2.4.2 SHGW Elevation Verification (optional)

Since the elevation of the water table is such a crucial element of a good working SWMF, it is a good idea to double-check it with this simple process.

After a larger storm event dig a hole deep enough to observe ground water, but no more than 5-feet. **Please secure the area, especially from small children and pets**. Observe, measured, and documented few times a day for 3-days. Please discard any measurement that are significantly different from the majority of the measurements. Now, depends on the time of the year, the average of these remaining measurements will give you either the seasonal low, average, or high. Table 1. NRCS Soil Data in this section includes the months through which your measurements would consider to be the seasonal high. If you are outside of the noted timeframe, simply add 1-foot to your measurement to convert it to seasonal high.

If the SHGW elevation listed in **Table 3. NRCS Soil Data** and your calculated SHGW are significantly different, please contact our department for help, otherwise use the shallower depth.

2.4.3 Recovery Time Calculation

The entire storage volume of the chosen LID SWMF must recover in less than 72 hours through infiltration. The calculation to determine the recovery time is as followsSWMF:

$$\textit{Recovery Time (hr)} = \frac{\textit{Depth of LID SWMF (in)}}{\textit{0.5*Infiltration Rate (in/hr)}}$$

For example, if your site has soil identified as Foxworth (HSG A) than according to the information provided in **Table 3** the permeability rate will be 20 in/hr. The LDC requires a safety factor of 2 to be applied to permeability rates; therefore, you will divide the values found in **Table 3** by 2. For this example, the permeability rate used to determine the recovery time for your chosen LID would be as follows:

$$\frac{\textit{Permeability Rate Taken From Table}}{\textit{Safety Factor}} = \textit{Design Permeability Rate (in/hr)}$$

$$\frac{20\ in/hr}{2} = 10\ in/hr$$

If the proposed LID SWMF is 2 feet deep then the anticipated recovery time would be as follows:

$$\frac{\text{Depth of SWMF}}{\text{Design Infiltration Rate (in/hr)}} \times \text{Conversion From ft to in} = \text{Recovery Time}$$

$$\frac{2\ ft}{10\ in/hr} \times \frac{12\ in}{1\ ft} = 2.4\ hr$$

If you have soil that drains slowly or has low permeability such as Dorovan Muck, which is frequently flooded, the permeability rate is 0.6 in/hr. If the same LID SWMF is place in an area with this soil, the recovery rate would be:

$$\frac{\text{Depth of SWMF}}{\text{Factor of Safety} * \text{Infiltration Rate (in/hr)}} \times \frac{\text{Conversion From ft to in}}{} = \text{Recovery Time}$$

$$\frac{2\ ft}{0.5*0.6\ in/hr} X \frac{12\ in}{1\ ft} = 80\ hr$$

As you can see, soil properties make a huge difference in the time that it will take for the stormwater to infiltrate into the native soils. We will use this equation again in **Section 5** and will refer to **Table 3** to apply the applicable infiltration rates for the soils on your property.