

National Groundwater Awareness Week Reminds Us To Be "WELL Educated"!

Looking at the earth's surface on a globe, all of the blue we see surely gives the illusion that we have water o'plenty! But in reality, once you "hold the salt" water in oceans (97%) and "put the freeze" on water trapped in ice caps and glaciers (2%), suddenly 99% of the water on Earth is not directly usable by humans. Our remaining fresh water supplies are either stored beneath the ground (in soil or fractured bedrock) or in surface water (in streams, rivers, and lakes). Of this mere 1% of fresh liquid water that we can use and which our survival depends, over 98% exists beneath the land's surface. To put it simply, the reason we're around is the water underground! The Geauga Soil and Water Conservation District (SWCD) invites you to celebrate National Groundwater Awareness Week, March 5 - 11th, by learning more about groundwater and ways to monitor and safeguard your home's drinking water supply.

Now You See It, Now You Don't!

Groundwater is water found below the land's surface and fills the spaces and cracks between soils, sand grains, and rocks. If this saturated area, or zone, is capable of storing and yielding groundwater to a well it is called an aquifer. Aquifers are composed of permeable sediment or rock of which Ohio has three major types: sand and gravel deposits, sandstone bedrock, and carbonate bedrock (limestones and dolomites). Ohio's average precipitation is typically between 30 to 44 inches per year, and Geauga County averages around 40 inches annually. As this rain and snowmelt soak into the ground, most is taken up by plants or soil while some slowly seeps into the layers of pore space. Approximately 3 to 16 inches of Ohio's annual rainfall replenishes our aquifers in this process called "recharge." The top of this saturated zone is known as the water table and water tables vary in depth - rising as rainfall percolates during wet seasons and falling deeper as groundwater is discharged during dry seasons. Lakes, rivers, streams, and ditches also recharge aquifers. As part of the water cycle, groundwater does not remain stagnant underground, but moves very slowly from upland to lowland areas... sometimes only a few feet each year.

Lucky Buckeyes

In Ohio, we are extremely fortunate to have abundant groundwater resources. Approximately 45% of Ohioans depend on groundwater for their homes, businesses, schools, industries, farms, and drinking water supplies. Collectively we consume over one billion gallons of groundwater each day. On a local level, Geauga County's reliance on groundwater is even more critical with 98% of residents relying on it as their drinking water source. Yet our connection to groundwater's significance - to our communities, our health, our economy, and even our existence - seems to be buried deeper than the water itself. Despite the fact that groundwater is estimated to be 100 times more abundant than surface water, there remains an alarming lack of knowledge of the importance of its monitoring and protection.

What Money Can't Buy

Groundwater is an especially fragile resource that is very slow-moving, mostly unseen, sluggish to recharge, and incredibly difficult to clean. While it is no surprise that what we do on land impacts the quality of our drinking water supply, it's incredibly surprising how ill-equipped and unarmed we are in the realm of groundwater protection. The risks of groundwater contamination and the price of cleanup are far greater than most communities could ever imagine or afford! Groundwater contamination occurs when manmade or even naturally occurring materials seep into groundwater supplies and render it unsafe and unfit for human use. Examples of potential pollutants include household hazardous wastes, leaking underground storage tanks and landfills, failing septic systems, runoff including fertilizers, pesticides, animal wastes, chemicals, and road salt, and naturally-occurring arsenic, lead, methane, radon, and other elements or gases. As homeowners and residents, there are ways to ensure pollutants do not enter surface and groundwater from our property. If you own a septic tank, have it pumped every two to three years to maintain the system and prevent a breakdown that could pollute groundwater. Limit the use of pesticides, herbicides, and fertilizers, being careful to follow instructions and application rates. Dispose of hazardous wastes properly by not dumping them on the ground, pouring them down the drain, or flushing them down the toilet. And if you own a water well, have your water tested regularly. The first and most critical step is that we strive to be "well educated"!

It's All About That Baseline

Over the past 30 years, the U.S. Centers for Disease Control and Prevention found an increased proportion of waterborne disease outbreaks associated with private household drinking water supplies, with the majority of documented outbreaks caused by groundwater. While routine testing ensures state and federal standards in public water supplies, it is the primary responsibility of the individual well owners to ensure that the water drawn from their wells is safe. In Ohio over 700,000 people have their own wells! Routine monitoring of your water well is extremely important not only to determine the current water quality, but also to provide a baseline of quality and the ability to detect changes in future water tests. Routine testing helps you identify potential water quality issues and determine if treatment is necessary. The Ohio Department of Health recommends that private water system owners test total coliform bacteria, E. coli, nitrates, and arsenic annually as well as any time there is a change in taste, odor, or appearance of your drinking water. Any additional tests can be administered depending on concerns or local problems. Be sure to use a state qualified water testing laboratory and carefully follow the water sampling instructions and delivery protocol. The Geauga County Department of Water Resources has a multifaceted lab that offers many specific tests options for drinking water. More information can be found at gcdwr.org/laboratory.htm or by calling 440.279.1970. In addition to your water chemistry and

bacteria tests, your annual water supply maintenance check should also include a static water level check, a water yield test, and a visual inspection of the well cap and cover.

Knowing "The Drill"

If planning a new or replacement water well, contact the Geauga County Health District at geaugacountyhealth.org/water.html or 440.279.1914, or your local health department to begin the process of obtaining a well permit. A lot evaluation is required by a registered private water system contractor. The Ohio Department of Health requires every new or replacement well to have a permit prior to being drilled and that construction complies with certain standards. Private water system permits are good for one year. Within this timeframe the installation or alteration must be performed, the system must pass a final inspection, and the water supply must pass a water test through a state qualified water testing laboratory to ensure safety. As part of the well drilling process, drillers are required to file a *Well Log and Report* to the Ohio Department of Natural Resources. Logs provide information on the aquifer, geology, well depth, and construction details, and can be found at water.ohiodnr.gov. Once the open permit receives final approval from the local health district, property owners need to take special precautions, conduct routine monitoring, and keep good records to ensure the protection and maintenance of their private water system during its lifetime. For more information on water well maintenance, please contact the Geauga County Health District (geaugacountyhealth.org/water.html) or your local health department, the Ohio Department of Health (odh.ohio.gov), the Ohio Environmental Protection Agency (epa.ohio.gov/home), or the Ohio Watershed Network (ohiowatersheds.osu.edu). More resources about groundwater and drinking water in Geauga County can also be found at co.geauga.oh.us/Departments/Planning-Commission/Water-Links.

We Have All of the Water We Will Ever Have

While the total amount of water on earth remains constant, the availability of that water changes with weather (drought or flooding), season, and human consumption. From beach-closing blooms to Great Lakes Compact court cases, from leaching lead to microplastic pollutants, water issues are no stranger to the Midwest's media limelight. In our ongoing quest to meet the water use needs of a growing population in a developing region, water quality and quantity issues will only continue making headlines in the years to come. *Preventing* water quality degradation is the most critical and cost-effective approach to *protecting* our water quantity. Join Geauga SWCD as we celebrate National Groundwater Awareness week and stay tuned for an upcoming groundwater education program later this year. By working together we can keep our groundwater pristine and plentiful!