Illicit Discharge Detection and Elimination (IDDE) Program Manual

Virginia Tech Policy and Procedures

Virginia Tech, Site & Infrastructure Development Department

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Site and Infrastructure Development
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Contents

Introduction

This Manual presents the standard protocol which Virginia Tech (VT) will utilize to implement its Illicit Discharge Detection and Elimination (IDDE) Program. This manual outlines prohibited discharge and allowable discharge policies. Additionally, this manual provides written procedures designed to detect, identify, and address unauthorized non-stormwater discharges into VT's Municipal Separate Storm Sewer System (MS4).

Purpose

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The purpose and intent of this policy is to protect and enhance the quality of water courses and water bodies in a manner pursuant to and consistent with the Federal Clean Water Act (CWA) (33 U.S.C. §1251 et seq.) and Virginia Tech's MS4 Program. By reducing stormwater runoff pollutants to the maximum extent practicable (MEP) and by prohibiting non-stormwater discharges to the storm sewer system these goals are achieved.

Acronyms

BMP	Best Management Practices
CWA	Clean Water Act
DEQ	Virginia Department of Environmental Quality
EHS	Environmental Health and Safety
EPA	Environmental Protection Agency
GIS	Geographic Information System
IDDE	Illicit Discharge Detection and Elimination
MEP	Maximum Extent Practicable
MS4	Municipal Separate Storm Sewer System
NPEDES	National Pollutant Discharge Elimination System
ORI	Outfall Reconnaissance Inventory
SID	Site & Infrastructure Development
SWPPP	Stormwater Pollution Prevention Plan
TOB	Town of Blacksburg
VAC	Virginia Administrative Code
VDOT	Virginia Department of Transportation
VPDES	Virginia Pollutant Discharge Elimination System
VSMP	Virginia Stormwater Management Program
VT	Virginia Tech

Definitions

"Best Management Practices" means schedules of activities, prohibitions of practices, general housekeeping practices, pollution prevention and educational practices,

maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to stormwater, receiving waters, or stormwater conveyance systems. BMPs also include treatment practices, operating procedures, and practices to control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw material storage.

"Hazardous Substance" means any substance designed under the Code of Virginia or 40 CFR Part 116 (2000) pursuant to § 311 of the CWA.

"Illicit Discharge" means any discharge to a MS4 that is not composed entirely of stormwater, except discharges pursuant to a Virginia Pollution Discharge Elimination System (VPDES) permit.

"Municipal Separate Storm Sewer System" means a conveyance or system of conveyances otherwise known as municipal separate storm sewer system, including roads with drainage systems, municipal streets, basins, curbs, gutters, ditches, manmade channels, or storm drains:

1. Owned or operated by a federal, state, city, town, county, district, association, or other public body, created by or pursuant to state law, having jurisdiction or delegated authority for erosion and sediment control and stormwater management, or a designated and approved management agency under § 208 of CWA that discharges to surface waters;
2. Designed or used for collecting or conveying stormwater;
3. That is not a combined sewer; and
4. That is not part of a publicly owned treatment works.

"Municipal Separate Storm Sewer System Management Program" or "MS4 Program" means a management program conveying the duration of a permit for a municipal separate storm sewer system that includes a comprehensive planning process that involves public participation and intergovernmental coordination, to reduce the discharge of pollutants to the maximum extent practicable, to protect water quality, and to satisfy the appropriate water quality requirements of the CWA and regulations and the Virginia Stormwater Management Act and attendant regulations, using management practices, control techniques, and system, design and engineering methods, and such other provisions that are appropriate.

"National Pollutant Discharge Elimination System Stormwater Discharge Permit" means a permit issued by the Environmental Protection Agency (EPA) (or by a State under authority delegated pursuant to 33 USC § 1342(b) that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis.

"Non-Stormwater Discharge" means any discharge to the storm sewer system that is not composed entirely of stormwater.

"Outfall" means any source of stormwater exiting one separate storm sewer system to a water body or another MS4. Some examples of outfalls include, but are not limited to, discharges from pipes, ditches, swales and other stormwater conveyances.

"Pollutant" means anything which causes or contributes to pollution.

"Source" means any building, structure, facility, or installation from which there is or may be a discharge of pollutants.

"Stormwater" means any surface flow, runoff, or drainage consisting of water from any form of natural precipitation and resulting from such precipitation.

Prohibited and Allowable Discharges to the MS4 System

Prohibition of Illicit Discharges

No University employee, student, visitor or contractor, or department shall cause or allow discharges into the University's storm sewer system which are not composed entirely of stormwater, except for the allowable discharges provided in the VSMP Permit Regulations (9VAC25-890-20). Prohibited discharges include but are not limited to: oil, anti-freeze, grease, chemicals, washwater, paint, plaster, animal waste, debris, garbage, and litter. The spilling, dumping, or disposal of materials other than stormwater into the storm sewer system is prohibited by this Policy.

Allowable Discharges

Discharges from the following activities will not be considered a source of pollutants to the storm sewer system and to waters of the United States when properly managed to ensure that no potential pollutants are present, and therefore they shall not be considered illicit discharges unless determined to cause a violation of the provision of the CWA or this Policy:

- Potable water line flushing;
- Uncontaminated pumped groundwater and other discharges from potable water sources;

- Landscape irrigation and lawn watering;
- Diverted stream glows; rising groundwater;
- Groundwater infiltration to the storm sewer system;
- Uncontaminated foundation and footing drains;
- Uncontaminated water from crawl space pumps;
- Air conditioning condensation;
- Uncontaminated nonindustrial roof drains;
- Springs;
- Individual residential and occasional non-commercial car washing;
- Flows from riparian habitats and wetlands;
- Dechlorinated swimming pool discharges;
- Flows from firefighting.

The above prohibitions shall not apply to any non-stormwater discharge permitted under a VPDES permit, provided that the permit holder is in full compliance with all requirements of the permit, waiver, or order and other applicable laws and regulations.

Prohibition of Illicit Connections

The construction, use, maintenance, or continued existence of illicit connections to the storm sewer system is prohibited. This prohibition expressly includes without limitation, illicit connection made in the past, regardless of whether the connection was permissible under law of practices applicable or prevailing at the time of connection.

Waste Disposal Prohibitions

No Person shall throw, deposit, leave in or upon any VT property, driveway, parking area, street, alley, sidewalk, component of the storm drain system, or water of the United States, any refuse, debris, garbage, litter, or other discarded or abandoned objects that may cause or contribute to stormwater runoff pollution. Wastes deposited in proper waste receptacles for the purpose of collection are exempt from this prohibition.

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Discharge in Violation of Industrial or Construction Activity VPDES Stormwater Discharge Permit

Any person subject to an industrial or construction activity VPDES stormwater discharge permit shall comply with all provisions of such permit.

Illicit Discharge Detection

Illicit discharges enter the system through either direct connections (e.g., wastewater piping either mistakenly or deliberately connected to the storm drains) or indirect connections (e.g., infiltration into the MS4 from leaking sanitary systems, spills collected by drain inlets, or paint or used oil dumped directly into a drain). Common indicators of illicit discharges include:

- Unusual color or cloudiness;
- Dead vegetation or inhibited growth;
- Surface scum or foam;
- Dead animals;
- Algae;
- Floating debris;
- Stains on channel bottom or sides;
- Strong, pungent or musty odor;
- Pipe corrosion; or
- Oil sheen

SID Initial Investigation Procedure

Illicit discharges may be discovered by a variety of methods including ORI, reports from students, staff, or faculty, or by community members. If an illicit discharge is discovered the following procedure will be followed:

1. Contact the Environmental Health and Safety (EHS). No further action should be taken until EHS verifies the discharge is hazardous or non-hazardous. EHS shall have oversight of cleanup and remediation activities.
    a. Environmental Compliance Manager:
    Sheree Andrews 540-231-2510; shereean@vt.edu
2. Notify VT Facilities Customer Service of the discharge at 540-231-4300.
3. For non-hazardous discharges, if possible and safe to do so, efforts should be made to stop the illicit discharge.
4. An investigation to identify and locate the source of any illicit discharge shall begin immediately.
5. Priority of investigations shall be given to discharges of sanitary sewage and those believed to be a risk to human health and public safety.
6. If necessary, immediately notify DEQ of the discharge. DEQ must be notified within 24 hours of applicable discharges. Any operator of a small MS4 who discharges or causes

or allows a discharge of sewage, industrial waste, other wastes or any noxious or deleterious substance or hazardous substance or oil in an amount equal to or in excess of a reportable quantity that occurs during a 24-hour period into or upon surface waters; or who discharges or causes or allows a discharge that may reasonably be expected to enter surface waters, shall notify the Department of Environmental Quality of the discharge Immediately upon discovery of the discharge. A written report of the unauthorized discharge shall be submitted to the Department of Environmental Quality within five days of discovery of the discharge.

Source of the Discharge is Known

1. Inform the Town of Blacksburg, or local authority, if the discharge leaves campus or originates from an off-campus source.
2. Collect data and complete the Illicit Discharge Report from found in Appendix C.
3. If the discharge is found to be authorized under a VPDES permit no further action is required under the MS4 permit.

Source of the Discharge is Unknown

1. The methodologies below will be used to determine the source of the illicit discharge.
    a. Trace the storm sewer system in GIS to determine potential sources.
    b. Investigate potential upstream sources
    c. Contact project managers, maintenance staff, and supervisors to identify the source
    d. Dye testing is a useful diagnostic tool for identifying improper connections between the sanitary and storm sewer systems. In addition to detecting cross-connections, dye tests can help verify the direction of water flow and reveal critical information about system connectivity.
    e. Camera inspection equipment can further aid in locating sources of contamination by visually inspecting the interior of the storm sewer system. By navigating between manholes, cameras can pinpoint areas where pollutants may be entering the system, enabling targeted remediation efforts.
    f. Smoke testing is an effective method for detecting cross-connections between the storm drain system and the sanitary sewer or other underground sources. This technique should be employed only after other investigative methods have been exhausted. Prior to conducting smoke testing, it is essential to notify residents, businesses, and relevant personnel in the area to prevent unnecessary concern or confusion.
2. Collect data and complete the Illicit Discharge Report from found in Appendix C.
3. If the discharge is found to be authorized under a VPDES permit no further action is required under the MS4 permit.

SID Follow Up Investigation Procedure

If the source was unable to be identified SID will conduct a follow-up investigation 24 hours

from the initial discovery.

1. If the discharge is no longer observed the occurrence will be considered a one-time event.
2. If the discharge is observed, continuous, or expected to occur more frequently than a one-time discharge follow the procedures outlined in the Source of the Discharge is Unknow section to attempt to identify the source to verify that the discharge has been eliminated except as provided in Part I E 3 c (4)
3. If the source is not identified within six months of beginning the investigation, then document that the source remains unidentified.
4. If the observed discharge is intermittent, document that attempts to observe the discharge flowing were unsuccessful.

MS4 Interconnections

The Operator shall notify in writing the downstream MS4 of any known physical interconnection. VT currently has no known downstream physical interconnections.

High Priority-High Potential Areas

Within 12 months of state permit coverage, the operator shall identify all municipal high-priority facilities. These high- priority facilities shall include (I) composting facilities, (II) equipment storage and maintenance facilities, (III) materials storage yards, (IV) pesticide storage facilities, (V) public works yards, (VI) recycling facilities, (VII) salt storage facilities, (VIII) solid waste handling and transfer facilities, and (IX) vehicle storage and maintenance yards.

To properly evaluate areas of concern around the VT campus SID created a check sheet to rank the facilities on campus. All areas that do not need a SWPPP according to check sheets will then be considered IDDE Priority areas and will be monitored for potential stormwater pollution. Facilities determined to need a SWPPP will be inspected based on established SWPPP requirements for the individual facility.

Outfall Screening

As a minimum effort to identify illicit discharge occurrences from the VT MS4 Program, annual outfall screening is required by the Program Plan under the MS4 Permit.

Outfall field screenings will be prioritized based on land use and historical illegal discharges. VT will screen 100% of outfalls annually based on this prioritization.

In the case that potential illicit discharges are observed at specific outfalls, subsequent screening at a higher frequency may be necessary if the source is not identified and eliminated.

An Outfall Reconnaissance Inventory/Sample Collection Field Sheet (Appendix B) was created and is intended to regularize the process by which outfalls are annually inspected and documented. VT's MS4 Outfall Map shows the outfalls that are inspected annually. When conducting an ORI, SID staff should stay alert for any suspected illicit discharges. Upon arrival to the site, the investigator will note the time and date of the inspection, as well as take a photo of the outfall site for documentation. The investigator should then determine the material of the outfall, the shape, dimensions, and presence of sediment or water. The outfall should also be assessed for the presence of any flow.

Dry Weather Outfall Screening

Outfall screening shall be performed during dry weather using the Outfall Reconnaissance Inventory/Sample Collection Field Sheet. Completion of the form serves as the appropriate documentation that the required outfall screening has been performed and should be retained on file for a minimum of 3 years. Outfalls that are flowing during dry weather may indicate an active pollution issue, depending on if rain has occurred during the last 24 to 48 hours. Special attention should be paid to outfalls that are flowing and when no rain has occurred within the last 48 hours.

Wet-Weather Screening

While dry-weather screening events can identify possible illicit interconnections that are continuous, wet-weather screening events may identify pollutant discharges that are temporary and/or likely to result from improper storage of polluting materials or inadequate cleanup of off-site pollutant releases. Wet-weather screening may be appropriate if dry weather screening identifies physical indicators from Sections 4 and 5 of the ORI Form.

Responsible Parties

The University shall administer, implement, and enforce the provisions set forth in this Policy.

Appendix A

High Priority Facility Identification

High Priority Facility Identification

Inspector(s) Name(s): _____

Inspector Phone Number: _____

Inspector Email: _____

Date: _____

Site Name: _____

Location: _____

Contact Person: _____

Contact Person Phone Number: _____

Contact Person Email: _____

Part One: Pollutant Identification

Pollutant-Generating Activity	**Pollutants or Pollutant Constituents** (that could be discharged if exposed to stormwater)	**Location on Site**

Facility/Parcel size: _____(acres)

Impervious Acres: _____(acres)

Part Two: Permit Coverage

Is this site currently covered under another stormwater permit? ☐ YES ☐ NO

If **yes**, please list the permit type and number: _____

Does this site have a nutrient management plan? ☐ YES ☐ NO ☐ N/A

Part Three: Storage

Are pesticides and/or fertilizers stored at this location? ☐ YES ☐ NO

If **yes**, please describe:

_____

_____

_____

Are equipment and/or vehicles staged at this location? ☐ YES ☐ NO

If **yes**, please describe:

_____

_____

_____

Are storage areas covered by a roof? ☐ YES ☐ NO ☐ N/A

Does all stormwater runoff bypass the storage area? ☐ YES ☐ NO ☐ N/A

If **no**, please explain:

_____

_____

_____

Is any waste stored at this location? ☐ YES ☐ NO

If **yes**, please describe (Is it stored in containers, covered areas, etc.?):

_____

_____

_____

If **yes**, how is waste transported to this location?

_____

_____

_____

If **yes**, how is waste disposed of?

Are dumpsters covered? ☐ YES ☐ NO ☐ N/A

Is there any storing/stockpiling of materials at this location?

Stockpile Material	Likely to be Present at this Site?
Salt	☐ YES ☐ NO
Topsoil	☐ YES ☐ NO
Gravel	☐ YES ☐ NO
Mulch	☐ YES ☐ NO
Sand	☐ YES ☐ NO

Are any other materials stored/stockpiled? ☐ YES ☐ NO ☐ N/A

If **yes**, please explain:

If there is any stockpiling of materials, how are they transported to and from this location?

If there is any stockpiling of materials, how are they stored at this location and for what period of time are they stored here?

Part Four: General Stormwater Questions

Does composting take place at this location? ☐ YES ☐ NO

If **yes**, please describe:

Are all sanitary drains connected to the sanitary sewer system? ☐ YES ☐ NO

If ***no***, please describe:

Are all floor drains connected to the sanitary sewer system? ☐ YES ☐ NO

If ***no***, please describe:

Are written procedures or SPCC Plans in place to prevent and respond to leaks, spills, and other discharges?

Written Procedures	**Is there a written procedure for this site?**
Waste Disposal	☐ YES ☐ NO
Washwater and Wastewater Disposal	☐ YES ☐ NO
Spill Response (oil, gas, etc.)	☐ YES ☐ NO
Illicit Discharge Response	☐ YES ☐ NO

Are vehicles/equipment washed at this location? ☐ YES ☐ NO

If ***yes***, please describe:

Does vehicle/equipment maintenance take place at this location? ☐ YES ☐ NO

If ***yes***, please describe:

Are vehicles regularly checked for leaks? ☐ YES ☐ NO

Please describe.

How are vehicle/equipment leaks handled? Please describe.

Is water pumped from utility construction and/or maintenance activities at this location?

☐ YES ☐ NO

If **yes**, please describe:

Is there potential for discharge of sediment from this site? ☐ YES ☐ NO

If **yes**, please describe:

Have any spills or leaks been reported in the past 3 years? ☐ YES ☐ NO

If **yes**, please describe:

Are any of the following stormwater structures or controls at this site? (Check all that apply)

- ☐ Dike/Berm
- ☐ Drop Inlet/Curb Inlet
- ☐ Detention Pond
- ☐ Retention Pond
- ☐ Bioretention Facility
- ☐ Stormwater Conveyance Channel (e.g., ditch, trench, perimeter drain, swale, etc.)
- ☐ Outlet Protection for nearby storm drains and culverts
- ☐ Culvert
- ☐ Other type of ground-disturbing stormwater control: _____

Part Five: Documentation

If possible, please provide the following documents for review (check all that apply):

- ☐ Drainage Network Map
- ☐ Map that delineates the site boundaries
- ☐ Aerial Photograph (Google Earth or GIS)
- ☐ Photographs from Inspection
- ☐ Building Plans
- ☐ Other: _____

Site Notes:

Appendix B

Outfall Reconnaissance Inventory/Sample Collection Field Sheet

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed:		Outfall ID:	
Today's date:		Time (Military):	
Investigators:		Form completed by:	
Temperature (°F):	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other:_____
- Known Industries:_____

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☐ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other:_____	☐ Circular ☐ Elliptical ☐ Box ☐ Other:_____	☐ Single ☐ Double ☐ Triple ☐ Other:_____	Diameter/Dimensions: _____	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other:	☐ Trapezoid ☐ Parabolic ☐ Other:		Depth: Top Width: Bottom Width:	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☐ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	' "	Ft, In	Tape measure
	Measured length	' "	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

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)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 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

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

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

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

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

Appendix C

Illicit Discharge Reporting Form

Illicit Discharge Reporting Form

Date of illicit discharge: _____ Outfall # (if applicable): _____
Description of discharge: _____
_____
_____

Photos attached? Yes No
Date of investigation: _____
Was the source found? Yes No
If "Yes", please describe: _____
_____
_____

Was illicit discharge resolved? Yes No
If "Yes", please explain how it was resolved (include any personnel or outside parties contracted or involved): _____
_____
_____

If "No", please explain why it was not resolved: _____
_____
_____

Is any follow-up action required? Yes No
If "Yes", please explain: _____
_____
_____

Date investigation closed: _____