

# Rain, Rain...Go Away

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**D**on't forget your umbrella!! It's no secret that this Spring has generated heavy rainfall totals. Over the last month (April 18<sup>th</sup> to May 18<sup>th</sup>), the precipitation has been up 15% on average. These numbers don't lie, just take a look at the information from the USGS Real-Time Precipitation Data.

Geographical Area	2016 Average Rainfall Total in May	Historical Average Rainfall Total in May
Will County	5.0 Inches	4.4 Inches
Cook County	5.2 Inches	3.7 Inches
DuPage County	6.1 Inches	4.1 Inches
Lake County	4.1 Inches	4.0 Inches
McHenry County	3.5 Inches	4.6 Inches
Kane County	4.7 Inches	4.3 Inches

That's a lot of rain!! So what happens to all that water, and where does it go? It is the job of a civil engineer to carefully evaluate, design, and implement a detailed drainage plan for each development within a community. That's right, civil engineers help keep our roads, basements, and parking lots dry. They also take on the responsibility of protecting the world's most precious natural resource. Since only 1% of the world's water supply is available and usable for drinking, a civil engineer's job is vital to our overall wellbeing.

Let's take a closer look at how this is accomplished locally, in the Chicagoland area. For all practical purposes, Chicagoland is comprised of the five (5) collar counties (DuPage, Kane, Lake, McHenry, and Will) and the Metropolitan Water Reclamation District, which regulates stormwater discharges in Cook

County. Each county has adopted a different set of rules to regulate stormwater management. In addition to environmental feature-regulations (wetland, floodplain, etc...), each countywide stormwater ordinance is generally comprised of two (2) parts; water quantity control and water quality control. Both are essential, and each contribute as a basic building block to the overall stormwater management plan.

Stormwater quantity regulations help attenuate peak flow rates into downstream channels, storm sewers, and streams. Stormwater management facilities are designed to capture and store onsite runoff to help maintain the existing drainage patterns of a site during a predevelopment condition. Basically, runoff is rainwater that can no longer penetrate the natural ground surface once it has become saturated. Land development activities produce increased impervious area (pavement, roofs, etc..) that hinder the natural infiltration qualities associated with vegetated surfaces. Therefore, detention volume is necessary to avoid overloading the downstream collection systems.

Stormwater quality requirements are generally new to northeastern Illinois. The design standards are established based on treatment of lower intensity storm events. In other words, the 'first flush' of stormwater runoff is captured and treated to improve water quality within local streams, rivers, and

lakes. When precipitation comes into contact with an impervious surface, it often collects dirt, oils, and other debris. This is particularly true during the early portion of a rainfall event. Therefore, it is extremely important for these inhibitors to be properly filtered and treated to avoid negative impacts to the downstream ecology of a body of water. Water quality standards help promote groundwater infiltration, and treat the "first flush" of precipitation. Each local ordinance differs in quantifying runoff volumes requiring treatment. However, the overall objective remains consistent. An area of land shall be set aside to function similar to the undeveloped drainage characteristics of the property. Defining the size, location and function of these areas, along with areas for stormwater detention should be a critical early step in the land development process.

Needless to say, a stormwater engineer should be engaged early and often during any type of land planning activities. The water quality aspect of land development should not be overlooked, because these regulations are often supplemental to the overall detention requirements (i.e. water quantity). When the development process is thoroughly examined with a civil engineer, a site plan may be generated that benefits the owner, community, and local aquatic habitat. For example, the (continued on page 10)