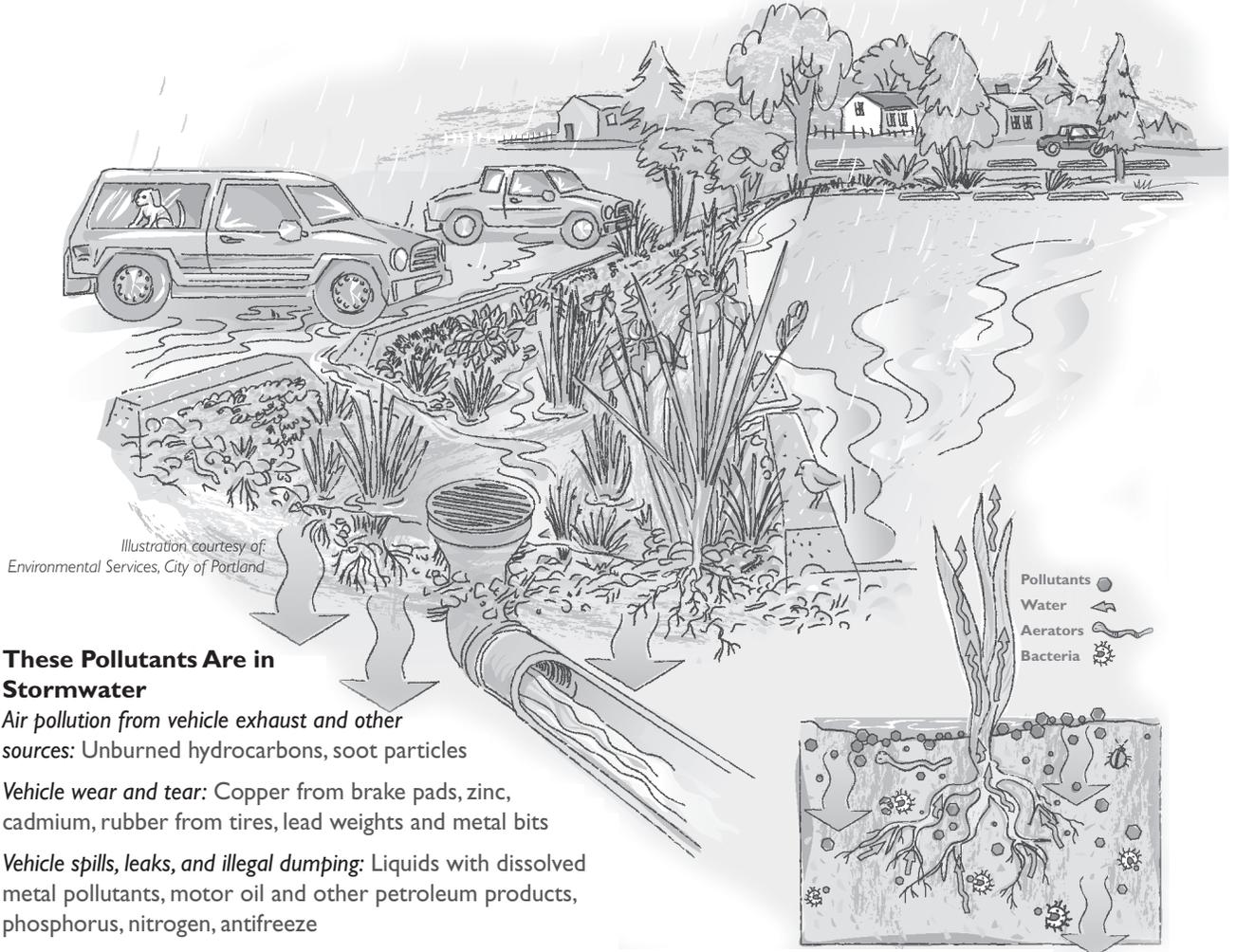


Stormwater Swales

A Natural Way to Reduce and Clean Water from Parking Lots, Roads and Other Impervious Surfaces

A swale is a long, gently sloping, landscaped depression that collects and cleans stormwater. When it rains, water runs over pavement and other hard surfaces, picking up pollutants along the way. Much of this polluted stormwater runoff goes to storm drains and into our rivers and streams. Swales collect and slow down stormwater. The soil and plants in these swales can filter and clean water before it drains into sewers, groundwater, rivers, and streams.



These Pollutants Are in Stormwater

Air pollution from vehicle exhaust and other sources: Unburned hydrocarbons, soot particles

Vehicle wear and tear: Copper from brake pads, zinc, cadmium, rubber from tires, lead weights and metal bits

Vehicle spills, leaks, and illegal dumping: Liquids with dissolved metal pollutants, motor oil and other petroleum products, phosphorus, nitrogen, antifreeze

Animal waste: Fecal bacteria

Why These Pollutants Are Harmful

Dissolved metals are toxic to sensitive aquatic life.

Petroleum products contain toxic hydrocarbons and can pollute large volumes of water.

Fecal bacteria can make water unsafe for recreation by conveying diseases to humans, pets, and wildlife.

Phosphorus and nitrogen are nutrients for aquatic vegetation, but in overabundance, can cause overgrowth and/or abnormally huge blooms of algae within water bodies.

Sediment can fill in our rivers and streams, changing aquatic habitat. It can also bring in pollutants such as fertilizer and pesticides attached to sediment particles.

How Swales Work

Adsorption: Pollutants in water attach to the surface of soil particles, where roots and bacteria can use them or where they are retained.

Storage: Roots, insects, and worms increase the space between soil particles making more room for stormwater runoff storage.

Plant Uptake: Water, nitrogen, phosphorus, and trace elements are used for plant functions.

You Can Help Minimize Automotive Pollution

The average car produces one pound of pollutants every 25 miles driven.

Use your car less. Combine trips, bus, carpool, bike, or walk.

One quart of motor oil can contaminate more than 250,000 gallons of water.

Take care of your car and watch for leaks.

Properly dispose of motor oil. In the City of Eugene, you can put motor oil in a 1 gallon plastic milk jug. Label it "USED MOTOR OIL" and recycle it at the curb.

Particles from brake pads, car exhaust, and tires pollute our rivers and streams.

Make sure tires are properly inflated and aligned to reduce wear.

Slow down. Driving over 55 mph reduces your gas mileage and wears out tires faster.

Soak up spills or dripped auto fluids with kitty litter, then sweep up the litter, bag it and dispose of it in the trash can.

Wash vehicles on your lawn (if possible) using non-phosphate soap or at a car wash that recycles water.

Maintenance

Remove trash from swales. It looks better and helps keep drains from getting clogged.

Sediment collecting near curb cuts may need to be scooped up occasionally. Toss sediment in the garbage.

Walk around swales, or use stepping stones to walk across instead of compacting soil, which can decrease water infiltration.

Join or form a group that adopts a swale to plant native plants and remove non-native, invasive plants.

Get your local school to do water quality tests to see how well a swale is working.



Illustration courtesy of:
Environmental Services, City of Portland

Terms to Know

ADSORPTION: Attachment of pollutants in water to soil particles, resulting in retention of pollutants.

BIOFILTRATION: A pollution reduction technique which uses plants to remove pollutants from water.

HEAVY METALS: Common elements like zinc, lead, copper, chromium, and cadmium that can be toxic to aquatic life when dissolved in water.

HYDROCARBONS: Toxic chemicals made of carbon and hydrogen, like motor oil and gasoline.

IMPERVIOUS SURFACE: A hard surface that does not allow fluids, like water, to pass through it.

INFILTRATION: The flow of a fluid through pores or spaces in a substance. An example of infiltration is water moving through the spaces in soil.

NITROGEN: A prevalent element that is an essential nutrient for plants, but can have harmful effects in large quantities.

PETROLEUM: A flammable liquid hydrocarbon such as gasoline, motor oil, or hydraulic fluid.

PHOSPHORUS: An element that is an essential nutrient for plant growth.

PHYTOEXTRACTION: The removal of essential elements and pollutants from soil and water by plant roots.

TRACE ELEMENTS: Elements essential to plant or animal life but required in only small amounts, such as trace amounts of manganese, zinc, iron, molybdenum, cobalt and copper.



For more information: contact Public Works staff at the Permit Information Center (PIC).

In person: 99 W. 10th Ave. (Atrium Building) from 9 a.m. to 5 p.m., Mon.-Fri.

Voice-mail: 541-682-8400

Email: cewepic@ci.eugene.or.us

Web: www.eugene-or.gov/stormwater

(See section 2.9 of the City of Eugene's Stormwater Management Manual for details.)