

### 3-30-18 Sky to earth and back again

Sky to earth and back again, that's where water exists. It is an ever-moving cycle of precipitation, collection, absorption and evaporation, with a wide spectrum of other factors and influences tossed in, such as winds, soils, topography and plant life. During its visit to the earthly realm, it can deliver anything from salvation to destruction, depending on the amount, its speed and where you live.

Many areas in New England received more than their usual share of precipitation in the last month, causing cellars to be inundated with water, sump pumps to burn out, and even electrical systems and gas furnaces being shut down with rising water, leaving homeowners in a dangerous predicament and the local Fire Departments very busy. Lots of people are reading up on mold and mildew due to the recent rising of groundwater into their homes. There are countless families in the area who have never had to deal with wet basements, which are now facing losses in the thousands, in addition to the destruction of the downed trees.

I received some calls on the topic of ruined lower levels and constantly running sump pumps. They mostly wondered if the water problems had anything to do with recently repaired septic systems in their neighbor's yards. I sympathized as I listened to them. They had never seen water like this in all the years they had lived here. Their insurance companies were not covering the losses because they did not have flood insurance, yet, they did not live in flood areas. We could not help but wonder, was it really a flood?

It did not seem to be a flood in the typical sense of a water body, such as a river or pond or ocean, rising to such a level, that it spread into adjoining areas. What these homeowners had was melting snow and rainwater falling in such high amounts, for an extended period, in areas that could not drain fast enough to keep up with the falling water. It must go somewhere. And while it sits, it also seeps. It will follow the path of least resistance and when there is a lot of resistance, it will even find its way through your previously dry concrete cellar walls.

It just so happened, that in the cases of the calls I received, the address folders contained the evidence to explain that the drowning cellars were not the

result of their neighbor's recently repaired septic systems. Looking at topography and soils, the surveyed plans, which, I was familiar with, I could see that water previously drained toward the wet cellar in one case. And, in that case, the nearby repaired system was not mounded and, so, there were no changes in circumstances.

In another instance, the two address folders had sufficient evidence to tell me that previous and existing topography drained away from the caller with concerns. It not only drained away, but also there seems to have been previous concerns about groundwater just sitting and collecting between the two properties, because the plan showed a "pre-existing swale". A swale is a slight depression, a barely noticeable ditch, which is designed to allow water to run to it; then follow it away from where you don't want water to collect. The soil logs also showed where the high groundwater was found and what type of soils were found. In this case, the leaching area of the septic system had been placed in a sandy area with tighter soils deeper down (more than six feet). However, where the groundwater was presently sitting in part of the yard, there happened to be another soil log. The now-wet area had not been used for the leaching area because under some sand, there were tight, silt-loam soils that drain very slowly.

In cases like this, with silt loam below the sand, it is possible, when copious amounts of water are added, as in the month of March, that the "bathtub effect" can happen. The rain water seeps down through the sandy soils until it hits the silty, tight soil. It hits and then it sits. If enough water continues to arrive, it will rise, filling up the "bathtub" of someone's back yard.

In addition to learning from the National Weather Service, if you'd like to get more involved in your really wicked local weather, check out this cool, informative weather data site at <http://www.cocorahs.org/>, where you can follow their blog, check out all kinds of data, or even become a member and call in precipitation reports yourself. Oh, how my father, a pilot and barometer watcher, would have loved this site! It will be fun to order one of their rain gauges and join as a member. It looks like we have someone reporting from Kingston and Hingham and Middleboro, leaving lots of room for "wicked local" data reporting.

If you are thinking of buying a home, visit your local board of health and see what you can learn from their address folders and their health agent. There's more

to understand than the house and the septic plan. The soils and topography tell a story also. It might even tell you what water will do when lots of it falls on that property. Will it drain, or will it sit? You need to know that before you buy.

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