



Green Infrastructure

As our population has grown, natural landscapes, prairies and forests have been replaced by agricultural land and sprawling cities. Stormwater, once easily absorbed into the ground, now flows as runoff across pavement and other hard surfaces. Stormwater runoff is comprised of water from rain or snowmelt that flows over hard, non-absorbent surfaces, also known as impervious surfaces, like driveways, roofs, sidewalks, and streets. Stormwater gains speed as it travels across these impervious surfaces. The increased speed and volume of runoff reaching the banks of a water body causes erosion. Stormwater picks up chemicals, nutrients, debris, sediment, and other pollutants as it travels across the pavement to the storm inlet. Heat from roadways and other impervious surfaces increases the temperature of stormwater, causing a rise in the temperature of streams, rivers, and lakes. Untreated stormwater runoff can be harmful to the water bodies we use for swimming, fishing, and as a source of drinking water.

To counter the effects of excessive stormwater runoff, we can manage stormwater with green infrastructure. Green infrastructure involves the use of soils, plants, and land features that mimic natural processes to absorb the impact of stormwater where it first falls. This reduces the volume of runoff and pollutants entering our waterways. Using Green Infrastructure to manage stormwater, we can prevent untreated water from negatively impacting our environment. Common strategies include the collection and conveyance of stormwater runoff from roofs, driveways and other hard surfaces so that rain is absorbed into the ground through deep-rooted, drought-resistant native plants, or so it can be stored for re-use.

Incorporating Green Infrastructure into the landscape of your own property offers many benefits, including water conservation and aesthetic appeal.



Description:

Stormwater that runs off your roof often flows untreated into the storm sewer and directly to local waterways. Why not put that stormwater to better use? A rain barrel can capture a portion of the rainfall that lands on your roof and store the water for later use. A rain barrel is a container that captures and stores rainfall from a roof downspout for non-potable uses like irrigation. Rain barrels come in a wide variety of materials, designs, and colors to suit your particular needs. Capturing and reusing rainwater from your roof reduces demand on the storm sewer system and protects the quality of streams and groundwater.

Considerations:

In the summer, lawn and garden watering accounts for 40% of average household water usage. A rain barrel can potentially save a homeowner approximately 1,300 gallons of water during the summer months of peak water usage by storing water from a rainfall for later use. A rain barrel can cost anywhere from \$20 to \$300, and is fairly easy to build and install on your own.

- Install the rain barrels with the location where you intend to use the stored water in mind.
- Consider multiple rain barrels based on the size of your roof and reuse needs.
- Make sure your rain barrel has an overflow to a safe location.
- Secure your rain barrel on a firm, level surface. A full 55-gallon rain barrel weighs more than 450 lbs.
- Rain barrels must be structurally sound. Containers such as trash cans are not designed to withstand great water pressure and should not be used.
- Larger and more complex rainwater collection systems like cisterns have greater storage capacities and often require pumps. It is best to consult a professional for help in designing and installing a large collection system.

To learn more about this and other Green Infrastructure strategies, visit:

www.OmahaStormwater.org



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A well-designed rain garden is able to successfully manage stormwater runoff by catching rainwater where it initially falls. Rain gardens are defined as shallow ground depressions that use native and adapted plants to absorb and filter stormwater running off your roof, driveway and other hard surfaces. As the water captured by the rain garden drains through the soil of the rain garden, pollutants are absorbed by the vegetation and prevented from entering our waterways. Conventional landscapes typically have compacted lawns and bermed planting beds that force stormwater to pass quickly over your property. Rain gardens prevent stormwater from running off the lawn, thereby allowing water to soak into the ground. A rain garden is a functional and beautiful solution for stormwater management, and it offers many benefits, including providing a habitat for birds and butterflies. Rain gardens are an important way to make our cities and neighborhoods more attractive places to live while enhancing ecological health.

Considerations:

Rain gardens are fairly simple to create and maintain. Even a small rain garden can help prevent stormwater pollution from entering our water resources. To prevent damage to utilities, always call Diggers Hotline of Nebraska at 800-331-5666 before you start your project.

- Map out your rain garden by choosing spots that are down slope of downspouts or paved areas that will drain into it.
- Typically rain gardens are 100 to 300 square feet and designed to completely drain within 24 hours.
- For better drainage, till compost into the soil. In the case of a large rain event, make sure to include an overflow point to safely convey excess stormwater away from the garden toward the storm sewer.
- Your rain garden should blend into the landscape but not be built beneath the canopy of any trees. Disturbing the soil beneath a tree can cause damage to its root structure.
- Test the soil for infiltration to determine how deep to make the rain garden. If your soil absorbs 0.25" per hour, you can expect 6" to soak in over 24 hours.

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Downspout Disconnection



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Description:

Your home's downspouts are either connected from your roof gutter directly to the city storm sewer, or they discharge stormwater straight onto your property and subsequently into a storm inlet. In each situation, stormwater flows unimpeded into our waterways. Stormwater absorbs heat from roadways and other hard surfaces, raising the temperature of streams, rivers, and lakes – thus creating an unfavorable environment for the receiving streams' ecosystems. As water travels across hard surfaces including pavement, roofs, and even turf grass, it collects whatever material is on its surface and picks up speed. The speed that water gains as it travels unimpeded over hard surfaces creates a powerful force that can scour away stream beds and erode stream banks. Coupled with the large increase in water volume traveling to the stream through storm sewer pipes during a rain event, increased speed can cause large amounts of erosion along the length of a stream or river. Motor oil, fertilizer, and dirt are just a few of the pollutants that stormwater can easily carry down your neighborhood storm inlet and deposit untreated into your local stream, river, or lake. By disconnecting your downspout and aiming the runoff from your roof at something green, you are allowing the stormwater an opportunity to soak into the ground where it lands.

Considerations:

Disconnecting downspouts and re-directing stormwater can help protect our water resources, but it must be done properly to prevent wet basements, flooding and erosion. Take a moment to consider where you are directing the stormwater and what effects additional water traveling to (or across) that area will have when it gets there.

- Disconnected downspouts should be extended to convey water at least six feet from the foundation of a structure.
- Make sure the water from your newly disconnected downspout flows over at least four feet of vegetation before it hits a hard surface.
- Direct the water to your lawn or a large landscape area. You might also consider building a rain garden or catchment cistern for the stormwater to run into.
- Avoid disconnecting downspouts in an area that does not drain well or is directed toward a wall or structure
- Make sure that excess flow from big storms will run to storm inlets rather than your neighbors' property.
- Hire professional assistance if needed to advise you or to do the work.

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