

## Consider Where Your Drinking Water Comes From

Wood, Wildlife, Recreation, Water—sound familiar? All are important but only one is really essential to our lives. It's human nature to take things for granted that we have in abundance. Here in the Northeast, unlike for most of the world's population, we are blessed with an abundant and relatively inexpensive supply of clean water. If you think that your drinking water comes from the tap or a bottle, you're missing the point. Almost all of our drinking water comes from surface water or groundwater, which are integrally connected. Even the filthiest water can be treated to make it safe to drink, but it is expensive and prone to failure. The recent events in Charlestown, West Virginia demonstrated how difficult it is to treat contaminated water. It's much wiser and cheaper to maintain a supply of clean water that requires little or no treatment.

As part of my job as a hydro-geologist I deal with the all too common situation where groundwater has been contaminated to the point where it is no longer safe to drink. The scary part is that is that a small chemical spill can affect groundwater over a large area and the problem can persist for several decades. It's common to spend millions of dollars on remediation and still accomplish little to restore clean water. To put it in perspective, just a few drops of gasoline are enough to contaminate 10,000 gallons of water to the point where it is unsafe to drink—ouch! There is an enormous body of technical information on groundwater movement and chemistry. In short, groundwater moves constantly, flowing downward and laterally just as rivers do, and contaminants buried in or spilled on the ground usually get dissolved into the groundwater which lies below.

The importance of forests in providing clean water can't be underestimated. In part this is due to what they provide, but it's also about what they keep out. In order to have clean water a clean storage area (aquifer or reservoir) and an area where contaminants are not introduced is needed. Technically we could be getting clean water from developed areas but people would have to be close to perfect: no inadvertent fuel or chemical spills on the ground; no leaking underground tanks; and no failing septic systems—just to name a few. There is a good reason that the Scituate Reservoir is surrounded by forest and they are very adamant about keeping the public out. Even private forestland tends to have reduced public use and access, thus limiting the potential for contamination.

The other thing that forests do for water is to act as a filter. As water percolates down through the soil to the water table below, many contaminants are removed or rendered less toxic through degradation by the natural bacteria in the soil and chemical reactions with the soil. Contaminant levels are also reduced through dilution as the forest soils slow the infiltration rate and allow rainwater or snowmelt to dilute the contaminants. Lastly, forests filter out air pollutants such as nitrous oxides and sulfur dioxides and reduce their impact on drinking water supplies. So, the next time you're in the woods, take some time to think about the critical role of forests in providing the clean drinking water that is essential for human life.