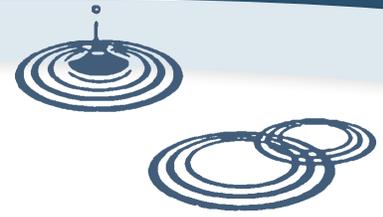


Know your watershed - know your waterway



Activities to learn about watersheds, streams, and stormwater features

This resource sheet explains some of the terms and concepts about stormwater and the important role it plays in our community.

Teacher Information Resource Sheet

Source: Modified from Colorado Department of Public Health

1. Why is Urban Stormwater Such a Big Issue?

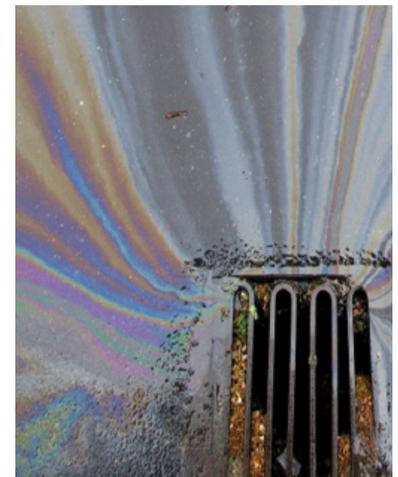
- Urban stormwater pollution is pollution that runs off urban landscapes and into storm drains as a result of rainfall and snowmelt events. Stormwater pollution differs from more conventional pollution sources that are discharged from a discrete source (such as a treatment plant or factory) and are more easily identified for control measures. Although not actually composed of stormwater runoff, other sources of urban pollution from diffuse sources, such as dumping of used oil into stormwater drains or waterways, are often included in urban stormwater education and control programs.
- In Clark County, nearly all stormwater runs directly into surface waters, including lakes and streams, without any treatment via inlets, catchbasins and pipes. This runoff typically contains pollution that has harmful effects on drinking water supplies, recreation, fisheries and wildlife.
- Contaminated stormwater runoff is arguably the primary cause of water pollution throughout the United States today. Stormwater runoff from urban areas is the number one cause of environmental degradation of the nation's rivers and streams, and the third leading cause of environmental degradation in the nation's lakes.

2. What are the Sources of Stormwater Pollution?

- Stormwater pollution may include sediment (eroded soil); litter; fecal bacteria (e.g. from pet wastes and sewage/septic systems); nutrients and toxic organic chemicals (such as fertilizers, soaps, pesticides, oil, grease, gas, and antifreeze); toxic inorganic chemicals (heavy metals such as lead, zinc, copper and cadmium); salts; acidic and alkaline chemicals (such as bleach and battery acids); and other contaminants.
- Population growth and development have increased the amount of land covered by hard or paved surfaces (impervious) in urban areas. Large volumes of storm runoff alter or increase the frequency and duration of peak flow events. This can cause erosion and flooding.

3. How Does Stormwater Pollution Affect Streams and Lakes?

- Stormwater pollution and flows may cause erosion/sedimentation; turbidity; eutrophication; diseases; lethal and sublethal toxic effects (which may be acute or chronic); increased salinity; physical impairment (altered temperature and flow regimes); disruption of habitat structure (changing stream beds, vegetation); and stream bank and channel instability that adversely affects living organisms.
- Eutrophication (of lakes and reservoirs) is a state of high nutrient (nitrogen and phosphorus) enrichment that promotes excessive algae growth. When the algae dies and decomposes, it depletes the water of oxygen needed by fish and other aquatic organisms.



(continued from front)

4. Stormwater Regulations.

- The State of Washington's Department of Ecology regulates stormwater pollution by issuing permits for stormwater discharges from industry, construction sites, and some government entities ("municipalities") located in urban areas that are responsible for stormwater drainage. In addition to cities, counties, municipal districts, and other similar entities. These permits require: (1) public education and outreach on stormwater impacts, (2) public involvement/participation, (3) illicit discharge detection and elimination, (4) construction site stormwater runoff control, (5) post-construction stormwater management in new development and redevelopment, and (6) pollution prevention/good housekeeping for municipal operations. Regulations require the use of BMPs to reduce or eliminate sources of stormwater pollution. For additional information on the stormwater regulations, contact Clark County's Clean Water Division, Environmental Services at (360) 397-2121 x 4345 or www.clark.wa.gov/stormwater.

5. Stormwater Best Management Practices: Solving the Problem!

- Best Management Practices (BMPs) are pollution controls that we can perform or install to prevent or reduce water pollution originating from human activity. BMPs consist of both structural and non-structural BMPs.
- Structural BMPs include, but are not limited to, detention ponds, infiltration basins, construction site silt fences, porous pavement, stream setbacks, stream bank stabilization, sand filters, grass strip biofilters, wetlands, and reducing impervious area. This grouping also includes rain gardens, bioretention and other infiltration techniques.
- Non-structural BMPs include, but are not limited to, education, maintenance practices (street sweeping and pavement repair), recycling (toxic chemicals), signage, and pollution prevention methods.

6. Point Source vs. Non-Point Source.

- All sources of stormwater pollution were traditionally defined as "Non-Point Source Pollution." "Point Source" pollution was defined as discharges from a discrete point, such as a pipe at a factory. Many references will therefore refer to urban stormwater pollution as urban non-point source pollution. However, since the early 1990's, state and federal regulations have defined certain sources of stormwater runoff as point sources requiring point source discharge permits. Therefore, urban stormwater will often be referred to as both a non-point source, because of the diffuse nature of the pollution sources, and as a point source, because it is regulated as a point source and discharge permits are issued.



*Bioretention Swales -
Luke Jensen Sports Park*



Clark County Clean Water Division
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* This resource sheet is part of a series to help students learn about stormwater. Information can also be used to complete the Washington Green Schools audit and assessment forms. Look for the green tags for help!

