

**Montgomery County  
Illicit Discharge Detection and Elimination**

**FIELD GUIDE**

**For Elimination of Polluted Stormwater in Stormwater Systems**

**Montgomery County, Virginia**

**June 2018, Version 1**

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## ITEMS INCLUDED IN THIS GUIDE

- Introduction
- Examples of what **IS** an Illicit Discharge (Polluted Stormwater)
- Illicit Connections
- Examples of what **IS NOT** an Illicit Discharge
- Illicit Discharge Initial Field Review
- Techniques for Conducting a Field Investigation
- Determining the Source of the Illicit Discharge
- Documentation of Suspected Illicit Discharges
- Coordination of Actions Following Initial Field Review
- Closure for Suspect Illicit Discharges
- EPA Fact Sheet for Emergency Release Reporting Requirements

## INTRODUCTION

Montgomery County (County) is committed to ensuring that stormwater runoff from all its regulated areas and facilities comply with all federal and state environmental regulatory requirements.

This Field Guide **DOES** pertain to the following areas of Spill Response:

- Understanding allowable versus illicit discharges of materials to jurisdictional waters and storm drain systems that drain to these waters.
- Guidance on determining the source of illicit discharges and documenting spill incidents.
- Providing contact information for follow up investigations.
- Provides Reference to the Montgomery County Good Housekeeping Procedures
- Provides and EPA Fact Sheet for Emergency Release Reporting Requirements

This Field Guide **DOES NOT** provide comprehensive Chemical Spill Response Training.

Stormwater run-off is rainwater and melted snow that runs off the surface of streets, lawns, farms and construction and industrial sites. In undeveloped areas, much of the stormwater run-off is absorbed into the ground. That which is not absorbed by the ground ultimately flows into streams and rivers. Developed areas contain impermeable surfaces such as pavement and buildings that prevent stormwater from being absorbed into the ground, and thus increase stormwater runoff into storm drains, storm sewer systems and drainage ditches.

Excess stormwater run-off has the potential for causing infrastructure damage, downstream flooding and stream bank erosion. Also, metals, oils and grease, bacteria and other pollutants not filtered from the runoff can contaminate streams, rivers, wetlands, etc.

The Municipal Separate Storm Sewer System (MS4) Permit requires the County to develop an Illicit Discharge Detection and Elimination (IDDE) program. The IDDE program must incorporate the following four elements:

- Develop an MS4 map showing the location of all outfalls;
- Develop and implement a plan to detect and address illicit discharges, including illegal dumping, to the storm sewer system;
- To the extent allowable under state law, prohibit illicit discharges into the MS4; and
- Inform public employees, businesses, and the general public of the hazards.

This IDDE Field Guide is designed to assist field personnel with detection, investigation and elimination of illicit discharges to the County's regulated small MS4 and is designed to complement the County's Illicit Discharge Detection and Elimination Program. This guide describes conditions that personnel may encounter and actions they need to take, and it should be utilized in field operations.

## EXAMPLES OF WHAT IS AN ILLICIT DISCHARGE

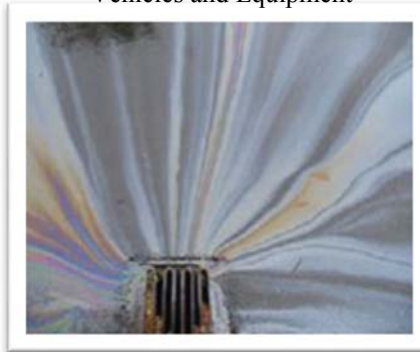
### What is an Illicit Discharge?

An illicit discharge is defined in the County's MS4 permit as "any discharge to a municipal separate storm sewer that is not composed entirely of stormwater, except discharges pursuant to a VPDES or VSMP permit (other than the VSMP permit for discharges from the municipal separate storm sewer), discharges resulting from firefighting activities, and discharges identified by and in compliance with 9VAC25-870-400 D 2 c (3)."

Sanitary Stormwater from  
Showers, Sinks, etc.



Discharge of Oil, Fuel from  
Vehicles and Equipment



Grass Clippings and Leaves When  
Intentionally Blown into Drains



Solvents



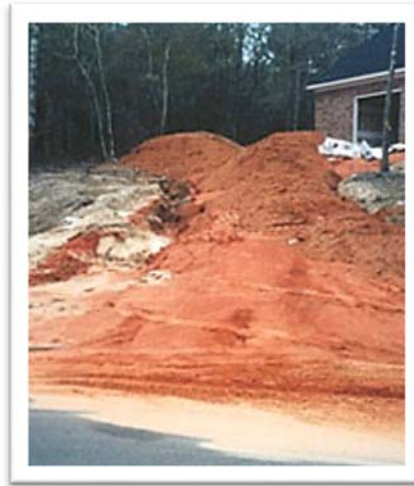
Cooking Oil and Grease



Cleaning Chemicals



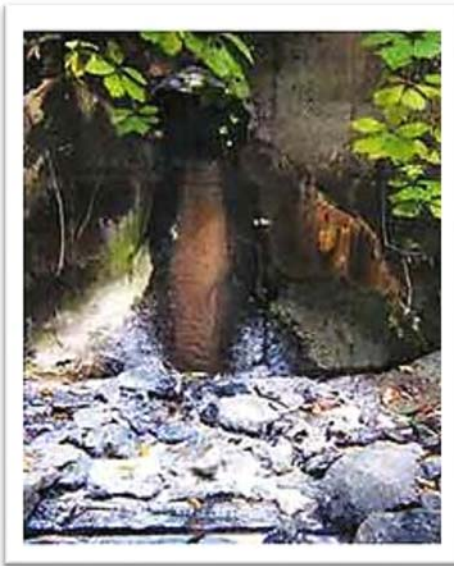
Sediment



Improper Disposal of Radiator Fluid



Paints



Non-residential Vehicle Wash Water



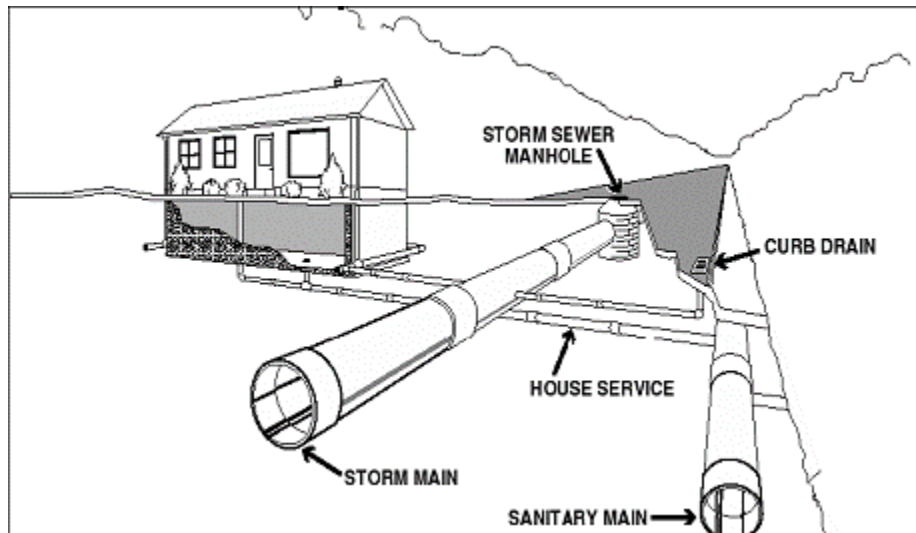
Mismanagement/Excess Road Salt



## Illicit Connections

Illicit connections occur when drainage pipes or other conveyances are improperly connected to the storm drain system. These improper connections are often sources of illicit discharges. Examples include:

- A sewer pipe improperly connected to the storm sewer that is discharging raw sewage
- A shop floor drain that is connected to the storm sewer system
- A pipe from a residential household discharging gray water into storm drainage system



## Unpermitted Cross-Connections

Unpermitted cross-connections are between the MS4 and sanitary sewer. Such connections increase the risk of introducing water polluted with human-related bacteria and other contaminants and are considered illicit discharges.

Sewer can be attached to pipes and manholes that were either not identified or mistakenly identified. These connections must be removed and proper connections made to ensure the integrity of the MS4.

## EXAMPLES OF WHAT IS NOT AN ILLICIT DISCHARGE

Fire Fighting Activities Uncontaminated



Agricultural Irrigation Water



Foundation/Footing Drains



Dechlorinated Swimming Pool Discharges



Landscape Irrigation and Lawn Watering



Uncontaminated Water Line Flushing



## EXAMPLES OF WHAT IS NOT AN ILLICIT DISCHARGE

Basement/Crawlspace Sump Pumps



Discharges from Potable Water Sources



Air Conditioning Condensation



Street Wash Water (For construction road cleaning, washing may only be performed after the road is cleaned in accordance with minimum standard 17.



Springs



Residential Car Wash Water





## EXAMPLES OF WHAT IS NOT AN ILLICIT DISCHARGE

### Other discharges not considered illicit discharges include:

- Uncontaminated groundwater infiltration,
- Uncontaminated pumped groundwater,
- Rising groundwaters,
- Flows from riparian habitats and wetlands, and
- Those discharges covered under a Virginia Pollution Discharge Elimination System (VPDES) or National Pollutant Discharge Elimination System (NPDES) permit;
- Fuel, oil or antifreeze spills related to a vehicular accident that is properly cleaned up through normal incident management practices are not considered an illicit discharge. Staff should nevertheless monitor the site during and/or after the incident to ensure that the cleanup is sufficient.
- Drums or other containers containing potentially hazardous materials that are found abandoned are considered unknowns or other potential hazardous materials cargo. Do **NOT** open containers. Contact your local hazardous material response team.

#### Are there any exceptions?

In the event that any of these activities are found to cause sewage, industrial wastes or other potentially significant sources of pollution to be discharged into the stormwater system, the source should be further investigated. The county or town having jurisdiction over the source shall be notified, as they have the authority to order the activity to cease.

## ILLCIT DISCHARGE INITIAL FIELD REVIEW

The proper staff will conduct initial field reviews for potential illicit discharges. These assignments will be coded as Polluted Stormwater (IDDE).

Polluted Stormwater (IDDE) investigations are typically generated from one of the following sources:

1. **Staff or Citizens observe a suspect discharge outside of a regulated facility covered under a housekeeping SWPPP and report it to either of the following: for Montgomery County Public Schools (MCPS) properties - report to the Environmental and Maintenance Program Manager, for all other suspect discharges - report to the Environmental Services Department.**
  - The proper staff will follow guidance to determine if suspected Illicit Discharge (ID) is considered an ID. Staff may also evaluate whether the discharge is considered an emergency spill and needs to be routed to local HAZMAT.
  - The proper staff enters the information into the IDDE Tracking form.
  - Proper procedures are followed to track and eliminate the discharge.
    - For County properties, generate a MCPS or General Services work order as appropriate
    - For Non-County properties, contact the property owner to initiate elimination of the discharge and any required cleanup.
  - Document all correspondence related to the elimination of the ID.
2. **Staff or Citizens observe a suspect discharge inside of regulated facilities covered under a housekeeping SWPPP and report it to MCPS Environmental and Maintenance Program Manager.**
  - In addition to the steps outlined above, an evaluation of the illicit discharge circumstances is made to determine whether or not regular procedures should be revised to eliminate future illicit discharges.
3. **Contacts to report an emergency spill:**
  - Emergency Services Coordinator Neal Turner, 540-394-2146, [turnerkn@montgomerycountyva.gov](mailto:turnerkn@montgomerycountyva.gov)
  - The Virginia Department of Environmental Quality (DEQ) Blue Ridge Regional Office (Roanoke), 540-562-6700.
  - The National Response Center (NRC), at 1-800-424-8802.

For spills that generate a County work order, initial Field Review requires a site visit to determine if the condition described in the work order can be verified. The citizen or other reporting party should be contacted if the site location cannot be found, and in many cases, it may be advisable to meet them onsite. Many illicit discharges are intermittent and may not be present at the time of your visit, so the person may be capable of better isolating the time and circumstances surrounding the discharge they reported.

## TECHNIQUES FOR CONDUCTING A FIELD INVESTIGATION

During field investigations, suspect discharges should be evaluated based on:

### Odor

Odors may indicate an illicit discharge has occurred. The presence of sewage, sulfide, or rancid/sour odors may indicate the presence of wastewater in the system. Petroleum and chemical odors may indicate that a possible spill has occurred nearby.

**Do not enter confined areas such as culverts, drop inlets, manholes or other enclosed areas to investigate the origin of odors. Gases may accumulate in these areas that can overcome the entrant.**

### Color

Certain water colors may also indicate the presence of an illicit discharge. Brown, gray, yellow, green, orange or red water should be noted. Water that is tinted brown may be due to the presence of naturally occurring tannins in the surrounding environment and may not be an illicit discharge. Turbid, cloudy water may indicate the presence of excessive siltation or other pollutants entering the stormwater.

### Staining/Discoloration

The presence of stains or discoloration in or around an outfall may be signs that an illicit discharge is occurring or has occurred. Stains or discoloration often originate from natural sources, including water with high concentrations of iron or other minerals, lichen/fungi, and mineral deposits on stone or concrete.

### Stressed/Dead Fish or Other Aquatic Organisms

Stressed or dead aquatic organisms are a possible indication that an illicit discharge has occurred. These may be caused by naturally low dissolved oxygen levels during summer, or from lakes or streams freezing over during the winter. They can also be caused by diseases, overpopulation, or polluted runoff. Nevertheless, if multiple dead or stressed aquatic organisms are observed, refer to the Environmental Services Department for further evaluation.

## Other Observations

**Containers**, including drums and buckets may be found abandoned along the roadside. These containers may contain hazardous materials and should be avoided. Do **NOT** open containers. Contact the Environmental Services Department for assistance.



**Foam** may be observed while performing an initial field review. Many instances of foam are natural; foam is produced when air is introduced to the water through stream turbulence, waterfalls or waves breaking on the shore. It can also occur from the natural breakdown of algae or other plant material. This natural foam may appear white at first, but will generally turn brown over time.



Natural foam in creek – not an illicit discharge



White foam in ditch – this is manmade in origin and is considered an illicit discharge

Foam that is white in color and has a sweet or scented odor is likely to be manmade. Examples of these include detergents, soaps, and shampoos. Always check the surrounding area for possible sources when foam is observed.



When disturbed, an organic sheen will crack and break into many small platelets.

## Sheen

The appearance of a sheen can result from the presence of naturally occurring bacteria or petroleum contamination. The sheen's origin can be determined by touching it with a stick or other object. If the sheen breaks up into platelets or clumps, then it is due to the presence of naturally occurring bacteria in the water. If the sheen swirls (separates) and reforms (re-adheres), petroleum is present in the water. The pictures below are examples of a bacterial and petroleum sheen.



A petroleum sheen will swirl and reform itself rather than break apart.

### Do sheens always indicate an illicit discharge?

The presence of a bacterial sheen does not necessarily indicate an illicit discharge. Petroleum sheens are signs that petroleum has leaked or spilled, which indicates an illicit discharge has occurred or is occurring.

## Iron Bacteria

In areas throughout the state, an orange brown benthic growth may be observed in pipes, outfalls, and streams. This growth may appear as an orange, brown, red, yellow or grayish gelatinous slime. It can also appear as stains or as a “feathery” filamentous growth. A rainbow sheen may also be present. While unsightly, this growth is from iron bacteria that are naturally occurring in the soil and oxidize dissolved iron or manganese. The presence of iron bacteria does not typically indicate an illicit discharge.



Two examples of iron bacteria. Note the rainbow sheen.

## DETERMINING THE SOURCE OF THE ILLICIT DISCHARGE

If the discharge is found in the County drainage system, the source of the discharge should be investigated by:

- 1) Tracking the illicit discharge to its point of entry into the storm sewer system.
- 2) At the point of entry look to see if the source can be identified; examples include a leaking drum used to store used oil or a PVC pipe from a residence that is discharging gray water. Do not enter private property without permission to do this.
- 3) Take pictures and notes on observations and exact location where the pollutant enters County regulated area.

At times, it may be difficult to determine the source of a discharge. The area around the discharge location should be visually surveyed to determine the:

- Location of outfalls and drainage pathways
- Upstream connections
- Potential upstream impacts (such as failing septic systems, etc.)
- Origins of pipes/culverts

By surveying the area upstream of a suspect discharge, the upstream connections as well as potential sources of discharges may be located.

An example of a source is a leaking septic system upstream impacting water quality downstream. Determining the origin of pipes and culverts can reveal unauthorized connections to a stormwater system as well. Unauthorized connections are often sources of illicit discharges.

### A reminder about safety:

**At no time should anyone violate County safety rules in the investigation of a polluted stormwater complaint, including entering confined spaces.**



## DOCUMENTATION OF SUSPECTED ILLICIT DISCHARGES

All reports of illicit discharges and any field investigations must be documented.

### Photographs

Photographs should be taken during the investigation to support information in the Illicit Discharge Incident Tracking Sheet.

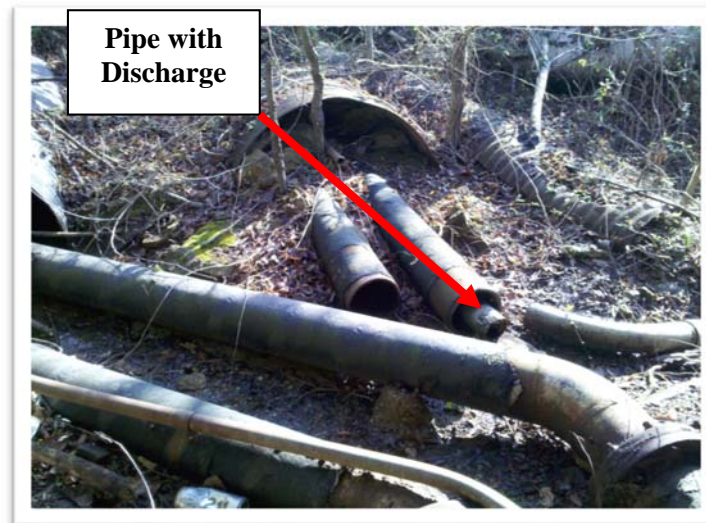
#### Photographs-

- (1) Provide a visual record of conditions observed,
- (2) Provide information to staff when further investigation is required, and
- (3) Document changes in the outfall conditions over time.

In addition to close-up detailed photos, also take photos that capture the outfall and surrounding area (“Big Picture”). A “Big Picture” photo provides a frame of reference for anyone who has to perform a follow-up investigation at the site.



“Close-up” of oily substance discharging from pipe.



“Big Picture” photo shows pipe and surrounding layout.

The close-up photo by itself provides good detail of the discharge; however it is difficult to determine the true scale or location of the issue through viewing this photo alone. The “Big Picture” photo gives the investigator perspective as to the nature and severity of the discharge.

The photos below provide another example of close-up and “Big Picture” photos.

The source of this illicit discharge was determined by following the smell and excessive vegetation in the ditch line to a sewer manhole. The two pictures were taken in the spring. The grass in the yard had not yet come out of winter dormancy, but the grass in the ditch line was three times as tall, and was much greener than the yard.



“Close-up” of ditch where a sewage smell was reported.



“Big Picture” of the ditch line and nearest connection.

## CLOSURE FOR SUSPECT ILLICIT DISCHARGES

After all field investigations are complete, the illicit discharge investigation can be closed in one of the following ways:

1. If the illicit discharge is addressed through County or MCPS staff through a work order, complete the work and document by contacting the appropriate County or MCPS official, and the investigation can be closed.
2. If the illicit discharge is verified but the source or type of discharge cannot be determined, provide all available information related to the investigation and any photos that were taken to the appropriate County or MCPS official.
3. If the illicit discharge is intermittent (\*), the site must be visited a minimum of three times to attempt to observe the discharge. If the discharge is not observed during any of these visits, note the attempts and close the investigation.
4. If, after consultation with the Staff or Citizen making the report, the evidence of an illicit discharge cannot be found, the information related to the investigation should be documented. These incidents will be documented and the investigation will be closed.

**\*=An intermittent discharge is an illicit discharge that has been reported and verified, but upon further investigation is not flowing.**



## Fact Sheet Emergency Release Reporting Requirements

This fact sheet was developed to assist facilities with reporting requirements. However, this is only a guide and does not cover all federal reporting requirements. Facility operators are reminded to review this sheet, and regulations before a release occurs. Refer to the Code of Federal Regulations for more details regarding regulations under CAA, CWA, CERCLA, EPCRA, RCRA, and TSCA.

STATUTE	REGULATIONS	INCIDENT	REPORT TO/BY	REPORTING
Clean Air Act	40 CFR 63.10(d)	Startup, shutdown and malfunctions not consistent with procedures in source's plans	EPA Administrator by owner/operator of air emission sources	Within two working days Follow-up: within seven working days
Clean Air Act	40 CFR 70.6	Emergency causing exceedance of emission limitations of permit	Permitting authority by permittee	Within two working days Follow-up not required
Clean Water Act	40 CFR 110.6	Oil discharge (film/sheen/dicoloration) to water surface, or shoreline, or violation of water quality standards.	NRC. If not practical then EPA or USCG by person in charge of vessel or facility	Immediately Follow-up not required
Clean Water Act	40 CFR 117.21	Discharge of hazardous substance (equal to or above RQ)	Appropriate govt. agency by person in charge of vessel or facility	Immediately Follow-up not required
Clean Water Act	40 CFR 122.41	Noncompliance which may endanger health and environment (above permit allowance)	Appropriate government agency by permittee	Within 24 hours Follow-up required in five days
Comprehensive Environmental, Response, Compensation, and Liability Act	40 CFR 302.6(a)	Hazardous substance release (Equal to or greater than RQ)	NRC by person in charge of vessel or facility	Within fifteen minutes Follow-up not required
Emergency Planning and Community Right-to-Know Act	40 CFR 355.40	Release of SARA extremely hazardous substance or CERCLA hazardous substance equal to or greater than RQ	LEPC, SERC, or local emergency response personnel (911 in case of transportation related release) by owner/operator	Within fifteen minutes Follow-up required within seven calendar days
Resource Conservation and Recovery Act	40 CFR 262.34, 263.30, 264.56 & .196, 265.56 & .196, 270.14, & .30, 273.17, .37 & .54, 279.43 & .53, 280.50, .52, .53, .60, & .61	Release, fire, or facility explosion that threatens health outside the facility	NRC/OSC/state/ local /EPA Regional Administrator by emergency coordinator or owner/operator	Within 24 hours Follow-up: varies from 5 to 30 days report to OSC/NRC/EPA Regional Administrator
Toxic Substance Control Act	40 CFR 761.120, 761.125	PCB spill (equal to or greater than 50 ppm) with release to surface water /drinking water supplies/sewers/ grazing lands, etc.	NRC, and EPA regional office of pesticides and toxics by person in charge	Within 24 hours Follow-up: as required by agency

NRC: National Response Center 800-424-8802

RQ: Reportable Quantity