

The fresh water you use in your home comes from a well.

This is true whether you live in a village — Hartford, Quechee, West Hartford, White River Junction, Wilder — or a rural part of town. “Town water” itself comes from three Town-maintained wells.

We all depend on a hidden but vital resource known as **groundwater**. Public health and the health of our **surface waters**, such as streams, ponds, rivers, and lakes, are related to the adequacy and quality of our groundwater supplies. Pollution to our surface waters can create pollution in groundwater and vice versa.

To ensure a sufficient supply of clean, fresh water we need to:

1. **Conserve water by using (withdrawing) no more than we need**
2. **Protect it from contamination**
3. **Maximize recharge of our groundwater**

LOW IMPACT DEVELOPMENT

Design tools known as Low Impact Development (LID) use strategies that mimic natural hydrological processes— infiltration, recharge, retention— and incorporate attractive landscape measures to minimize runoff and maximize infiltration, while enhancing natural beauty and livability (see rain garden photos). Equally important, these techniques for improving water quality and living environments are frequently LESS costly than traditional designs.

Benefits of Low Impact Development:

- Reduces pollution in runoff
- Reduces flooding and protects property
- Protects drinking water supplies
- Protects fish and wildlife habitat from high flows
- Preserves and restores trees and other vegetation
- Maintains stream flows and water levels in wetlands
- Reduces building costs for stormwater management
- Results in more attractive neighborhoods

For more information visit:
www.vtwaterquality.org/stormwater.htm

CONSERVATION NOTES CLEAN WATER



HARTFORD
CONSERVATION
COMMISSION

BUILD A RAIN GARDEN

A rain garden is a bowl-shaped garden designed to capture and absorb rainfall and snowmelt (collectively referred to as “stormwater”).

When stormwater is captured by a rain garden, it soaks into the ground and recharges the groundwater at a rate 30% greater than that of a typical lawn.

Ultimately, if we all work together to create landscape features that absorb the stormwater, we can replenish our groundwater and help keep it pollution free.

Benefits of a Rain Garden:

- Easy to install and maintain
- Recharges groundwater
- Helps reduce flash flooding
- Provides wildlife habitat
- Improves water quality



CURB-SIDE RAIN GARDEN

RAIN GARDEN MANUAL

An excellent 20-page step-by-step guide for making your own rain garden has been produced by the Winooski Natural Resources Conservation District and UVM Extension Lake Champlain Sea.

To get your copy of the *Vermont Rain Garden Manual* and the companion *Plant List*, either:

1. download it FREE OF CHARGE from: www.vacd.org/winooski/winooski_raingarden.shtml
2. order a full color manual for \$5 each (checks made payable to WNRCD and mailed to: Ashley Lidman, WNRCD, 1193 S. Brownell Rd, Suite 35, Williston, VT 05495).



Photos: David Raphael, Landworks

RAIN GARDEN QUESTIONS:

Does a rain garden form a pond?

No. After most storms a properly constructed rain garden will absorb water within a period of 24 hours and not more than 48 hours for larger storms depending on the soil type.

Do mosquitoes breed in rain gardens?

No. Mosquitoes require 7-12 days of standing water to lay and hatch eggs. Standing water will only last a few hours after most storms.

Do they require maintenance?

Like any garden, diligent weeding and watering will be needed in the first two years. As the garden matures, maintenance requirements will lessen. Plants may need to be thinned after a few years.

How much does a rain garden cost?

The cost varies depending on who does the work, the size, where the plants come from, and the planting density. If you purchase plants and materials but do all the labor yourself, the cost will be roughly \$4-\$6 per square foot. If you hire a professional to design and install the garden, it will cost roughly \$10-\$14 per square foot.

Text drawn from the Vermont Rain Garden Manual

HOW TO REDUCE WATER CONTAMINATION

- Install a Rain Garden.
- Maintain vegetated buffers along edges of water bodies (riparian buffers).
- Reduce the amount of paved and other impervious surfaces in your yard and increase the amount of vegetated area. Select native plants and grasses in your landscaping to reduce the need for watering during dry periods. Reduce lawns and set lawn mower for tallest grass level. Do not over-water your lawn (stop watering before water runs onto pavement or into storm sewer).
- Sweep up debris rather than using a hose to wash it “away.” Compost or recycle yard wastes when possible.
- When using a water hose, employ an attachment that can adjust and shut off water from the handle rather than at the faucet (running a hose for 5 minutes can use 50 gallons of water).
- Purchase and use nontoxic, biodegradable, recycled, and recyclable products whenever possible.
- Use fertilizers and pesticides sparingly. When use is necessary, use them in the recommended quantity. Avoid application when the forecast is for rain. Learn to use Integrated Pest Management (IPM).
- Use hazardous substances like paints, solvents, and cleaners in the smallest amounts possible, and follow directions on the label. Store substances properly to avoid leaks. Clean up spills immediately and dispose of the waste safely. Dispose of waste at special hazardous waste collections.
- Collect pet waste and dispose of by flushing when possible.
- Have septic system inspected and pumped every 3 to 5 years.
- Place unused pharmaceuticals in the trash, do not flush down the toilet or pour down the drain.
- Check autos, boats, motorcycles and other machinery for leaks, and make repairs as soon as possible. Recycle used motor oil and other automotive fluids.
- Use commercial carwashes that do not cause runoff or wash your car on the grass rather than on pavement.
- Use Low Impact Development (LID) principles (see inside for details).

A PDF of this brochure can be downloaded from the following site:

<http://www.hartford-vt.org/content/conservation/>

WAYS TO CONSERVE WATER

- Install water-saving showerheads and low-flow faucet aerators.
- Fix water leaks:
 - leaky faucet (1 drip /second = 3,000 gallons/year)
 - leaky toilet, can be tested by adding food coloring to tank (average leak = 73,000 gallons/year).
- Turn off the water when brushing your teeth (2 gallons/min. = 2,880 gallons/year).
- Run dishwashers and washing machines with full loads only.
- When replacing appliances, look for water-saving models.
- Replace old 3.5 or 5 gallon/flush toilets with 1.3 gallon/flush models.
- Use water collected in a rain barrel to water the garden (saves 1,300 gallons year).

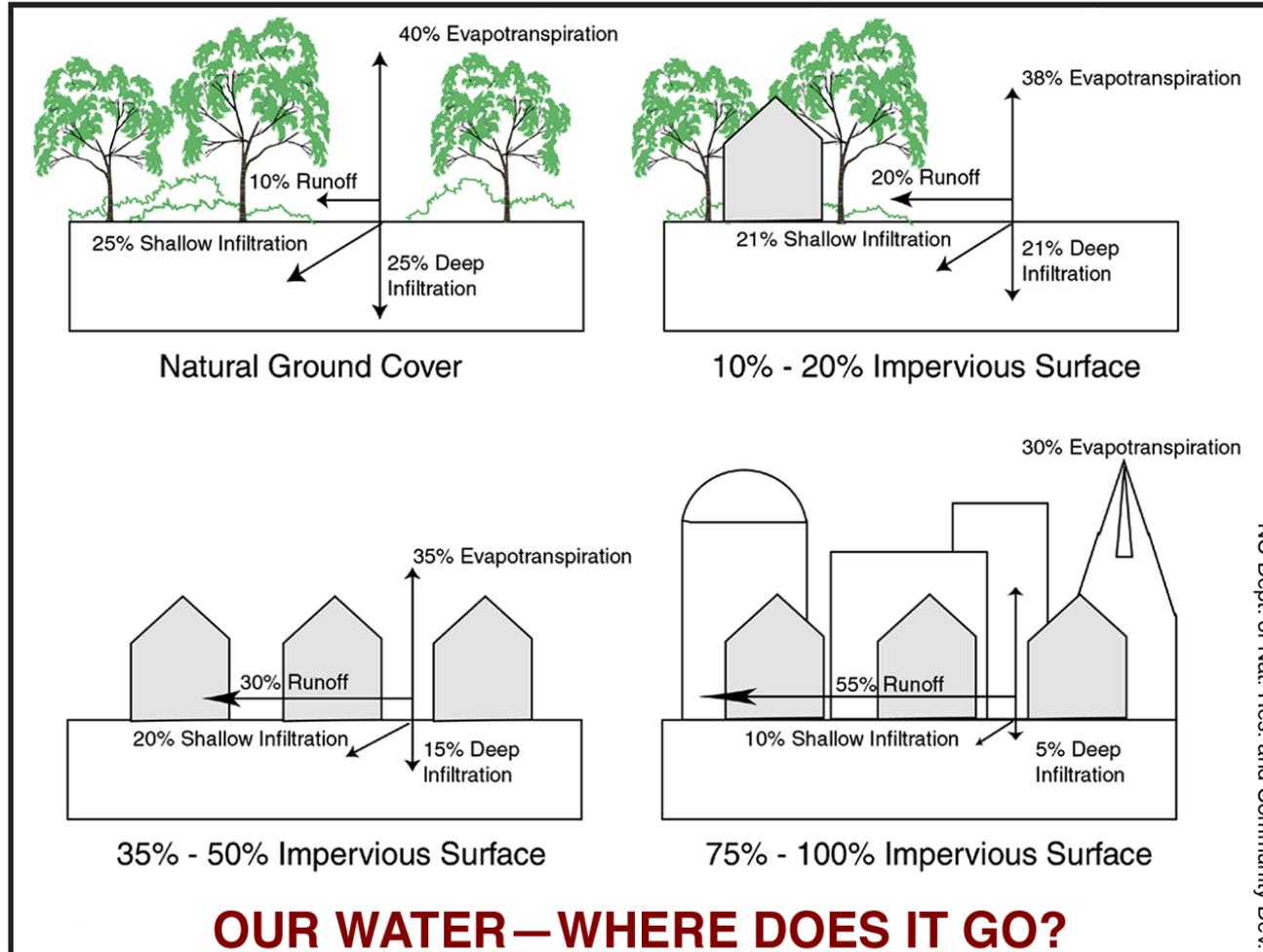
These figures represent losses by a single household. When extrapolated for a town with a population exceeding 11,000 people and nearly 6,000 homes, the quantity of water squandered or saved is more than a drop in the bucket!

Water saving ideas from:
<http://www.epa.gov/watersense/>

GROUNDWATER RECHARGE AND STORMWATER RUNOFF

What does it mean to recharge groundwater?

Recharge is the process by which groundwater is replenished. Groundwater is recharged when precipitation (rainfall and snowmelt), also known as **stormwater**, infiltrates through soil layers and reaches underground reservoirs known as aquifers. In an ideal situation, all precipitation that is not taken up by plants or released as water vapor into the air (evapotranspiration) would be retained within the soils long enough to be pulled by gravity into fissures in the rock where groundwater collects.



Our area receives plentiful rain and snow. Why be concerned about groundwater recharge?

For generations, we have been adding water-shedding surfaces and structures (collectively described as **impervious surfaces**) such as roads, parking lots, driveways, sidewalks, rooftops, and storm sewers. Good at shedding water, impervious surfaces often send stormwater off-site and into surface waters rather than retaining it long enough for infiltration to recharge groundwater. In a natural environment, about 50% of the stormwater infiltrates the soil and 10% runs off. However, as illustrated, when the amount of impervious surface increases, infiltration decreases and runoff increases.

What is stormwater runoff?

Stormwater runoff is water from rain or melting snow that does not soak into the ground. It flows from rooftops, across paved areas and bare soil. As it flows, stormwater runoff collects and transports the following unsavory stew to our rivers and streams:

- sediment
- pesticides, fertilizers
- animal waste
- oil, grease, gasoline, antifreeze
- road salt
- yard waste
- trash

Stormwater runoff is the most common cause of surface water contamination