

Healthy Yards DIY: A Beginners Guide to Building a Rain Garden

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In the fall of 2020 Reep Green Solutions partnered with the City of Waterloo to design and construct a demonstration rain garden at their Service Center. While this project was designed to improve the flow of stormwater runoff from the Service Center, it also serves to inspire residents to tackle a rain garden project on their own property – reducing community flood risk, improving local water quality, increasing biodiversity, and beautifying their yard.

Not sure what a rain garden is? Check out our [Rain Garden Coach Service](#).

10 Steps to Plan and Build a Rain Garden!

1. Assess your Space

Before starting any landscape project, it is smart to take a holistic look at your property and note some key findings. Begin by observing the existing flow of rainwater runoff from your property.

- Where are your downspouts?
- Where does the water flow after it exits your downspouts?
- Do you have any current drainage issues you would like to improve?
- What is the topography of your property?
- How does runoff from your roof and paved surfaces ultimately flow off of your property?

At the Waterloo Service Center, runoff was flowing down the grass slope and sidewalk from the parking lot and pooling on the flat part of the sidewalk. The rain garden addressed this issue by slowing down and capturing this runoff, allowing it to flow away from the building and into the rain garden.

A rain garden often requires small changes to the topography of your yard to ensure that water flows from a source of runoff (usually a downspout) and into the rain garden. Considering heading outside during rain to observe how water flows from one area to another. Often by tweaking the slope of the land to ensure proper drainage and flow, you can improve existing drainage challenges on your property.

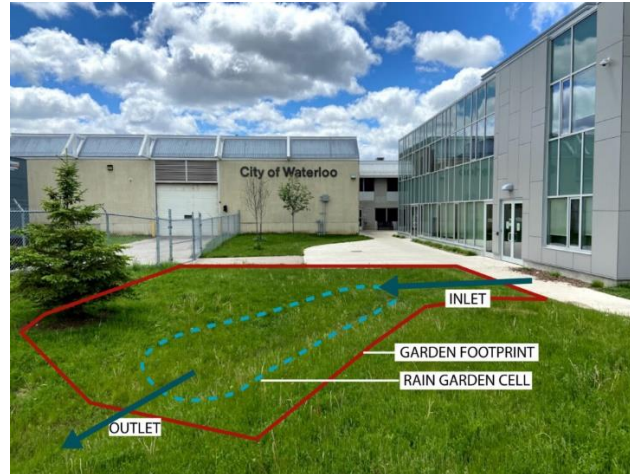


Another critical area to assess in your yard is the location of underground utilities and tree roots. Rain gardens require digging and this should not be done in areas where there are utilities (like gas or water lines) or tree roots. Make note of the location of trees on your property, bearing in mind that tree roots take up a similar amount of area as the tree's canopy. To determine the location of any utilities on your property contact [OntarioOneCall](#).

2. Pick Your Location

Once you have gathered the information suggested above, you can start to determine a suitable area for a rain garden. Keep in mind a rain garden should be:

- At least 3m away from a building foundation
- On a relatively flat slope (1-5%)
- Downhill from a source of rainwater runoff (usually a downspout)
- Uphill from an unpaved area to direct any overflow
- Clear of any underground utilities or tree roots



3. Design your Garden

Now that you have found a suitable area for a rain garden based on your Site Assessment, you can begin to consider the size of your garden and the visual characteristics. How do you want your rain garden to look?

SIZING: Rain gardens can be designed in many different ways. A simple way to begin to understand how big your rain garden should be is to follow a general rule of thumb:

The surface area of your rain garden should be approximately 1/10 the size of the area draining to it & should consist of approximately 60 cm of sandy, well-draining soil.

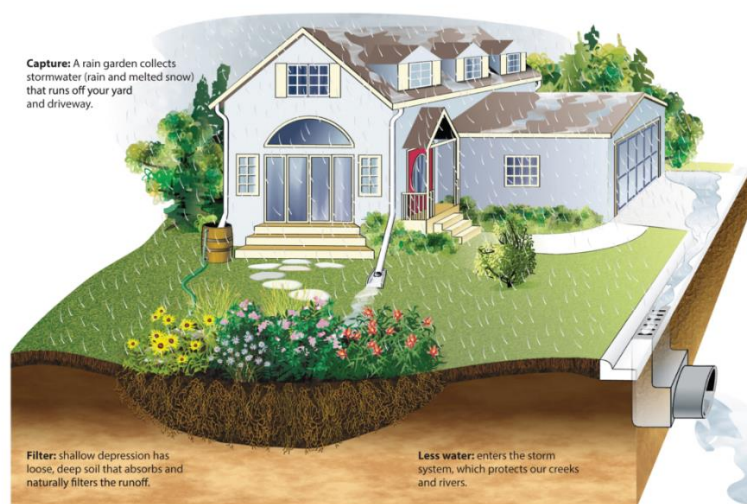


Image Credit: TRCA

Of course you can always adjust the size up or down depending on your available space and the depth of rain garden soil you decide on. If your soil is very sandy already, you don't need to make your rain garden as deep. If your soil is clay, it is recommended to remove a full 80 cm of existing soil and replace it with 60 cm of a sand and compost mix, leaving room for a layer of wood chips and some space at the top for temporary ponding during a rain fall.



INLET: Consider how you want to move water from the downspout into the garden. A common way to create an inlet is to dig a shallow channel from the base of your downspout leading into the rain garden. Line this channel with landscape fabric and river rocks, which will help to slow the runoff down before it flows into the rain garden.

OUTLET: How do you want water to exit the rain garden in the event of a heavy rain that exceeds the capacity of your rain garden? Typically rain garden outlets consist of a small notch in the lower lip of the rain garden that allows any excess rain to escape and flow away from the house and the garden towards a pervious area or the stormwater sewer.



4. Order Materials

There are 3 key materials required to build a functional rain garden:

1. Rain Garden Soil – 60% sand & 40% compost to a depth of up to 60 cm if you are replacing clay, less if you have sandier soil already.
2. Natural shredded mulch – a thick 10cm layer is best
3. Plants – check out our [rain garden plant list](#) that shows which native plants will thrive in the base or on the sides of your rain garden
4. Rocks (optional) – for use along the inlet or outlet of your garden

Once you have determined the general size and depth of your garden, you can quickly calculate the materials you will need, or consult with someone at a landscape supply store or garden center to help.



5. Lay Out your Garden

Before making any changes to your yard, I like to lay out the shape of my garden in real life to ensure it looks the way I had imagined it and to double-check the sizing, grading, etc. You can use many different things to mark out your garden. I like to use a garden hose because it holds curves nicely.



6. Remove Sod & Excavate

To begin building your rain garden, remove the top layer of sod from the space you have outlined. This can be tough work, so consider using a sod remover hand tool or gas-powered sod remover, rentable from small machine rental companies or some hardware stores.

If your design involves building up the landscape around your rain garden, layers of sod turned upside down can be a good base to build berms.

Once the sod is gone, it is time to start digging the basin of your rain garden. Remember, the depth of your dig depends on the type of soil you have. If its clay, you will need to remove around 80cm depth of soil so that you can fully replace it with a sand & compost mix. If you have very sandy soil, you should remove some soil from the basin to create the ideal dish shape, and mix in compost to provide nutrients for your plants.



7. Create an Inlet & Outlet

Connect your freshly excavated rain garden to your inlet and outlet based on your rain garden design. Consider using landscape fabric under river rocks, if you have chosen that method, to limit weed growth in this area. Use a level or stakes and string to ensure that the slope is continuously at least 2% between the bottom of the down spout and the beginning of your rain garden. You can also use a hose and create runoff from the end of your downspout to test how your inlet is functioning.

Next create an outlet at the end of your rain garden (opposite side as the inlet) so that any excess rain can escape in the event of a major rain event that exceeds the capacity of your rain garden. Use a level, stakes and string to ensure that the outlet is lower than the inlet.



8. Place Rain Garden Soil and Mulch

Now that you have completed the excavation and grading of your rain garden basin, inlet, and outlet, place the rain garden soil. Lay down the soil in 20 cm layers and gently tamp down in between to avoid creating a garden that will sink under the weight of wood chips, feet, or rain. When you have placed and tamped all of the layers of rain garden soil, place a 10 cm layer of shredded wood chips. At this point, check to ensure that the finished level of your rain garden basin is lower than your outlet – you want to make sure that the rainwater is being stored and infiltrated in the garden and not flowing right through.



9. Plant

Layout your plants in your garden in their containers prior to planting to perfect their placement. Take in the garden from multiple perspectives and double-check the full-grown height of your plants to avoid any frustration in the future.



When you're happy with your layout, plant each plant by raking back the wood chips and digging a hole that is the height of the plant's container and 2 x the width of the plant's container. Place the plant in the hole and backfill it with the rain garden soil. Rake wood chips back around the plant, but avoid piling wood chips high around the plants' stem. Water each plant thoroughly after planting and regularly for its first two years in your garden.



10. Maintain

To maximize the effectiveness and beauty of your rain garden, there are some key maintenance tasks to perform:

- **YEARS 1 & 2:** In the first 2 years after planting your garden, water those plants! The plants suited for a rain garden are drought tolerant, but all newly planted plants need a little help in those first few seasons to become established. Water 3x a week during hot, dry summer months.
- **SUBSEQUENT YEARS:** Annually, check your layer of wood chips and top-up as needed to maintain that 10 cm layer. This will help protect plants from the hot, dry sun and will minimize weed growth. In the fall and spring, check your inlet and outlet and remove any sediment, leaves, trash that may have been caught in these spots, always ensuring that water is flowing freely through these areas and into or away from your garden.
- Get to know your plant species and consider dividing and/or pruning accordingly to ensure healthy, blooming plants long into the future.

When you're done...enjoy your garden! Rain gardens provide beneficial habitat to many birds, bees, and butterflies, and can be a beautiful addition to any landscape.

