

CHAPTER 15  
MUNICIPAL SEPARATE STORM SEWER SYSTEM  
PROGRAM REQUIREMENTS

**15.1 INTRODUCTION**

In accordance with Section 402 (p) of the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) regulations require certain municipalities to regulate inputs to the municipal separate storm sewer system (MS4) in accordance with their approved NPDES permit. EPA delegated this permit authority to the State and it is known as the Virginia Pollution Discharge Elimination System (VPDES) program. Based on this requirement, Henrico County must reduce stormwater pollution to the maximum extent practicable, including stormwater pollution from residential, commercial and industrial areas. The permit also addresses illicit discharges to the MS4 and stormwater discharges from construction sites.

**15.2 APPLICABILITY**

In accordance with Sec. 10-32 of the Henrico County Code, the requirements of this chapter apply to all regulated land-disturbing activities described in Chapter 3. For help determining the land disturbance activity type, please refer to Chapter 3 of this Manual.

**15.3 REQUIREMENTS**

It is unlawful under Article VII of Chapter 10 of the Henrico County Code to cause, allow, or discharge materials other than stormwater to the County storm sewer system. To ensure compliance with NPDES regulations and in accordance with Henrico County's approved NPDES permit, the following requirements must be addressed for proposed development:

**15.3.1 DUMPSTERS**

In an attempt to prevent dumpster discharges from entering the storm sewer system, the County does not allow dumpster pads in the immediate vicinity of any drainage inlets. Every attempt must be made in the design phase to ensure that dumpster spillage/drainage does not enter the storm sewer system by maximizing the distance between the dumpster pad and the receiving drop inlet. In some instances, a shorter separation is allowed if the drainage from the dumpster pad must cross a drive aisle as it flows to a drop inlet.

### **15.3.2 TRASH RACKS**

Trash racks are required for all curb drop inlets in shopping centers, fast food restaurants, convenience stores, auto parts stores, and other facilities where significant trash, debris, and other contaminants may be generated. Due to potential flooding issues, trash racks are not allowed on any inlets within the public right-of-way. The minimum design standards (15.01) for trash racks can be found at the end of this chapter.

### **15.3.3 OIL/WATER SEPARATORS (OWS)**

All plans of development (PODs) with proposed or modified fueling facilities are required to install oil/water separators (OWS) and ensure that site grading provides positive drainage to these structures. The minimum standards (Minimum Design Standard 15.02) for OWS and the design worksheet can be found at the end of this chapter.

### **15.3.4 WASTE FATS/OILS/GREASE**

External storage of bulk waste fats/oils/grease (FOG) has potential for materials other than stormwater to enter the storm sewer system. In the past, we have found that containers tend to leak around the extraction point, material is often spilled when transferring from the facility to the storage area, and storage covers are sometimes not properly sealed after material is added. If not properly contained, runoff from these areas flows into the storm sewer and, over time, clogs the pipe(s).

To address these problems, all plans of development (PODs) that generate FOG must be designed in accordance with the following guidelines:

1. The storage location must be clearly shown on the plans;
2. The storage barrels/bins must be stored “under roof” to eliminate rainfall intrusion;
3. A floor drain that discharges to the sanitary sewer is required where the barrels/bins are located; and
4. The plans must include a detailed grading plan for the FOG storage area showing that the “under roof” area will drain to the floor drain and the area that is not “under roof” will drain away from the storage area.

In lieu of meeting these requirements, internal grease extraction units are an acceptable alternative for FOG storage. This minimizes the potential for external leaks and spillage and no additional precautions are needed to prevent FOG from entering the storm sewer system.

All plans that generate bulk FOG must include a note on the cover sheet stating how the FOG storage will be addressed (either by using barrels/bins for outdoor storage or by using an indoor grease extraction unit).

### **15.3.5 FLOOR DRAINS**

All plans must ensure that no cross connections are made between sanitary sewer systems and storm sewer systems. No connections (i.e. floor drains) are allowed from inside a building structure to the County storm sewer system.

### **15.3.6 POOL DRAINS**

Pool drains may not discharge directly into the County's storm sewer system.

## MINIMUM DESIGN STANDARD 15.01 TRASH RACK

### **Definition**

A trash rack is a device that is used to prevent trash and other debris from entering storm sewer inlets while not obstructing the flow of stormwater.

### **Purpose**

Certain land uses have the potential for generating litter that could be conveyed by stormwater runoff. These land uses include, but are not limited to, shopping centers, fast food restaurants, and convenience stores. Curb inlets on these types of projects must be equipped with grates or other device to collect trash and prevent the debris from entering the storm sewer systems.

### **Design Criteria**

Trash racks must be constructed according to the following design criteria:

- ❑ The trash rack must be constructed of reinforcement steel or similar material and must be epoxy coated or galvanized.
- ❑ The trash rack must be constructed to provide a maximum of two inch openings between the rebar or in the grate.
- ❑ Trash racks are not allowed on inlets that have the potential to flood a public roadway if the inlets become clogged.

### **Maintenance**

- ❑ Trash racks must be cleaned periodically of trash and other debris.
- ❑ The collected debris must be disposed of in a proper trash receptacle.
- ❑ The source of the trash and debris must be addressed.

## MINIMUM DESIGN STANDARD 15.02 OIL WATER SEPARATOR

### **Definition**

An oil water separator is a device that is installed in conjunction with fueling stations to remove hydrocarbon fuels and lubricants from stormwater and washwater.

### **Purpose**

The purpose of an oil water separator is to remove fuels and lubricants in stormwater and washwater that would otherwise be flushed into the storm sewer system or receiving channels.

### **Design Criteria**

- ❑ The Oil / Water Separator (OWS) must be designed according to the American Petroleum Institute (API) standards.
- ❑ If the OWS will be designed by the engineer, the design calculations and details must be submitted for review.
- ❑ If a pre-manufactured OWS will be used, the following information must be submitted for review:
  - The design calculations for sizing the OWS.

$$Q = A \times I$$

where: Q is the design flow to the OWS

A is the area draining to the OWS

I is the amount of rainfall = 1.6 in/hr/ft<sup>2</sup> under the canopy

= 2.8 in/hr/ft<sup>2</sup> outside of canopy

- ❑ A statement from the manufacturer indicating that the OWS is designed per the API standards.
- ❑ A detail drawing of the OWS must be shown on the plans.
- ❑ A trench drain system must be installed to divert the wastewater to the OWS.
- ❑ The trench drain must fully encompass the area that produces wastewater.
- ❑ The area that produces wastewater must be covered. The canopy must be labeled and the trench drain should be inside the drip edge of the canopy.
- ❑ The area that produces wastewater must be graded so the runoff from the surrounding area will not enter the trench drain. Spot grades around the fueling pad must be shown on the plans.

- IF THE WASTEWATER WILL BE DIVERTED TO THE SANITARY SEWER SYSTEM:
  - The OWS must be approved by the Department of Public Utilities. (The Department of Public Works will not review the OWS).
  - A trench drain system must be installed to divert the wastewater to the OWS.
  - The trench drain must fully encompass the area that produces wastewater.

OIL WATER SEPARATOR DESIGN WORKSHEET

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

Date: \_\_\_\_\_

**IF THE WASTEWATER WILL BE DIVERTED TO THE STORM SEWER SYSTEM:**  
**Checked items must be addressed**

- ❑ The Oil / Water Separator (OWS) must be designed according to the American Petroleum Institute (API) standards.
- ❑ If the OWS will be designed by the engineer, the design calculations and details must be submitted for review.
- ❑ If a pre-manufactured OWS will be used, the following information must be submitted for review:

- a. The design calculations for sizing the OWS.

$$Q = A \times I$$

where:      Q is the design flow to the OWS  
              A is the area draining to the OWS  
              I is the amount of rainfall = 1.6 in/hr under the canopy  
  = 2.8 in/hr outside of canopy

- b. A statement from the manufacturer indicating that the OWS is designed per the API standards.
  - c. A detail drawing of the OWS must be shown on the plans.
- ❑ A trench drain system must be installed to divert the wastewater to the OWS.
  - ❑ The trench drain must fully encompass the area that produces wastewater.
  - ❑ The area that produces wastewater must be covered. The canopy must be labeled and the trench drain should be inside the drip edge of the canopy.
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**Pollutant Removal**

There is no additional pollutant removal efficiency associated with level oil water separators.