illicit discharge you have noticed inside  
or outside the City?

## For More Information

- Contact the Division of Engineering
  - 540-667-1815
- Visit the City's Stormwater Webpage
  - <http://www.winchesterva.gov/engineering/stormwater>
- Visit EPA's Pollution Prevention/Good Housekeeping for Municipal Operations
  - [http://cfpub.epa.gov/npdes/stormwater/menuofbmps/?action=min\\_measure&min\\_measure\\_id=6](http://cfpub.epa.gov/npdes/stormwater/menuofbmps/?action=min_measure&min_measure_id=6)
- Review the City Yards SWPPP.



**Module 2: Pollution Prevention Practices for Road, Street, and  
Parking Lot Maintenance**



# Winchester Employee Stormwater Training



## Module 2

# Pollution Prevention Practices for Road, Street and Parking Lot Maintenance

Prepared By:  
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This module will train City staff on:

- How to maintain the storm sewer's integrity
- How to minimize stormwater pollution when:
  - Working with concrete
  - Excavating
  - Dewatering
  - Paving and pavement repair
  - Storm drain system cleaning
  - Street sweeping
  - Leaf collection
  - Snow removal
- This module also reviews vehicle maintenance, leaks, and spills.

## Oh, No!! It's a Quiz

1. Vehicles of all sizes must be washed at the City Yards wash bay.

True or false?

2. When dewatering the vacuum truck, it should be pumped from work areas straight into the storm drain.

True or false?

3. When cleaning storm drain systems, one should minimize discharge to the system.

True or false?

4. Hosing down spills is the appropriate method for clean up.

True or false?

A quiz to test existing knowledge.

Answers:

- 1.) True
- 2.) False
- 3.) True
- 4.)

## Why Are We Here Today?



- Discharges from the City's storm sewer system are regulated by the Virginia Department of Environmental Quality (DEQ) under the federal Clean Water Act.
- It is the responsibility of all employees to ensure that the City complies with its stormwater permit.
- A key component of ensuring compliance is implementing good housekeeping practices while performing street, parking, and drainage maintenance.

We are here today:

- To gain an understanding of the procedures to follow to minimize stormwater pollution.
- DEQ regulates the City's discharges from the storm sewer systems and employees are responsible to ensure that the City complies.
  - Therefore it is essential to understand how to prevent stormwater pollution during the City's street, parking, and drainage operations by following all SOPs and good housekeeping practices.

## Vehicle and Equipment Maintenance

- All vehicles/equipment must be washed in the City Yards wash bay.
- Remain present while fueling your vehicle, and DO NOT top off the fuel tank.
- Store materials and containers in a manner that minimizes exposure to precipitation.
- Conduct spill cleanup immediately using spill kits. Notify your supervisor of any spills greater than five (5) gallons or any spill that reaches a storm drain. If a supervisor is unavailable, call the stormwater hotline (540-662-4131).



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Following the SOPs and good housekeeping practices will allow the City to minimize stormwater pollution from the City's fleet and activities. Some of these practices include performing all maintenance within the shop bays at City Yards, using drip pans or absorbent materials for leaking vehicles and spills, fueling properly, and promptly and properly disposing of trash, debris, and fluids.



## Vehicle Leaks and Spills

- Regularly inspect for leaks or stains around vehicles and equipment.
  - Use a drip pan or absorbent material to collect dripping fluids.
- Locate the source of leakage and stop further spillage by fixing the leak or draining the fluid.
- Clean up spills immediately to minimize safety hazards and deter it from spreading.



To prevent contaminated stormwater runoff while working on vehicles, regularly inspect for leaks and stains. Use a drip pan and/or absorbent material as seen in the picture on the left.

Ask: what is wrong in the picture on the right? Large stains near/under equipment. It is important to locate the source of leakage and stop further spillage by fixing the leak.

## Working with Concrete

- Prevent the cutting slurry from entering the storm drainage system by doing one of the following:
  - Collect slurry and dispose of waste and water  
OR
  - Allow slurry to dry and sweep up dried waste
- Require concrete trucks to wash out in a designated location where wash water will not drain to a storm drain, drainage ditch, or creek.



MN DOT

As mentioned in Module 1, concrete cutting and concrete washouts can be a common source for illicit discharges and contaminated stormwater, with the resulting elevated pH harmful to fish and other aquatic wildlife. To minimize the contaminated stormwater runoff, use practices that will prevent concrete slurry from entering the storm drain. The slurry can be allowed to dry and be swept up or the slurry can be collected immediately. In both cases the waste needs to be disposed of properly. For washouts,

## Excavation

- Do not place excavated materials where they can enter the storm system.
- Cover exposed materials with a tarp or plastic at all times, especially when rain is expected.
- Utilize erosion and sediment controls.
- Stabilize excavations as soon as possible.



## Dewatering

- Do not pump contaminated water from work areas straight to the storm drainage system.
- Stormwater from work areas must be allowed to settle or pass through filters prior to discharge.
- Be aware of other potential pollution, such as oils and petroleum products from unknown underground storage tanks.



During dewatering activities, contaminated water from work areas should not be pumped straight to the storm drainage system. To prevent sediments and nutrients attached to those sediments from entering the storm sewer drains, dewatering from work areas must be allowed to settle or pass through filters prior to discharge. It is also important to be aware of other pollution such as oils and petroleum products from unknown underground storage tanks or other sources during dewatering activities.

## Paving and Pavement Repair

- When milling, do not allow grindings to accumulate where they can wash into the storm sewer. Clean up ASAP.
- Mix only the amount of patching material necessary to complete the repair.
- Locate stockpiles of asphalt patching material on a concrete or other paved surface. Cover stockpiles to prevent contact with rain.



Following the SOPs and good housekeeping practices while paving will greatly minimize contaminated stormwater runoff. When milling, the grindings should not be accumulated in a location that will allow them to wash into the storm sewer and they should be cleaned up immediately. While making repairs, make sure that only the amount of material needed is used. If there are any stockpiles of asphalt patching material, make sure they are located and covered.

## Paving and Pavement Repair (continued)

- Use less harmful products rather than diesel for asphalt patching and cleanup activities.
- Clean trucks, equipment, and tools in designated equipment wash facilities where wash water will not drain to a storm drain, ditch, or creek.
- If no wash facility is available, clean equipment over a layer of absorbent material spread on a paved surface and/or heavy plastic sheeting.
- Promptly sweep up absorbent material, and dispose of in accordance with established procedures.



Other ways to prevent contaminated stormwater runoff during paving and pavement repairs are using less harmful products (for example plant-based binder)

## Maintain the Storm System's Integrity

- When doing road and sidewalk work, make sure that a positive grade to the inlet is maintained.
- Do not pave over inlets or manholes.
- Do not reduce the capacity of the inlet.



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To maintain the storm system's integrity during road and sidewalk repairs, make sure a positive grade to the inlet is maintained. Manholes and inlets should be not paved over or obstructed so that the capacity of the inlet is reduced.

## Storm Drain System Cleaning

- Remove larger debris and trash (e.g., fallen trees, large branches, etc.) by hand.
- Inspect inlet for damage or maintenance needs.
- When cleaning storm drains by flushing, place the hose into the storm drain system at the catch basin and discharge the hose upstream.
- Use sandbags in the storm drain system, as needed, to divert and minimize wash water discharging into the system.



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To maintain the storm system's integrity, the storm drains and inlets should be inspected for damage and maintenance needs regularly. If cleaning is required, remove larger debris and trash (e.g., fallen trees, large branches, etc.) by hand. If flushing the storm drains, place the hose into the storm drain system at the catch basin and discharge the hose upstream so displaced debris can be collected. The use of sandbags in the storm drain system can be utilized to divert and minimize wash water from discharging into the system.



## Street Sweeping

- Keep the street sweepers maintained and in operation.
- Sweep as close to the curb as possible.
- Maintain an effective speed.
  - Effectiveness increases as speed decreases
- Keep accurate logs of the amount of material collected.



During street sweeping, following the SOPs and good housekeeping practices will help minimize contaminated stormwater runoff. Some of the practices include

## Spills and Leaks

- Inspect vehicles/equipment before leaving City property.
- Conduct spill cleanup using spill kits.
- Do not hose down spills.
  - Use the dry clean up method.
- If the spill is greater than 5 gallons, notify your supervisor.
- Immediately call 911 if a spill presents a threat to health or safety, or is otherwise considered an emergency.



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To prevent leaks and spills while performing street, parking, and drainage operations; inspect all vehicles/equipment before leaving City property. In the event of a spill, use spill kits and dry clean up methods. If the spill is greater than 5 gallons, notify a DPU supervisor. If supervisor is not present call the stormwater hotline for spills and urgent responses (540-662-4131)

Immediately call 911 if a spill presents a threat to health or safety, or is otherwise considered an emergency.

## Waste Disposal Methods

- Collect all used anti-freeze, motor oil, transmission fluid, and hydraulic fluid.
  - Store them in separate containers by type.
  - Make sure storage containers are properly labeled.
- Keep the lids closed on dumpsters and trash cans and, when applicable, drain plugs in place.
- Never dispose of used fluids, filters, or batteries in the trash.
- Contaminated absorbent materials, rags, and other such items should be stored in approved containers in the hazardous materials storage shed for pickup by contractor.



All waste disposal containers must be properly labeled, and all waste materials must be separated into containers by type.

## Leaf Collection

- Be sure to remove leaves from gutters, ditches, and from around inlets.
- The City collects 5,000 cubic yards of leaves, annually.
- Take collected leaves to be composted at City Yards.
- Trash and debris cannot be composted.



As learned in Module 1, leaf and grass clippings are a common source of illicit discharge since nutrients are released after the material is broken down by microbes. When collecting leaves, make sure all the leaves are removed from gutters, ditches, and from around inlets. Take collected leaves to be composted, but note that trash and debris cannot be composted.

## Snow Removal

- Keep ice and snow chemicals covered, until needed.
- Calibrate the spreaders so only the necessary amount will be applied.
- Do not use deicers containing urea.
- Do not use other materials that contain nutrients (i.e., fertilizers) as deicers.



During snow removal, following the SOPs and good housekeeping practices will help minimize contaminated stormwater runoff. Some of the practices include

## Refuse Collection

- Never pick up hazardous materials.
- Clean up spills immediately using appropriate methods.
- Contact your supervisor immediately if a spill or release such as a broken hydraulic line occurs while collecting trash.
- 'Squeezings' and other liquids that have accumulated in the garbage trucks should be emptied at the landfill.



# Stormwater Best Management Practices (BMPs)

- Examples: Bioretention areas, rain gardens, vegetated swales
- Do not cut off the water supply while repairing or conducting maintenance.
- For Bioretention areas and rain gardens do not mow as part of regular mowing.
- Remove any weeds that do appear in BMPs by hand pulling.



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Example: Rain gardens as shown in the bottom picture. A rain garden is a landscaped area specially designed to collect rainfall and storm-water runoff. The plants and soil in the rain garden clean pollutants from the water as it seeps into the ground and evaporates back into the atmosphere. For a rain garden to work it must be maintained properly.

As a City employee, one should not cut off the water supply while repaving or conducting maintenance, and rain gardens/bioretention areas should not be mown as part of maintenance. Remove any weeds from by hand pulling, only.

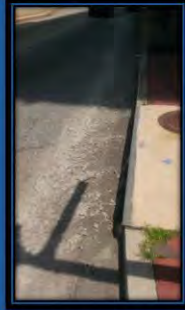
## Illicit Discharges

Report suspected illegal dumping of prohibited items or pollution problems to the Stormwater Complaint Hotline at 540-662-4131.



Paint balls in a catch basin

Concrete washout



Discharge from a commercial carwash (EPA)

As learned in Module 1,



## Summary

- How can stormwater pollution be minimized when:
  - **Working with concrete?** Collect slurry and dried waste promptly, dispose of the waste properly, and washout in designated areas only.
  - **Excavating?** Prevent excavated materials from entering the storm system by using a tarp or plastic cover and proper controls on storm drain inlets.
  - **Dewatering?** Do not pump directly into the storm drain system, and allow sediments to settle prior to discharge.
  - **Paving and repairing pavement?** Mix only the necessary amount of materials, accumulate grindings ASAP, and cover asphalt patching stockpiles.
  - **Cleaning the storm Drain System?** Remove larger debris by hand, inspect inlets regularly, and use sandbags to divert and minimize wash water discharge.

## Summary (Continued)

- How can stormwater pollution be minimized when:
  - **Street Sweeping?** Maintain street sweepers, sweep as close to curb as possible, maintain effective speed, and keep accurate logs.
  - **Collecting Leaves?** Remove leaves from gutters, ditches, and around inlets, and take all leaves to the City Yard for composting.
  - **Removing Snow?** Keep chemicals covered until needed, calibrate spreaders, sweep excessive sand, and conduct vehicle and equipment maintenance, when necessary.
  - **Performing road and sidewalk work?** Remember to not reduce the storm drain system by maintaining a positive gradient to the inlet, and don't pave over inlets and manholes.

## Oh Yes, It's Another Quiz!!

1. Vehicles of all sizes must be washed at the City Yards wash bay.

True or false?

2. When dewatering the vacuum truck, it should be pumped from work areas straight into the storm drain.

True or false?

3. When cleaning storm drain systems, one should minimize discharge to the system.

True or false?

4. Hosing down spills is the appropriate method for clean up.

True or false?

23

A quiz to see what was learned.

Answers:

- 1.) True
- 2.) False
- 3.) True
- 4.)

## For More Information

- Contact the Division of Engineering
  - 540-667-1815
- Visit the City's Stormwater Webpage
  - <http://www.winchesterva.gov/engineering/stormwater>
- Visit EPA's Pollution Prevention/Good Housekeeping for Municipal Operations
  - [http://cfpub.epa.gov/npdes/stormwater/menuofbmps/?action=min\\_measure&min\\_measure\\_id=6](http://cfpub.epa.gov/npdes/stormwater/menuofbmps/?action=min_measure&min_measure_id=6)
- Review the City Yards SWPPP. The SWPPP is available from the City Engineer.



## **Module 3: Pollution Prevention Practices for Fleet and Facility Operations**

# Winchester Employee Stormwater Training



## Module 3 Pollution Prevention Practices for Fleet and Facility Operations

Prepared By:  
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This module will train City staff on:

- How to prevent vehicle leaks and spills.
- How to properly fuel vehicles and equipment.
- How to properly wash vehicles and equipment.
- How to store and handle materials safely.
- How to properly clean the shop and pavement area.
- How to properly dispose of waste.
- How to clean up spills.

## Oh, No!! It's a Quiz

1. The City's storm sewer system is connected to the sanitary sewer.

True or false?

2. It is acceptable to dump wash water down the storm drain.

True or false?

3. Only the Department of Public Utilities is responsible for ensuring that the City complies with its Municipal Separate Storm Sewer System (MS4) permit.

True or false?

4. What stream receives stormwater runoff from City Yards?

2

A quiz to test existing knowledge.

Answers:

- 1.) False
- 2.) False
- 3.) False
- 4.)



## Why Are We Here Today?



- Discharges from the City's storm sewer system are regulated by the Virginia Department of Environmental Quality (DEQ) under the federal Clean Water Act.
- Discharges from City Yards are also covered under a separate industrial permit.
- It is the responsibility of all employees to ensure that the City complies with its MS4 permit.
- A key component of ensuring compliance is implementing good housekeeping practices at City facilities such as City Yards.

3

We are here today:

- To gain an understanding of the procedures to follow to minimize stormwater pollution from fleet and facility operations.
- DEQ regulates the City's discharges from the storm sewer systems and employees are responsible to ensure that the City complies.
  - Therefore it is essential to understand how to prevent stormwater pollution from our activities.

Why do we want to minimize stormwater pollution?

- Polluted stormwater runoff can have many adverse effects on plants, fish, animals, and people.
  - Bacteria and other pathogens can wash into swimming areas and create health hazards.
  - Debris washed into waterbodies can choke, suffocate, or disable aquatic life like ducks, fish, turtles, and birds.
  - Excess nutrients can cause algae blooms.
  - Hazardous wastes like insecticides, pesticides, paint, solvents, used motor oil, and other auto fluids can poison aquatic life.
  - Sediment can cloud the water and make it difficult or impossible for aquatic plants to grow.

## Stormwater Pollution and the City Yards

- A Stormwater Pollution Prevention Plan (SWPPP) has been developed for City Yards; it must be followed.
- Only stormwater should be discharged into the storm drains.
- Good housekeeping must be employed continuously to minimize stormwater pollution from:
  - Storage of salt, aggregate, road sand, street sweeping debris, and road paint
  - Vehicle maintenance
  - Fueling
  - Vehicle washing
  - Parking areas



4

A SWPPP has been prepared for the City Yards. The SWPPP describes SOPs, good housekeeping practices, and activities to reduce potential stormwater pollution runoff. Many activities come from the fleet and facility operations which include: vehicle and equipment washing, fueling and maintenance activities, shop and pavement cleaning, material stockpiling, and waste disposal.

## Vehicle and Equipment Maintenance

- All maintenance activities must be performed in a bay inside the fleet maintenance garages.
- Drip pans must be placed underneath leaking vehicles/equipment that are awaiting maintenance, in order to catch leaking fluids.
- Maintenance areas must be kept clean by promptly disposing of trash, debris, old parts, and absorbent materials used on spills.
- Fluids that have been collected in drip pans or other open containers must be disposed of in the proper location.



Following good housekeeping practices will allow the City to minimize stormwater pollution from the City's fleet and facility related activities. Some of these practices include: performing all maintenance within the maintenance bays at City Yards; using drip pans or absorbent materials for leaking vehicles and spills; and promptly and properly disposing of trash, debris, and fluids.

## Vehicle Leaks and Spills

- Regularly inspect for leaks or stains around vehicles and equipment.
  - Use a drip pan or absorbent material to collect dripping fluids.
  - Clean up the absorbent materials immediately, especially prior to a rain event.
- Locate the source of leakage and stop further spillage by fixing the leak or draining the fluid.
- Clean up spills immediately to minimize safety hazards and deter it from spreading.
- Store batteries in a leak proof container and under cover.



6

More good housekeeping practices to prevent stormwater pollution include: regularly inspecting for leaks and stains, cleaning up spills immediately, and storing equipment such as batteries in a leak proof container. It is also important to watch the weather predictions to make sure the absorbents and other materials are cleaned up or covered before rain events.

Ask the audience what they see in the picture and if they are abiding by the good housekeeping practices.

## Washing Vehicles and Equipment

- All vehicles/equipment must be washed in the wash bay at City Yards.
- Store materials and containers in a manner that minimizes exposure to precipitation.
- Conduct spill cleanup immediately using spill kits.
  - Notify your supervisor of any spills greater than five (5) gallons or any spill that reaches a storm drain.



7

As previously mentioned, washing City vehicles and equipment is one activity outlined in the SOP. To wash the vehicles and equipment in a way which will minimize stormwater runoff, one should only wash in the City Yards Wash Bay, cover and store cleaning products and solvents in a manner that minimize exposure to precipitation, and conduct spill clean-up immediately.

# Fueling

- Vehicle/equipment fueling is done under cover at City Yards.
- DO NOT TOP OFF THE FUEL TANK.
- View the area around the fuel pump and vehicle to ensure that there are no leaks or spills.
- Stay with the vehicle at all times during fueling.
- Someone should be present during loading of bulk fuel tanks.



North Central Texas Council of Governments

In order to comply with the SOPs for fueling vehicles and equipment, a City employee should fuel under cover at City Yards, check for leaks and spills around the pump and vehicle, and stay with the vehicle at all times during fueling. In addition, someone should be present during loading of bulk fuel tanks, and no one should ever top off the fuel tank. By adhering to these practices, contaminated stormwater runoff from fueling operations can be minimized.

## Store and Handle Materials Safely

- Store materials and containers in a manner that minimizes exposure to precipitation.
- Keep material or waste containers in good condition, and replace any containers that leak.
- Store materials away from high traffic areas to prevent accidents that might cause spills or cause spilled material to be spread by traffic.



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To minimize stormwater runoff, materials and containers should be stored to limit their exposure to precipitation and stored away from high traffic areas. This will help prevent accidents that might cause spills or cause a spill to spread more rapidly. It is essential to keep material or waste containers in good condition and replace any that leak and fix any that are improperly covered.

Does the picture here show good or bad housekeeping practices?

Picture shows stored materials being covered to prevent sediment or material runoff on stormwater.

## Store and Handle Materials Safely (continued)

- Make sure containers are closed or sealed, except when they are being filled or emptied.
- Regularly inspect containers for corrosion or signs of leaks.
- Utilize spill containment when possible.
- Storage areas outside should be bordered by a curb or berm to contain spills.



10

Photos show neatly stored drums.

Which photo shows proper storage of drums containing fluids? The lower photo because of the secondary containment pallets. The building structure in the top photo may have secondary containment; however, it is not evident in the photo.



## Shop and Pavement Cleaning

- Use dry methods (sweeping, wiping, and absorbents) to clean work areas as much as possible.
- Dispose of wash water properly.
  - Do not empty outside where it can enter the storm drains.
- Do not hose down work areas.
- Inspect and clean-up outside work areas, especially before rain is forecasted.
- Clean fueling areas using approved methods to remove accumulated fuel and grease.



North Central Texas Council of Governments



Always use dry cleaning methods; cleaning should never involve washing sediment, oils, etc. down a storm drain. Areas should be inspected and cleaned prior to storm events.

## Waste Disposal Methods

- Collect all used anti-freeze and petroleum products, and dispose of in the proper containers.
- Make sure storage containers are properly labeled.
- Keep the lids closed on dumpsters, trash cans and, when applicable, drain plugs in place.
- Never dispose of used fluids, filters, or batteries in the trash.
- Contaminated absorbent materials, rags, and other related items should be stored in approved container in the hazardous materials storage shed for pickup by contractor.



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All waste disposal containers must be properly labeled and all waste materials must be separated into containers by type.

Used Oil Container in top picture

Trash cans exposed to precipitation without covers in lower picture

## Clean Up Spills Properly

- Conduct spill cleanup immediately using spill kits.
- **DO NOT HOSE DOWN SPILLS.**
  - Use only “dry” clean up methods.
- Notify your supervisor of any spills greater than five (5) gallons. If not available contact the stormwater hotline numbers at 540-662-4131.
- Call 911 immediately if the spill represents a threat to health or safety, or is otherwise considered an emergency.



13

In the event of a spill, the cleanup should occur immediately using the spill kits. Do not hose down spills as it could cause runoff and wash the spilled substance into the storm sewer systems. Use absorbent materials and dispose of them properly. Call 911 if the spill poses a threat to the public health and safety or could cause major environmental concerns. Spill and illicit discharge response are covered more thoroughly in Module 1 (Illicit Discharge Recognition and Reporting).

## What Can Be Done to Prevent Stormwater Pollution?



14

Ask the audience what can be done in this instance to protect stormwater pollution.

- Wash all equipment in the wash bays at City Yards.
- Do not wash equipment on impervious surface adjacent to a storm drain where the wash water can enter the storm drains.
- Do not use hazardous chemicals adjacent to storm drains.
- Be aware of the activity you are conducting and the potential affect to stormwater.
- Picture: Road paint disposal

## What Can Be Done To Prevent Stormwater Pollution?



15

Ask the audience what can be done in this instance to protect stormwater pollution.

- Make sure all containers are properly sealed
- Make sure all storage containers are in good condition (not rusted through and no leaks)
- Store all materials so that they will limit their exposure to precipitation
- Secondary containment

## Refuse Collection

- Never pick up hazardous materials.
- Clean up spills immediately using appropriate methods.
- Contact your supervisor immediately if a spill or release such as a broken hydraulic line occurs while collecting trash.
- ‘Squeezings’ and other liquids that have accumulated in the garbage trucks should be emptied at the landfill.



One of these things is not  
like the others...  
Which one is it and why?



Answer: The salt storage shed. The pollutants are not exposed to precipitation.

## Summary

- The City's SWPPP for fleet and facility operations at City Yards must be followed.
- Follow good housekeeping practices for maintaining, washing, and fueling vehicles/equipment. What are some examples?
- Follow good housekeeping practices for storing and handling materials. What are some examples?
- Follow good housekeeping practices for waste disposal. What are some examples?
- Follow the SOP for cleaning up spills. What are some of these good housekeeping practices?

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- A Stormwater Pollution Prevention Plan (SWPPP) has been developed for City Yards. They must be followed. Only stormwater should be discharged into the storm drains.
- Follow good housekeeping practices for maintaining, washing, and fueling vehicles/equipment. Examples: Washing must occur inside in bay at City Yards, use absorbent materials and drip pans during maintenance, regularly inspect for leaks and stains, fueling must be done under cover at City Yards, stay with vehicle at all time during fueling, and do no top off at the fuel tank.
- Follow good housekeeping practices for storing and handling materials. Examples: Store materials and containers in a manner that minimizes exposure to precipitation, keep containers in good conditions and replace any that leak, store materials away from high traffic areas, and make sure containers are closed.
- Follow good housekeeping practices for waste disposal. Examples: Make sure containers are labeled, collect waste (anti-freeze, motor oil, etc.) separately; keep lids on dumpsters and trash cans closed; and never dispose fluids, filters, or batteries in the trash.
- What are some of the good housekeeping practices? Conduct spill clean up immediately, use spill kit located against the building between the fuel tanks, use dry clean up method only, and notify a supervisor of any spills greater than 5 gallons.



## Oh, Yes!! It's Another Quiz

1. The City's storm sewer system is connected to the sanitary sewer.  
True or false?
2. It is acceptable to dump wash water down the storm drain.  
True or false?
3. Only the Department of Public Utilities is responsible for ensuring that the City complies with its Municipal Separate Storm Sewer System (MS4) permit.  
True or false?
4. What stream receives stormwater runoff from City Yards?

19

A quiz to see what we have learned.

Answers:

- 1.) False
- 2.) False
- 3.) False
- 4.)

## For More Information

- Contact the Division of Engineering
  - 540-667-1815
- Visit the City's Stormwater Webpage
  - <http://www.winchesterva.gov/engineering/stormwater>
- Visit EPA's Pollution Prevention/Good Housekeeping for Municipal Operations
  - [http://cfpub.epa.gov/npdes/stormwater/menuofbmps/?action=min\\_measure&min\\_measure\\_id=6](http://cfpub.epa.gov/npdes/stormwater/menuofbmps/?action=min_measure&min_measure_id=6)
- Review the City Yards SWPPP. The SWPPP is available from the City Engineer.



**Module 4: Minimizing Stormwater Pollution from Parks and Grounds  
Maintenance**

# Winchester Employee Stormwater Training



## Module 4 Minimizing Stormwater Pollution from Parks and Grounds Maintenance

Prepared By:  
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This module will train City staff on good housekeeping practices for parks and ground maintenance including:

- Material storage
- Lawn and plant management
- Fertilization application
- Pesticide and herbicide application
- Debris management
- Building maintenance

## Oh, No!! It's a Quiz

1. Any City employee can apply fertilizer as part of their daily job duties.

True or false?

2. Erosion and sediment controls are only required on private development, and do not apply to government projects.

True or false?

3. If you run out of salt to apply on icy surfaces, a fertilizer containing nitrogen is an acceptable, yet less effective, alternative.

True or false?

4. The proper method for removing grass clippings is to blow them into the nearest curb inlet so that they are flushed to the sanitary sewage treatment plant for disposal.

True or false?

A quiz to test existing knowledge.

Answers:

- 1.) False (need a certified fertilizer applicator)
- 2.) False
- 3.) False
- 4.)

## Why Are We Here Today?



- Discharges from the City's storm sewer system are regulated by the Virginia Department of Environmental Quality (DEQ) under the federal Clean Water Act.
- It is the responsibility of all employees to ensure that the City complies with its stormwater permit.
- A key component of ensuring compliance is implementing good housekeeping practices while maintaining the City parks and grounds.

We are here today:

- To gain an understanding of the procedures to follow to minimize stormwater pollution.
- DEQ regulates the City's discharges from the storm sewer systems and employees are responsible to ensure that the City complies.
  - Therefore it is essential to understand how to prevent stormwater pollution during parks and grounds maintenance.

## General Good Housekeeping Practices

- All vehicles/equipment must be washed in the City Yards wash bay.
- Remain present while fueling your vehicle, and DO NOT top off the fuel tank.
- Ensure fuel and oil containers are secured during mobilization.
- Conduct spill cleanup immediately using spill kits. Notify your supervisor of any spills greater than five (5) gallons or any spill that reaches a storm drain.



Following the SOPs and good housekeeping practices will allow the City to minimize stormwater pollution from the City's fleet and activities. Some of these practices include: performing all maintenance within the maintenance bays at the Property Yard; using drip pans or absorbent materials for leaking vehicles and spills; fueling properly; minimizing the exposure to precipitation for all stored materials and containers; and properly disposing of trash, debris, and fluids.

Winchester has two stormwater hotline numbers. For spills and urgent responses, use 540-662-4131. For all other references, use 540-542-1346.



## Lawn and Plant Management

- Plant grass or put mulch on bare areas to prevent erosion.
- Use mulching blades when mowing to the maximum extent practicable in order to minimize collection and disposal of grass clippings and recycle nutrients to fertilize grass.
- Convert woody debris to wood chips to the maximum extent practicable, and recycle by applying to City parks or other City property and distributing to residents for landscaping use.
- Do not over water, and repair any broken sprinklers.



5

Many practices can be followed to reduce nutrient runoff, which will contaminate stormwater. Bare spots should be mulched or replanted to prevent erosion. Erosion allows for heavy loads of sediments to enter the storm system. Many nutrients, especially phosphorus, are attached to the sediments and are also carried into the storm drains. As learned in module one, grass clippings are a common source for illicit discharge. To minimize this, grass clippings should not be blown into the inlets, and the mulch setting on lawn mowers should be used instead. Along with the grass clippings, woody debris can be recycled and reused by converting it to woody debris. In addition, any broken sprinklers should be repaired, and irrigation systems should be checked as not to over water or cause erosion from a broken sprinkler. Rain gauges and sensors can be used to make sure sprinklers are not operating during rain events.

## Fertilizer Application

- NEVER apply fertilizer when the ground is frozen or plants are dormant.
  - Never use it as a deicer.
- Do not allow fertilizer to fall on impervious surfaces like driveways or walks, and avoid using fertilizer near storm drains, lakes, streams, or channels.
- Do not fertilize near storm drains or drainage swales before heavy rains.
- Choose a fertilizer with slow release nitrogen.

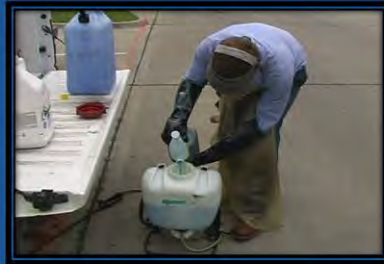


6

To minimize nutrient runoff from fertilizer applications: never apply fertilizer when the ground is frozen or plants are dormant, do not allow fertilizer to fall on impervious surfaces like driveways or walks, avoid using fertilizer near storm drains or lakes, and do not fertilize near storm drains or drainage swales before heavy rains. When appropriate, use a fertilizer with slow release nitrogen. To know the appropriate amount of fertilizer to use, soil tests should be conducted. The services of a Certified Nutrient Management Planner can be employed to know which fertilizer to use, the rate at which to apply, and when the fertilizer should be applied. It is also important to note that one must be a certified fertilizer applicator to apply the fertilizer.

## Pesticide and Herbicide Practices

- Follow safety and storage/disposal procedures for pesticides and herbicides.
- Follow label directions precisely when mixing or applying pesticides or herbicides.
- Mix pesticides and herbicides where potential spills will not runoff into the storm drainage system or waterway.
- When possible, use non-toxic herbicides such as citrus or water and vinegar as an alternative.



Following SOPs during pesticide and herbicide application will allow the City to minimize contaminated stormwater runoff. For the safety of the City's employees and for environmental concerns, all safety, storage, and disposal procedures and label directions for mixing and applying pesticides and herbicides must be followed. Do not mix pesticides and herbicides where potential spills will not runoff into the storm drainage system or waterway. When possible, use non-toxic herbicides such as citrus or water and vinegar as an alternative.

## Pesticide and Herbicide Practices (Continued)

- Apply pesticides and herbicides only where necessary.
- Do not overspray on to streets or sidewalks where it may be washed into the storm drain system.
- Do not apply chemicals near sensitive areas including streams, lakes or wetlands, unless they are approved for that type of application.
- Do not apply during windy conditions or when rain is predicted within 24 hours.



Other practices to reduce contaminated stormwater runoff include: only applying pesticides and herbicides where necessary; not over-spraying on to streets or sidewalks where it may be washed into the storm drain system; not applying chemicals near sensitive areas including streams, lakes or wetlands--unless they are approved of for that type of application; and not applying during windy conditions or when rain is predicted within 24 hours.

## Required Certifications

### Pesticide/Herbicide Application

- In order to apply pesticides (including herbicides) as a government employee, you must be certified by the Virginia Department of Agriculture and Consumer Services.
- For more information:  
<http://www.vdacs.virginia.gov/pesticides/certification.shtml>

### Fertilizer Application

- Localities that apply fertilizer to nonagricultural lands shall employ or retain the services of a certified fertilizer applicator (CFA).
- For more information:  
<http://www.vdacs.virginia.gov/plant&pest/cfa.shtml>

City employees must be certified to apply pesticides, herbicides, and fertilizers.

## Debris Management

- Never dispose of grass clippings, leaves, or other debris in the storm drain.
- Remove accumulated litter and debris from storm drain inlets.
- Dispose of trash in covered containers when possible.
  - Place uncovered trash containers where runoff will filter through grass.



Chesapeake Stormwater Network

## Material Storage



11

Describe pictures. What's good, what's bad?

First Picture: Good: the excavation materials are covered, Bad: the materials are not fully contained under the tarp, runoff is evident

Second Picture: These barrels are all exposed to potential precipitation events. If empty, the barrels should be properly discarded, not stored outside and exposed. If full/in use, these barrels should be covered and have secondary containment.

## Dog Park

- Encourage Dog Park usage.
- Enforce the requirement to pick up and dispose of wastes.
- Maintain signs and materials.
- Support of local dog groups, gaining their participation and support of initiatives.



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Encourage the use of the Dog Park—

- a. Away from waterbodies, grass filtration
- b. Educational opportunity-signs and agreements
- c. Easier to enforce clean up law
- d. Easier to supply clean up materials.
- e. Support of local dog groups



## Controlling Geese



- Use small native shrubs and wildflowers to landscape.
  - Waterfowl perceive clumps of vegetation as habitat for predators.
  - These plantings also improve water quality by trapping and taking up pollutants in stormwater runoff.
- Maintain the “Do Not Feed Geese” Signs.
- Clean Up After the Geese.

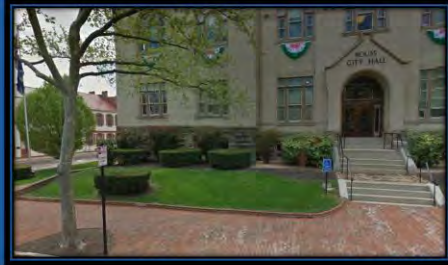
13

Geese droppings have been a major problem in our park system for a long time. obviously, feeding them only makes the problem worse because it encourages them to stay. Some of the problems include:

- Accumulation of droppings on lawns and sidewalks
- Erosion on lawns when geese overgraze the area
- Risk to young children and pets when geese become aggressive, especially during breeding season
- Water quality problems (such as noxious algal blooms in summertime and small fish kills) caused by excess nutrients in ponds from waterfowl droppings

## Building Maintenance

- When power washing buildings do not use chemicals, and filter the water before it enters the storm drains.
- Do not empty cleaning water outside. Dispose of wash water in approved location to sanitary sewer.



When performing building maintenance and power washing do not use chemicals, and filter water before it enters the storm drain to prevent solids from entering the storm sewer system. In addition,

## Land Disturbance

- Minimize ground disturbance.
- Install erosion and sediment control measures to minimize sediment entry into the storm drainage system.
- Stabilize the site as soon as possible.



During land disturbing activities, minimize ground disturbance by installing erosion and sediment control measures. These measures such as inlet protection (top picture) and silt fences (bottom picture) will minimize sediment entry into the storm drainage system. In addition, the site should be stabilized as soon as possible.

## Specific Conditions for City Yards

- Stormwater discharges at City Yards are regulated under a separate industrial permit.
- A Stormwater Pollution Prevention Plan (SWPPP) has been developed for City Yards.
- The SWPPP must be followed.



## What Can Be Done to Prevent Stormwater Pollution?



17

Ask audience what can be done to prevent stormwater pollution?

- Inlet protection from runoff, dirt accumulation
- Do not fertilize while plants are dormant
- Clean up debris and trash

## What Can Be Done To Prevent Stormwater Pollution?



18

Ask audience what can be done to prevent stormwater pollution?

- Silt fences
- Inlet protection
- Maintain bare spots
- Clean up debris and trash
- Cover salt/sand pile

## Summary

- Minimizing stormwater pollution from parks and grounds maintenance can be achieved by following SOPs and good housekeeping practices. The following are specific suggestions on how stormwater pollution be minimized for some common activities:
  - **Lawn and plant management** – Do not over water, fix broken sprinklers, mulch or plant grass on bare spots, and mulch mow.
  - **Fertilization application** – Never apply to frozen ground, do not apply before rain events, choose slow release fertilizers, avoid impervious surfaces and waterbodies, and use a certified applicator.
  - **Pesticide and herbicide application** – Follow label directions, use non-toxic options, mix and spray where it will not run off in to the storm drain system or waterbodies, and use a certified applicator.
  - **Debris management** – Never dispose of clippings or leaves into the storm drain, remove accumulated liter from the inlets, and dispose of landscape or trash debris at the proper location.

## Oh, Yes!! It's Another Quiz

1. Any City employee can apply fertilizer as part of their daily job duties.

True or false?

2. Erosion and sediment controls are only required on private development, and do not apply to government projects.

True or false?

3. If you run out of salt to apply on icy surfaces, a fertilizer containing nitrogen is an acceptable, yet less effective, alternative.

True or false?

4. The proper method for removing grass clippings is to blow them into the nearest curb inlet so that they are flushed to the sanitary sewage treatment plant for disposal.

True or false?

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A quiz to see what was learned.

Answers:

- 1.) False (need a certified fertilizer applicator)
- 2.) False
- 3.) False
- 4.)



## For More Information

- Contact the Division of Engineering
  - 540-667-1815
- Visit the City's Stormwater Webpage
  - <http://www.winchesterva.gov/engineering/stormwater>
- Visit EPA's Pollution Prevention/Good Housekeeping for Municipal Operations
  - [http://cfpub.epa.gov/npdes/stormwater/menuofbmps/?action=min\\_measure&min\\_measure\\_id=6](http://cfpub.epa.gov/npdes/stormwater/menuofbmps/?action=min_measure&min_measure_id=6)
- Review the City Yards SWPPP. The SWPPP is available from the City Engineer.

