

How You Can Reduce and Eliminate Nutrients and Bacteria

- Plant vegetation around driveways, shorelines, and on slopes. The vegetation will absorb nutrients, filter out pollutants and trap sediment.
- Keep yard waste such as grass clippings and leaves out of the lake, storm drains, and off streets. Although yard waste is natural, when it decomposes it becomes high in nutrients.
- Reduce or eliminate fertilizer application; use organic, “no phosphorus” or slow-release fertilizers. Massachusetts state law was changed in 2012 to reduce the phosphorus content in fertilizers. And most established landscaping does not need any additional phosphorus.
- To determine the phosphorus content in a fertilizer, look at the middle number in the formula on the package (e.g., 16-0-8).
- You can have your soil tested (call the UMASS Extension Soil Testing Lab at 413-545-2311 or download a soil test order form at <https://soiltest.umass.edu/ordering-information>). You may not need to add fertilizer.
- Use phosphate-free or low-phosphate (less than 1%) automatic dishwashing detergents. Phosphate content in

various dishwashing detergents sold in Massachusetts ranges from 0% up to 8.7% by weight. Gel detergents tend to have less phosphorus than powder detergents.

**Brought to You by MassDEP
and
the Town of HANSON**



Be a Beneficial Lake Effect: Protecting Your Lake or Pond From Stormwater Pollution

Lake Water Quality, Watersheds, and Stormwater Pollution

A lake's water quality reflects what is happening in its surrounding watershed.

A watershed includes all the land that drains into a stream, lake or other waterbody.



Why Is Stormwater a Problem?

When stormwater flows throughout the watershed, it picks up pollutants and deposits them into water resources.

Common types of stormwater pollutants include phosphorus and bacteria from septic systems; oil and grease from parking lots; phosphorus and nitrogen from lawn and garden fertilizers; pet waste; and sediment from construction activities and soil erosion.

Stormwater pollution does not observe property lines. It flows wherever water takes it - typically to storm drains and then, without any treatment, into nearby streams and lakes.

How Does Stormwater Pollution Affect Lake Water Quality?

- Excessive nutrients such as phosphorus stimulate algal and plant growth, limiting the recreational use of the lake (fishing, swimming and boating) and degrading wildlife habitat.
- Sediment can cause serious damage to lakes and ponds by increasing turbidity and filling in sensitive habitat that is needed for aquatic life. It also transports phosphorus.
- Bacteria from failing or substandard septic systems, pet waste, and waterfowl often cause beach closures.

What Can We Do To Help Reduce Stormwater Pollution?

Cumulatively, people who live near lakes and ponds can have the greatest impact on the health of a lake. Steps to prevent or reduce stormwater pollution can be simple and inexpensive. Preventing and reducing stormwater pollution is the key to improving lake water quality. Every little bit helps!



Best Management Practices

Best Management Practices (BMPs) are activities that prevent pollution or reduce the effects of stormwater pollution. It is easier and more cost-effective to prevent pollution than to restore degraded lakes and ponds. BMPs can be “structural”, such as planting a buffer strip, or “non-structural”, such as analyzing lawn soils prior to applying fertilizer. Listed below are simple and cost-effective BMPs that can be used to reduce pollution from stormwater.

Encourage Infiltration and Control Sedimentation

- Minimize impervious surfaces such as driveways and parking lots to encourage infiltration.
- Slow or divert stormwater runoff toward vegetated areas where water can seep into the ground.
- Mulch and seed exposed soils to eliminate erosion.
- Wash cars over pervious surfaces, such as lawns, not over driveways; and wash undercarriages at a commercial car wash facility.

How You Can Reduce and Eliminate Nutrients and Bacteria

- Maintain septic tanks with regular pumping and inspection at least every 3-5 years.
- Pick up pet waste and dispose of it in the trash.
- Establish a vegetated buffer strip along shorelines to discourage waterfowl, such as geese, and avoid feeding them. The average goose will produce one pound of droppings a day!

Stormwater Pollution Prevention Guide

FOR HOMEOWNERS

The U.S. Environmental Protection Agency estimates that contaminants in stormwater runoff cause over half of the pollution in our nation's waterways.

Stormwater pollution begins when rain or snowmelt washes over pavement and other impervious surfaces, picks up contaminants, and flows down stormdrains to the waterways we rely on for drinking and recreation.

Common pollutants include antifreeze, detergents, fertilizers, gasoline, household chemicals, motor oil, paints, pesticides, pet waste, road salt, solvents, and yard waste

HELP KEEP OUR WATERWAYS CLEAN!

Please check the back of this page for tips on preventing stormwater pollution.
It's easier than you think!



Stormwater pollution is the toxic mix of bacteria, chemicals, metals, nutrients and other contaminants that washes over pavement and other impervious surfaces and flows down stormdrains to the waterways we rely on for drinking and recreation.

Let's work together to keep our waterways clean.

Learn more at www.neponsetstormwater.org





PICK-UP AFTER YOUR DOG

*Dog waste carries high levels of harmful **E. coli bacteria** and other pathogens, and is a major contributor to local water pollution.*

- █ Pick up the poop! Always carry a **plastic bag** when you walk your dog, and dispose of pet waste in a **trash can**.

LAWN & GARDEN

- █ Choose **organic lawn chemicals** whenever possible.
 - Use lawn chemicals sparingly and never use more than the directions call for.*
- █ Sweep up **dry chemical spills** and dispose in trash.
- █ Don't pile **yard waste** near streams, wetlands, or stormdrains.
- █ Start a **compost pile**.
- █ Don't allow irrigation to **spray onto pavement**. Water that ends up on the pavement contributes to polluted runoff, and is wasted.
- █ Make sure that your **landscaper / irrigation contractor** follows rules for preventing stormwater runoff.
- █ Redirect **downspouts** toward grassy areas, trees and shrubs, so that runoff from your roof can soak into the ground.
- █ Use **pervious materials** in landscape designs. Bricks, pavers and stones allow water to slowly filter into the ground.
- █ Set a **rain barrel** under your downspout to capture water for another use.
- █ Plant **rain gardens** to help filter and soak up water before it runs onto the street.

HOMES / BUSINESSES

- █ Use the **least toxic** products available for cleaning, etc.
- █ Avoid **liquid chemical spills** such as oil, gasoline, antifreeze, paint, etc. on paved areas.
 - If a liquid chemical spill occurs, clean with rags or absorbent material such as **sand or kitty litter**. Sweep up absorbents and dispose of in the trash.*
- █ Never use a **hose** to wash down the driveway or sidewalk. This washes pollutants into storm drains, and is a waste of water.
- █ Dispose of household hazardous waste through your local DPW / **Household Hazardous Waste Program**.
- █ Never pour **washwater or chemicals** down stormdrains.

- █ Store chemicals in **leak proof containers** inside a building or shed, or under cover, away from rainwater.
- █ **Avoid oversalting** walkways and driveways in the winter, and use non-toxic products whenever possible.
- █ Sweep up all **construction areas** on a regular basis and dispose of debris in the trash.

WASHING CARS AND BOATS

- █ Park your vehicle in a spot where the soap will run off onto **grass**, rather than into the street and down the stormdrain. If practical, park your vehicle on your lawn when washing it.
- █ Use **organic or mild soaps** and detergents.
- █ Never clean or pressure wash the **undercarriage of a car** at home. The oil, grease and other pollutants from this activity can contaminate shallow groundwater.
- █ Always use a **hose nozzle with a trigger**, and shut it off when you're not using it to conserve water.
- █ Skip the home treatment and **wash your car professionally**, but use a car wash that recycles its water!

AUTOMOTIVE REPAIR

- █ Store automotive parts, such as batteries, engines, transmissions, and parts that may have oily or greasy residue on them, under cover and off the ground, to **minimize rainwater contact**. Rainwater can wash pollutants off these parts and into stormdrains.
- █ Collect all used oil, antifreeze, and other vehicle fluids in containers with tight fitting lids and **recycle at a local service station**.

SWIMMING POOLS AND HOT TUBS

- █ Never **discharge pool water** directly into a storm drain.
- █ Dechlorinate pool, hot tub or spa water with **neutralizing chemicals**, if water is to be discharged into the ground. If water cannot be dechlorinated, it must be collected by a pool maintenance company.

For more information on hazardous waste disposal, call your local Department of Public Works.

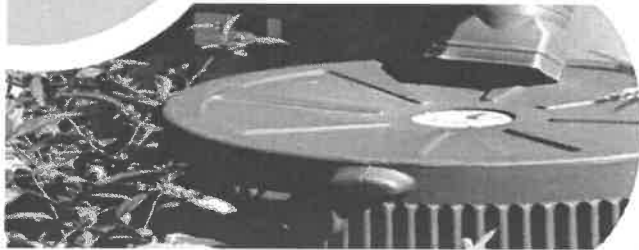
For more information on reducing stormwater pollution, visit www.neponsetstormwater.org





What you can do as a Citizen

U.S. EPA | STORMWATER OUTREACH AT EPA NEW ENGLAND



STORMWATER is a leading cause of poor water quality. Rain or melted snow runs down driveways, sidewalks and streets carrying oil, dirt and other pollutants into nearby waterways. Polluted runoff, which can cause erosion and flooding, runs into waterways and degrades plants, fish, shellfish and other wildlife. In water used for recreation, the runoff can lead to illness, and people who eat contaminated fish can also become sick. Untreated stormwater can also contaminate drinking water sources.

INTRO:

Whether you live in a rural farmhouse or a 21-story apartment building, you have a role to play in reducing the amount of pollution from stormwater that runs into our rivers, lakes, streams and groundwater. The way you manage your property, your pet's waste, your garbage, or even your municipal taxes will affect the pollution from stormwater runoff. Below are some suggestions for how you, as an individual, can reduce your impact on stormwater and the environment.

TO DO YOUR PART:

Take steps in your home landscaping:

- **Rain barrels** — Rainwater can be collected from rooftops and used later on gardens. Rain barrels conserve water and reduce the amount of water that runs off your land.

- **Rain gardens** — Rain gardens planted with native plants can naturally offset the effects of stormwater runoff. Rainwater diverted to these areas from rooftops or paved areas will either be used by plants or will soak into the ground thereby recharging aquifers. Plants along roads or streams can trap stormwater pollution.

- **Lawn care** — Fertilizers and pesticides wash off gardens and pollute streams. Yard waste, such as leaves and grass clippings, can wash into storm drains, adding nutrients to streams. Avoid overwatering your lawn and use pesticides and fertilizers sparingly and organic mulch when possible. Compost or mulch yard waste so it doesn't go into storm drains or streams. Cover piles of dirt or mulch.

- **Paving surfaces** — Reduce the amount of pavement where you live. Brick walks, gravel driveways and porous concrete allow rainwater to run back into the ground to be filtered. Porous surfaces also replenish aquifers. Traditional concrete and asphalt rely on drains, pipes and other infrastructure to divert and control stormwater. The amount of non-porous surfaces is directly related to the health of rivers and lakes.

Maintain septic systems — Leaking septic systems release nutrients, bacteria and viruses into stormwater. Inspect your

system every three years and pump your tank as necessary (every three to five years). Don't dispose of household hazardous waste in sinks or toilets.

Use care with your car — If you wash your car at home, avoid using excess detergents or chemicals. Wash the car in your yard so wash water containing detergents seeps into the ground rather than into storm sewers or septic systems or use commercial car washes because they treat or recycle wastewater. Also, don't clean auto parts at home. Dumping car fluids into storm drains or on a street is like dumping them into a pond or river.

Manage pet waste — Clean up after your dog in cities and make sure waste is left far from water sources in rural areas. Flushing pet waste down the toilet is the best method. Leaving pet waste on the ground or throwing it into the storm drain increases public health risks because pet waste bacteria drains into nearby waterways.

Support your municipal program — Support local efforts to manage stormwater. Support repairs or improvements to your town or city's infrastructure. Allowing your town or city's infrastructure to erode will cost more money in the long run and create more pollution. Watch for notices about street sweeping programs.

Handle household waste carefully — Recycle or properly dispose of toxic products, including pesticides, paint, solvents and used oil. Don't pour them onto the ground or into storm drains. Use green cleaning products.

KEY CONTACTS:

MYRA SCHWARTZ
EPA New England
Assistance & Pollution Prevention
(617) 918-1696
schwartz.myra@epa.gov

LEAH O'NEILL
EPA New England
Watershed & Nonpoint
Source Unit
(617) 918-1633
oneil.leah@epa.gov

GENERAL INFO:

EPA NEW ENGLAND
5 Post Office Square
Suite 100
Boston, MA 02109-3912
(617) 918-1111
www.epa.gov/region1/

**EPA TOLL-FREE
CUSTOMER SERVICE**
1-888-EPA-7341

LEARN MORE AT:
www.epa.gov/region1/
topics/water/stormwater.html

What's the Problem with Dog Waste?

Dog waste left in our yards, forest areas and parks can have many adverse effects on the environment.

It's full of harmful bacteria and excess nutrients.

Besides being a neighborhood nuisance, dog waste can make people sick, especially children who are more likely to come into contact with it while playing.

Dog waste left on lawns can also kill or damage grass and other plants.

When dog waste is washed into lakes or streams, the waste decays, uses up oxygen in the water, and sometimes releases ammonia. This can kill fish!

Dog waste also contains nutrients that encourage weed and algae growth.

Too much of these nutrients turn water cloudy and green . . . imagine this in your backyard pond or stream!



Managing dog waste properly is something easy that everyone can do to make a difference in the quality of our surface waters.

Brought to you by the
Town of HANSON



DOG WASTE AND SURFACE WATER QUALITY

Did You Know?

There are over __ licensed dogs in our town.

Each of these dogs produces about ¾ pound of solid waste and over 7 billion bacteria daily!



Rainfall and snowmelt in the Town of _____ goes untreated into our stormwater system, then directly into local streams, ponds, rivers and lakes.

As it flows, stormwater picks up contaminants and pollutants in its path.

That's why it's important to make sure that dog waste and its pollutants do not end up in the storm drains.

What's So Bad About Dog Waste?

Bacteria and other parasites found in pet waste, such as Giardia and Cryptosporidium, can survive for long periods when left on the ground.

During a rain storm, these pollutants can be washed into local rivers and ponds and into local drinking water supplies.

Individual actions can result in significant water quality improvements when carried out by many people.

Unlike some forms of stormwater pollutants, individual people can easily and economically manage dog waste and help keep our waters safe and aesthetically pleasing.

How You Can Help



BRING IT – Always bring a plastic bag when you walk your dog.

BAG IT – Use the bag as a glove to pick up the dog waste. Scoop it up and turn the bag inside out around the waste.

DISPOSE IT – Properly dispose of dog waste by putting it in a trash can. **Never throw dog waste down a storm drain.**

AND REMEMBER

- Pick up after your pet in your yard
- Only bring your dog where dogs are allowed.

How to Create a Rain Garden

Designing and planting a rain garden is much like creating any other perennial garden, with a few unique differences.

- The garden must be located where runoff can be diverted into it, at least 10 feet away from building foundations and septic systems.
- A shallow, saucer-shaped depression is created in the garden to hold rain as it soaks in. The garden should be about 20-30% of the area from which it is receiving runoff.
- Soil replacement and additional preparations are sometimes needed for success. A good soil mix for rain gardens is 50-60% sand, 20-30% topsoil, and 20-30% compost.
- Species of perennial plants and shrubs native to our region are recommended, as they are adapted to local conditions and will not need extra care once they are established. Plant flood tolerant species in the center and drought tolerant ones around the edges. Berry-bearing and nectar-producing plants attract and nourish wildlife.
- A mulch of shredded hardwood is an integral part of your rain garden. It keeps the soil moist and ready to soak up rain, and makes your garden low-maintenance.

Did You Know? The average home roof is 1,300 square feet and generates 832 gallons of runoff during a single 1" rainfall event.

Rain Garden Resources

New England Wildflower Society:
<http://www.newfs.org/publications-and-resources/rain-gardens.html>

URI Healthy Landscapes:
www.uri.edu/ce/healthylandscapes/raingarden.htm

University of Connecticut Extension Service:
www.sustainability.uconn.edu/pdf/raingardenbroch.pdf

Natural Resources Conservation Service:
www.la.nrcs.usda.gov/features/raingardens.html



Going Green with Storm Water: Rain Gardens



**Broad Meadow Brook Conservation Center
And Wildlife Sanctuary**
414 Messasolt Road
Worcester, MA 01604

Phone: 508-753-6087
Fax: 508-755-0148
www.massaudubon.org

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Healthy Communities Grant

Going Green with Storm Water

Rain Gardens



A Best Management Practice to:

- ◆ Reduce Stormwater Runoff
- ◆ Improve Water Quality
- ◆ Enhance Your Landscape

Make your own beautiful contribution to
cleaner water in the Blackstone River
Watershed.

Come visit Broad Meadow Brook's
Demonstration
Rain Garden



What is a Rain Garden?

A rain garden is a shallow depression planted with perennial native plants that are tolerant of both dry and wet conditions. Rain gardens capture runoff from impervious surface areas such as rooftops and driveways and allow it to seep slowly into the ground. Most importantly, rain gardens help preserve nearby streams and ponds by reducing the amount of polluted runoff and filtering pollutants.

Why Plant a Rain Garden?

Stormwater runoff from residential areas often contains excess lawn and garden fertilizers, pesticides and herbicides, oil, yard wastes, sediment and animal wastes which cause water pollution.

Rain gardens fill with stormwater and allow the water to slowly filter into the ground rather than running off into storm drains, and eventually into streams and lakes.

Rain gardens reduce peak storm flows, helping to prevent stream bank erosion and lowering the risk for local flooding.

By collecting and using rainwater that would otherwise run off your yard, you not only return rain to the water table, but you are also creating a beautiful solution to water pollution.



The Rain Garden at Broad Meadow Brook Conservation Center

The rain garden captures roof runoff from three down spouts, and a rain barrel captures the fourth. We use water from the rain barrel to irrigate when necessary.



We chose a variety of native plants that provide color and interest throughout the growing season. They produce nectar and berries to attract wildlife such as butterflies, hummingbirds, cedar waxwings and winter robins.

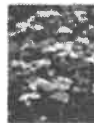
Plant List:

Shrubs:

Sweet Pepperbush
Dogwood
Shamrock Inkberry
Winterberry
Gro-Low Sumac
Lowbush Blueberry
Highbush Blueberry
Dwarf Fothergilla
Slender Deutzia
Potentilla

Perennials:

Dwarf Aster
Swamp Milkweed
Joe Pye Weed
Coneflower
Blazing Star
Beebalm
Blackeyed Susan
Crested Iris
Foamflower
Yarrow
Sea Oats



Mass Audubon is a lead partner in the Blackstone River Coalition (BRC) and the Campaign for a Fishable/Swimmable Blackstone River by 2015. All of Worcester's waterways, including Broad Meadow Brook, are headwater tributaries to the Blackstone. To further implement the Campaign, the BRC is targeting polluted runoff and stormwater volume as the major issue impacting water quality.

The BRC's "Tackling Stormwater in the Blackstone River Watershed" Initiative is a four-pronged approach focusing on homeowners, municipal decision makers, developers, and businesses. See www.zaptheblackstone.org for details.

Remember that anything that enters a storm drain in the road is discharged untreated into the water bodies we use for swimming, fishing, paddling, and recharging our drinking water supplies. The more we can all do to reduce stormwater impacts to our waterways, the healthier they will be.



Stormwater Pollution Education: Fertilizing the Lawn

**When you fertilize the lawn, remember . . .
you're not just fertilizing the lawn.**

It's hard to imagine that a green, flourishing lawn could pose a threat to the environment, but the fertilizers you apply to your lawn are potential pollutants! If applied improperly or in excess, fertilizer can be washed off your property and end up in lakes and streams. This causes algae to grow, which uses up oxygen that fish need to survive. So if you fertilize, please follow directions and use sparingly.



Clean water is important to all of us.

It's up to all of us to make it happen. In recent years, sources of water pollution like industrial wastes from factories have been greatly reduced. Now, more than 60 percent of water pollution comes from stormwater runoff, which picks up pollutants like leaking oil from cars, fertilizers from farms and gardens, and failing septic tanks. All these sources add up to a big pollution problem.

But each of us can do small things to help clean up our water - and that adds up to a pollution solution!

Why do we need clean water?

Having clean water is of primary importance for our health and economy. Clean water provides recreation, commercial opportunities, fish habitat, drinking water, and adds beauty to our landscape. All of us benefit from clean water-and all of us have a role in getting and keeping our lakes, rivers, streams, marine, and ground waters clean.

What's the problem with fertilizers?

Fertilizer is a "growing" problem for lakes, rivers, and streams, especially if it's not used carefully. If you use too much fertilizer or apply it at the wrong time, it can easily wash off your lawn or garden into storm drains and then flow into lakes or streams. Just like in your garden, fertilizer in lakes and streams makes plants grow. In water bodies, extra fertilizer can mean extra algae and aquatic plant growth. Too much algae causes water quality problems and makes boating, fishing, and swimming unpleasant. As algae decay, it uses up oxygen in the water that fish and other wildlife need.

Clean Water Tips: How can you fertilize and help keep our waters clean?

- Use fertilizer sparingly. Many plants don't need as much fertilizer or need it as often as you might think.
- Don't fertilize before a rain storm.
- Consider using organic fertilizers. They release nutrients more slowly.

Have your soil tested before applying fertilizers to your lawn and gardens.

A standard soil test costs \$15. You may not need to add any fertilizer.

To order a soil test or for more information contact the

UMass Extension Soil Testing Lab at 413-545-2311

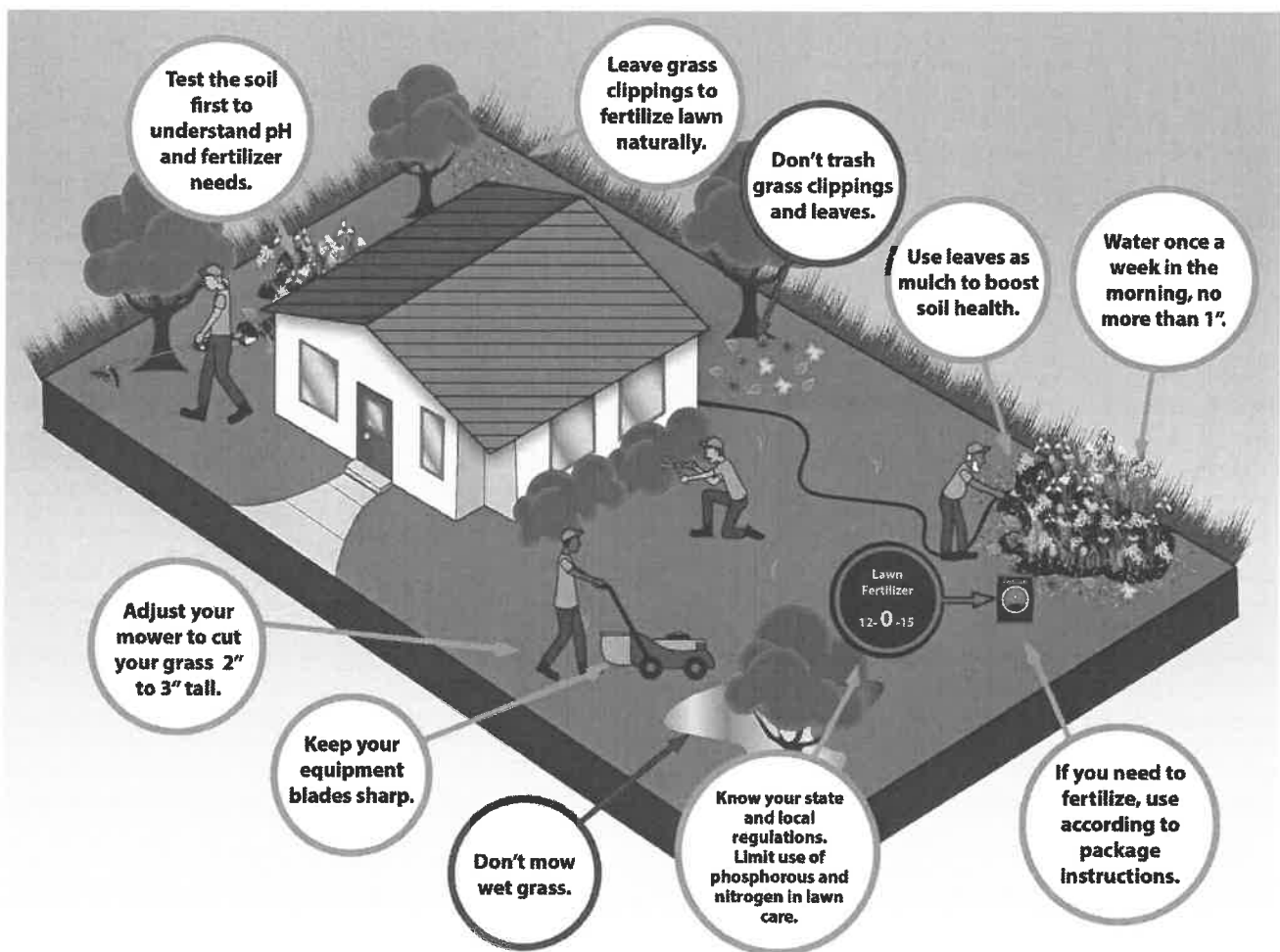
<http://soiltest.umass.edu/ordering-information>

Brought to you by the Town of Hanson





Lawn and Garden Tips to Help Curb Stormwater Pollution



Under Massachusetts law, only apply fertilizer with phosphorus if:

1. A soil test shows that phosphorus is needed; or
2. During the first growing season for a newly established lawn.

Contact the UMass Cooperative Extension Soil Nutrient Testing Laboratory to learn how to conduct a routine soil test: <https://ag.umass.edu/services/soil-plant-nutrient-testing-laboratory/ordering-information-forms>

Learn more at: www.ThinkBlueMassachusetts.org

