

2021 VIRGINIA TECH

VPDES PERMIT NO.
VAR 040049

MS4 PROGRAM PLAN

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RELEVANT ACRONYMS

BMP	Best Management Practice
CWA	Clean Water Act
DEQ	Virginia Department of Environmental Quality
EPA	Environmental Protection Agency
IDDE	Illicit Discharge Detection and Elimination
LDA	Land Disturbance Activities
MEP	Maximum Extent Practicable
MS4	Municipal Separate Storm Sewer System
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
VPDES	Virginia Pollutant Discharge Elimination System
VT SID	Virginia Tech Site and Infrastructure Development

Executive Summary

Virginia Tech is committed to the development, implementation, and enforcement of a MS4 Program Plan to reduce the discharge of pollutants from the regulated MS4 service area to the MEP in accordance with VPDES Permit No. VAR 040049. The focus of the proposed program will be to protect water quality, improve waters into which the regulated small MS4 discharges, and meet the requirements of state and federal regulations.

Note that this is a planning document and that all enforceable provisions of the MS4 program are contained within the General VPDES Permit for Discharges of Stormwater from Municipal Separate Storm Sewer Systems. DEQ retains the right to review the Program Plan to determine if it includes the required elements as prescribed in the MS4 Permit.

The Virginia Tech MS4 Program Plan identifies the roles and responsibilities of University personnel in implementing permit requirements in an organizational chart, as mentioned in the index. This organizational chart identifies the responsible parties within each Best Management Practice.

The Program Plan addresses permit requirements for the following minimum control measures (MCMs):

- 1) Public Education and Outreach
- 2) Public Involvement and Participation
- 3) Illicit Discharge Detection and Elimination
- 4) Construction Site Stormwater Runoff Control
- 5) Post-Construction Stormwater Management
- 6) Pollution Prevention/Good Housekeeping

The program plan meets the permit for each MCM by including the following:

- 1) Each specific requirement as listed in Part I E for each MCM;
- 2) A description of the BMPs or strategies that the permittee anticipates will be implemented to demonstrate compliance with the permit conditions in Part I E;
- 3) All standard operating procedures or policies necessary to implement the BMPs (note that procedures and policies developed for the program are internal documents that are intended to give guidance to staff addressing permit requirements. The County reserves the right to SOPs and policies at any time as part of an iterative process if plan improvement);
- 4) The measurable goal by the goal which each BMP or strategy will be evaluated; and
- 5) The persons, positions, or departments responsible for implementing each BMP or strategy; and
- 6) A list of documents incorporated by the reference including the version and date of the document being incorporated.

In accordance with Part II of the permit, the Program Plan will address special conditions for approved total maximum daily loads (TMDLs) when a wasteload allocation (WLA) is assigned to Virginia Tech. Currently Upper Stroubles Creek Watershed has a TMDL Implementation Plan for sediment. More information on the TMDL:

<https://www.deq.virginia.gov/Portals/0/DEQ/Water/TMDL/ImplementationPlans/stroubip.pdf>

Any modifications to the Program Plan will be documented as part of the annual report submittals in conformance with Part 1.D.2e of the permit.

Contact

Questions and concerns related to any of the following MCMs should be directed toward Katelyn Muldoon, Virginia Tech's Water Resource Specialist. She can be reached at 540-231-3716 or via email at stormwater@vt.edu.

MCM 1: Public Education and Outreach

This minimum control measure is intended to implement a diverse public education program, targeting individuals and groups that will have impacts on stormwater. The goal of the educational material is to increase public audience knowledge about the steps that can be taken to reduce stormwater pollution and the hazards associated with illegal discharges and improper disposal of waste.

Public Education and Outreach Plan (PEOP)

Virginia Tech operates a Stormwater Management Program in compliance with the Virginia General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4 General Permit). Site and Infrastructure Development seeks to educate and inform Virginia Tech faculty, staff, students, and campus visitors about stormwater management and the health of local waterways, as well as to comply with Section II B 1 of 9VAC25-890-40. Site and Infrastructure Development implements a Public Education and Outreach Program (PEOP) on stormwater impacts. The PEOP aims to fulfill the goals set forth by MCM 1.

Supporting Documents: [2019 Public Education and Outreach Plan](#)

Water Quality Issue 1: Sediment

Stroubles Creek, which runs through the Virginia Tech campus, is considered impaired by the DEQ and must satisfy TMDL requirements for sediment. Sediment enters Stroubles Creek through exposed soil on construction sites, along with erosion from pedestrians and maintenance vehicle traffic. Upstream urbanization, stream channelization, and livestock access have resulted in significant sediment loading to Stroubles Creek, causing benthic macroinvertebrate community impairment. VT Site & Infrastructure Development (SID) works in cooperation with the other members of the Stroubles Creek Improvement Partnership (SCIP) in order to continue reducing sediment loading to Stroubles Creek. More information can be found at <https://vtechworks.lib.vt.edu/handle/10919/81783>.

Strategies for Public Education and Outreach

Category	Strategy	Anticipated Timeline and Measurable Goal for Evaluation
Traditional written materials	Informational Sheets	Planting native species of trees expands the already present ecosystem, and helps to hold the soil in place and reduce erosion. Measurable goal will be the number of sheets distributed.
Speaking engagements	General In-Class Presentations	Speakers from Site & Infrastructure Development talk about our MS4 program and the effect it has on all three issues: sediment, animal waste, and trash. Measurable goal will be the estimated number of students enrolled in a given class section.
Media materials	VT Site & Infrastructure Development Facebook Page	The SID Facebook shares a minimum of four informational articles pertaining to erosion and runoff, as well as dates and times of upcoming community events. Measurable goal will be the reported viewing statistics.

Water Quality Issue 2: Animal Waste

Waste from waterfowl at the Duck Pond, pets, and cows in the agricultural pastures contribute to the E. coli impairment in Stroubles Creek. Animal waste is a large, known source of greenhouse gases, especially from the methane and nitrous oxide it produces. Weather events, such as storms, are often responsible for loading the waterways with pollutants from runoff. Within this runoff, we can find high levels of fecal coliform. Animal waste is the main contributor of fecal coliform. Relevant community involvement efforts are listed below:

Strategies for Public Education and Outreach

Category	Strategy	Anticipated Timeline and Measurable Goal for Evaluation
Traditional written materials	VT Dining Table Cards	Spreading awareness for why it is important for people to pick up after their pets can encourage the habit of picking up after pets. Measurable goal will be the number of tables these cards are presented on.
Alternative materials	Pet Waste Stations and Replacement Bags	These stations serve as a place to get a bag to properly dispose of pet waste. The year round signage also serves as a reminder to pick up after pets. Measurable goal will be the estimated number of these bags distributed annually.
Speaking engagements	General In-Class Presentations	Speakers from Site & Infrastructure Development talk about our MS4 program and the effect it has on all three issues: sediment, animal waste, and trash. Measurable goal will be the estimated number of students enrolled in a given class section.
Alternative materials	Steppin' Out	Steppin' Out encompasses many different aspects of environmental conscientiousness. One main message we advertise is animal waste cleanup. We promote this further by giving out biodegradable pet waste bags. Measurable goal is the number of bags and dog bag holders distributed.

Water Quality Issue 3: Trash

Trash is capable of travelling throughout the world's rivers and oceans before accumulating on beaches or in gyres, like the Great Pacific Garbage Patch. The trash harms habitats, transports chemical pollutants, threatens aquatic life, and interferes with human water uses. It was noted in the VT 2016 PEOP that trash, including Styrofoam, plastic bags, receipts, and cigarette butts are the most common pollutants from the student population entering into Stroubles Creek. The EPA regards plastic trash as the most harmful to the environment. It is often consumed by birds and fish, bioaccumulating toxic chemicals in their tissues, and filling their stomachs, leading them to starvation. Relevant community involvement efforts are listed on the following page:

Strategies for Public Education and Outreach

Category	Strategy	Anticipated Timeline and Measurable Goal for Evaluation
Traditional written materials	Educational Handouts	Details and importance of events, like ReNew the New, to promote trash removal from the local waterways are distributed to on campus residents and around campus classrooms. Measurable goal in the number of handouts printed and distributed.
Alternative materials	Educational Magnets	These magnets highlight the importance of water quality and harmful pollutants like trash and its effect on aquatic life. Measurable goal will be the number of magnets distributed.
Speaking engagements	General In-Class Presentations	Speakers from Site & Infrastructure Development talk about our MS4 program and the effect it has on all three issues: sediment, animal waste, and trash. Measurable goal will be the estimated number of students enrolled in a given class section.
Media materials	VT Site & Infrastructure Development Facebook Page	The SID Facebook shares a minimum of four informational articles pertaining to trash and littering, as well as dates and times of upcoming community events. Measurable goal will be the reported viewing statistics.

Supporting Documents: [SOP Storm drain marking](#)

MCM 2: Public Involvement and Participation

Maintain a Virginia Tech [Stormwater Management website](#)

- Where the public can report potential illicit discharges, improper disposal, or spills to the MS4, complaints regarding land disturbing activities, or other potential stormwater pollution concerns
- The public can provide input on the permittee's MS4 program plan

Website statistics and documentation of public input received on the MS4 program and associated MS4 program plan, and the permittee's response, will be provided in the Annual Report available under the Stormwater Resources section of the Stormwater Management website by emailing stormwater@vt.edu.

Annual Local Outreach Activities

The permittee shall implement no less than four activities per year from two or more of the categories listed in THE MS4 Permit Table 2 provided in Part I.E.2.d to provide an opportunity for public involvement to improve water quality and support local restoration and clean-up projects.

Category	Public Involvement Opportunities	Anticipated Timeline and Measurable Goal for Evaluation
Restoration	Tree Planting	A variety of Virginia Tech organizations and classes will participate in planting trees along Stroubles Creek, creating riparian buffers and healthier ecosystems. Throughout the year during events, like The Big Plant. Measurable goal will be the number of planted trees recorded.
Restoration	Stream and Duck Pond Clean-ups	Virginia Tech Site & Infrastructure Development participates in stream clean-ups. A variety of Virginia Tech organizations and classes will volunteer to pick up trash from Stroubles Creek and its surrounding bank. Measurable goals will be the number of people who participate and the number of trash bags collected.
Pollution prevention	The Big Event	Virginia Tech students will be assigned to volunteer with Virginia Tech Site & Infrastructure Development during this annual event to put storm drain markers on unmarked storm drains throughout campus. Measurable goals will be the number of students and number of markers put out.
Restoration	Stadium Woods Clean-up	A group of local volunteers will collect trash by walking through Stadium Woods, located near Virginia Tech's football stadium during this annual event. Measurable goal will be the number of volunteers.
Restoration	ReNew the New: Fall into the New	Virginia Tech students volunteer alongside Southwest Virginia residents to clean-up the New River. This is done by walking and riding canoes to pick up trash and old tires. Measurable goal will be the number of student volunteers.

Educational events	New River Watershed Roundtable	A quarterly event to share and learn about local opportunities and updates. Measurable goal will be the number of persons from Virginia Tech attending quarterly.
Monitoring	VASOS stream monitoring	A report is filed every fall and spring to number and identify the benthic macroinvertebrates in Stroubles past the Duck Pond.

Supporting Documents: [SOP Stream Clean-Up](#)

MCM 3: Illicit Discharge Detection and Elimination

Minimum control measure 3 is intended to detect and eliminate illicit discharges to the MS4 storm system.

The Virginia Tech MS4 Program Plan for MCM 3 will be developed to fulfill the following criteria:

- (1) Identify MS4 Outfalls and develop a storm sewer system map and associated table of information for each outfall that is to be updated each year by October 1 to include any new outfalls or approved TMDLs;
- (2) Effectively prohibit, through ordinance or other legal mechanism, non-stormwater discharges into the storm sewer system;
- (3) Develop, implement, and update, when appropriate, the IDDE and other written procedures to detect, identify, and address unauthorized non-stormwater discharges, including illegal dumping; and
- (4) Promote, publicize, and facilitate public reporting, inspections, and corrective measures of illicit discharges into or from any MS4.

Storm Sewer and Outfall Map and Database

Develop, maintain, and update a Storm Sewer and Outfall Map and Database to include the following information as required by the MS4 General Permit (9VAC25-890-40).

Link to Outfall Map:

<https://www.arcgis.com/home/webmap/viewer.html?webmap=d5896391f66f4ba7bf49e59469b66a30&extent=-80.4581,37.2127,-80.3947,37.2462>

Illicit Discharge Program

Establish a program to detect and eliminate illicit discharges into the Municipal Separate Storm Sewer System by developing and adopting regulations and an enforcement program to prevent illegal discharges into the MS4 storm drain system. This program is defined in the MS4 General Permit and should include the following components:

- 1) Written dry weather field screening methodologies to detect and eliminate illicit discharges to the MS4 that include field observations and field screening monitoring and that provide:
 - a) A prioritized schedule of field screening activities;
 - b) A determination of the minimum number of field screening activities the operator shall complete annually;
 - c) Methodologies to collect the general information such as time since the last rain, the quantity of the last rain, site descriptions, estimated discharge rate, and visual observations;
 - d) A time frame and priority listing upon which to conduct an investigation or investigations to identify and locate the source of any observed continuous or intermittent non-stormwater discharge;
 - e) Methodologies to determine the source of all illicit discharges shall be conducted;

- f) Mechanisms to eliminate identified sources of illicit discharges including a description of the policies and procedures for when and how to use legal authorities;
 - g) Methods for conducting a follow-up investigation in order to verify that the discharge has been eliminated; and
 - h) A mechanism to track all investigations and document (i) the date or dates that the illicit discharge was observed and reported; (ii) the results of the investigation; (iii) any follow-up to the investigation; (iv) resolution of the investigation; and (v) the date that the investigation was closed.
- 2) Public reporting and inspections of reported illicit discharges into or from MS4s.

In the event of an Illicit Discharge please report the incident using 1 of the 3 options below:

1. Notify Environmental Health and Safety via phone at 540-231-3600
2. Complete the online form anonymously at https://www.ehss.vt.edu/report_issue/ 3.
Contact SID by emailing stormwater@vt.edu.

Upon receiving notification via 1 or 2, EHS will then notify SID. Upon receiving notification via 3, SID will then notify EHS. EHS and SID will then coordinate the necessary investigation and delegation of responsibilities based upon the type and degree of the illicit discharge.

Supporting Documents: [The Virginia Tech IDDE](#)

Annual Reporting Requirements:

For the annual Outfall Reconnaissance Inventory, if the total number of MS4 outfalls is greater than 50, a schedule to screen a minimum of 50 outfalls annually such that no more than 50% are screened in the previous 12-month period. The 50% criteria is not applicable if all outfalls have been screened in the previous three years and there is a mechanism in place to track parts i-vi in the permit. The annual reports are to contain the total number of outfalls screened during the reporting period with any follow-up actions detailed in addition to a summary of each investigation conducted by the operator of any suspected illicit discharge.

MCM 4: Construction Site Stormwater Runoff Control

This minimum control measure is intended to reduce pollutants in stormwater runoff from land disturbing activities to the MS4.

MS4 Program Requirements for Construction Site Stormwater Runoff Control The following programs were previously established by Virginia Tech to help meet the requirements of the MCM are as follows:

1.
 1. 2019 Virginia Tech Annual Standards and Specifications for ESC and SWM
 2. Virginia Tech MS4 Program
 3. General Permit for Discharges of Stormwater from Construction Activities (VAR10)
 4. Memorandums of Understanding (MOU): project-by-project basis
 5. Memorandums of Agreement (MOA): project-by-project-basis

*This list will be updated on an as-needed basis. Projects outside of Virginia Tech's main campus may be subject to local ordinances.

2. Written inspection procedures to ensure the erosion and sediment controls are properly implemented and all associated documents utilized during inspections, including the inspection schedule.
3. Written procedures for requiring compliance through corrective action or enforcement action to the extent allowable under federal, state, or local law, regulation, ordinance, or other legal mechanisms.
 - Virginia Tech has regulatory enforcement capabilities and is responsible for monitoring all violations listed under section 3.4.
 - Corrective actions and enforcement actions can be found in the [Virginia Tech Annual Standards and Specifications](#).
4. The roles and responsibilities of each of the permittee's departments, divisions, or subdivisions in implementing the construction site stormwater runoff control requirements in Part I E 4.

3.4 Violation instances of non-compliance with VTAS&S on regulated projects may be noted for the following circumstances:

- No approved ESC and/or SWM Plan;
- Failure to install stormwater BMPs or erosion and sediment controls;
- Stormwater BMPs or erosion and sediment controls improperly installed or maintained;
- Failure to conduct required inspections;
- Incomplete, improper, or missed inspections;

- Discharges not in compliance with the requirements of Section 9VAC25-880-70 of the general permit;
- No Construction General Permit registration;
- No SWPPP;
- Incomplete or outdated SWPPP; and • SWPPP not available for review.

A notice of any violations shall be provided to the Operator in the form of an inspection report from VTSID

Annual Standards and Specifications and Approval Letter

The most recently approved annual standards and specifications can be found at this link:

https://www.facilities.vt.edu/content/dam/facilities_vt_edu/stormwater/2019VTASS.pdf

Measurement of Effectiveness: Develop and maintain current and accurate database of land disturbing activities.

Annual Reporting Requirements: Provide information regarding the total number of regulated land-disturbing activities, total number of acres disturbed, total number of inspections completed, and summary of enforcement actions taken; include the total number and type of enforcement actions taken during a reporting period in the MCM 4 section of the Annual Report available on the website.

MCM 5: Post-Construction Stormwater Management

This minimum control measure is intended to reduce pollutants in stormwater runoff from developed properties to the MS4 storm system. The post-construction stormwater management program will include the following elements:

- 1) A Stormwater Management Ordinance;
- 2) Written policies and procedures utilized to ensure that stormwater management facilities are designed and installed in accordance with Section II B 5 b of the MS4 General Permit;
- 3) Written inspection policies and procedures utilized in conducting inspections;
- 4) 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;
- 5) Written procedures for inspection and maintenance of operator-owned stormwater management facilities;
- 6) Roles and responsibilities for implementing MCM 5; and
- 7) A stormwater management facility tracking and reporting mechanism.

Measurement of Effectiveness: Annual evaluation of the Stormwater Management ordinance and manual and continued compliance with state and federal regulations.

Annual Reporting Requirements: Summarize the status of the Stormwater Management ordinance and manual.

Inspection of Stormwater Management Facilities

Develop and maintain a database of all known operator-owned and privately-owned stormwater management facilities that discharge into the MS4 storm system for tracking and reporting.

Database attributes for each stormwater management facility shall include the following:

1. Facility type and BMP Clearinghouse specification reference number;
2. Location (address or latitude and longitude);
3. Total area treated, including delineation of pervious and impervious area;
4. Completion date; if unknown, assume June 30, 2005;
5. The sixth order hydrologic unit code (HUC) where the facility is located;
6. 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 facility discharges;
7. Ownership information (private or public); and
8. Date of most recent inspection and name of inspector.

The electronic database of all stormwater management facilities, including those completed during each reporting year, as well as any new stormwater management facilities added in a permit year will be included in the [Annual Report](#).

Completed BMP inspection forms can be furnished upon request.

Annual Reporting Requirements: Submit all stormwater management facilities to the electronic database of all stormwater management facilities. Include all inspections completed during each reporting year with the annual report.

Maintenance of Stormwater Management Facilities

With the help of the Virginia Tech Facilities Operations Department, campus stormwater management facilities are maintained on an as-needed basis each year.

Supporting Documents: [Operation and Maintenance Manual](#)

Responsible Party: Virginia Tech Facilities Operations will be responsible for the maintenance of campus stormwater management facilities. Facilities Department – Site & Infrastructure Development will be responsible for recording the number of inspections and maintenance items.

Objective and Expected Results: The number of inspections and maintenance completed will be recorded and kept on file for at least 3 years.

Annual Reporting Requirements: The number of inspections and maintenance completed will be recorded and kept on file for at least 3 years.

MCM 6: Pollution Prevention/ Good Housekeeping

This minimum control measure is intended to reduce pollutants in stormwater from daily operations and maintenance activities and municipal facilities, as well as from turf and landscape areas. The pollution prevention/good housekeeping plan will include the following elements:

- (1) Written protocols being used to comply with the MS4 General Permit the daily operations and maintenance requirements;
- (2) A list of all municipal high-priority facilities that identifies those facilities that have a high potential for chemicals or other materials to be discharged in stormwater and a schedule that identifies the year in which an individual stormwater pollution prevention plan (SWPPP) will be developed for those facilities required to have a SWPPP;
- (3) A list of lands where nutrients are applied to a contiguous area of more than one acre;
- (4) A turf and landscape nutrient management plan; and
- (5) A written training plan for the next reporting cycle.

Municipal Facility Pollution Prevention and Good Housekeeping

Virginia Tech will develop and implement written procedures designed to minimize or prevent pollutant discharge from daily municipal operations and activities. This includes the identification of all high priority areas with high potential of chemicals or other materials to be discharged into the storm sewer system- which require the enforcement of SWPPPs.

Supporting Documents: [VT SWPPPs](#) and [Good Housekeeping SOP](#)

Responsible Party: Facilities Department – Site & Infrastructure Development

Objective and Expected Results: Develop SWPPPs for all high priority sites within 48 months of permit coverage and maintain an Inspection Checklist of all High Priority/ High potential SWPPPs.

Annual Reporting Requirements: Summarize the status of the good housekeeping procedures development including tasks completed to date and schedule updates.

Landscaping Management and Pest Control

Virginia Tech is responsible for maintaining the 21 current nutrient management plans throughout campus.

Supporting Documents: [Nutrient Management Plans](#)

Responsible Party: Virginia Tech Athletic Department, Virginia Tech Golf Course, Virginia Tech Department of Horticulture, Virginia Tech Department of Recreational Sports, Virginia Tech Turfgrass Research Center, Virginia Tech Facilities Operations, Virginia Tech College of Agriculture

and Life Sciences (CALS) College Farm, Facilities Department —Site & Infrastructure Development

Objective and Expected Results: Implement the current plan and reevaluate it annually. If it is determined that more NMPs are needed, Virginia Tech will develop these NMPs and implement them.

Annual Reporting Requirements:

Personnel Training

Supporting Documents: [MS4 Stormwater Awareness PowerPoint](#) and the [Annual Training Plan](#)

Responsible Party: Virginia Tech Environmental Health and Safety will be responsible for implementing the training. Facilities Department —Site & Infrastructure Development will be responsible for developing the training curriculum as well as any future modifications when necessary.

Objective and Expected Results: Once the written training plan is developed, it will be evaluated and modified each year. Applicable field crews for the Virginia Tech Facilities Operations Department will receive stormwater pollution prevention training every 2 years and the number of employees trained each year will be tracked.

Annual Reporting Requirements: Provide a summary report on the required training, including a list of training events, the training date, the number of employees attending training and the objective of the training. Provide certification of emergency response employees receiving alternate emergency response training for applicable personnel. Provide ESC and SWM certifications for applicable personnel.

Virginia Tech MS4 Organizational Chart

