

Rain Gardens

Design and Installation
in Northwestern Ontario

A Guide for Planting Zones 2 to 4



By EcoSuperior Environmental Programs in partnership with Rusty Schmidt,
David Dods and Dan Shaw of Waterdrop Innovations.



ecosuperior



Waterdrop
Innovations LLC

About the Authors

EcoSuperior Environmental Programs is an incorporated not-for-profit organization, operated by a volunteer board of directors in Thunder Bay, Ontario. We are partnership-based and supported entirely through fee-for-service projects delivered for municipal, provincial and federal governments as well as corporate sponsors and other funding agencies.

Our mission is building a healthy future for people and the planet. In doing so, we offer a wide range of programs and services in Northwestern Ontario, from community workshops and school presentations to information resources and a growing retail operation of eco-friendly products. Our staff are actively involved in community events and committees.

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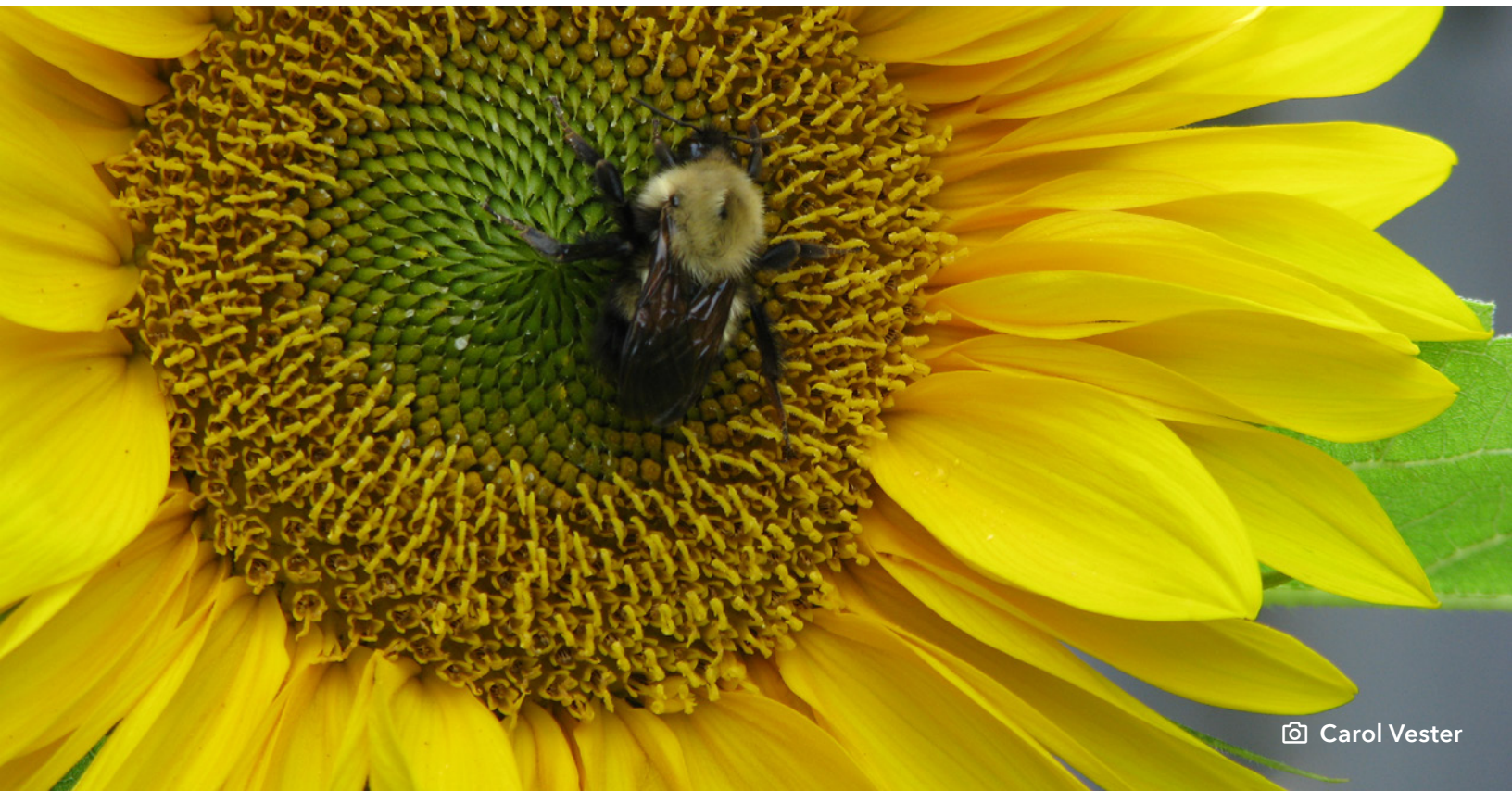
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Rain Garden Terms Simplified

Biennial: A plant that lives for two growing seasons before setting seed and dying.

Cultivar: A plant or group of plants that have been bred to enhance or maintain a desired size, colour or other characteristics.

Drainage area: An area that drains surface runoff to a specified point. A drainage area could be the portion of a rooftop that drains to a downspout, or a parking lot that drains to a catch basin.

Dry well: An underground drainage structure using clear stone lined with filter fabric to capture and slowly release excess water, most commonly surface runoff and stormwater. Also known as a leaching pit or French Drain.

Green infrastructure: The natural vegetative systems and green technologies within a municipality that provide economic, environmental and social benefits. This includes urban forests, engineered wetlands, rain gardens, green roofs, urban agriculture, parks and other greenspaces.

Grey stormwater infrastructure: Systems engineered by people to manage stormwater, including sewers, storm drains, pumps, ditches and ponds.

Groundwater: Water that collects or flows beneath the Earth's surface, filling the porous spaces in soil, sediment, and rocks.

Infiltration: The downward movement of water through the soil from the ground level.

Invasive species: An organism (plant, animal, fungus, or bacterium) that is non-native to a particular area and whose introduction results in harmful effects to a region's environment, economy or public health. Not all introduced species are invasive.

Low-impact Development: LID refers to systems that use or mimic natural processes to treat and manage stormwater, generally on the site that it falls, to reduce flows and improve downstream water quality and aquatic habitat.

Native species: An indigenous species. A native plant historically occurs naturally somewhere within the boundaries of a given region.

Perennial: A plant that lives for more than two growing seasons. Some perennials are woody (e.g. a shrub), whereas herbaceous perennials are non-woody and die back to the ground each fall. Perennials sprout new growth in the spring.

Rain Garden: A landscaped depression including native or adaptive perennial plants that captures rain water from a hard surface, such as a rooftop, and allows it to soak into the ground instead of running off into nearby storm drains.

Storm drain: A drain constructed (usually underground) to carry away excess water, such as surface runoff from a roadway, in times of rain or snowmelt.

Stormwater: The overland flow of surface water due to rain or snowmelt when the surrounding landscape is unable to absorb it.

Swale: A shallow channel with gently-sloped sides that is designed to carry water runoff. A bioswale uses vegetation such as grass or perennial plantings to also filter pollutants and increase rainwater absorption, whereas a rock-lined swale resembles a dry creek bed using a variety of stone types such as cobble or rip-rap.

Watershed: The entire land area draining into a specific body of water.

CHAPTER 1: INTRODUCTION

Rain Gardens: Your personal contribution to reduced runoff and cleaner water

Using rain as a resource

When rain falls on a forest, it travels a long and slow way to get from cloud to creek. A raindrop might land on the branch of a tree, and trickle down the trunk to the ground before being absorbed into leaf litter and natural mulch. Plant roots loosen the soil to let water soak in and move slowly through the subsurface to feed streams and recharge groundwater.

Now, if you take a walk in an urban neighbourhood on a rainy day, you'll notice that water moves around much differently. Traditionally in the past, cities designed for stormwater to be drained away from buildings and critical infrastructure as quickly as possible; during heavy rainfalls, this leaves little opportunity for water to soak into the soil and replenish groundwater. It might run off a hard surface such as a rooftop and down a driveway, over a sidewalk, and along a street. From there, it disappears into a storm drain and through a network of sewer pipes that empty directly into local streams and rivers, causing their banks to swell, which leads to erosion and flooding.

Along its way, runoff mixes with whatever it can carry in its path, including motor vehicle fluids, cigarette butts, litter, animal waste, road salts and other contaminants in the environment.



You might be surprised to learn that the majority of stormwater is not treated before it enters our rivers and creeks. What flows into storm drains eventually ends up in water bodies downstream.

Urban runoff not only affects local water quality—heavy rainfalls also carry the risk of wet basements and sewage backups. Rainwater and snowmelt might also pool in a low spot of your property or drip from the roof of a building, forming an erosion gully.

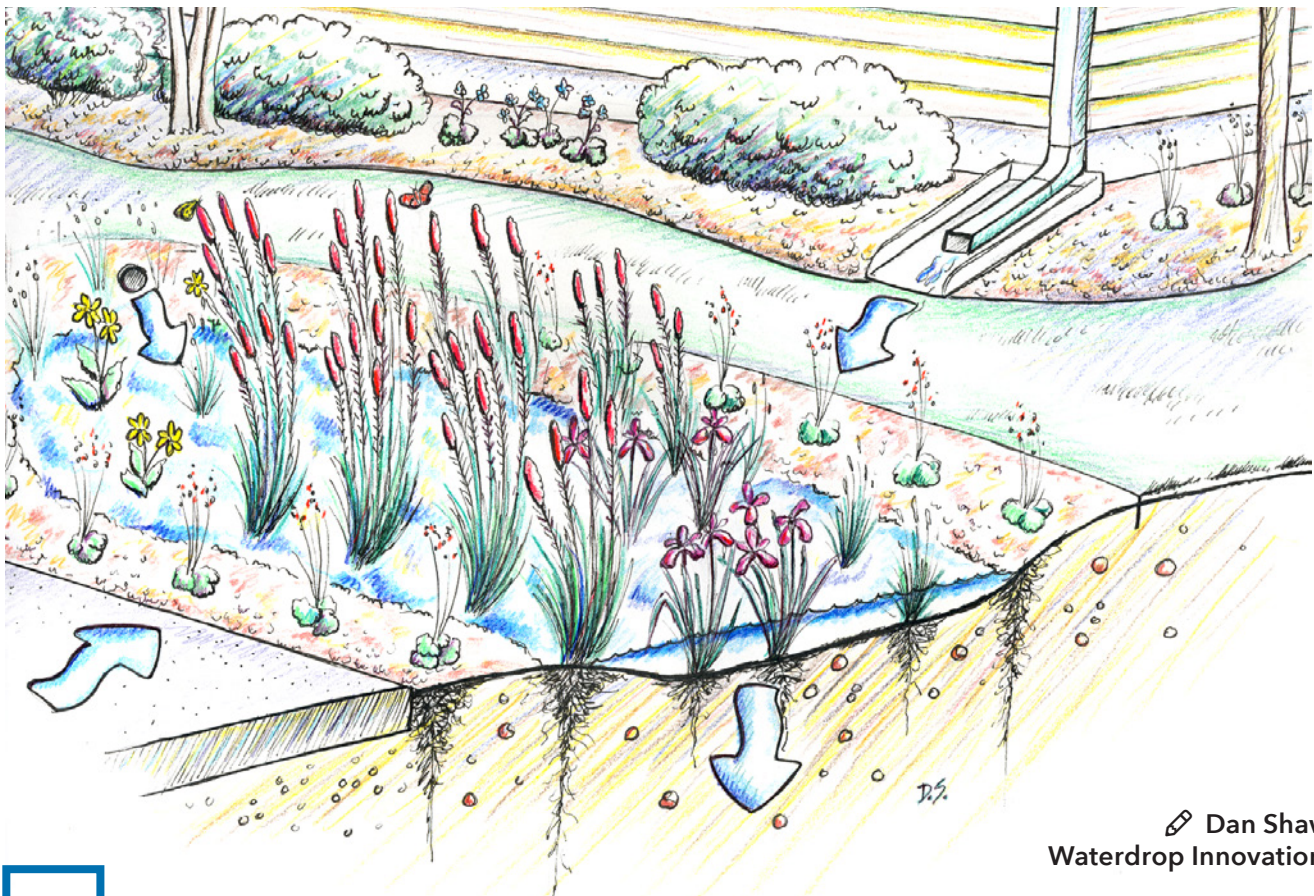
Natural approaches to managing rainfall can bring many benefits. This guide explores rain gardens as attractive, cost-effective landscaping that help to reduce urban stormwater runoff, improve household drainage, recharge groundwater and utilize rain as the resource that Nature intended.



What is a rain garden?

Rain gardens are perennial gardens with jobs—that is, they are designed for more than just good looks. Rain gardens are shallow, landscaped depressions that help to manage precipitation where it falls by capturing rainwater and snowmelt from the rooftop of a house or other hard surface via a downspout, filtering pollutants through the soil, and diverting water that would otherwise run off into storm drains. Rain gardens are often planted with native wildflowers, shrubs and grasses that can tolerate both wet and dry growing conditions.

Other features, such as a French drain or dry well, could be added beneath a rain garden to increase stormwater storage and infiltration under ideal conditions. If you have a large driveway or own a small business, we suggest consulting a landscape architect or an engineer to discuss more advanced techniques of managing runoff on your property.

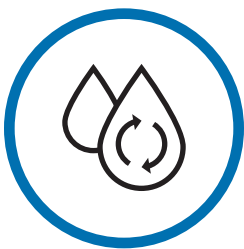


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Why are rain gardens important?

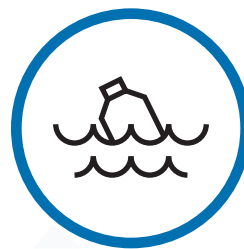
While an individual rain garden may seem like a small effort, collectively they can bring substantial neighbourhood and community environmental benefits. Rain gardens can help to achieve the following:



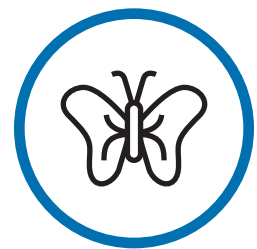
Recharge groundwater and restore the natural water cycle.



Protect neighbourhoods from localized flooding and drainage problems.



Keep local waterways clean by reducing the volume of polluted stormwater entering streams from storm drains.



Provide habitat for birds, butterflies and insects.

Frequently asked questions

1. Does a rain garden form a pond?

No. Rain gardens are designed to capture rainwater temporarily and drain within 24 hours.

2. Do rain gardens breed mosquitoes?

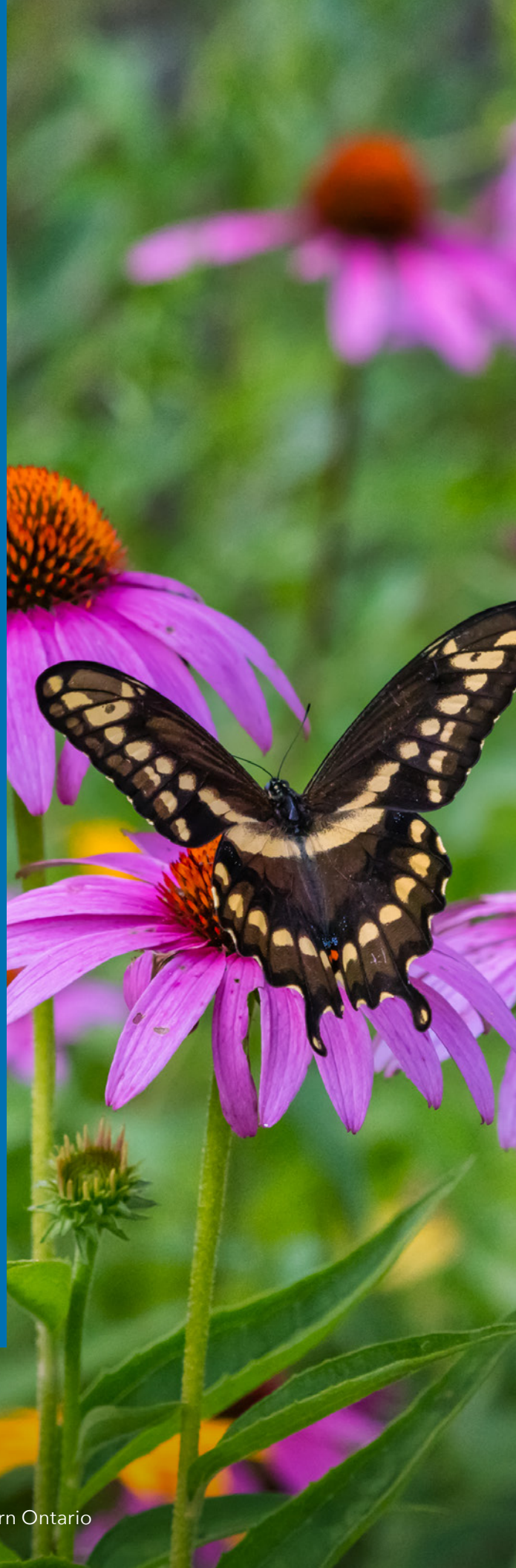
No. Mosquitoes need a minimum of seven days to lay and hatch eggs in standing water. Mosquitoes are more likely to lay eggs in bird baths and clogged roof gutters. Rain gardens can attract beneficial insects like dragonflies, which eat mosquitoes!

3. How much maintenance is required?

Rain gardens can be maintained with little effort after the plants are established. Proper mulching will lower weeding chores, and weeding time will decrease as the plants mature. Regular watering is important for the first few weeks after planting during periods of dry weather. After two or three years, it may be necessary to thin some of the more aggressive plants or replace plants that have not survived.

4. Is a rain garden expensive?

It doesn't have to be. The cost of a rain garden depends on its size, the materials used, and who does the installation. The main cost will be purchasing perennial plants and a good quality mulch, but this can be minimized by using some native plants that might already exist in your yard or in a neighbour's yard. You may find free or discounted wood mulch with a local tree service company. A family and a few friends can provide the labour.



CHAPTER 2

Understanding Your Property

Rain gardens can be placed in many locations of your yard, but before you choose a spot, take a few minutes to think about how your garden might fit into the natural landscape around you and your neighbourhood.

What zone do you live in?



The Plant Hardiness Zones map outlines the different zones in Canada where various types of trees, shrubs and flowers will most likely survive. It is based on the average climatic conditions of each area, including minimum winter temperatures, length of the frost-free period, summer rainfall, maximum temperatures, snow cover, January rainfall and maximum wind speed.

The map depicts zones numbered 0 through 9, which are further divided into subzones (eg., 2a or 2b). These zones are widely used to help define the winter hardiness of perennial plants (plants that come back each year), and you'll see hardiness zone recommendations in many seed and plant catalogues.

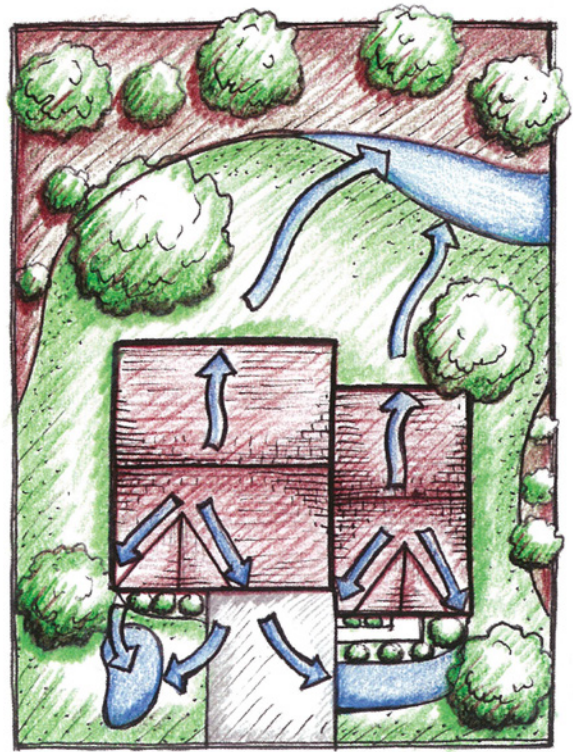
The plants listed in this book are hardy in Zones 2, 3, and 4 for Northwestern Ontario.

Invasive species

While you're considering the growing conditions of your area, keep an eye out for some of the invasive species that are common in Northwestern Ontario and the Great Lakes region. Garlic mustard, Himalayan Balsam, Japanese Knotweed and lawn weeds like Dandelions are all too common in many areas. The problem with these plants is that they are non-native species that don't have natural predators or competition in this area; plus, they have characteristics (such as prolific seed production) that allow them to spread, inhibiting the healthy growth of native species.



Himalayan balsam can completely cover an area and crowd out native vegetation.



Understanding water flow on your property

Walk around your yard during a heavy rain and observe how rainwater moves through your property. Look at where rain lands, and then where it flows. You will notice that where it lands on trees and landscaped areas, much of the rain soaks into the ground. But where the rain lands on a hard surface such as a roof or driveway, most of it runs off that surface and looks for a place to drain away, often causing erosion gullies on soft surfaces such as grass or topsoil.

Look to see where water drains away from your downspouts, driveway, sidewalks, patios or sump pump drains. If your yard slopes away from your house, water will drain away from your foundation. If parts of your yard slope toward your house, it may contribute to a wet basement. This is something you will want to correct and think about as you design your rain garden.

Where should the rain garden go?

Consider existing and future land use

When planning the placement of your rain garden, design with the end result in mind. How can the rain garden be integrated into existing land use and landscaping? Determine how far or close you want the rain garden to be from outdoor gathering spaces, pathways and play areas.

Rain gardens work well where water drains away from downspouts, sump pump outlets, or driveways. To help you decide where to put a rain garden, consider these points:

- The rain garden should be located on a gentle slope at least 3 metres from the foundation of a house or building, so infiltrating water doesn't seep into the foundation.
- Do not place the rain garden directly over buried utility lines, on top of a septic system or sewer lateral.
- The goal of a rain garden is to encourage infiltration, and your yard's wet patches indicate where drainage is slow. Rain gardens should drain completely within 24 hours. If you have a wet spot in the yard that doesn't drain in 24 hours, a rain garden uphill of the low spot may collect and infiltrate the water and dry out the wet spot at the bottom of the hill.
- Avoid building a rain garden directly under a big tree. Roots might make it difficult to dig the garden, and you risk damaging the tree.
- If your house is located on a slope, it is best to avoid infiltrating water on the uphill side of the house. Divert the runoff around the side of the house before directing it into a rain garden.
- If you have a retaining wall in your yard, do not direct additional water behind it if it was not designed with a drainage system.
- Rain gardens do not work very well over areas of shallow bedrock or shallow groundwater (approximately 1 metre below ground surface or less), which impede infiltration.



Overflow water from a rain barrel is directed into a swale lined with river rock.



CHAPTER 3

Sizing Your Rain Garden

The surface area of your rain garden can vary in size, but cost, time and the existing use of your landscape will always be important factors. Remember that this is a garden for your yard, and it should fit with the size of your property, available space and overall landscaping aesthetics.

The sizing guidelines in this manual are based on a goal of managing 100% of runoff during an average **25 mm (1 inch)** rainfall, while keeping the rain garden at a reasonable size. If you follow these guidelines and decide the calculated surface area is just too large for your goals, it is acceptable to make your rain garden smaller. We recommend creating an outlet for excess water to flow out of when your rain garden reaches capacity. For example, in a heavy storm or during a prolonged period of rain, your rain garden might overflow into another part of your lawn. Be careful not to send excess water into the neighbour's property or near another structure that cannot handle the water.

The size of the rain garden will depend on:

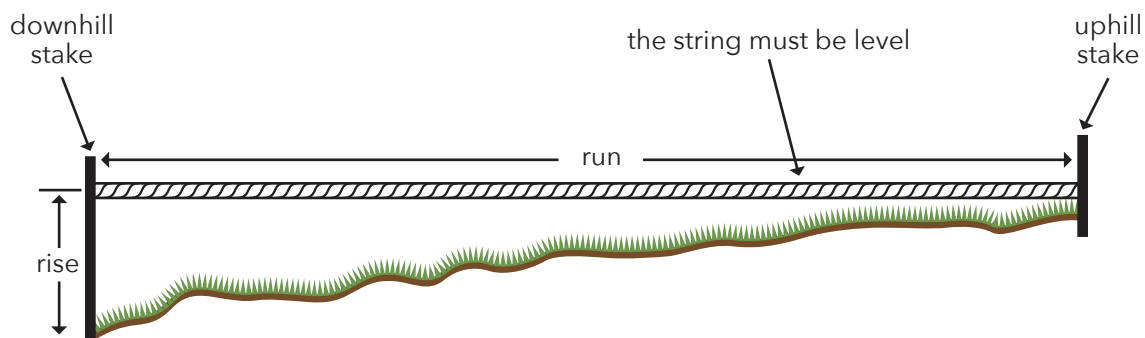
- The finished depth of the rain garden;
- What type of soils the rain garden will be planted in;
- How much roof and/or lawn area will drain into the rain garden.

Step 1: Calculate the slope

A rain garden is best located on a gentle slope (ideally between 4 and 8%) away from your home or the foundation of a nearby building. If the slope is more than 12%, it is best to find another site for your rain garden, or talk to a professional landscaper about amending the gradient.

To calculate the slope:

1. Pound one stake in at the uphill end of your rain garden site and pound the other stake in at the downhill end. The stakes should be a convenient distance apart, eg. five metres.
2. Tie a string to the bottom of the uphill stake and run the string to the downhill stake.
3. Using a string level or a carpenter's level, make the string horizontal and tie the string to the downhill stake at that height.
4. Measure the distance (or "run" in metres) between the two stakes.
5. Now measure the height (or "rise" in metres) on the downhill stake between the ground and the string.
6. Divide the rise value by the run value and multiply the result by 100. This is the lawn's slope percentage.



The string should be tied to the base of the uphill stake, then tied to the downhill stake at the same level.

Measured distance between two stakes (run) = 5 metres

Measured distance between the ground and the string (rise) = 0.3 metres

$$\frac{0.3}{5} = 0.06 \times 100 = 6\% \text{ slope}$$

Step 2: Testing your soil and determining rain garden depth

After you've determined the slope of the area for your proposed rain garden, take a look at the existing soils at your rain garden site. Sandy soils have the fastest infiltration, where water drains relatively quick. Clay-based soils are dense and have the slowest infiltration rates, and silty soils are in between. If the soil feels very gritty and coarse, you likely have sandy soil. If your soil is smooth but not sticky when wet, you have silty soil. If it is very sticky and clumpy when wet, you probably have clay-based soil, which is not suitable for a rain garden and would have to be amended (refer to Chapter 4).

An infiltration test will ensure your soil can handle a rain garden, and will allow you to select the rain garden depth. There are a number of ways to run infiltration tests. A simple method includes the following steps:

1. Dig a hole in the proposed rain garden area. Make the hole roughly 20 cm (8 inches) deep and 20 cm (8 inches) in diameter.
2. Remove any loose dirt from the hole and fill it to the top with water.
3. Allow the water to soak into the soil for a minimum of one to two hours to saturate the soil.
4. Fill the hole back up with water so that the water level is about 2.5 cm (1 inch) from the top. Mark the starting water level with a toothpick or popsicle stick. Record the time.
5. Measure how far the water level drops at known time intervals with a ruler or tape measure. If you have sandy soils and the water goes down quickly, you might record the water level after 15 minutes, 30 minutes and 1 hour. If you have clay soils and the water drains very slowly, you may have to record the water levels after one, two and four hours.
6. Based on the infiltration rate you measure, calculate how many centimetres or inches of water will soak into the soil over 24 hours. The number of centimetres or inches that soak into the ground should ultimately be the depth of your rain garden. The hole should be completely drained of water within 24 hours, otherwise we advise amending the soil to increase infiltration, or choosing a different location.

Even if the infiltration test indicated that more than 30 cm (12 inches) of water will soak into the ground in 24 hours, the maximum rain garden depth should be 30 cm. This will help prevent mosquitoes from breeding, and will allow you to choose from a large palette of plants for your garden.

Example infiltration test calculation

Assume you ran an infiltration test and the water level dropped a little more than 1 cm (about one-half inch) after two hours, and 2.5 cm (one inch) after four hours. Calculate how many centimetres of water will infiltrate into the soil in one day (24 hours).

$$\frac{2.5 \text{ cm (1")}}{4 \text{ hours}} \times \frac{24 \text{ hrs}}{\text{day}} = \mathbf{15 \text{ cm or 6 inches/day}}$$

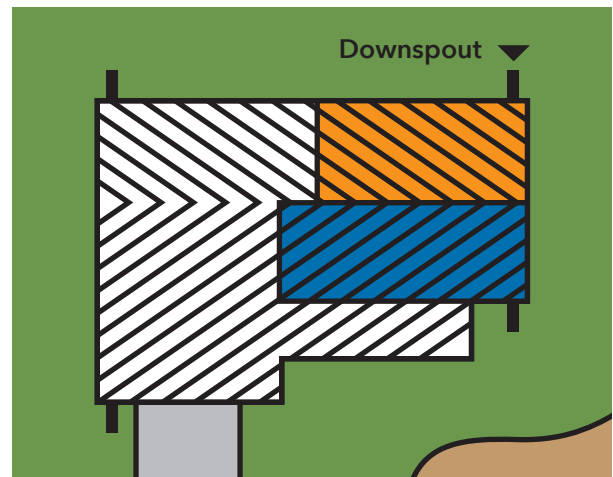
In this example, you can expect approximately 15 cm (6 inches) of water to soak into the soil in one day, so you would make your rain garden pool depth 15 cm.



Step 3: Determine the drainage area

The drainage area is the area of hard surface that will be feeding your rain garden (eg., the portion of rooftop via a downspout). There is some guesswork in determining the size of a drainage area. Use the suggestions below to make an estimate without spending a lot of time.

1. Walk around the house and estimate what percentage of the roof flows to the downspout that will feed the rain garden.
2. Next, find your home's footprint, the area of the first floor, in square metres.
3. Finally, multiply the roof area by the percent of the roof that feeds to the rain garden downspout.



Example:

Susan's house is 10 m x 20 m, so the roof area is 200 square metres. She estimates that the downspout collects water from 25% of the roof.

$200 \times 0.25 = \mathbf{50 \text{ m}^2}$ of roof drainage area



Step 4: Determine the area of the rain garden

Having calculated the rain garden depth and drainage area, you can determine the rain garden surface area.

A common approach is to try to size the garden to hold about an inch of rain that falls on the area of hard surface draining to the rain garden (drainage area value). This is a good starting point for sizing rain gardens for residential yards, but don't consider it an absolute rule. A sizing example is shown below:

Example rain garden sizing calculation:

Susan's roof drainage area is 50 square metres, as shown in the previous example.

Let's say that Susan ran an infiltration test on her soil and found that 15 cm, or six inches of water per day will soak into the ground. This means her rain garden should be 15 cm (150 mm, or six inches) deep. If the goal of the rain garden is to capture 25 mm (one inch) of runoff from her roof, her garden can be 1/6th the area of her roof.

Footprint Ratio

$$\frac{25 \text{ mm per day (target rainfall)}}{150 \text{ mm per day (measured infiltration rate)}} = \frac{1}{6}$$

This means the size of the rain garden should be 1/6th of the drainage area.

Rain Garden Footprint

Drainage Area x Footprint Ratio

$$\frac{50 \text{ m}^2}{6} = 8.3 \text{ m}^2 \text{ of garden}$$

Rounding to the nearest whole number, Susan's garden area is about 8 square metres.

Worksheet

Slope

Measured distance between two stakes (run): _____ m

Measured distance between the ground and the string (rise): _____ m

$$\frac{\text{(rise)}}{\text{(run)}} = \text{_____} \times 100 = \text{_____} \% \text{ slope}$$

Soils present (sand, loam, clay): _____

Infiltration test results (1 cm = 10 mm)

1. $\frac{\text{(a)} \quad \text{cm}}{\text{(b)} \quad \text{hours}} \times \frac{24 \text{ hours}}{\text{day}}$

2. $24 / (b) = (c)$

3. $(c) \times (a) = \text{_____} \text{ cm per day (d) (up to 30 cm)}$

Rain garden depth = _____ cm (may convert to inches) (d)

Footprint Ratio

1. $\frac{2.5 \text{ cm per day}}{\text{(d)} \text{ _____ cm per day}} = (e)$

2. $\frac{2.5}{\text{(d)}} = (e)$

Rain garden area

Footprint of home or building: _____ square metres (f)

Percentage of roof area that feeds into rain garden downspout: _____% (g)

$(f) \times (g) = \text{_____} \text{ square metres of drainage area (h)}$

Drainage Area x Footprint Ratio = square metres of rain garden

$(h) \text{ _____} \times (e) \text{ _____} = \text{_____} \text{ square metres}$

CHAPTER 4

Preparing the Soil and Garden Bed

Designing and planning your rain garden is a great opportunity to unleash your creativity and convert what might be a drainage problem in your yard into a functional, attractive, low-maintenance piece of landscaping instead.

Call before you dig!

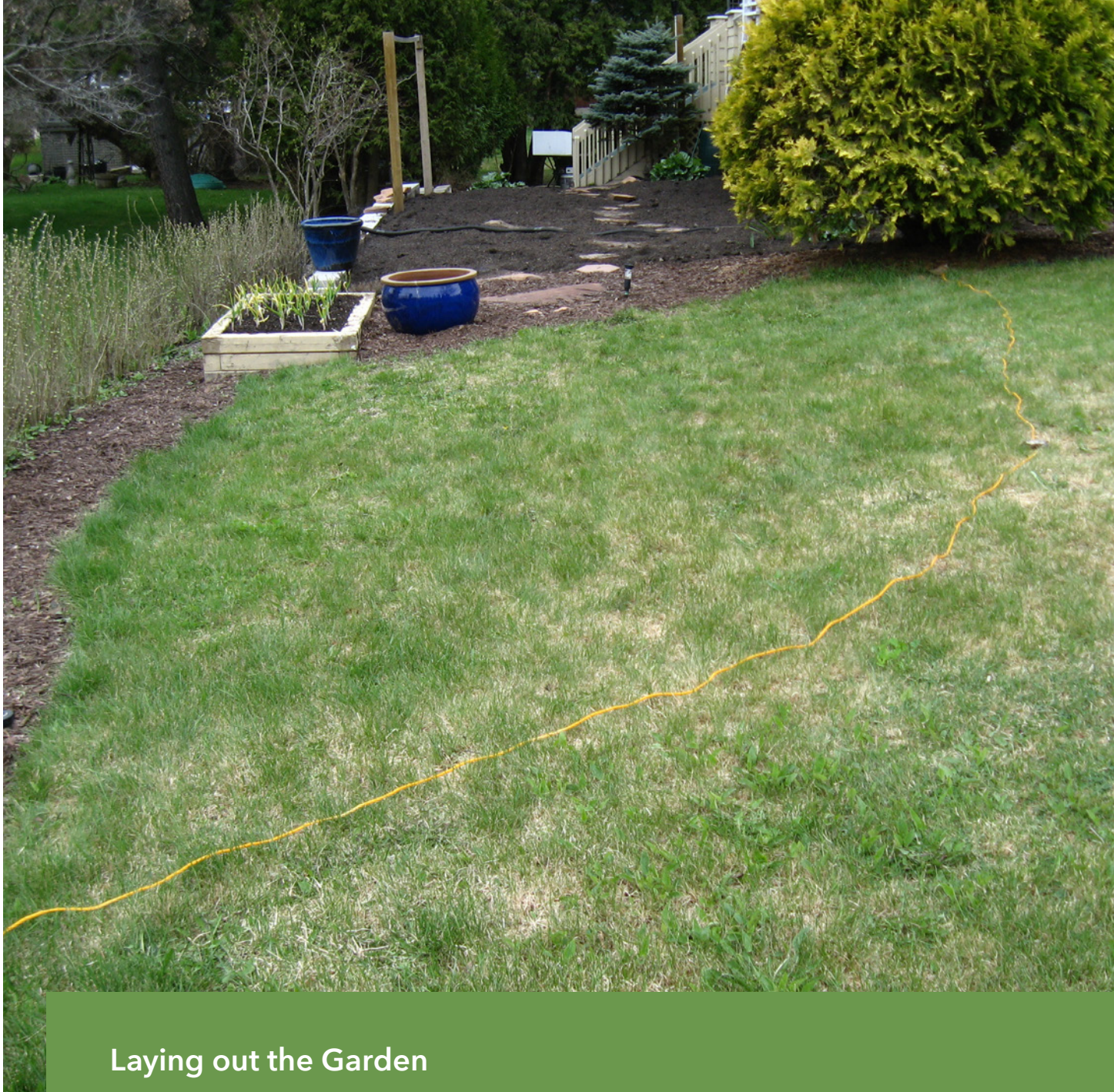
Before you do any digging, make sure you're aware of any utility located beneath or near your rain garden site. Contact Ontario One Call and submit a request for locates online or by telephone: www.on1call.com or 1-800-400-2255.



Tools you will need

The following tools will help in building your rain garden:

- Tape measure
- Rope or garden hose
- Spade shovel and lawn edger
- Rakes (garden and landscape)
- Hand trowel
- Carpenter's level
- Wood or bamboo stakes, at least 60 cm (2 ft) long
- String
- 2"x4" board, at least 2 metres long
- Pick or grub hoe for hard or compacted soils
- Tamp (optional)
- Sod cutter (optional)
- Potato or spading fork



Laying out the Garden

Once you have selected a location for your rain garden, lay out some rope or a garden hose to define the basic shape (refer to Chapter 3 and your rain garden area calculation). You can also use stakes and string. Play with the shape until you are happy with the layout and how it fits in with your existing landscape. You can change the shape according to your preference so long as you keep the area footprint, although you may choose to build a smaller rain garden if you need to. Consider the everyday use of your yard, mowing concerns, the view from the house and street, and any current or future space constraints.

Note that the footprint includes both the flat bottom of your rain garden and the sloped sides.

Getting water to the garden

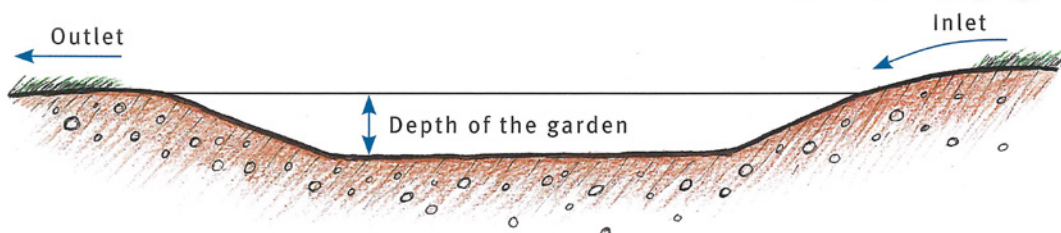
There are a lot of functional and attractive ways to convey rainwater from its source to your garden. All you need to remember is that water flows downhill, and you can use your imagination from there. Consider the following approaches:

- Rain chains are decorative chains that attach to the ends of roof gutters. Water from the gutter flows down the chain instead of a downspout.
- Plastic pipes can be buried just below the surface of your yard to move water away from downspouts or under walkways. It is ideal to have the pipe sloping downhill so that it drains freely and helps to prevent mosquitos in the summer and freezing in the winter. Placing river stone or a splash block at the end of the pipe will slow the water flow where it enters the garden.
- A strip drain is a slotted metal channel that can convey water along a path, and may be less prone to freezing than a buried pipe.
- A grass swale (a flat, grassy channel) slows and spreads out water as it travels to your rain garden. It also provides additional space for infiltration.
- A creek bed with boulders and river rock.
- If you are creating a new walkway and need to move water beneath it, you can make a bridge over the swale with long, flat stones.



Shaping the garden

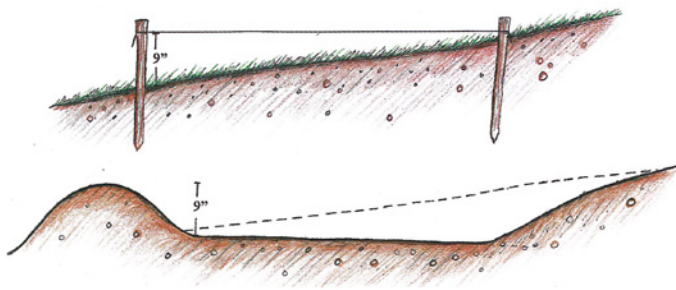
Remove your sod with a spade or sod cutter, if necessary. Be aware of nearby tree roots that can complicate your excavation or damage the tree. Then begin digging out the rain garden. The basic shape is a wide, flat-bottomed depression. The sides of the rain garden should slope, fairly gently, usually about 3:1 or flatter. That means if the garden pool is 20 cm deep, the side slopes should be about three times that long (60 cm). Since the plants in a rain garden tolerate different depths of water, this will provide space to plant different species on the sides (drier) and in the middle (wet) of the garden.



 Dan Shaw, Waterdrop Innovations

Think about where water will enter the garden and where water will go when it fills up and overflows during a heavy downpour. Design your rain garden so the water enters and exits where you want it to flow. It's a good idea to place rocks at the inlet and outlet points to break up the water, which prevents washout of mulch and soil.

If your yard is relatively flat, you will need to dig out the center of the garden. If your yard is sloped, you will need to build up a berm on the lower side to hold the water in the garden. You can use stakes and string to level the top of the garden and decide how high to make the berm, as shown in the following illustration.



 Dan Shaw, Waterdrop Innovations

After shaping the berm, use a tamp or stomp on the berm several times to compact the soils. You can cover it with mulch, plant grass or a dry-tolerant prairie species. It is very important to have a well-compacted berm, so you may add an erosion-control mat to protect the berm while the plants are taking root.

Levelling the rain garden

It is important that the bottom of your rain garden is level in order to ensure an even distribution of water. When the area has been dug out to the required depth, lay a 2x4" board in the basin of the rain garden with a carpenter's level sitting on it. Find the spots that aren't level. Dig out the higher places and fill in the low places. Move the board around to different places of the rain garden, filling and digging as necessary to make the surface level. When the garden is as level as you can get it, rake the soil smooth.



Preparing the soil

Will you need to add soil amendments or fertilizer to your rain garden? That generally depends on the types of plants you have chosen, and the existing soils in your garden.

Most native plants do not need soil amendments or fertilizer. When planting native species, adding fertilizer may encourage the growth of weeds. However, some species, and many horticultural varieties, can have particular soil or nutrient requirements. For example, many woodland plants thrive in highly organic soil, so adding compost would be beneficial. Think about the environment you are creating in your rain garden (eg. sun exposure, moisture level, soil type), and which plants enjoy those conditions. It's a good idea to sample your soil and run a soil test if possible. These services may be available at a local university or through the local Master Gardeners chapter, if you have one.

If your soil drained well during the infiltration test (say it drained more than 20 cm of water per day), and the garden contains some topsoil, you probably don't need to add soil amendments. If the soil is compacted, has little topsoil left, or is mostly clay, it would be beneficial to add compost or peat moss to loosen it up and increase infiltration. If your soil is mostly sand, adding compost or peat moss will help your rain garden to retain moisture and nutrients for the plants. Try this approach:

1. Shape the garden bed and excavate to the desired depth.
2. Remove additional soil to dig it 10 to 15 cm (4 to 6") deeper. Set that soil aside temporarily.
3. Using a shovel or potato fork (or a rototiller if you have one), loosen the soil an additional 15 cm below the current depth.
4. Add a 5 to 10 cm layer of compost or peat moss, then add the extra soil you removed, and mix it into the soil until you reach your desired finished depth. Rake and grade the garden into the shape you want.
5. If you have heavier clay soils, loosen and over-dig or rototill the soil from 20 to 30 cm (8 to 12") beneath the bottom of the garden bed. Just go as deep as is practical with the tools you have at hand.

Avoid stepping on the loosened soil to the best of your ability. By tilling the garden bed and working in some compost or peat moss, your rain garden will have a loose, soft bed that will allow young plant roots to become established more quickly and allow for better infiltration.



Edging around the garden

Once the garden soil is prepared, place edging around the garden to delineate it from the lawn. This will help to keep grass from creeping into the rain garden. Professional-grade plastic edging or aluminum is recommended—it's more durable and easier to use than cheaper alternatives.

Cut a small trench and nail in the edging so that the top is level with the surrounding grass. If using mulch, it should be a few centimetres (about one inch) below the edging. Edging should be at least 10 cm (4") deep to keep grass from spreading underneath it.

Selecting Plants

This guide contains plant recommendations for Zones 2, 3, and 4 in Northwestern Ontario. Keep in mind that there are a lot of selections that might work for your garden, and many landscape nurseries can be helpful in providing other ideas, designs and suggested plants.

Tips for designing an attractive rain garden

While rain gardens are a functional way to help protect water quality, they are also gardens and should be an attractive addition to your yard and neighbourhood. Here are a few tips to consider in the context of your home's overall landscape design:

- Use perennial plants (plants that return each year). You may wish to accent your garden with annuals in the first year to add a boost of colour, but the intent of a rain garden is to grow perennial plants with deep root systems that add to its function and fill in the garden over time.
- When choosing native plants, consider the height, colour and texture of each variety. Many native species grow significantly taller than hybrids and cultivars (plants that have been cross-bred for modified features, i.e. different colour or a more compact size).
- Use plants that bloom at different times to create a long flowering season in your rain garden.
- Clump individual species in groups of three to seven plants to provide a bolder colour statement. Repeated groupings create cohesion and a more formal look.
- Try incorporating a diverse mixture of sedges, rushes and grasses into your flowering species (forbs). This creates root competition that will allow plants to follow their normal growth patterns and not out-compete other species.
- You may also use shrubs and trees in your rain garden. While they are generally not good to put in the centre of rain gardens, trees placed on the edges can help take up water and provide background and structure so the rain garden does not appear plunked down in the middle of a lawn.
- Consider enhancing the rain garden by using local or existing stone, ornamental fences, trails or pathways, or garden benches.



Using native plants

We encourage you to consider using native plants for your rain garden and other landscaping needs. Using plants that are native to a region can be beneficial in the following ways:

- They are adapted to the local climate and soils, requiring less care than non-native species.
- Native plants develop deep root systems that help them to tolerate drought, survive hot summers, and create small root channels that improve infiltration over time.
- They are disease-resistant and do not need fertilizer or watering once they are established.
- Native species support pollinators and beneficial insects by providing food, shelter and a place to over-winter.



General considerations

Although we typically prefer to use native plant species, you don't have to be solely limited to these. Some horticultural perennials work great in rain gardens, too. And sometimes true native species are difficult to find. Many nurseries carry native cultivars, which are plants that have been selected by humans for certain traits and propagated to keep those traits. For example, the true native species of black-eyed Susan is *Rudbeckia hirta*. *Rudbeckia hirta* 'autumn colours' is a shorter, more compact variety with bi-colour shades of larger orange, yellow, red and brown flowers. It also has a longer lifespan compared to the short-lived *R. hirta*.

Whatever varieties you choose, consider the following factors:

- Moisture tolerances
- Sun preferences
- Plant size
- Plant aggressiveness (also avoid invasive species)
- Seasonal interest
- Salt tolerance, if planting near a road or sidewalk
- Selections for birds, butterflies and other pollinators

Seeds versus pots

We do not recommend planting seeds for most residential rain gardens. Many species take at least two growing seasons to fully establish. Seeds run the risk of washing away, drowning or getting displaced and popping up in other areas of your garden.

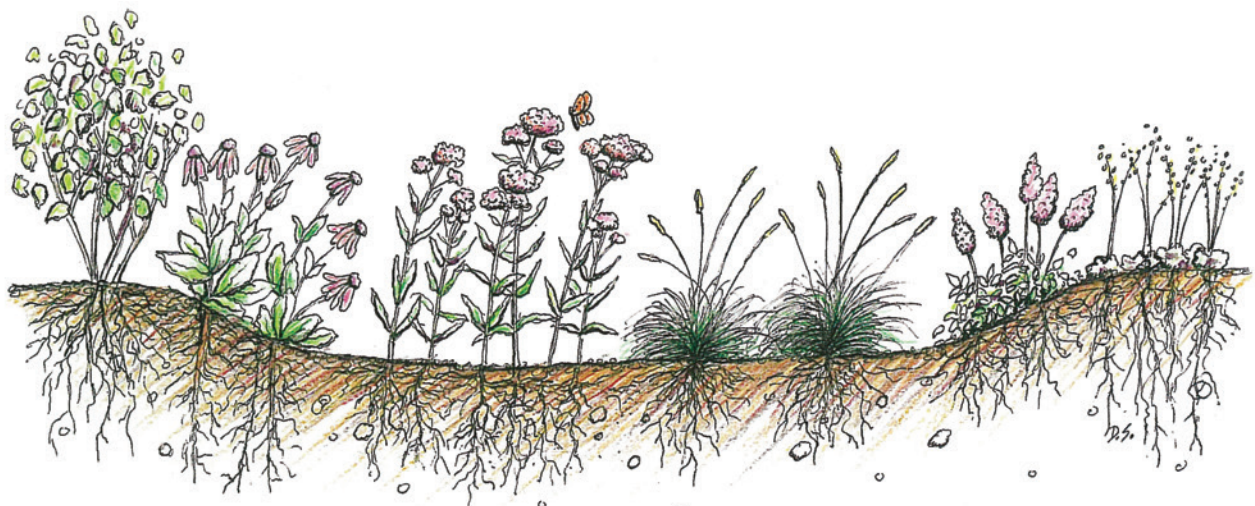
Potted plants are a good choice for a rain garden because they have developed root systems and can provide more instant landscaping. But the larger they are, the more expensive they will be. Costs for perennials can rise quickly.

If plugs are available at your local nursery, they can keep costs down and typically work very well in rain gardens. Plugs are small cone-shaped pots that usually come in multi-packs.



Plant moisture zones

Plants that like wet or moist conditions typically go in the deepest section of the garden (usually the center). Plants that like average conditions go on the sides where the water does not get quite as deep. Plants that enjoy dry conditions go around the top edges. During your infiltration test, if the infiltration rate was high (equal to or greater than an inch in an hour), you can typically use plants that like average conditions in the bottom, and average to dry conditions on the sides because your rain garden will readily drain and not hold water for longer periods.



Top of Garden:

Average to Dry
Soil Moisture

Sides of Garden:

Average
Soil Moisture

Bottom of Garden:

Average to Moist
Soil Moisture

Sides of Garden:

Average
Soil Moisture

Top of Garden:

Average to Dry
Soil Moisture



CHAPTER 6

Planting Design and Construction

Now for the fun part: designing and planting your rain garden! A number of planting plans and a list of suggested species are found at the end of this guide. You can replicate them for your rain garden or use these as inspiration for your own design.

Plant layout

Make sure to have a rough plan that outlines which plants will be planted where. Lay out the plants according to the appropriate spacing (usually indicated on the tag) and keep them in containers for as long as possible before planting.

Here are a few tips to keep in mind:

- Place the big plants in the back and the smaller plants in front.
- Group common plants in masses of three or more plants; odd numbers look best. When they bloom you will have large mounds of colour.
- Repeat patterns in the garden or provide symmetry by matching plantings on both sides of the garden.
- Stick the pot tags in the soil next to each plant.

Planting techniques

Try to minimize how much you walk through the garden to reduce soil compaction. One trick is to mulch part of the rain garden first and walk over the mulch instead. Simply pull back the mulch when planting, but take care not to contaminate the mulch with the soil. You can remove the mulch and dirt, and place them in separate buckets or spare pots as you plant.

Dig a hole deep enough to let the roots hang vertically to the bottom of the hole. Set the plants so the base of the stem is a little above the ground surface, but make sure the root ball is completely covered by soil. Gently backfill the hole to minimize air spaces around the roots. Plant perennials far enough apart to provide room for the plants to grow (about 45 cm or 18"), but touch when they are mature to reduce maintenance. The more spread out the plants are, the more opportunity for weeds to fill in between the plants, or the plants do not support each other and can droop if flower or fruit is heavy.

Water immediately after planting and mulching, and continue to water twice a week until the plants are established (unless rain does the job for you). You should not have to water your rain garden once the plants are established.



Planting a rain garden at Lakehead University in Thunder Bay, ON.

Using wood mulch

Mulching keeps plants cool and moist, and helps to keep weeds down. Cover the ground with a layer about 8 cm (3 inches) thick, and leave about an inch of space around the plant stems. We recommend using coarse, double-shredded hardwood mulch. The coarse pieces lock together and do not float too much when the garden fills up with water. Conversely, lighter mulches such as pine bark nuggets or cedar chips have a tendency to float away. Hardwood also lasts longer, so it needs to be replenished less often in the future.



Inlets and outlets

Water flowing into and out of your rain garden can cause erosion and wash out mulch, so it's important to think about where water will enter and exit the garden. Sooner or later, you will get a heavy rainstorm; your rain garden will fill up quickly, and then overflow. Inlets and outlets help to control the flow by slowing it down and spreading it out.

At the inlet, you can add decorative river stones that mimic a creek bed entering the garden, or splash blocks to dissipate the energy of the flowing water. You may create an opening or notch in the berm to allow excess water to spill out of your rain garden into another area of your yard. Adding river stones at the outlet will help prevent mulch from washing away. If the garden is located next to a sidewalk or driveway, make sure the top of the mulch is at least a few centimetres (about an inch) below the edge of the pavement to prevent the mulch from scattering onto the paved surface.





Maintenance

Each spring, prune dead vegetation and plants that get too large, weed the garden, and add a fresh layer of mulch to maintain the mulch thickness at 8 cm (3 inches) until the plants have grown large enough to touch each other and you do not see mulch between the plants anymore. Remove sediment, leaves or debris if materials begin to pile up next to plants where water enters the garden.

After that, care for your rain garden as you would any other garden. The first couple of years may require weeding throughout the growing season. But as the plants mature and fill in the garden, you will need to weed less. By the third year, weeding should occur just a couple of times a year. It is easiest to pull weeds early in the year when spring weeds come up, and regularly into July as the summer weeds appear.

Many pollinators nest in the stems of grasses and flowers, so it is best to leave stems standing through winter and wait to cut them back when temperatures warm later in the spring.

CHAPTER 7

Rain Garden Plant Choices

Here is a list of common plants suitable for rain gardens (and perennial gardens in general) in Plant Hardiness Zones 2 to 4. If you live in Zone 2, we recommend consulting a local nursery or landscape professional, as the options will be more limited. Many are true native species, while a select few are cultivars, hybrids or naturalized to the area and do well in most rain gardens. Several of these species can be found in habitats across Northern Ontario, and others range in Northern Minnesota and the Midwest prairies.

Key to plant characteristics:

Sun/Shade Tolerance:

Sun =  Part Sun =  Shade = 

Bloom time:

May through to September

Soil Moisture:

Preferred Moisture Conditions - Dry to Wet

Location in Rain Garden:

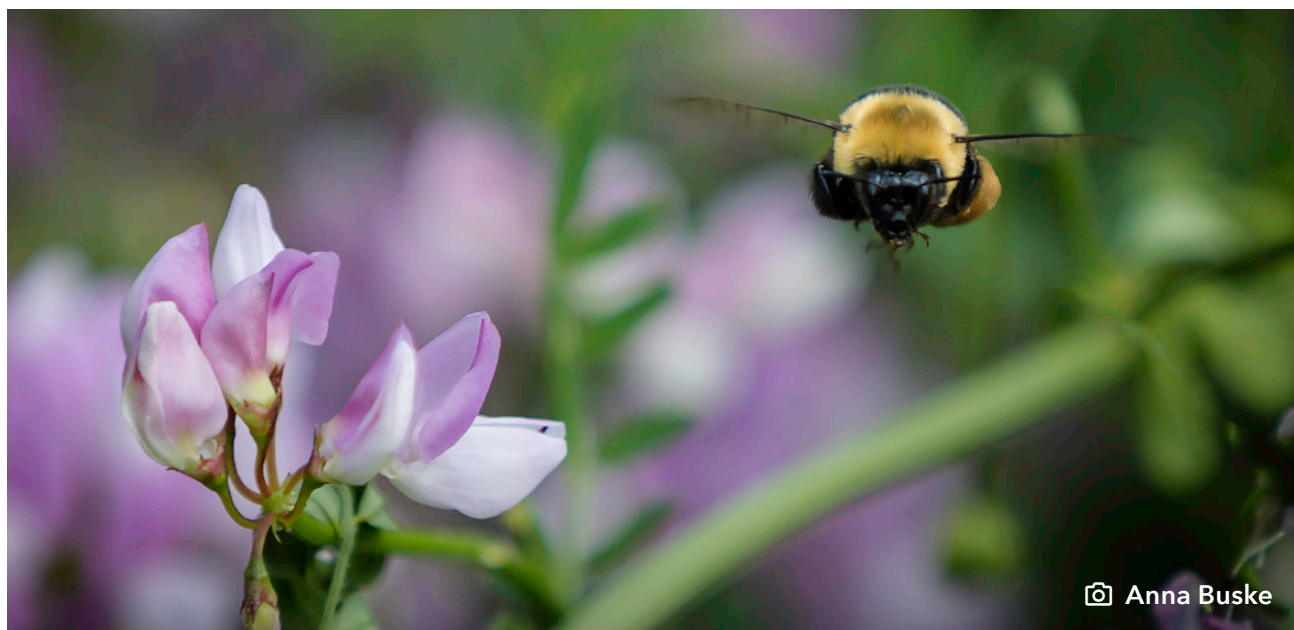
Front, Back, Sides or Bottom

Soil preferences:

Sand, Loam, Clay, All Soils

Deer-resistant plants are noted*

*The attribute "deer-resistant" describes plants that are least likely to be damaged by deer. Selection of food plants by deer can vary greatly across regions and seasons. Plants unappealing to deer in one season may be more tempting during times of food scarcity.



📷 Anna Buske

10 Easy-to-Grow Herbaceous Plants and Shrubs for Rain Gardens

These species have been selected because they tend to grow well in rain gardens with good sun exposure, making them ideal candidates for beginner gardeners.



Agastache foeniculum
(Anise Hyssop)

This aromatic plant is part of the Mint family and grows up to 90 cm tall. The leaves and flowers emit a licorice fragrance when crushed and have been used for salads and tea. It produces purple flower spikes atop dark green foliage. A biennial that will self-sow readily.



- July to September
- Dry to Average
- Sides and Front
- All soils
- Zones 3 to 8
- Deer-resistant



Andropogon gerardii
(Big Bluestem)

Big bluestem is a tall, clump-forming prairie grass growing to 2 metres tall. Stiff stems provide a good perch for songbirds, and turn an attractive maroon colour in the fall. It will tolerate heat and salt.



- Dry to Moist
- Bottom and Back
- Loam, Clay
- Zones 3 to 9
- Deer-resistant



Calamagrostis acutiflora
'Karl Foerster'
(Karl Foerster's Feather Reed Grass)

Karl Foerster's grass is a commonly used ornamental grass. It has stems that stand erect throughout the year and a light coloured seed head. It is a clump-forming grass that is valued for its consistent form. This grass is drought and salt tolerant. (Cultivar, native to Europe.)



- Dry to Moist
- Front and Sides
- All Soils
- Zones 3 to 9
- Deer-resistant



Echinacea purpurea
(Purple Coneflower)

Purple coneflower is an excellent plant for attracting butterflies and finches. It has vibrant purple flowers that typically bloom from July to August in our climate. It generally grows less than a metre tall in clumps. This is a low-maintenance, easy-to-grow plant that tolerates clay and alkaline soils. It provides wonderful cut flowers and tends to be deer-resistant.



- July to August
- Dry to Average
- Sides and Back
- All Soils
- Zones 3 to 8
- Deer-resistant



Eupatorium maculatum
(Joe-Pye Weed)

Joe-Pye Weed is a common plant of wet meadows. It has flat-topped purple flowers, four to five whorled leaves, and grows from 1 to 2 metres tall. It is suitable for larger rain gardens.



- July to September
- Average to Wet
- Bottom and Back
- All soils
- Zones 3 to 9
- Deer-resistant



Iris versicolor
(Blue Flag Iris)

Blue flag iris has bluish-purple flowers and sword-shaped leaves that spread outward into large clumps. It is a common iris used in rain gardens and can tolerate up to 30 centimetres of inundation over the course of a day. It requires very little maintenance, but it is not always successful in sandy, well-drained soils.



- June
- Average to Wet
- Bottom
- Loam, Clay
- Zones 3 to 9
- Deer-resistant



Matteuccia struthiopteris
(Ostrich Fern)

Ostrich fern has large fronds that grow 1 to 2 metres tall. Ostrich Fern is an old-fashioned favourite, but will turn brown in the heat of mid-summer, so it should be planted on the north or east side of a house, or in a heavily shaded location.



- Average to Wet
- Bottom
- All soils, especially acidic loam
- Zones 3 to 7
- Deer-resistant

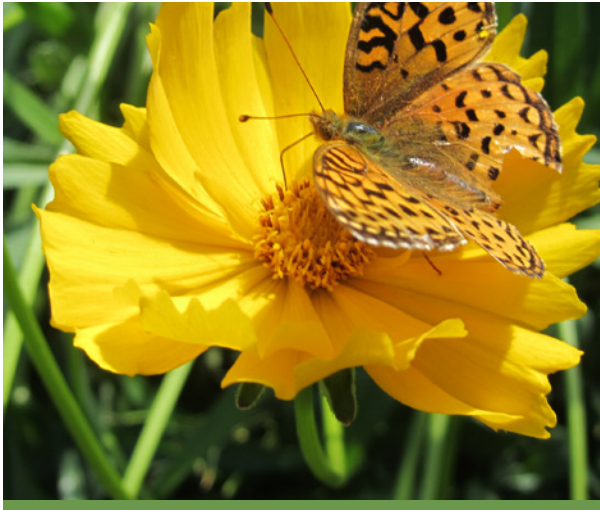


Juniperus horizontalis
(Creeping Juniper)

Creeping juniper is a low-growing evergreen that grows up to 30 cm tall. It can provide good winter interest and can be used to cascade over retaining walls. Creeping juniper is very hardy and drought tolerant. It spreads outward from a central stem, making a good groundcover.



- Dry to Average
- Sides and Front
- Sand, Loam
- Zones 3 to 9
- Deer-resistant



Coreopsis lanceolata
(Lanceleaf Coreopsis)

This daisy-like flower with bright yellow rays on single, elongated stems makes an excellent cut flower that lasts about seven to ten days. Under ideal conditions, this beautiful wildflower will bloom its first year; its foliage makes an attractive ground cover throughout the year. Grows 30 to 60 cm tall.



- July
- Dry to Medium
- Sides
- Sand to Clay
- Zones 3 to 8
- Deer-resistant



Monarda fistulosa
(Wild Bergamot)

Wild Bergamot is common to open woods and fields. It forms in clumps and grows 60 to 90 cm tall with showy, tubular lavender flowers. The leaves and stem have a strong fragrance of mint and citrus when bruised. Bergamot is a garden favourite for attracting butterflies and bees.



- July-August
- Dry to Moist
- Bottom, Sides
- All soils
- Zones 3 to 8
- Deer-resistant

Additional Rain Garden Plant Choices

Forbs/Flowers								
Common Name	Botanical Name	Exposure	Colour	Bloom Time	Height	Where	Spacing	Zone
Yarrow	<i>Achillea millefolium</i>	Sun	Yellow	June - Sept	30-45 cm (12-18")	Sides, Front	45 cm (18")	3 to 8
Wild Columbine	<i>Aquilegia canadensis</i>	Sun - Part Shade	Red/ Yellow	June	30-90 cm (12-36")	Sides	30 cm (12")	2 to 9
Wild ginger	<i>Asarum canadense</i>	Part Shade - Shade	Maroon	May-June	15 cm (6")	Sides, Front	40 cm (16")	2 to 8
Marsh Milkweed	<i>Asclepias incarnata</i>	Sun to Part-Shade	Pink	July	1-1.5m (40-60")	Bottom	45 cm (18")	3 to 6
Butterfly Milkweed	<i>Asclepias tuberosa</i>	Sun - Part Shade	Orange	July - Aug	45-90 cm (18-36")	Sides, Front	60 cm (24")	3 to 9
New England Aster	<i>Aster novae-angliae</i>	Sun	Purple	Aug - Sept	45-60 cm (18-24")	Sides, Front	45 cm (18")	3 to 8
Harebell	<i>Campanula rotundifolia</i>	Sun - Part Shade	Blue	June - July	30-45 cm (12-18")	Front, Sides	30 cm (12")	2 to 7
Turtlehead	<i>Chelone glabra</i>	Part Shade	White	Aug - Sept	60-90cm (24-36")	Sides, Bottom	45 cm (18")	3 to 8
Purple Prairie Clover	<i>Dalea purpurea</i>	Sun	Purple	June - Aug	30-60 cm (12-24")	Front, Sides	40 cm (16")	3 to 8
Maiden Pink	<i>Dianthus deltoides</i>	Sun - Part Shade	Pink	July	15-40 cm (6-16")	Sides, Front	30 cm (12")	3 to 8
Blanket Flower	<i>Gaillardia x grandiflora</i>	Sun	Red/ Yellow	June - Sept	60-90 cm (24-36")	Sides	45 cm (18")	3 to 10
Wild Geranium	<i>Geranium maculatum</i>	Part Shade - Shade	Pink/ Lilac	May - June	45-60 cm (18-24")	Sides, Front	40 cm (16")	3 to 8
Coral Bells	<i>Heuchera richardsonii</i>	Sun - Part Shade	Cream	June	30-60 cm (12-24")	Sides, Front	45 cm (18")	3 to 9
Dense Blazingstar	<i>Liatris spicata</i>	Sun	Purple	July - Aug	60-120 cm (24-48")	Sides, Bottom	45 cm (18")	3 to 8

Common Name	Botanical Name	Exposure	Colour	Bloom Time	Height	Where	Spacing	Zone
Great Blue Lobelia	<i>Lobelia siphilitica</i>	Sun - Part Shade	Blue	Aug - Sept	30-75 cm (12-30")	Bottom, Front	40 cm (16")	3 to 9
False Solomon's Seal	<i>Maianthemum racemosum</i>	Part Shade - Shade	White	May - June	30-90 cm (12-36")	Sides, Back	45 cm (18")	3 to 7
Obedient Plant	<i>Physostegia virginiana</i>	Sun - Shade	Pink	August	30-90 cm (12-36")	Bottom, Sides, Front	45 cm (18")	3 to 9
Yellow/Gray-headed Coneflower	<i>Ratibida pinnata</i>	Sun - Part Shade	Yellow	July-Aug	1-2 m (3-6 ft)	Back	45 cm (18")	3 to 8
Black-eyed Susan	<i>Rudbeckia hirta</i>	Sun	Yellow	June - Sept	30-75 cm (12-30")	Sides	45 cm (18")	3 to 7
Blue Vervain	<i>Verbena hastata</i>	Sun	Blue	July-Sept	90 cm-1.2 m (36-48")	Sides, bottom	45 cm (18")	3 to 9
Ironweed	<i>Vernonia fasciculata</i>	Sun - Part Shade	Purple	July - Aug	90 cm-1.2 m (36-48")	Bottom	60 cm (24")	4 to 9

Grasses, Sedges and Ferns

Common Name	Botanical Name	Exposure	Colour	Bloom Time	Height	Where	Spacing	Zone
Maidenhair Fern	<i>Adiantum pedatum</i>	Part Shade - Shade	Green foliage	N/A	30-80 cm (12-30")	Bottom	45 cm (18")	3 to 8
Lady Fern	<i>Athyrium filix-femina</i>	Part Shade - Shade	Green Foliage	N/A	30-90 cm (12-36")	Bottom, Sides	45 cm (18")	3 to 8
Sideoats Grama	<i>Bouteloua curtipendula</i>	Sun	Tan	July - Sept	30-80 cm (12-30")	Sides	35 cm (15")	3 to 9
Nodding Sedge	<i>Carex gynandra</i>	Sun - Part Shade	Green Foliage	May-July	0.6-1.2 m (24-48")	Bottom	45 cm (18")	3 to 9
Hop Sedge	<i>Carex lupulina</i>	Part Shade	Green foliage	May - Aug	60-100 cm (36-40")	Bottom	45 cm (18")	3 to 8
Fox Sedge	<i>Carex vulpinoidea</i>	Sun - Part Shade	Green foliage	May - July	30-80 cm (1-2.5 ft)	Bottom, Sides and Front	45 cm (18")	3 to 7

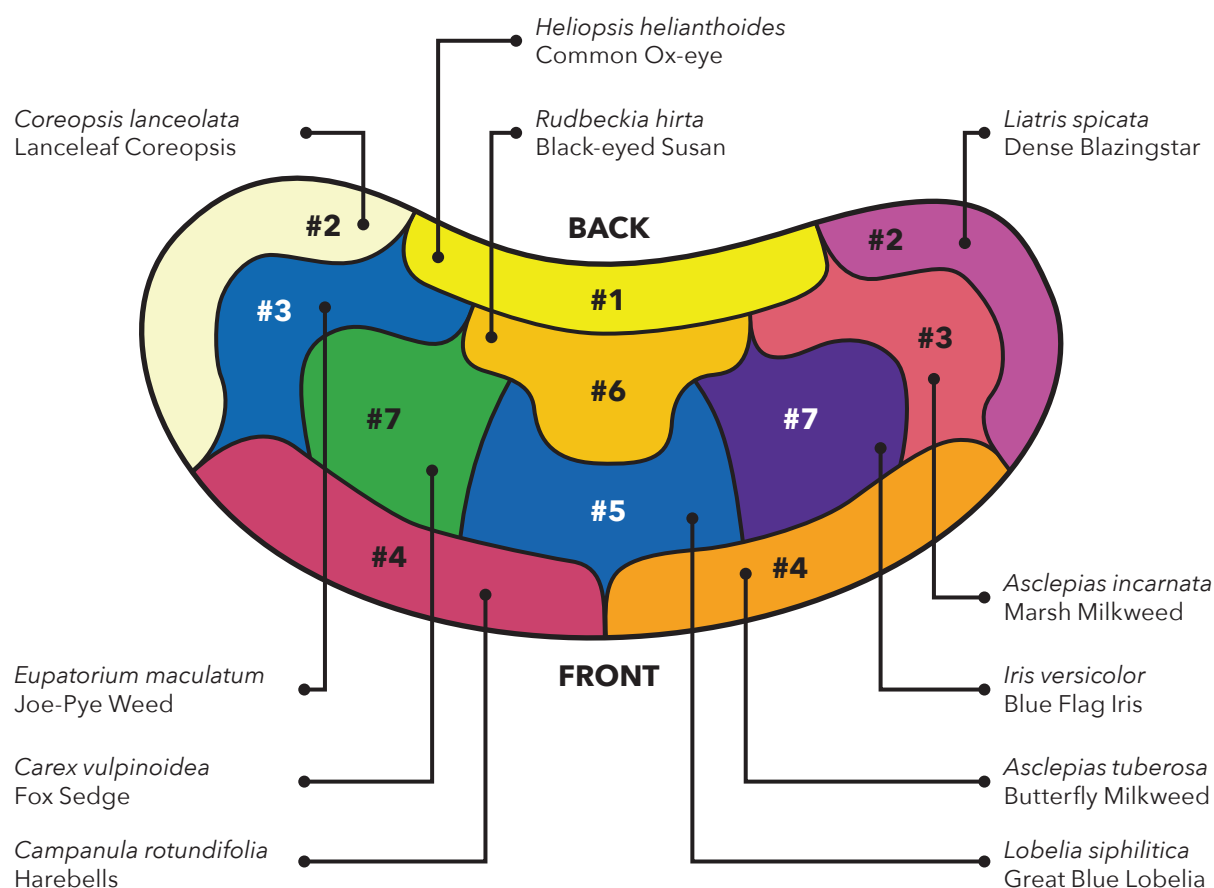
Common Name	Botanical Name	Exposure	Colour	Bloom Time	Height	Where	Spacing	Zone
Fowl Manna Grass	<i>Glyceria striata</i>	Sun - Part Shade	Green Foliage	July - Sept	30 cm-1.2 m (12-48")	Bottom	45 cm (18")	3 to 9
Soft Rush	<i>Juncus effusus</i>	Sun - Part Shade	Brown	N/A	60 cm (24")	Bottom	45 cm (18")	4 to 9
Sensitive Fern	<i>Onoclea sensibilis</i>	Part Shade - Shade	Green Foliage	N/A	60 cm-1.2 m (24-48")	Bottom	45 cm (18")	4 to 8
Little Bluestem	<i>Schizachyrium scoparium</i>	Sun - Part Shade	Blue-Green Foliage	August	60 cm-1.2 m (24-48")	Sides, Back	45 cm (18")	3 to 9
Shrubs								
Common Name	Botanical Name	Exposure	Colour	Bloom Time	Height	Where	Spacing	Zone
Black Chokeberry	<i>Aronia melanocarpa</i>	Sun - Part Shade	White	May - June	1-2 m (3-6 ft)	Sides, Back	2 m (6 ft)	3 to 8
Red-osier Dogwood	<i>Cornus sericea</i>	Sun - Part Shade	White	June	1-2.5 m (4-8 ft)	Bottom, Back	2 m (6 ft)	2 to 7
Dwarf Bush Honeysuckle	<i>Diervilla lonicera</i>	Sun - Shade	Yellow	June-July	60-90 cm (24-36")	Sides, Bottom	90 cm (36")	4 to 8
Common Ninebark	<i>Physocarpus opulifolius</i>	Sun - Part Shade	Pink, White	May-June	1.5-3 m (5-10 ft)	Sides, Back	1.5-3 m (5-10 ft)	2 to 7
Compact American Highbush Cranberry	<i>Viburnum trilobum</i> - Various Compact Species	Sun - Part Shade	White	May - June	1.5-2.5 m (5-8 ft)	Back, Bottom	2 m (6 ft)	3 to 7
Trees								
Common Name	Botanical Name	Exposure	Colour	Bloom Time	Height	Where	Spacing	Zone
Tamarack	<i>Larix laricina</i>	Sun	Green/ Yellow Foliage	N/A	12-24 m (40-80 ft)	Sides, Back	5-9 m (15-30 ft)	2 to 5
Showy Mountain Ash	<i>Sorbus decora</i>	Sun	White	June	6-9 m (20-30 ft)	Sides, Back	5-6 m (15-20 ft)	2 to 7

A photograph of a rain garden. In the foreground, there is a bed of smooth, dark and light-colored river stones. Behind the stones, a variety of yellow-flowered plants are growing, including some with large green leaves and others with smaller, more delicate flowers. To the left, a red wooden fence or deck railing is visible, with a small rainbow flag hanging from it. The background shows a house with a window and a door.

CHAPTER 8

BluePrints

This appendix contains sample rain garden designs called BluePrints, providing four different types of gardens that should work well in most residential landscapes in our climate. The designs provide a variety of choices for style preferences, and include alternatives below. Due to space constraints, some plant species included here may not be listed in Chapter 7. If you are living in Zone 2, we recommend checking with your local nursery to discuss which species will tolerate your local growing conditions.



Native prairie garden

- Full Sun (6+ hours of sunlight per day)
- Native plant species*
- Very showy
- Base plant list is fairly tall (0.5 to 1.5 m)

Alternatives*:

Planting Zone #1

- Big Bluestem
- Narrowleaf Sunflower
- Yellow/Gray-headed Coneflower

Planting Zone #2

- Little Bluestem
- Sideoats Grama
- Purple Coneflower

Planting Zone #3

- Turtlehead
- New-England Aster
- Anise Hyssop

Planting Zone #4

- Purple Prairie Clover
- Scaly Blazingstar
- Fox Sedge

Planting Zone #5

- Hop Sedge
- Fowl Manna Grass
- Siberian Iris

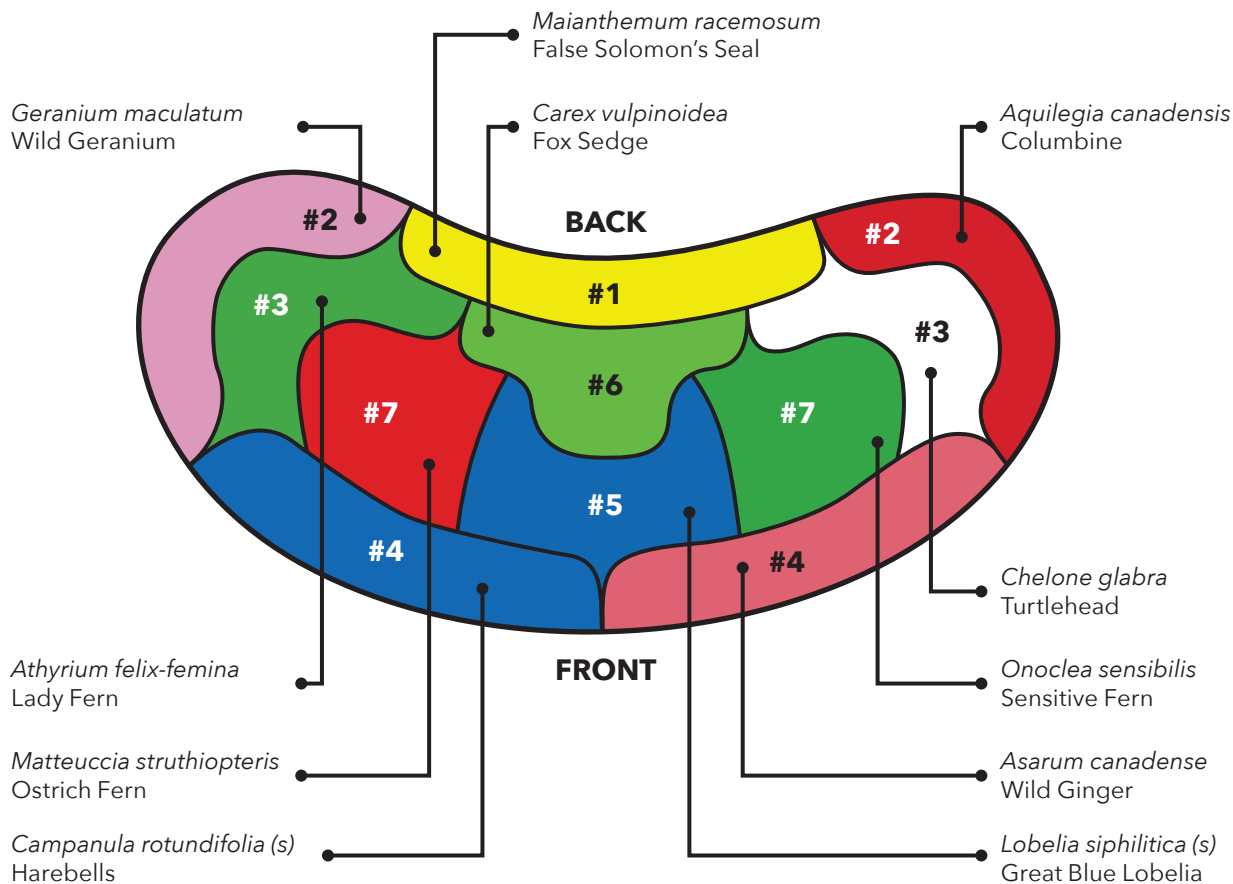
Planting Zone #6

- Wild Bergamot
- Ironweed
- Wild Columbine

Planting Zone #7

- Fox or Hop Sedge
- Dense Blazingstar
- Scaly Blazingstar

*Alternatives may not be native species.



Native shade to part shade garden

- Medium to Full Shade (4 hours or less of sun per day)
- Native plant species*
- As showy as possible for the light conditions
- Base plant list is fairly tall (30 cm to 2.5 metres)

Alternatives*:

Planting Zone #1

- Soft rush
- Wild Ginger
- Turtlehead

Planting Zone #2

- False Solomon's Seal
- Obedient Plant

Planting Zone #3

- Wild Bergamot

Planting Zone #4

- Wild Geranium
- Coral Bells

Planting Zone #5,6,7

Fern list below

Potential Shrub

Alternatives:

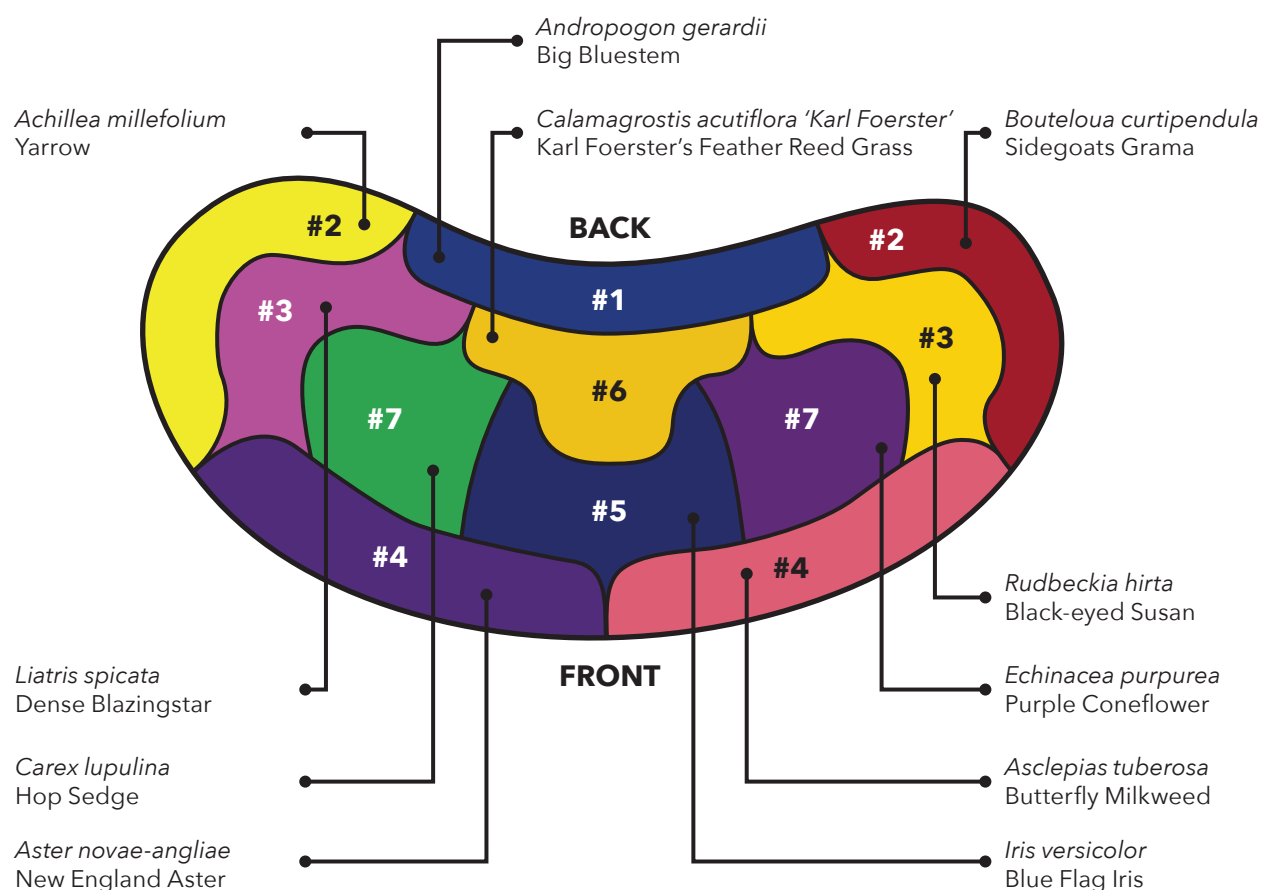
- Black Chokeberry
- Dwarf Bush Honeysuckle
- Red-osier Dogwood

Potential Fern

Alternatives:

- Ostrich Fern
- Maidenhair fern
- Christmas fern
- Cinnamon fern

*Alternatives may not be native species.



Mixed sunny garden

- Common Garden Favourites – Full Sun (6+ hours of sun per day)
- A mix of native and non-native plant species
- Very showy

Alternatives*:

Planting Zone #1

- Red-osier Dogwood

Planting Zone #2

- Lanceleaf Coreopsis
- Blanket Flower
- Little Bluestem

Planting Zone #3

- Joe Pye-Weed
- Bee Balm
- Smooth Phlox

Planting Zone #4

- Creeping Juniper
- Harebells

Planting Zone #5

- Great Blue Lobelia

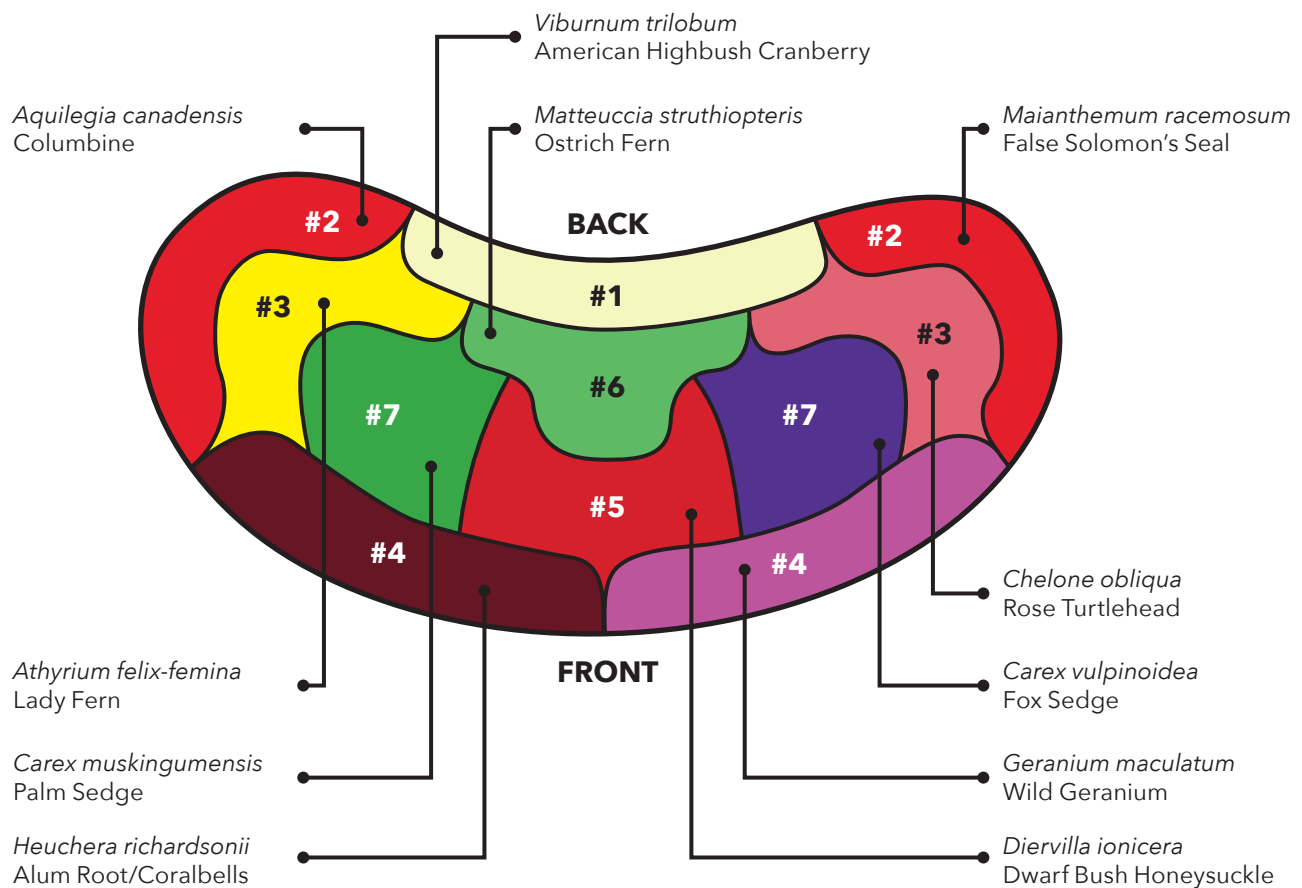
Planting Zone #6

- Black Chokeberry
- Ox-eye Sunflower
- Sneezeweed

Planting Zone #7

- Soft Rush
- All Other Sedges

*Alternatives may not be native species.



Mixed shade garden

- Common Garden Favourites – Medium to Full Shade (4 hours of sun per day or less)
- As showy as possible for shady conditions

Alternatives*:

Planting Zone #1

- Spikenard
- Black Haw Viburnum

Planting Zone #2

- Bleeding Heart
- Jacob's Ladder

Planting Zone #3

- Sensitive Fern
- Turtlehead
- Maidenhair Fern

Planting Zone #4

- Wild Ginger

Planting Zone #5

- Blue Lobelia

Planting Zone #6

- American Highbush Cranberry

Planting Zone #7

- Christmas Fern
- All Other Sedges

*Alternatives may not be native species.



📷 Alison Carr



ecosuperior



**Waterdrop
Innovations LLC**