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CLEAN BUSINESS IN A WATERSHED

The Scituate Reservoir Watershed Education Program

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Passing On Clean Water

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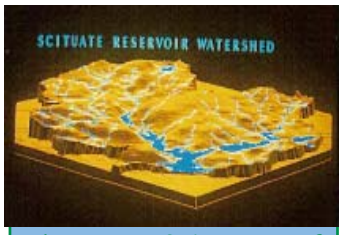

Above is a 3-D image of the Scituate Reservoir Watershed.

Portions of Foster, Glocester, Johnston and Scituate comprise this land area.

The Scituate Reservoir, lying in the lowest part of this land area, catches all water flowing over this watershed.

The Scituate Reservoir is a major source of drinking water in Rhode Island.

Contents:

Are profits washing away?

Are **profits** the only things that concern you as a business owner? Do you only want to see your business improve, bills to be paid, and profits to be made? No. You also want to see customers happy so that they'll continue to do business with you. You want to better understand the connection between the product or service you offer and the consumers who are buying them. The relationship between your business and consumers directly translates into profit.

Interactions in the watershed can increase "profits" or create "deficits" in your environment.

What is a profitable situation for your watershed?

A "normal" water cycle situation is the most profitable for people, plants, and animals. In an uninterrupted / ideal environment, the water cycle involves *precipitation* in the form of rain, snow, sleet, or hail. When precipitation reaches the land, some infiltrates to recharge the groundwater (i.e. drinking water from wells). Some of the precipitation runs over the land when the ground becomes completely saturated. In developed areas, runoff occurs because the precipitation cannot be absorbed due to the presence of pavement, buildings and roofs. Both groundwater and runoff serve to recharge surface water—streams, reservoirs, lakes, ponds, and the ocean. As the sun heats the water, it *evaporates* into the atmosphere, where the droplets become involved in the *condensation* process and clouds are formed. The cycle thus continues and we continue to have water to drink from home wells and reservoirs.

How are deficits created?

Stormwater is one way that the yield of the watershed environment can be compromised. **Stormwater** is the portion of rainfall that does not infiltrate into the soil. It refers to rainwater & snowmelt, as well as water from washing cars or over watering lawns. Stormwater washes down storm drains on the curbs of roads and leads directly into lakes, rivers, and streams in an untreated state. The lack of infiltration contributes significantly to flooding, leading to septic system overflows and flooding issues. Stormwater carries pollution—all of the non-point source pollution from our yards, driveways and roads—directly into our water resources.
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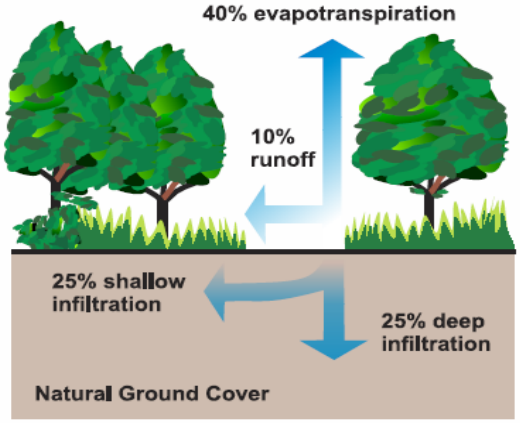
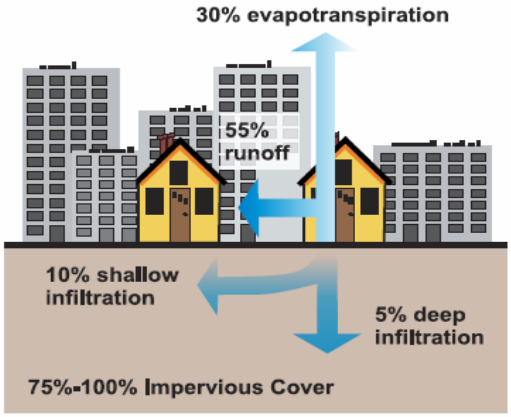
Why is stormwater a problem?

Stormwater is a problem because of 2 things: Increased runoff (due to increased development) and increased pollution loading (also due to increased development). Below are graphics that display how urbanization alters the natural water cycle.





Evapotranspiration is the loss of water from the soil both by evaporation and by transpiration from plants growing there.

Increased Runoff

In a natural environment, like a forest or wetland, the ground is very porous. Precipitation falls and either infiltrates into the soil quickly, or becomes trapped in low areas. In this setting, runoff moves slowly, which allows further infiltration, as well as a cleaning process.

In developed areas, where there are substantial amounts of impervious areas, the precipitation remains above the surface. In an urbanized area 75%-100% of the land area is impenetrable; thus much more runoff occurs in this setting. Although this may be extreme and not exactly how areas in Scituate, Foster or Glocester look, our towns do have developed areas—village centers, roads, parking lots, roofs. In these areas, increased runoff develops.

Studies conducted by the U.S. EPA show that in natural landscapes like forests, wetlands and grasslands, the porous terrain allows 50% infiltration, with only 10% runoff and 40% evapotranspiration.

Conversely, impervious landscapes that have roads, parking lots, and rooftops allow only 15% infiltration, 55% runoff and 30% evapotranspiration.

Other problems from increased amounts of runoff include:

- severe erosion power
- decreased groundwater recharge (less drinking water)
- decreased fish health and reproduction
- increased pollution to water bodies

Pollutant Loading

Pollutant loading refers to the total quantity of pollutants in stormwater runoff. Pollutants are coming from our properties, getting caught in the stormwater runoff and moving into surface waters with increased quantities & speed.

EPA sites the following items as pollutants commonly carried by stormwater.

- Sediment (Sediment is dirt or other matter that settles at the bottom of a water body)
- Oil, grease, and toxic chemicals from motor vehicles
- Pesticides and nutrients from lawns and gardens
- Viruses, bacteria, and nutrients from pet waste and failing septic systems
- Road salts
- Heavy metals from roof shingles, motor vehicles, and other sources
- Thermal pollution from dark impervious surfaces such as streets and rooftops

These pollutants may find their way into water bodies in a normal environment, but with the existence of stormwater, the pollutants arrive faster and in larger quantities.

What to expect in the the next 2 volumes of Clean Business :
Volumes 10 & 11:
Businesses in Scituate Village making a difference--Minimizing Stormwater

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