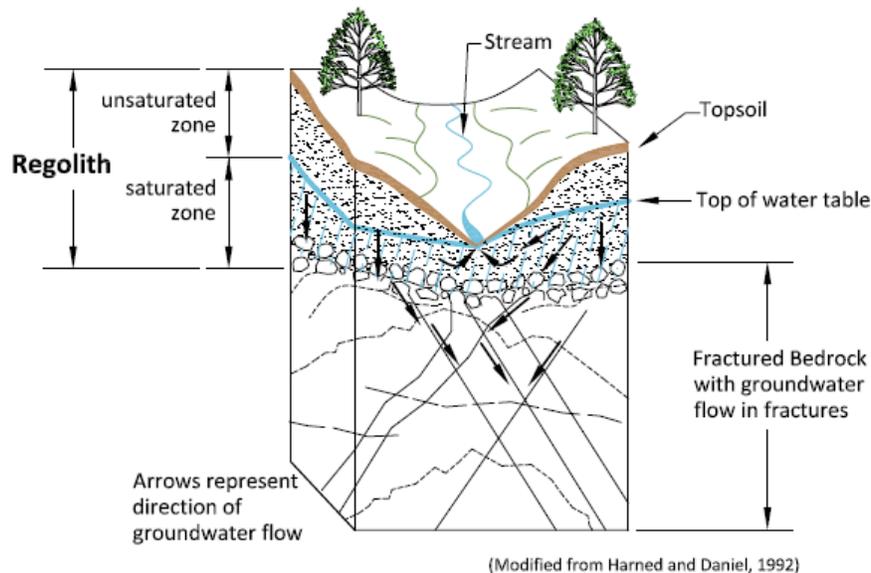


## Orange County Groundwater Observation Well Network (Well Net)

In May 2005, the Water Resources Initiative adopted by the Orange County Board of Commissioners proposed the creation of a groundwater observation well network to continue the work of the previous decade of groundwater research in the county, and provide a means for the collection of information on local groundwater quality and quantity. As shown in Figure 1, groundwater in the Piedmont region of North Carolina (including Orange County) is found within fractured bedrock as well as in the overlying unconsolidated material, which is known as regolith. Older hand dug and bored wells accessed the groundwater present in the near-surface regolith, but this water often contained bacteria and other contaminants originating from the surface. More recent water wells are drilled into the deeper fractured bedrock aquifer. The groundwater present in bedrock wells is only found within the fractures present in the bedrock. Hydrogeologists often refer to regolith groundwater as water that is in storage since it is this water that recharges the deeper fractured bedrock aquifer.



**Figure 1. Schematic diagram illustrating the movement of groundwater in the Piedmont region of North Carolina.**

The goals of the groundwater observation well network include the collection of groundwater level data from a combination of bedrock and regolith wells spread across Orange County. Regolith wells monitor natural stresses on the quantity of groundwater available in storage caused by variations in climatic conditions. Bedrock wells monitor changes in groundwater levels in the bedrock across the county. Taken together, the Orange Well Net (OWN) is designed to collect information concerning the amount of groundwater available locally in Orange County.

Currently, the OWN network includes the following bedrock wells: Eubanks Road, Millhouse Road, Confluence Property, Blackwood Farm, Duke Forest, Former 911 Center, and the following regolith wells: COL-1, COL-2, COL-3, Blackwood Farm, and the future Northeast District Park, the locations of which are shown on Figure 2. Groundwater level data that is collected from the OWN wells is uploaded to the North Carolina Department of Environment and Natural Resources (NCDENR) Division of Water Resources (DWR) groundwater level database web site:

[http://www.ncwater.org/Data\\_and\\_Modeling/Ground\\_Water\\_Databases/leveltable.php?tl=1&net=orange&inactive=](http://www.ncwater.org/Data_and_Modeling/Ground_Water_Databases/leveltable.php?tl=1&net=orange&inactive=)

The DWR web site also allows statistical evaluation of the groundwater level records for the OWN observation wells, as well as provides information regarding groundwater level conditions across North Carolina.

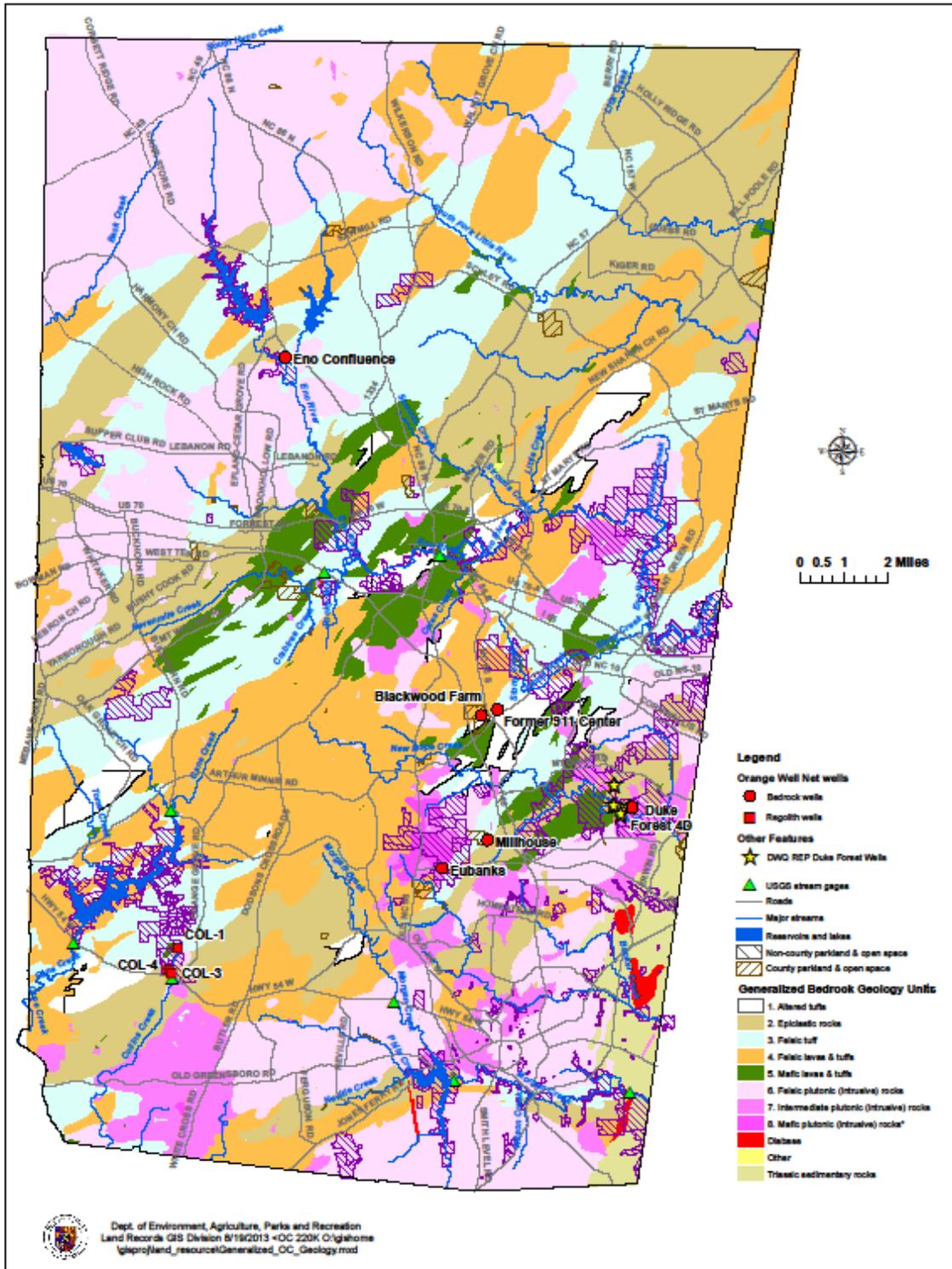


Figure 2. Generalized Geologic Map of Orange County with Locations of Orange Well Net Regolith and Bedrock Wells.