

NYRWA's Detailed Groundwater Mapping Efforts

by Steven Winkley,
Water Resources Planning Specialist

Introduction

Recently, I have assisted several communities in the Hudson River Valley Region with detailed mapping of their groundwater resources. These mapping efforts have often been part of the development or revision of the community's comprehensive plan. Understanding the nature and occurrence of groundwater resources is fundamental for rural communities to better plan for the future. Most communities rely very heavily upon groundwater for drinking water needs. Groundwater also contributes a significant portion of water to local streams, wetlands, and ponds.

Sand and Gravel Aquifer Maps

The United States Geological Survey has completed detailed sand and gravel aquifer maps of the most extensively used aquifers in New York. However, this represents only a small fraction of the total number of sand and gravel aquifers. In most rural areas, the only aquifer mapping exists on a 1:250,000 scale as part of a series of five maps completed by the United States Geological Survey in the 1980's. At this scale, one inch measured on the map represents approximately four miles in reality. This scale is simply not adequate for local planning and land use regulations.

In order to help fill this void, communities are having me complete local sand and gravel aquifers maps at a scale of 1:24,000 on a town-wide basis. This scale means that one inch on the map represents 2,000 feet in reality, sufficient detail for local decision-making. This mapping is a natural extension of the work I completed for my Master's thesis at Syracuse University, where I produced a hydrogeologic for Onondaga County (by hand!). Today, the process used for mapping sand and gravel aquifers is still quite involved, but it has been simplified to some extent through the use of Geographic Information System (GIS) technology. The first step is to complete a surficial geologic map of the Town by utilizing digital soils data, digital elevation models (topography), subsurface data, and field checking. After consulting well logs and yield data, aquifer boundaries are then digitized.

Bedrock Groundwater Resources Maps

The vast majority of New Yorkers with residential wells (>90 percent) obtain their water from bedrock.

No bedrock groundwater resource maps exist in New York. Since 2000, water well contractors have had to submit copies of well completion reports and the latitude and longitude coordinates of completed wells to the NYSDEC. I use this well data along with data from other sources to generate very detailed maps of the availability of groundwater from bedrock. Figure 1 is an example legend from a bedrock resource map that was done for the Town of Ancram in Columbia County.

The Costs

With the loss (hopefully temporarily) of our federal funding, there now is a cost for our detailed groundwater mapping. However, as a non-profit entity, we are asking communities to simply cover my salary and travel expenses. There are also some state funding sources that may cover costs for such mapping. Please contact me at 1-888-697-8725 ext 17 or winkley@nyruralwater.org to see examples of previous mapping and/or to get a quote of groundwater mapping costs for your area. I think you will be surprised at how little such mapping can cost through NYRWA. 💧

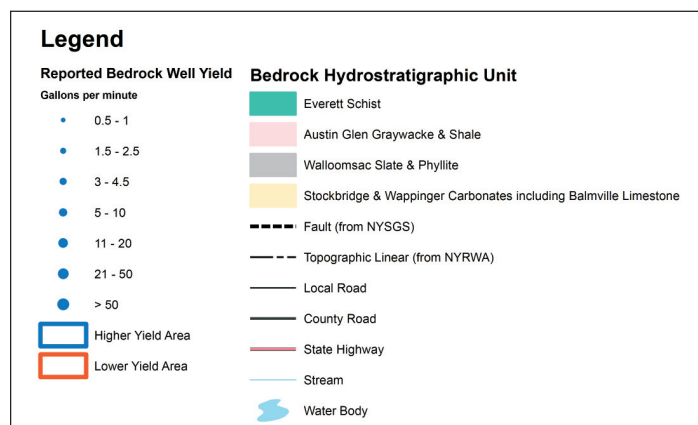


Figure 1. Example legend from a NYRWA bedrock groundwater resources map.

