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Of Special Interest:

- What is an Illicit Discharge?
- Is Pet Waste Harmful to Local Waters?
- Where Can Household Hazardous Wastes Be Safely Discarded?
- What is an MS4 Permit?

What is Stormwater?

Stormwater is the excess runoff water that comes primarily from precipitation (rain or snow) that runs off of impervious surfaces like streets, driveways, sidewalks, parking lots and building rooftops. These impervious surfaces block the ability of the precipitation to absorb into the soil, which creates runoff. As the stormwater travels across these and other surfaces, like lawns and construction sites, it picks up pollutants along the way, such as fertilizers, trash, debris, leaves, litter, pet waste, and sediment, and carries it all straight to the nearest receiving river, creek, or stream. The stormwater is transported overland or by way of an open ditch, swale, or underground storm pipe, the



Diagram courtesy of City of Fairchild, OH

latter of which collects the stormwater through a catch basin or a drainage inlet in a parking lot or along the street curb.

Household wastewater travels from toilets, sinks, and showers to a wastewater treatment plant through the underground sanitary sewer system. However, *stormwater runoff is not treated!* Thus, most pollutants that end up on the ground ultimately end up in the area's

local waterways, where they have a direct affect on water quality. The Roanoke River and most of its tributaries have been negatively affected by polluted stormwater runoff and, as a result, the Virginia Department of Environmental Quality (DEQ) has classified them to be impaired due to three main pollutants: Sediment, bacteria, and polychlorinated biphenyls (PCBs).

What are the Main Pollutants in Stormwater?

Polluted stormwater may carry a host of different contaminants, which can be divided into three main categories: (1) *Natural* - leaves, shrubs and grass clippings, sediment, pet waste; (2) *Chemical* - detergents, oil, grease,

gasoline, pesticides, fertilizers; and (3) *Litter* - cigarette butts, plastic bags, drink containers, food wrappers, etc. How these products affect waterways varies somewhat. For example, **sediment** clouds waters, clogs storm drain pipes,

smothers fish eggs, and limits the ability of water plants to use light as their energy source. **Organic material** (leaves, grass, etc.) uses up vital oxygen in water, making it hard for fish and other critters to breathe. **Litter** clogs pipes

and waterways; it also causes toxicity from the breakdown of materials. The latter negatively affects plants, fish, and wildlife.



Pollutants reach streams thru storm drainage inlets and underground pipes.

How Can You Reduce Stormwater Pollution?



Wash your car in the grass, which is a natural filter, or take your car to a commercial car wash facility.

Motor oil, antifreeze, pet waste, fertilizers, pesticides, detergents, yard debris, litter, sediment, and car wash runoff water have a major impact on the quality of stormwater runoff, which negatively affects downstream receiving waters.

Certain products and practices are necessary to maintain automobiles and homes. That makes it even more important to follow label instructions carefully and to properly dispose of any excess. If you have questions about disposing of car care products, lawn and garden supplies, or household hazardous waste, contact:

**Roanoke Valley Resource Authority (RVRA)
(540) 857-5820**

In addition, there are some simple things you can do around your home to ensure that you do not negatively impact stormwater runoff from your property, such as:

- Sweep street gutters and driveways often and place the sweepings on the garden, compost pile, or in the trash.
- Prevent soil or mulch from being washed or blown off the lawn or garden.
- Rake up leaves or lawn clip-

pings and use them as mulch on a garden or compost pile.

- Seed or re-plant areas of disturbed soil.
- Consider natural alternatives to pest control chemicals.
- Maintain the car, repair leaks, properly dispose of fluids, and clean up oily spills using cat litter.
- Use the minimum amount of non-phosphate detergent for car washing.
- Wash your car on grass or gravel, or take it to a commercial car wash, where the water is recycled.

Stormwater Rules and Regulations in Virginia

Roanoke County has been issued a Municipal Separate Storm Sewer System (MS4) permit by the Virginia Department of Environmental Quality (DEQ). It requires focus on six Minimum Control Measures, including Public Education.

The Virginia Department of Environmental Quality (DEQ) regulates stormwater discharge from municipal separate storm sewer systems (MS4s) as point source discharge. DEQ derives its authority from three distinct programs: the Virginia Stormwater Management Act, the Virginia Stormwater Management Program (VSMP) Regulations, and the Clean Water Act (through the VPDES Permit Program). As described on DEQ's website, the MS4 regu-

lations were developed and implemented in two phases. Implementation of the first phase began in the early 1990s and required that operators of MS4s serving populations of greater than 100,000 people (per the 1990 decennial census) apply for and obtain individual permits to discharge stormwater from their outfalls. The second phase of MS4 regulations became effective March 23, 2003, and required that operators of small MS4s in

"urbanized areas" (as defined by the latest decennial census) obtain coverage under a general permit to discharge stormwater from their outfalls. Roanoke County is classified as a small MS4, and thus operates under the General MS4 Permit.

The MS4 Permit aims at reducing pollutants in stormwater runoff by focusing on six Minimum Control Measures (MCMs), including Public Education/Outreach.



No, She is not The Poop Fairy

There is no such thing as a poop fairy. Dogs have to poop outside, and that is just THE WAY IT IS. Dogs do not know how to use a toilet.

Poop carries harmful bacteria, via stormwater runoff, to local receiving waters, including the Roanoke River and all of its tributaries. Most of these water bodies are impaired due to high

levels of bacteria. The bottom line is this:

POOP POLLUTES:

- Neighborhoods
- Rivers
- Streams
- Lakes
- The Beach

So, do the right thing.
SCOOP THE POOP.

Pet poop contains harmful bacteria, such as *E. coli* and *fecal coliform*. If left on the ground, it is swept off by stormwater runoff straight to local waterways, making them potentially unsafe for human contact. So, "bag it and trash it."

Yard Management 101: Protecting Stormwater

Did you know that excess fertilizer from your lawn runs off of the land surface when it rains, polluting nearby creeks and streams? In fact, pollution from nutrient runoff is one of the most severe problems facing local waterways. Runoff that carries excess nutrients causes excess algae growth, which reduces water clarity, and decreases dissolved oxygen. This stresses fish and other aquatic plants and animals.

So, what is a yard owner to do? Certainly most of us want to have a beautiful, green lawn. There are quite a few Best Management Practices (BMPs) that you can employ to ensure

you have a lush, green lawn while protecting local waters from harmful, polluted runoff. Follow these easy steps:

- Apply fertilizer ONLY when your lawn is actively growing.
- Test your soil to determine how much fertilizer it actually needs.
- Fertilize just enough to get a dense stand of grass; this helps to prevent erosion and retain nutrients.
- Use slow-release nitrogen fertilizer, so it is there when the grass needs it.
- Set mower height to at least 3 inches to strengthen and deepen the root system.

- Retain clippings and mulched leaves on the lawn to add organic matter, which improves infiltration and soil health.

- Immediately sweep excess fertilizer from paved surfaces onto lawn areas.
- Do not apply fertilizer within 15 feet of a ditch, creek, stream, or river.
- Help stormwater infiltrate into the soil by aerating and top-dressing it with 1/4 inch of compost once or twice a year when the grass is actively growing.
- Install rain gardens, permeable pavers, and rain barrels to reduce runoff.



Reduce, Reuse, Recycle for a Clean Environment

By reducing, reusing, and recycling everyday products used around the house and office, we can all limit the amount of waste that gets thrown away and sent to the local landfill.

Thus, practicing the three R's helps to save energy, conserve natural resources, and minimize the size of the local landfill. Ultimately, this helps everyone save MONEY! Here are a few helpful tips to get started:

Reduce - limit waste by not producing it.

- Buy in bulk
- Avoid over-packaged goods
- Make 2-sided copies
- Use cloth napkins/towels instead of paper

Reuse - reuse products when feasible.

- Reuse paper or plastic grocery bags
- Rinse and reuse plastic baggies

Buy used clothes or donate some to charity

- Use plastic plates instead of paper plates

Recycle - process old materials into new ones, such as:

- Paper
- Batteries
- Plastics
- Glass
- Used Motor Oil
- Tires

Practice The Three R's

- **Reduce waste by simply buying less**
- **Reuse unwanted items by selling or donating them**
- **Recycle old products into new ones**

Proper Disposal of Hazardous Household Wastes

There are many ordinary household products that are highly toxic to fish, wildlife, plants, domestic animals, and humans if improperly handled or improperly discharged. Some of the products that can be toxic to the environment may surprise you. Here is a partial list: *Motor Oil, Lawn Fertilizer, Bleach, Ammonia, Detergents, Pesticides, Charcoal,*

Pool Cleaners, Weed Killer, Paint, Cooking Oil, Battery Acid, and Gasoline, to name a few.

You may dispose of hazardous household waste products, for FREE, at the Roanoke Valley Resource Authority's (RVRA's) Household Hazardous Waste Collection (HHWC) facility, located at the Tinker Creek Transfer Station. This facility

serves the residents of Roanoke County, Town of Vinton, and City of Roanoke ONLY.

RVRA's HHWC facility accepts many items during its normal business hours and others during free monthly collection events.

For more information, contact RVRA at **(540) 857-5820** or on the web at <http://rvra.net>.



MANY ordinary household chemicals are toxic to fish, plants, and wildlife if poured on the ground or into a storm drain.



Division of Stormwater Management
5204 Bernard Drive, 2nd Floor
Roanoke, Virginia 24018
Phone: (540) 772-2080
Fax: (540) 772-2108
www.roanokecountyva.gov



Just one gallon of motor oil poured into a storm drain can pollute one MILLION gallons of water in nearby receiving streams.



Tree branches and leaves dumped by homeowners are a common cause of storm drain blockages that contribute to flooding during heavy rains.

How to Identify and Report an Illicit Discharge

What in the world is an Illicit Discharge? It is generally anything, except rainwater, that enters the County's storm drainage system. Illicit discharges may include pet waste, motor oil, trash, lawn/leaf debris, kitchen grease, discarded household chemicals, or even chlorinated pool backwash.

If you see someone placing anything into the storm drainage system, which includes storm drainage inlets, roadside ditches, curb and gutter systems, and underground

drainage pipes, please report the activity to the County by clicking on "Report a Concern" on the home page of the County's website at <http://www.roanokecountyva.gov> or call (540) 772-2080.

If possible, take a picture of the illicit discharge activity when it is occurring and forward the pictures to the County's Stormwater Program Manager in the Community Development Department, Stormwater Division, at 5204 Bernard Drive, 2nd Floor, Roanoke, Virginia 24018, or by email: stormwater@roanokecountyva.gov

County staff will investigate the incident and attempt to resolve the issue.

To learn more about the harmful effects of illicit discharges on the area's receiving waters, please see the County's various public education videos, under Stormwater, at: <http://www.roanokecountyva.gov>



Please, only rain down the storm drain.