



Green Landscaping

GREEN LANDSCAPING BENEFITS

Anyone who maintains property can take action to reduce stormwater runoff which can lead to flooding, by storing and infiltrating rain water where it falls rather than channeling the rain directly into pipes and waterways. Green landscaping, as shown in the photo of a rain garden above, involves beautifying a property to achieve multiple environmental benefits including the capture and use of stormwater on your property. These include some of the techniques referred to as Green Stormwater Infrastructure (GSI).

Why it Matters

Green landscaping techniques not only help reduce flood risks, they also prevent water pollution. Green infrastructure helps keep oil from pavement, nutrients and toxins from lawns, harmful bacteria and other pollutants from entering drinking water sources and swimming areas. Green landscaping works because it slows, spreads and sinks stormwater, making use of that water for plant growth and to recharge groundwater.

How to do Green Landscaping

Property owners can adopt a wide range of measures from retaining existing trees to adding compost to lawns during annual maintenance that can help reduce stormwater runoff from the site. The chart on the following page presents techniques, from simple and inexpensive property management to those that may be integrated into larger construction projects, to achieve the many advantages of green landscaping. Additional green landscaping practices suitable for Vermont are described on the [Vermont Agency of Natural Resources Green Stormwater Infrastructure website](#) and at [Smart Water Ways](#).

Green landscaping can reduce property management costs and increase the usefulness of landscaping in the following ways:

Less maintenance: longer intervals between maintenance tasks such as watering and weeding.

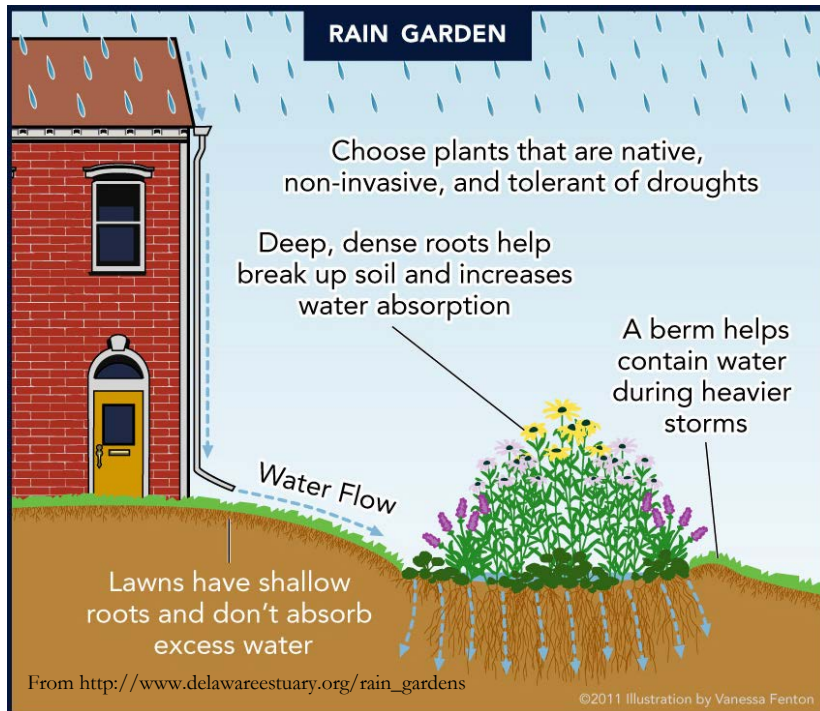
Fewer inputs: less watering, fertilizing, herbicides/pesticides, electricity, and fuel for equipment and maintenance vehicles.

Less pollution: reduction or elimination of landscaping pollutants such as synthetic fertilizers, toxic chemicals for biological control, and exhaust from landscaping equipment. Also helps filter polluted runoff from other sources.

Healthier: improved health and vigor for all living creatures such as soil organisms, plants and animals including pollinators and pets.

PROPERTY MANAGEMENT TECHNIQUES	APPROXIMATE STARTING COST OF MATERIALS	BENEFITS BEYOND FLOOD RESILIENCE
Direct rainspouts into rain gardens, grassy areas or infiltration trenches to slow absorption into the ground. See these step by step instructions for disconnecting rainspouts .	Rain Downspout Diverter – \$15	Diverts water away from the building foundation and supports plant growth.
Collect and reuse rainwater in barrels and cisterns. Vermont design guidance for rain barrels .	Residential Scale Rain Barrel – \$75	Collects water for use during dry periods. Reduces cost of watering plants for properties served by public water.
Build soil health by annually applying compost on lawns and gardens and wood chips, bark or other organic mulch to cover planting beds and the root zone around trees.	Compost – \$60/cubic yard (bulk) or \$6/20 quart bag.	Improves plant health and retains soil moisture reducing need for fertilizers and watering and allows for better rain water infiltration.
Fertilize lawns only when needed ; minimize soil compaction and use soil testing to any guide fertilizer use. Practical instructions for the care of lawns in Vermont .	No cost unless soil tests are needed. UVM soil tests cost \$14 plus postage.	Reduced costs for fertilizing lawns and reduced pollutants in streams and lakes from excess nutrients in stormwater runoff.
LANDSCAPE INSTALLATION OR RENOVATION	COSTS TO CONSIDER	BENEFITS BEYOND FLOOD RESILIENCE
Preserve existing topsoil in place and protect from compaction during construction.	Temporary fencing and installation.	Reduces cost of landscaping and protects existing trees.
Preserve existing drainage patterns , place structures on less porous soils; minimize lawn; maintain naturally vegetated buffers from waterways.	Additional analysis and attention to natural features during site design.	Site development and maintenance may cost less.
Create shallow depressions in lawns and other open spaces, grading to slow runoff and increase infiltration.	Excavator, finish grading, seeding and mulching.	Water collection and infiltration achieved with little change in landscaping.
Create rain gardens – landscaped beds that capture stormwater and are planted with attractive, deep-rooted, water-thirsty flowers, grasses and shrubs. Vermont Rain Garden Manual explains it all:	Excavator, finish grading, plantings, compost and mulch. Regular maintenance.	Attractive, low maintenance landscaping. Prevents stormwater pollution and supports pollinators if native and flowering plants are used.
Create vegetated swales along roadways and around parking lots to slow and infiltrate stormwater while conveying it off-site. Details on vegetated swales for Vermont from the Agency of Natural Resources.	Design, excavator, grading, drainage, amended soil, planting.	Can be created in existing green strips and green spaces in around parking lots to beautify and employ otherwise under-used spaces. Benefits are similar to rain gardens.
Install porous pavement or pavers on parking lots, driveways and walkways. Details on how to install porous pavement from the EPA.	Specialized installation, materials and site preparation. Additional vacuum sweeping required periodically.	There is no standing water to freeze in winter and if installed correctly, extends life of pavement in cold climates and allows reduced use of salt.

For more on these and other green landscaping tools, see the [Vermont Low Impact Development Guide for Residential and Small Sites](#).



GREEN LANDSCAPING TIPS

Retain and Plant Trees

Trees reduce the need for costly stormwater systems and treatment facilities by naturally managing runoff. They intercept falling rain and hold a portion of it on the leaves and bark, slowly releasing it to evaporation and the soil. The leaves that fall to the ground improve the soil texture allowing rain to be absorbed more effectively.

Considerations for Clay Soils

Green landscaping techniques in places with clay soils, common in Vermont's Champlain Valley, need to be applied with special consideration for the natural imperviousness of the soils. For example, the storage volume of rain gardens need to be increased to accommodate more runoff and additional compost added to the soil beyond what is normally recommended for rain gardens (50 soil/50 compost).



ABOVE: A shallow bio-swale with a variety of plants is used in place of lawn in a tree-island next to a road to achieve an attractive border that reduces flooding and improves water quality.

“Healthy soil” means soil that has a well-developed, porous structure, is chemically balanced, supports diverse microbial communities, and has abundant organic matter. 6 V.S.A. § 4802 (3).

By avoiding soil compaction and applying compost and organic mulches to lawns and landscaping, you can build healthy soils that increase the capacity of the ground to absorb and retain rain water, improving flood resiliency, making water and nutrients available for healthy plants while reducing soil erosion and polluted runoff.

Lawns are the most commonly used ground cover in the United States but they provide the least value from a green landscaping point of view. Shallow grass roots and soil compaction from frequent mowing and maintenance mean that rainwater is more likely to run off the lawn than in locations with plants having deep roots and un-compacted soils. Consider using lawns only in locations where people are likely use an open grassy area to play or picnic. Improve the ecological functions of the lawn by taking the following steps:

- ➔ Minimize watering and fertilizer to encourage deeper grass roots.
- ➔ Aerate the soils as part of annual maintenance.
- ➔ Add compost annually to improve the health of the lawn and the soil porosity.
- ➔ Create shallow depressions in the lawn to capture and infiltrate rainwater.

Successful green landscaping and green infrastructure installations are flourishing in Vermont including the following examples:

SOUTH BURLINGTON COMMUNITY LIBRARY RAIN GARDEN

Installed in the Spring of 2013 in front of the South Burlington Community Library, the rain garden was specifically designed to capture excess water from the parking lot, which was the cause of periodic flooding. For more information see: [South Burlington Community Rain Garden Case Study](#).



HANDY'S POROUS PAVEMENT PARKING LOT

The owner of Handy's Hotels and Rentals paved an 18,000 square foot parking lot with porous asphalt. The parking lot services a thirty-unit residential apartment building and two triplex condominiums. Runoff from the rooftops of the apartment buildings and condominiums is conveyed beneath the pavement surface for infiltration. The project is an alternative to the standard approach of capturing stormwater in a pipe, treating it, and discharging it to surface water. The porous asphalt helps to control runoff of pollutants and protects groundwater supplies. For more information see: [Handy's Porous Parking Lot Case Study](#).

