Watershed Development

Storm water runoff from your property—urban or rural—contributes to flooding and water quality degradation. Water runoff from roofs, driveways, lawns and gardens carries pollutants such as hydrocarbons, heavy metals, sediment, bacteria, nutrients, grass clippings, and floatable liter.

Storm water runoff causes frequent surges in stream flows. These "flashy" flows or high flows/low flows cause stream corridor erosion, which contributes sediment to the water. Storm water also increases flood potential.

By coming together as a community, you may accomplish more by considering the entire watershed. A watershed is the area of land that drains into a river, stream or lake. In a watershed, water flows from the land downhill to streams, which flow into larger streams that empty into a river or lake.

By improving the way we manage the land in our cities, farms and natural areas, we can reduce water runoff and improve water quality. Reducing runoff also helps to alleviate flood damage to property and infrastructure such as roads and bridges.

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Learn more about the Iowa Department of Agriculture and Land Stewardship's commitment to build a culture of conservation.

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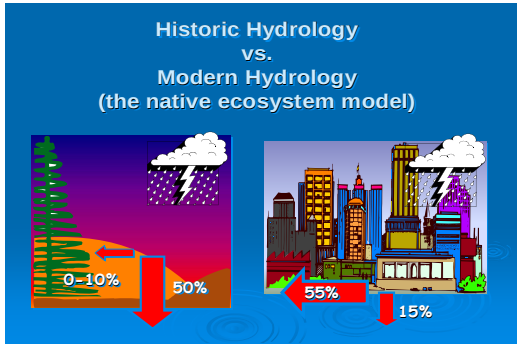
URBAN CONSERVATION PROGRAM

Understanding Hydrology

Iowa's urban hydrology works much differently than it did when our landscape was dominated by prairie. The prairie ecosystems of the past infiltrated more than 90 percent of rainfall. The root systems of native prairie grasses and flowering species reached down deep into the soil profile. Through the natural process of root system decay, rich and porous soils developed with the ability to infiltrate most rainfall into the soil. Consequently, surface waters were fed by cool, clean groundwater discharge rather than runoff. Before the prairie systems were disturbed and eliminated, surface waters had good water quality, stable water levels and flooding was minimized.



In our modern urban hydrology, up to 55 percent of the storm water becomes runoff, as compared to 10 percent on the prairie. Impervious surfaces like roads, roofs and parking lots generate runoff immediately. Green spaces, including lawns, often have compacted soils that cannot infiltrate water.

Installation of best management practices (BMP's) helps restore hydrological functionality, or the ability of our urban landscapes to infiltrate rainfall. By installing BMP's, you reduce your property's contribution to water quality degradation, flashy stream flows and flooding.

What is your hydrologic footprint?

An individual's management of their property affects their hydrologic footprint, or the amount of runoff they send to receiving waters. Urban landscapes generate runoff with almost every rainfall event. In Iowa, rainfall averages from 28-36 inches per year. That means an acre of land in Iowa receives anywhere from 760,000 to 977,500 gallons of rain in a typical year. A half-acre urban lot in central Iowa receives about 434,500 gallons of rain each year. In order to visualize how much water 434,500 gallons, imagine capturing all that rainfall in 50-gallon barrels. You'd need a row of barrels about four miles long.

Just the impact of a 1-inch rain is significant. Did you know that 1 inch of rain on the rooftop of a 2000-sq ft home will generate 1,247 gallons or twenty-five 50-gallon barrels of water?

If you're curious, you can calculate how many gallons of rainfall your property receives. Go to the Johnson Soil and Water Conservation District website (www.jcswcd.org) to perform a rain water audit.

Since every urban community has a complex landscape, there are many measures that can be taken to capture storm water and allow for infiltration. A combination of practices working together may be used to manage water sustainably and reduce your hydrologic footprint. These include bio-retention cells, rain gardens, bio-swales, soil quality restoration, pervious pavement and other infiltration practices.

Best Management Practices

Rain Gardens. A rain garden is a depressional area located to capture and infiltrate runoff. In most settings, a rain garden can be successfully installed. But there are certain situations where a rain garden might not be the right practice to install. A high water table or compacted soils may exist that won't allow water to percolate through the soil profile. In these cases, soil quality restoration may help your landscape better absorb rainfall.

Healthy Soils. Soil quality restoration involves deep tillage or aeration to shatter compacted soils and incorporation of compost to achieve high organic matter content. By increasing soil organic matter, you increase the infiltration of water into the soil and the soil's capacity to hold and utilize the water.

Pervious Pavement. Pervious paving systems allow water to infiltrate into rock layers for storage below the surface and into soil and groundwater below. Depending on the site, pervious paving systems may result in significant savings by eliminating required detention ponds.

Native Landscaping. Native landscaping can be used strategically to build soil quality, provide habitat for birds and insects, and reduce the need for watering, mowing, fertilizer and pesticide application.