



Home Owner's Guide

***12 simple strategies for
sustainable waterfronts
& landscape practices
for healthy shorelines.***

Studies have shown shoreline properties are in demand, and the value of these properties depends upon the water quality. What neighborhoods do to protect and improve the water quality will protect the investment. This guide addresses three main ways to protect the water quality of waterfront property. These best management practices can help all enjoy the beauty and health of living by the water for years to come.



FLLowPA
FINGER LAKES - LAKE ONTARIO WATERSHED PROTECTION ALLIANCE

WAYNE COUNTY



Soil & Water
Conservation
District

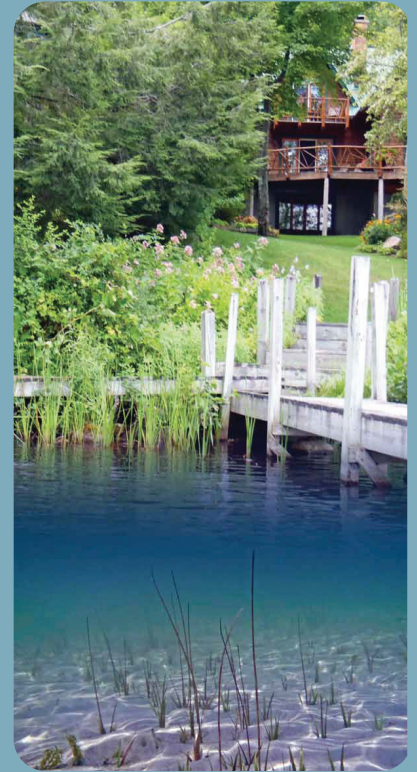


Changes to our Near Shore Environment

Look around, what once were cottages and camps are giving way to year-round homes as more and more people want to enjoy the beauty and tranquility of living along the water.

With this shift, the landscape is dramatically changing. Cottages are being cleared for larger homes, driveways are being paved, and trees are being removed to make way for fertilized lawns and viewsapes. The cumulative effects of these changes over the years has also meant significant changes to the health of our near shore environment.

The fact is people prefer clean water and will pay more to live around areas with better water quality. This guide was created to help homeowners make decisions to protect investments and sustain good water quality for years to come.



12 simple strategies for sustainable waterfront living & landscapes to protect water quality



MINIMIZE RUN OFF

1. **Reduce Impermeable Surfaces**
2. **Limit Lawn Size**
3. **Use Water Wisely**



ELIMINATE POLLUTANTS

4. **Use Phosphorus Free Fertilizer**
5. **Be Smart About Lawn Care**
6. **Maintain On Site Waste/Septic Systems**
7. **Minimize Erosion**



CAPTURE & INFILTRATE

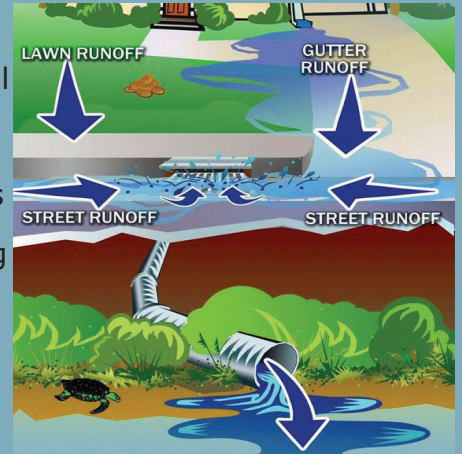
8. **Plant a Rain Garden**
9. **Use Native Plants**
10. **Install a Rain Barrel**
11. **Protect From Invasive Species**
12. **Become a Water Steward**

Stormwater Runoff

Stormwater runoff from developed areas is the greatest threat to the water quality in our waterbodies. Stormwater runoff is not just a problem along roads and commercial areas. Residential properties generate runoff as well.

What is stormwater runoff ?

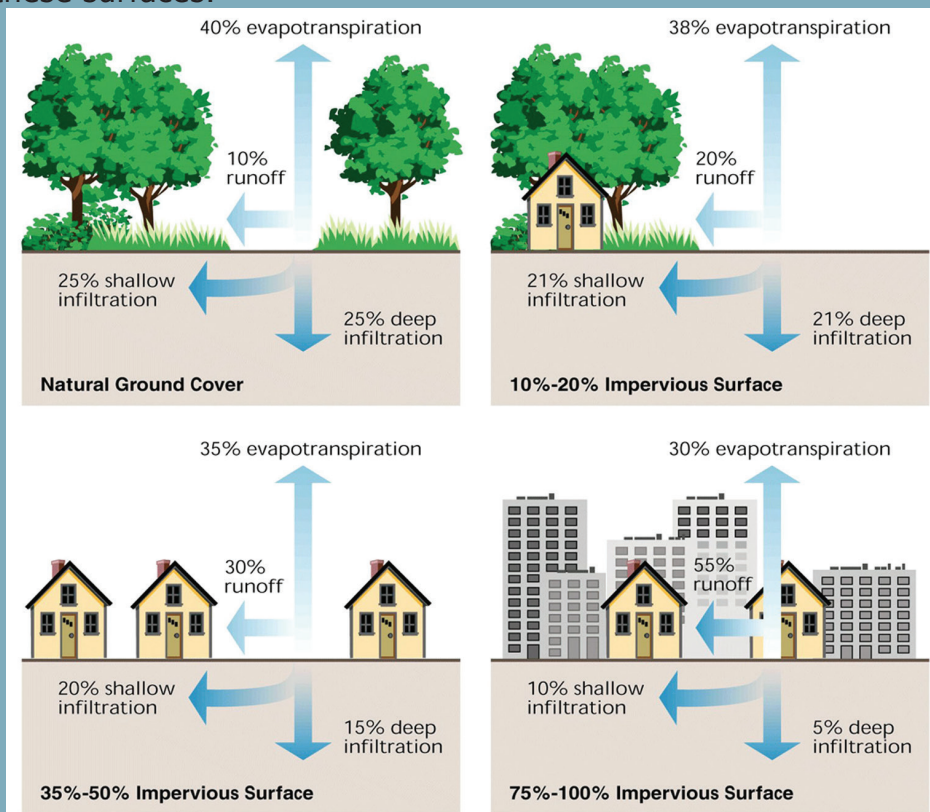
During a rain event, water falls on natural surfaces and infiltrates into the ground and eventually into the groundwater. Water that falls on impermeable or solid surfaces, such as roads and parking lots, does not soak into the ground, but instead moves across these surfaces.



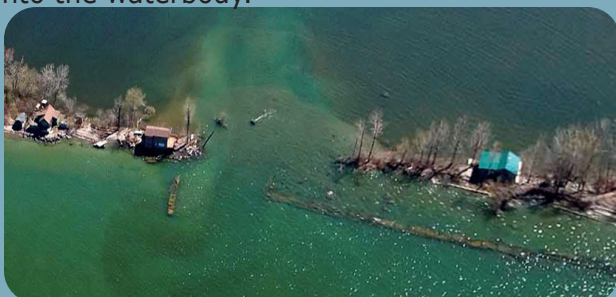
What are the effects of stormwater runoff?

- Sediments can cloud water, affecting plants, fish, and other aquatic life.
- Sediments can form deltas, impeding navigation and water access, and provide ideal habitat for invasive species.
- Excess nutrients can cause increases in algal blooms.
- Bacteria and pathogens can make water unsafe for drinking and swimming.
- Debris - including plastic bags - can suffocate or disable aquatic life; such as ducks and turtles.
- Household hazardous wastes; such as motor oil and paint poison aquatic life.
- Road salt from winter increases chloride levels.

All of these effects lead to water quality degradation which can cause an increase cost to remediation the issue.



As impermeable surfaces increase and water does not soak into the ground, runoff across the surface increases. These surfaces increase the velocity of the runoff and also transport pollutants. Oils, salt, nutrients and sediment carrying phosphorous or other chemicals are picked up by the water as it travels and deposits into the waterbody.



Runoff carrying sediments. When the stream reaches a water-body, the water slows, and the sediment settles out in the lake at the mouth of the stream or bay.



Reduce Impermeable Surfaces

Permeable surfaces allow water to infiltrate and soak into the ground. Impermeable surfaces do just the opposite. When water hits this kind of surface, instead of soaking in, it runs off. This is what creates stormwater runoff. The larger the area of impermeable surface, the greater the volume of stormwater runoff.

Make it easier for water to soak into the ground

Consider these alternatives:

- Grass pavers are another form of permeable paving. A patio or driveway made of grass pavers will closely resemble a lawn. Lay stone pathways or stepping stones across the lawn instead of poured concrete or asphalt paths.
- Keep paved driveways as small as possible. Use permeable surfaces for driveways and overflow parking areas that aren't needed on a regular basis. While gravel driveways may start off permeable, over time the compaction makes them nearly as impermeable as asphalt.



A Grass paver system allows water to soak into the ground.

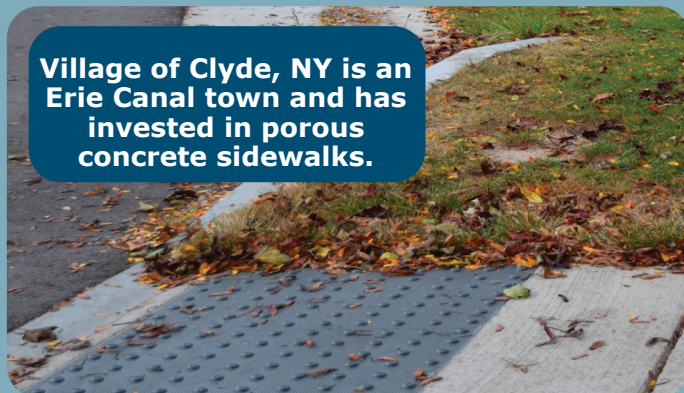


Photo: HT Builders, Permeable Pavers

- Try one of the newer permeable pavement technologies. There are a variety of permeable paver systems available, asphalt, and concrete - so just about any look can be achieved. Prices vary - and while all options are generally more expensive than traditional pavements, it is definitely money well spent.

Municipalities are helping as well.

Porous asphalt allows water to drain through the pavement surface into a stone recharge bed and infiltrate into the soils below the pavement. This conveyance is used on areas where water concentrates on a slope and can help direct the sheet flow to one path while reducing erosion along the shoulder.



Village of Clyde, NY is an Erie Canal town and has invested in porous concrete sidewalks.



Limit Lawn Size

Simple
Step #2



Lawns absorb less rainfall than natural areas.

Look at the forests all around us. Naturally wooded areas have multiple layers of vegetation. A canopy of tall trees, an under-story of smaller trees and shrubs, and a groundcover of ferns and other plants. Branches and the leaf litter from all these plants build up on the forest floor over time and break down into a layer, called duff, that covers the ground.

Rain hits the unprotected ground hard and runs off across the surface, without the branches and leaves of trees and shrubs to intercept the rainfall and lessen its impact.

Duff protects the soil from the impact of rain, keeping the soil in place instead of letting it erode away. The roots of plants and trees in the forest also hold the duff and soil in place. Water soaks into the ground, filtering pollutants and replenishing groundwater.

New Construction Considerations:

1. Grading a lot to create a lawn removes the natural topography of the land. Those low spots or the areas where water would naturally collect, are areas where water would soak in.
2. Plan accordingly. Only create as much lawn area as needed. Avoid heavy machinery and equipment that can compact the soils during construction.
3. Leave grass clippings on the lawn to recycle nutrients and increase organic matter if watering is needed, water in the morning and use mulching lawnmower blades for composting.

Use Water Wisely

Simple
Step #3



If there is an irrigation system:

- Water lawns and gardens in the morning or evening when temperatures are cooler to minimize evaporation.
 - Adjust sprinklers so only lawn areas are watered and not the house, sidewalk, or street.
 - Install a rain sensor on the irrigation controller so the system won't run when it's raining.
 - Choose shrubs and ground-covers instead of turf for hard-to-water areas such as steep slopes and isolated strips.
- Spread a layer of organic mulch around plants to help retain moisture.
 - Use drip irrigation for shrubs and trees to apply water directly to the roots where needed.
 - Choose drought resistant plants wherever possible.

Try to landscape with
native plants for
stormwater zones



Illustration from Fiddlehead Creek Native Plant Nursery - Lake George

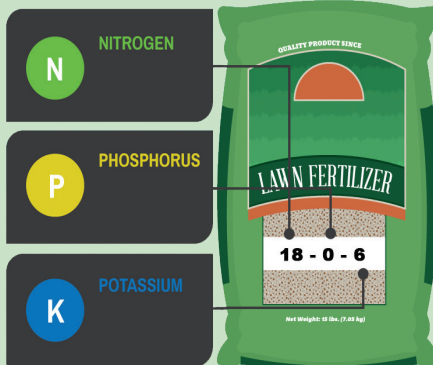


Simple Step #4

Use Phosphorus - Free Fertilizer

What do I look for?

The three numbers on fertilizer bags show the N-P-K nutrient analysis. The middle number is the phosphate (phosphorus) content. A "zero" in the middle means it is phosphorus-free.



Will phosphorus-free fertilizer keep my lawn green & healthy?

Yes! Phosphorus is an essential nutrient for initial plant growth, but not necessary for mature established plants. The majority of lawns already contain the necessary amount of phosphorus for grass to grow.

Nitrogen and Potassium are the "maintainers." Limiting phosphorus will help with pollution runoff into nearby waterbodies.



Establish a No Mow Zone

Do not fertilize or mow adjacent waterways. Leaving a "Ring of Responsibility" or buffer zone strip of unmanaged grasses or natural vegetation to grow along the shoreline, or plant a wildflower garden and add a variety of ornamental grasses. This vegetation will help prevent soil erosion and will also remove and retain some of the pollutants that would otherwise enter waterbodies.



Other Benefits Include:

- Offer food and shelter for local wildlife;
- Filter pollutants and sediments out of the soil;
- Absorb nutrients from the stormwater;
- Deter nuisance species;
- Privacy from bay users; and
- Savings in time and money for maintenance.

New York State Nutrient Runoff Law

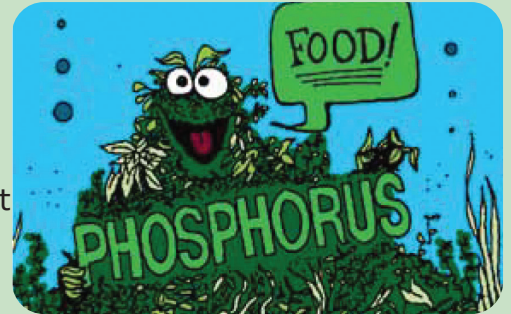
In 2012, New York State enacted a law that requires phosphorus-free fertilizer be used on all lawns unless establishing a new lawn or a soil test shows that additional phosphorus is required. In addition, fertilizer can not be applied within 20 feet of a waterbody unless there is a 10 foot vegetated area. Fertilizer may be applied by a device with a spreader guard, deflector shield or drop spreader and is applied at least 3 feet from surface water. Do not apply any lawn fertilizer between December 1 and April 1.

The law also requires retailers to display phosphorus-containing fertilizers separately from non-phosphorus fertilizers and to post an educational sign where the phosphorus-containing fertilizers are displayed. The law does not apply to agricultural fertilizer or fertilizer for gardens. **For more information on the Dishwater Detergent and Nutrient Runoff Law, visit www.dec.ny.gov/chemical/67239.html**

Phosphorus & Water Quality

What is Phosphorus?

Phosphorus is a natural element and an essential nutrient for plant growth, but is found only in small amounts in lakes and streams. Even small increases in phosphorus can have a devastating impact on the water quality of waterbodies. Increased phosphorus can stimulate algae and excessive plant growth. Boating, fishing & swimming can become difficult and waterfront property values can also be negatively impacted.



Green and Gross



Photo Credit NYS DEC

Excess phosphorus can lead to an explosion of algal growth. 1 lb of phosphorus can produce up to 500 pounds of wet algae! Most algae are harmless, but exposure to toxins and other substances produced by Harmful Algal Blooms (HAB) can make people and animals sick. HABs can impact drinking water, cause discolored water and create floating scum and unpleasant odors that can reduce the recreational and ecological value of a waterway. HABs are sometimes called blue-green algal blooms even though they can be various colors.

If you think you see a harmful algal bloom, **call 518-402-8179** or complete a Suspicious Algal Bloom Report Form, available for download at on.ny.gov/hab and submit it with any pictures to HABsInfo@dec.ny.gov

Be Smart About Lawn Care

Simple
Step #5



Mowing the Way to Clean Water.

Lawn care practices can have a big impact on water quality and the environment. Fertilizers, leaves, grass clippings, animal waste, and eroded soil are all sources of phosphorus. These materials are swept or washed into the street or even the nearest storm drain, where they end up in a nearby waterway.



Follow These Steps:

- Mow higher. Keep grass length to 2½ – 3 inches. It is healthier for mature lawns and it means mowing less often!
- Pick up pet waste. Pet waste can contain harmful bacteria as well as phosphorus. Flush it in the toilet or place it in the garbage.
- Build healthy soil using compost and other

natural amendments. Healthy soils are more resistant to disease and insect problems.

- Learn about Integrated Pest Management (IPM). Use pesticides sparingly and only when needed. More information about IPM: <http://albany.cce.cornell.edu/gardening/pests-ipm>



Simple Step #6

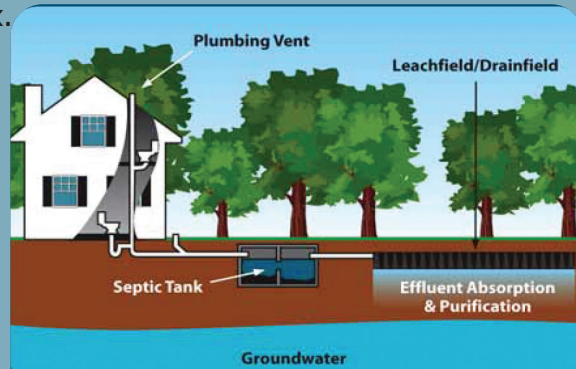
Maintain On Site Waste/Septic Systems

Maintain regularly onsite wastewater treatment systems (OWTS), or septic system, not only to protect waterbodies and nearby groundwaters from being contaminated, but also protects community health and investment of the property. Typical pollutants found in household wastewater include nitrogen, phosphorus, and disease-causing bacteria and viruses. A properly designed, constructed, and maintained system can provide long-term, effective treatment of household wastewater. A failing system is very expensive to fix.

Watch for these signs:

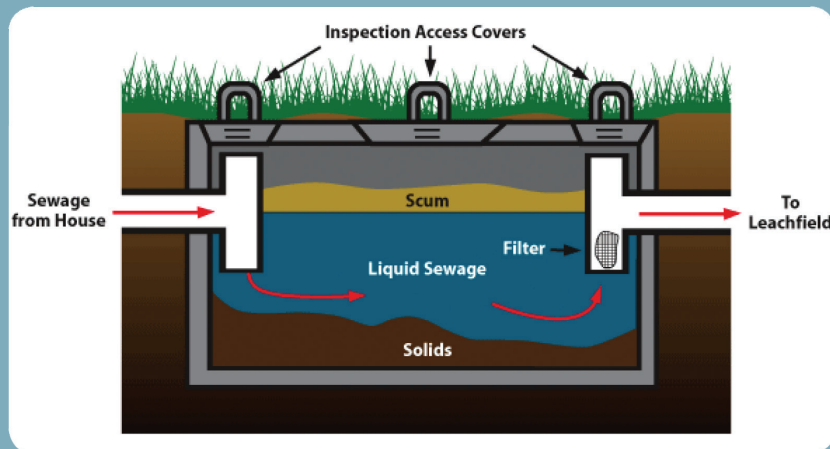
- Pooling water or muddy soil around the tank or drain field or in the basement.
- Bad smell coming from area of tank.
- Toilet or sink backing up when flushing or doing laundry.
- Bright green grass over the drain field.

If there are any of these signs, call a professional to have the septic system looked at right away.



A typical septic system has 4 main parts:

- A pipe from the home that carries the wastewater into the tank;
- A tank that holds the water long enough for the solids to settle out to the bottom and the oil and grease to float to the surface;
- A drain field where the water from the tank is discharged;
- The soil where the microbes provide the final treatment.



Follow these Best Management Practices

1. Regularly inspect the system and pump the septic tank as necessary. It's a good idea to have the system inspected every 2-3 years. In general, it should be pumped every 3-5 years. The solids in the bottom can build up and leak into the leach field, clogging it and eventually ruining it, if not routinely pumped.

2. Don't dispose of household hazardous wastes in sinks or toilets. Avoid paints, chemicals, cleaners, gasoline, oil, or other toxic materials that could kill the good bacteria in the system. Avoid things that can clog pipes. Avoid frequent use of a garbage disposal. Normal use of antibacterial products such as hand-soap is fine but excessive use might kill too many beneficial bacteria in the system. Septic additives are not needed.

3. Care for the drain field. Plant only grass or groundcover with shallow roots over or near the drain field. Deep roots could clog and damage the drain field. Don't drive or park vehicles on the drain field either. Keep roof drains, sump pump drains, and other surface water runoff away.

4. Practice water efficiently. Using less water means less water going through the septic system. This helps reduce stress on the system.

It is very important to keep a detailed record of all inspections, pumpings, permits, repairs, and any other maintenance.

Minimize Erosion

Simple
Step #7

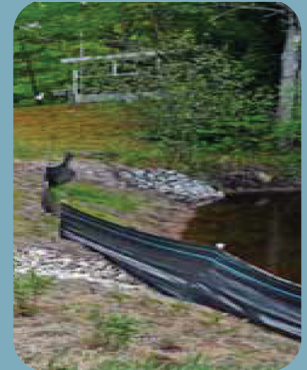


Be sure to have an erosion control plan in place before beginning any construction. Depending on the type of project, consider:



- Preserving existing vegetation wherever possible to prevent erosion. Avoid parking or driving heavy machinery near trees as soil compaction can damage their roots.

- Fence off the construction area to limit activity to only the necessary area of the site. This will help reduce erosion and unnecessary soil compaction of the rest of the property, and divert runoff around disturbed areas to minimize erosion.



Silt Fence

- Build a gravel access drive to limit compaction of the construction site and to limit the mud that is tracked out to the street from vehicles leaving the site.

Soil erosion can happen slowly, gradually washing away top soil, or can happen quickly in heavy rain events.

- Properly install a silt fence on the downhill slope of the site and around soil stock piles to contain sediment. Protect

soil stock piles with straw mulch or plastic. Locate the piles away from the road or nearby water to lessen the chance of sediment being transported off-site.

- Revegetate the area as soon as possible so that there is not bare soil. Cover lawn areas with 4-6" of topsoil and then hydro-seed or mulch with straw & seeds.

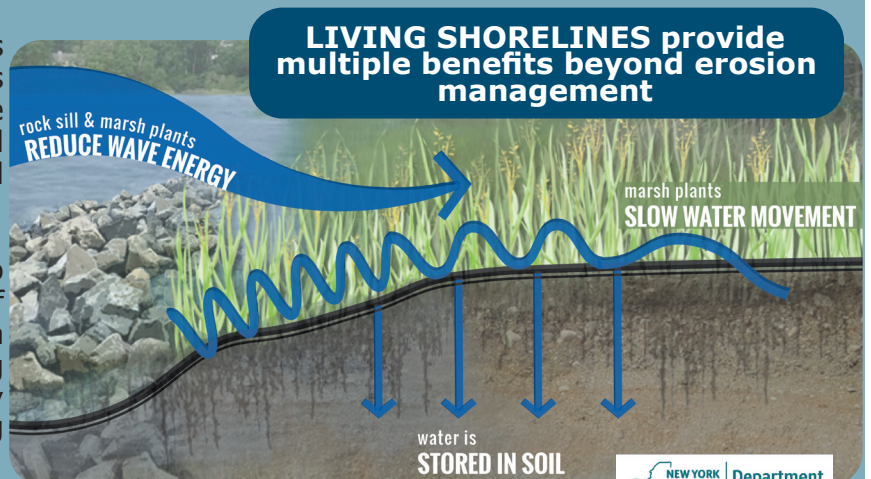
LIVING SHORELINES: a nature-based approach to managing shoreline erosion.

According to NOAA, New York has 2,652 miles of coastline. Living along the dynamic coastline means recognizing and addressing coastal risks, such as rising water levels, storm surges, flooding, and erosion.

Living shorelines incorporate natural and nature-based features alone or in combination with structural components. Compared to purely structural approaches, such as bulkheads and revetments, living shorelines improve habitat connectivity across the water-land interface and support natural processes.

Living shorelines are not a one size fits all solution. Living shoreline designs and materials must be tailored to the use of the site, current and future local site conditions, and the local ecological community.

Living shorelines can be designed to mimic some of the functionality of natural protective features. During a small or moderate coastal storm, living shorelines can act like a buffer by reducing wave energy and storing excess water.





Simple Step #8

Plant a Simple Rain Garden

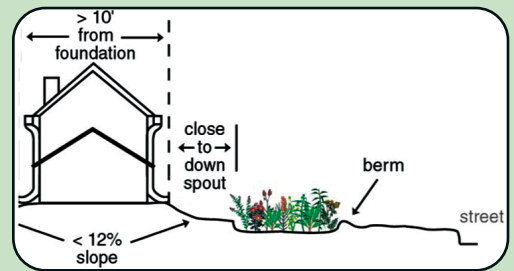


Help keep water clean by filtering stormwater runoff before it enters into waterbodies. Rain gardens help alleviate problems with flooding and drainage.

A rain garden is a vegetated depression that collects rainwater. This allows the rain that falls on rooftops, driveways and patios to infiltrate into the ground instead of becoming runoff.

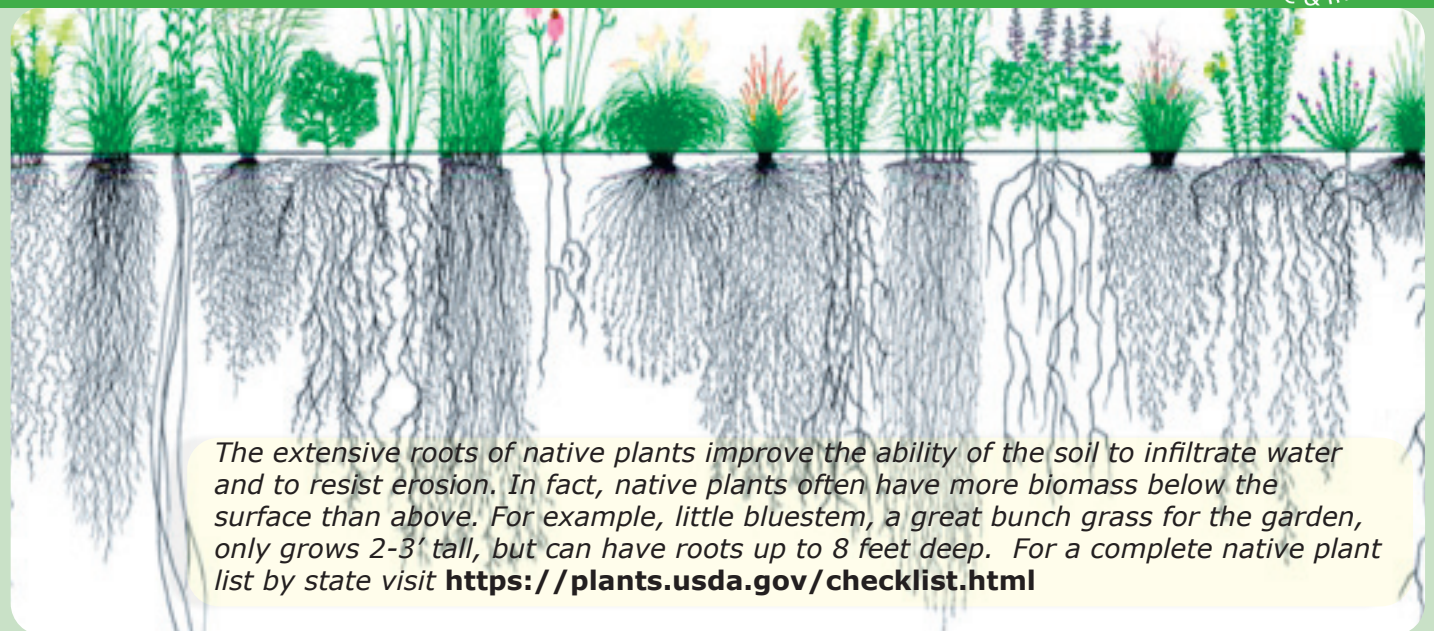
Getting Started:

The first step is sizing and siting the rain garden. Pick a location on the property that can direct a downspout or other source of runoff to. A typical homeowner rain garden is around 100-300 sq. ft. and 4-8 inches deep. The garden size will depend on the soils, slope, and the size of the area that drains to the garden. **More information:** https://www.hws.edu/fli/projects_green.aspx



Go Native!

Simple Step #9



The extensive roots of native plants improve the ability of the soil to infiltrate water and to resist erosion. In fact, native plants often have more biomass below the surface than above. For example, little bluestem, a great bunch grass for the garden, only grows 2-3' tall, but can have roots up to 8 feet deep. For a complete native plant list by state visit <https://plants.usda.gov/checklist.html>

Install a Rain Barrel

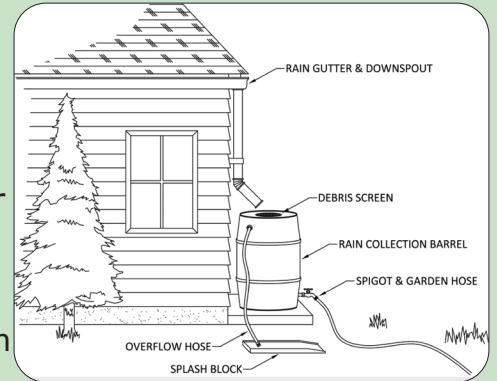
Simple
Step #10



Photo: CCE Onondaga County

Rain barrels are a simple way to capture and recycle the rain washing off the roof. Building a rain barrel is an easy way to save money, and personalize the look and utility of the barrel to match the property aesthetics.

Lawn and garden watering make up nearly 40% of total household water use during the summer. A rain barrel collects water and stores it for when it is needed it most—during periods of drought—to water plants, wash the car, or to top a swimming pool. It can provide an ample supply of

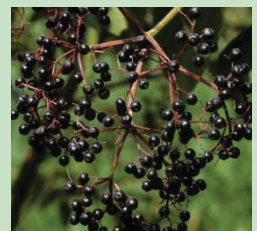


free "soft water" to homeowners, containing no chlorine, lime or calcium making it ideal for gardens, flower pots, and car and window washing.

The Benefits of Using Native Plants

Native plants come in just about every size, shape, and color. A native plant garden design can be created for interest in all 4 seasons as a theme garden.

- Help protect New York's biodiversity by providing food and habitat for birds, butterflies, and other wildlife.
- Natives are the natural foundation of our natural ecosystems, without them and native insects that coexist, birds could not survive.
- Natives plants have evolved in our environment over the years and have adapted to survive. They are low maintenance and don't need a lot of fertilizer, pesticides and watering, ultimately saving time and money.
- The deep roots of natives absorb and filter water more effectively than the short roots of many turf grasses and other ornamental plants, which naturally reduces stormwater runoff.



Use the Guide to native plants in NYS: http://www.dec.ny.gov/docs/lands_forests_pdf/factnatives.pdf and purchase from Madison County Soil and Water Conservation District's tree sale.



Simple Step #11

Prevent the Spread Invasive Species

Invasive species arrived by ships carrying aquatic organisms in their ballast water. Exotic insects can get into wood, shipping palettes and crates that are shipped around the world, and ornamental plants can escape into the wild and become nuisances.

Here are some tips to stop the spread:

Whether boating, birding, biking, or hiking – please take care to avoid carrying any “hitchhiking” plants or animals with you.



- Use native or non-invasive plants in ornamental ponds and water gardens.
- Don't move firewood long distances.
- Check and remove all clinging plants from watercraft, gear, and equipment after each use.
- Avoid boating, paddling, or swimming through dense plant beds.
- Never release aquarium plants into the wild.
- Clean, drain, and dry all boating, angling, & recreational gear before moving between waterways.
- Never transport uncertified bait-fish between waters and always dispose of unwanted bait in the trash, not the ground.



For more information: <https://stopaquatichitchhikers.org/>



Water Chestnut Foliage



Water Chestnut Seeds



Hydrilla *Verticillata*



Starry-Stonewort



European Frog-Bit

Simple Step #12

Get involved! Volunteer! BE A WATER STEWARD



Get involved with stakeholder groups such as your Lakes Association. Familiarize yourself with NYSFOLA (New York State Federation of Lake Associations) www.nysfola.org, CSLAP (the Citizens Statewide Lake Assessment Program) link provided at NYSFOLA site, and the Madison County Water Quality Coordinating Committee, as well as other area partners committed to protecting water quality.

Thanks to Madison County Water Quality Coordinating Committee for printing this document and to Wayne County Soil & Water Conservation District for sharing this guide.