The Backyard Water Resources Guide

A Guide to the Stewardship and Protection of Backyard Wetlands, Ponds, Streams, Lakes, Rivers and Estuaries

THE BACKYARD WATER RESOURCES GUIDE

Each of us lives in a watershed that drains first to a backyard water resource, then a larger wetland, pond, lake, stream or river, and then eventually to Long Island Sound. This guide provides simple, safe, and sound practices to help protect the health and quality of backyard water resources. Keep the guide on hand and use it to make every day decisions around your house and yard. By adopting simple practices for lawn and landscape care, septic system maintenance, hazardous product use and disposal, and drainage and stormwater runoff control you can play a role in protecting water quality.

The Connecticut River (left) and its 11,000 square mile watershed (above) contribute 70% of the freshwater input into Long Island Sound (CT River Watershed Map: U.S. Geological Survey and NEIWPCC).

Produced by the Connecticut River Coastal Conservation District, Inc., Spring 2005; 2nd Edition, Spring 2011

ROCKFALL

LONG ISLAND SOUND STUDY
A Partnership to Restore and Protect the Sound

RC&D

Reprinted with generous support from the Eastern Connecticut Resource Conservation & Development Area, Inc.

This guide was made possible with a generous grant from The Rockfall Foundation of Middletown, CT, and funds from the U.S. Environmental Protection Agency awarded by the Long Island Sound Study and administered by Cornell University and New York Sea Grant.

Printed on 50% post-consumer waste paper

WE ALL LIVE IN A *Watershed*

Created by the natural folds and creases of the earth's surface, a watershed is an area of land that drains rainfall and snowmelt to a single outlet. Watersheds can be small, like the local watershed that drains to your backyard wetland, stream or pond. They can also be very large, like the Connecticut River watershed. There are also various types of watersheds—rural, agricultural, forested, urbanized or suburbanized—depending on the land uses within them.

Each of us lives in a small local watershed. These small local watersheds lie within larger regional watersheds. In fact, everyone in Connecticut lives in the watershed of Long Island Sound.

What is a Watershed?

A watershed is an area of land that drains water, sediments and dissolved material to a single common outlet such as a wetland, stream, pond, lake, estuary or ocean.

THE LONG ISLAND SOUND WATERSHED

The Long Island Sound watershed is extensive, including all of Connecticut and parts of New York, Vermont, New Hampshire, Massachusetts and Quebec. Recognized for its outstanding natural resources, environmental significance, and recreational and commercial value, the Sound was designated an Estuary of National Significance in 1987.

More than 20 million people live within 50 miles of Long Island Sound. Decades of pollution, land use change, and extensive urban and suburban growth have taken its toll on water quality in the Sound. Fortunately, significant strides have been made to restore and protect the Sound's health, and many easily identified pollution sources have been addressed through state and federal permit programs.

Even so, water quality in the Sound and throughout Connecticut is still in need of considerable improvement. Pollution in stormwater runoff from residential, commercial, and agricultural lands, known as Nonpoint Source pollution, is a significant threat to the quality of our wetlands, ponds, streams, lakes, rivers and estuaries.

NONPOINT SOURCE POLLUTION: *A Threat to Clean Waters*

Nonpoint Source (NPS) pollution results when rainfall and snowmelt carry accumulated pollutants from roads, roofs, parking lots, residential lawns, agricultural fields and construction sites into nearby water resources. Because nonpoint sources are both common and widespread, they are considered by the Environmental Protection Agency to be a leading cause of water quality impairment nationwide. And, since nonpoint sources are so diffuse, addressing them poses a considerable challenge.

Connecticut is a state rich in water resources. Land use changes, including urban and suburban development, are threatening the overall health and quality of our waters. According to the State's *2010 Integrated Water Quality Report to Congress*, 30% of assessed river miles, 4% of assessed lake acres, and 57% of assessed estuary square miles did not fully support aquatic life. Water quality impairments are also affecting water-based recreation, shellfishing and fish consumption.

Common NPS

POLLUTANTS

- **Nutrients** (fertilizers)
- **Sediments** (road sand)
- **Pathogens** (bacteria)
- **Toxics** (heavy metals, pesticides, herbicides)
- **Floatable debris**
- **Heat**

SOURCES

- **Construction Sites**
- **Roads**
- **Parking Lots**
- **Roofs**
- **Lawns**
- **Farms**
- **Failing Septic Systems**

Connecticut's abundant water resources include 452,500 acres of wetlands; 5,830 linear miles of streams and rivers; 2,267 lakes, ponds and reservoirs; and 613 square miles of estuaries and harbors.

Water Resources in Your Backyard

Osprey

Backyard water resources provide food and shelter to a wide variety of water-dependent plants and animals. Wetlands provide important habitat for migrating and nesting birds, breeding amphibians, and a host of insects, reptiles and mammals. The Connecticut River, many of its tributaries, and many inland lakes and ponds support freshwater and migratory fish populations. Streams and rivers are the home of many fish eating birds including kingfishers, herons, osprey and eagles.

Backyard wetlands, streams, ponds, lakes and marshes are within local watersheds that collect surface runoff from rainfall and snowmelt. This runoff can also carry pollutants that threaten the health and vitality of these receiving waters. Sediments can smother the streambeds and pond bottoms that provide aquatic habitat critical to invertebrate and fish survival. Nutrients can cause runaway algal and plant growth leading to eutrophication (over-enrichment of nitrogen and phosphorus). Heat that builds up on roads and roofs can warm stormwater runoff, altering water temperatures and potentially degrading cold water fisheries. Lastly, pathogens and toxics can degrade aquatic ecosystems as well as pose risks to public health.

Trout

Your Role in Protecting Water Resources

Don't forget—each of us lives in a watershed. Our everyday actions in our small part of the watershed can impact downstream waters. This guide offers simple, safe and sound practices to help protect your backyard resources, so keep it on hand and use it to make decisions around your house and yard. Adopt these simple practices for lawns and landscapes, septic systems, hazardous household products, and drainage and runoff and you will not only play a critical role in protecting water quality—*you will make a difference in the health of your watershed.*

LAWN CARE AND LANDSCAPE MANAGEMENT

You—and your backyard water resource—can benefit from a healthy lawn and landscaping around your home. Grass, trees, shrubs, ground covers and other plants protect wetlands, ponds and streams from pollutants while enhancing the value and beauty of your property.

A properly maintained lawn and well-planned landscape serves many important purposes, including reducing runoff from roofs, downspouts and driveways; filtering pollutants from runoff; and controlling soil erosion. In addition, providing a well vegetated buffer of tall grasses, shrubs and trees next to your backyard stream, pond or wetland will help stabilize the banks, enhance aquatic habitat, and moderate water temperatures. Vegetated buffers will also help reduce damage from flooding events by absorbing rising waters and slowing flood flows.

Vegetated buffers take up nutrients and trap sediments in runoff, improve aquatic and riparian habitat, stabilize banks and reduce flooding (Photo: USDA NRCS).

Using a diverse mix of landscape plants, including tall grasses, flowering perennials, fruit-bearing native shrubs, and hardy shade trees will not only provide significant water quality benefits but will also enhance your yard's value as habitat for native birds, insects and wildlife.

Maintain a Vegetated Buffer Between your Yard and Backyard Water Resource

- The wider the vegetated buffer the better! In most cases the buffer between your yard (e.g., lawn) and backyard water resource should be at least 35 feet.
- Consider establishing a three-stage buffer, with a 25 foot undisturbed tree and shrub waterfront zone; a 20 to 135 foot managed upper zone of trees, shrubs and perennials; and finally 20 feet of lawn, tall grass and any needed water control measures (e.g., swales, berms, basins).

Mountain Laurel is Connecticut's state flower. It has beautiful pink flowers from May until June.

Choose Native Plants that Attract Birds, Bees, and Wildlife

- Use native shrubs, trees and perennial flowers to improve the quality of food and cover habitat available for native wildlife.
- Reduce overall landscaping maintenance by using native species that can endure local pests, diseases and weather conditions.
- In dry, sunny areas try Bayberry, Ground Juniper or Sweet Fern; in moist areas, Elderberry, Highbush Blueberry, Inkberry, Shadbush, Spicebush or Winterberry; in shaded areas, Mountain Laurel, Rhododendron (e.g., *R. maximum*), Swamp Azalea, Christmas Wintergreen or Mapleleaf Viburnum.

Mapleleaf Viburnum provides berries that are a valuable food source for wildlife.

Replace Non-Native Invasive Plants in Backyard Landscapes

Non-native invasive plants pose a threat to the health of our backyard water resources. They outcompete native species that provide food and habitat for native wildlife, and reduce local diversity. Non-native invasive species common in Connecticut include Purple Loosestrife, Asiatic Bittersweet, Burning Bush and Japanese Barberry (for an up-to-date list of invasive plants visit *www.hort.uconn.edu/cipwg*).

Purple Loosestrife is a non-native species often planted in flower gardens. Now that it has escaped into natural communities it is choking out native plants and poses a major threat to wetland and streamside habitats.

Avoid or Minimize Pesticides and Herbicides that are Harmful to Humans, Pets and Aquatic Life

- Choose plants that repel pests, e.g., catnip or marigolds, or attract beneficial predators or parasites, e.g., Queen Anne's lace, coreopsis, cosmos or butterfly weed (*Asclepias*).
- Hand pick pests or weeds.
- Use physical controls like traps, barriers, mulches or fabric covers.
- Look for safe, non-toxic alternatives, for example insecticidal soaps, horticultural oils and plant-based insecticides.
- Spot treat problem areas rather than broadcasting "weed and feed" mixtures widely.

Adopt Sound Fertilizing and Lawn Care Practices

- Mow your lawn high (3") to promote deep root growth and reduce watering needs.
- Leave grass clippings on the lawn—they contain valuable nutrients and can provide half or more of your lawn's total fertilizer needs.
- Test your soil to find out exactly how much fertilizer is needed. Testing is low-cost, easy to do, and can save you money in the long run.
- Apply only as much fertilizer as needed; too much can damage your lawn and degrade local water quality.
- Use organic fertilizer with low or no phosphorus and water insoluble, slow release or controlled release nitrogen.
- Apply fertilizers at the right time of year, e.g., in the fall spread fertilizer before your lawn goes dormant, otherwise it can wash away with winter rainfall and snowmelt.
- Sweep up fertilizer from sidewalks and driveways before it washes into a backyard water resource.

Without a vegetated streamside buffer that includes shrubs and trees, banks can erode and stormwater runoff can carry pollutants into the stream.

SEPTIC SYSTEM MAINTENANCE

Many homeowners rely on septic systems to treat and dispose of wastewater from sinks, baths, toilets, dishwashers and clothes washing machines. Septic systems that are properly designed, installed and maintained will have few adverse impacts on backyard water resources. Poorly kept, malfunctioning or ill treated septic systems can fail, resulting in contamination of water supply wells or nearby water resources with bacteria that can threaten public health and aquatic life.

Prevent Septic System Failures

- Have a licensed septic contractor pump out your system at least every 2 to 3 years. More frequent pump-out may be necessary if you have a large household.
- During septic tank pumping have the contractor check and replace the inlet and outlet baffles if missing or deteriorated.
- If you have a garbage disposal use it sparingly and have your system pumped out more frequently.
- Extend the life of your system by conserving water, e.g., install low-flow fixtures, fix leaking faucets or toilets, and do laundry or dishes only when the machine is full.
- Do not use caustic drain openers or put hazardous wastes, non-degradable items, chemicals, grease, paint or pesticides down the drain. They can harm the bacteria that keep your septic system functioning properly.
- Avoid driving or parking vehicles over your system to minimize compaction of the leaching/absorption field.
- Plant only grass over and near your system; tree and shrub roots can clog and damage the absorption field.
- Redirect flows from roofs, driveways, roads, curtain or footing drains away from the leaching/absorption field.

Signs of Septic System Malfunction or Failure

BACK UPS: toilets or sinks back up when you flush or do laundry.

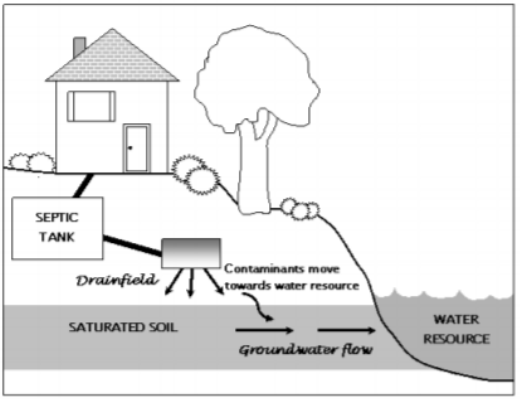
SLOW DRAINS: sinks, tubs, and toilets drain slowly.

SOGGY GRASS: standing wastewater or soggy absorption fields.

LUSH GRASS: vigorous green grass in absorption field area even when conditions are dry.

FOUL ODORS: unusual smells especially when doing laundry or showering.

Even with no obvious signs of failure an improperly maintained septic system may be contributing to surface or groundwater contamination!



Failing septic systems can contaminate down gradient wetlands, ponds and streams.

HAZARDOUS HOUSEHOLD PRODUCTS

It is a little known fact that many products used commonly around the home are hazardous. Household cleaners, paints, automotive products and pesticides can be harmful to people, pets, wildlife and backyard water resources. If flushed down the drain these chemicals can impair septic systems, causing failures and the eventual release of harmful bacteria. In addition, hazardous household products can pollute receiving waters since they are not removed in septic systems or at the sewage treatment plant. For details on toxic products and safe alternatives visit *www.nrcs.usda.gov/feature/highlights/homegarden/hazmat.html*.

Be Aware of Hazardous Household Products

- Choose less toxic or non-toxic alternatives to hazardous products.
- Read labels and use caution when purchasing household products.
- Buy only the amount you need of the least hazardous product available.
- Always use hazardous products in accordance with instructions.
- Store any hazardous products in their original containers so the label can be reviewed each time the product is used.
- Never dump excess hazardous products on the ground, down the drain, into storm sewers or in the trash.
- Dispose of all unused household chemicals, automotive products, batteries, aerosol cans and oil-based paints at an approved local hazardous waste collection center.
- Put used motor oil and antifreeze into a sturdy, closed container and take it to a local service station or oil recycling center.

Never dump or sweep anything into storm drains. They lead directly to streams, wetlands and ponds—not to sewer lines or sewage treatment plants.

Try These Less Toxic Cleaning Alternatives

ALL-PURPOSE CLEANER:
MIX TOGETHER 2 TBSP BAKING SODA, 2 CUPS WARM WATER AND 1 TSP LEMON JUICE OR WHITE VINEGAR.

DISINFECTANT:
IN A SPRAY BOTTLE MIX 1 TSP BORAX, 3 TSP WHITE VINEGAR AND 2 CUPS WARM WATER.

SLOW DRAIN UNCLOGGER:
FLUSH WITH A MIXTURE OF HALF CUP BAKING SODA, TWO OUNCES VINEGAR AND ONE CUP BOILING WATER. USE A PLUNGER AND A METAL SNAKE IF NECESSARY.

DRAINAGE AND STORMWATER RUNOFF

Many of us live in urban and suburban areas characterized by acres of hard surfaces—roads, rooftops and parking lots—that are impervious to rainfall and snowmelt. Unlike forests and fields, stormwater runs off impervious surfaces rather than soaking in. Adding or expanding impervious surface on your property can cause increased runoff, and may contribute to flooding or the transport of sediments, chemicals and nutrients into backyard water resources.

Steep, unvegetated slopes, exposed stream or pond banks, and large areas of bare ground tend to be unstable. If these areas are ignored they can erode, resulting in sediment-laden runoff and eventual sedimentation that degrades the quality of downstream water resources. Unfortunately, erosion and sedimentation are exacerbated by increases in runoff often resulting from land development.

On the following page are fairly simple suggestions for improving drainage and controlling stormwater runoff from your house, driveway and yard. If you need additional assistance with these practices contact your local soil and water Conservation District.

Turbid Waters . . . Why You Should Care

During rainstorms our ponds, streams and rivers often become clouded with suspended sediments. Excess sediment is more than just an eyesore—it creates turbid waters. The opacity, or cloudiness, of water is measured as turbidity.

High turbidity is dangerous to fish and other aquatic life. It reduces the amount of sunlight penetrating into the water, impairs sight-feeding fish, and clogs fish gills, which can lead to suffocation. When suspended sediments eventually settle out, they can smother eggs and larvae of aquatic organisms on the stream, pond or river bottom.

Without proper pollution prevention and source control measures in place, roads, parking lots, earth excavation projects, construction sites, agricultural fields and even your yard can contribute to severe sedimentation.

The next time you notice a pond, stream or river in your town that is discolored, muddy or turbid, report the problem to your town's wetland enforcement officer, land use office, DPW or chief elected official.

Improve Drainage and Control Runoff on Your Property

- Reduce impervious surfaces on your property by minimizing the amount of concrete, asphalt or packed gravel.
- Use permeable materials such as brick or stone for driveways, walks, patios and landscapes to maximize the amount of water soaking into the ground.
- Increase infiltration by directing roof gutters and pavement runoff to rain gardens, grass swales, vegetated filter strips or dry wells.
- Collect roof runoff in rain barrels and use to water household or landscape plants.
- Install gravel trenches or French drains along patios and driveways to collect and infiltrate rainfall and snowmelt (direct drains away from your foundation).
- Seed or resod bare or dying patches of lawn as quickly as possible.
- Use landscaping mulch or wood chips to stabilize eroded areas or exposed earth.
- Plant thick growing, hardy ground covers on steep or disturbed slopes.
- Minimize lawn area and maximize the number of shrubs and trees to promote infiltration and reduce runoff (especially important on larger lots).

Permeable driveways and grass swales are two alternative practices that reduce runoff by encouraging infiltration.

TECHNICAL ASSISTANCE

Connecticut River Coastal Conservation District
www.conservect.org/ctrivercoastal

North Central Conservation District
www.conservect.org/northcentral

NEMO Program / UCONN Cooperative Extension System
www.nemo.uconn.edu

USDA CT Natural Resources Conservation Service
www.ct.nrcs.usda.gov

NATIVE PLANTS

Connecticut Native Tree and Shrubs Availability List
www.ct.gov/dep (search "native tree and shrub")

Connecticut Botanical Society
www.ct-botanical-society.org

Lady Bird Johnson Wildflower Center
www.wildflower.org

ENVIRONMENTAL FRIENDLY FERTILIZERS

Safelawns.org
www.safelawns.org/resource_directory.cfm

PESTICIDE ALTERNATIVES

Beyond Pesticides
www.beyondpesticides.org

Pesticide Action Network
www.pesticideinfo.org

US EPA Controlling Pests
www.epa.gov/pesticides/controlling

ALTERNATIVE LAND CARE PRACTICES

Smaller American Lawns Today
www.conncoll.edu/green/arbo/8597

NOFA Organic Land Care Program
www.organiclandcare.net

USDA CT NRCS Ecological Landscaping Network
www.ct.nrcs.usda.gov/eln.html

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