

4-2-10 Rainfall and Groundwater

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 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, sumps pumps to burn out, and even electrical systems and gas burners being shut down with rising water, leaving homeowners in a dangerous predicament and the local Fire Departments very busy. It's no wonder that last week's paper ran an article from MEMA (Mass. Emergency Management) on dealing with mold and mildew from the recent rising of groundwater into people's 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.

I received some calls on the topic of ruined lower levels and constantly running sump pumps, mostly wondering 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 rainwater falling in such high amounts, for an extended period of time, in areas that could not drain fast enough to keep up with the falling water. It has to 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, in these cases, I was also familiar with, said that water previously drained toward the wet cellar in one case. And, in that case, the 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". The

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 particular 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 a 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 the sand, there were tight, silt-loam soils that will eventually drain but 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, 2010, that the "bathtub effect" can happen, with the rain water seeping 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.

According to the Community Collaborative Rain, Hail and Snow Network (CoCoRaHS), "a unique, non-profit, community-based network of volunteers of all ages and backgrounds working together to measure and map precipitation", Massachusetts averages between 40 and 50 inches of precipitation each year. I think Halifax received about 14.35 inches from March 1 to March 28, with about 8.22 inches falling in just three days from 3-14 to 3-16. So, if four inches a month is the average, we received more than double that in three days and more than triple that this month. As I type, the month is not over and, unfortunately, we are now receiving another five or so inches. As the Morton salt container said, when it rains, it pours.

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! I think I'll 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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