

This is the talk written and given by The University of Memphis' Ground Water Institute Interim Director Dr. Brian Waldron at the June 4, 2011 dedication of the Buckman Water Science Trail around Mertie's Lake at the Lichterman Nature Center in Memphis, Tennessee. The Buckman family made the project possible to honor Mertie Buckman, a Memphis philanthropist who passed away in 1999. The Buckman Water Science Trail is to honor Mertie Buckman's commitment to environmental stewardship, especially with regard to water.

The concept that water is the essence of life here on earth is not foreign to us. We learned about the hydrologic cycle in middle school, a complex weave of water transfer between ocean, sky and land. As depicted on the first panel, water is shown in its various forms of liquid, solid and vapor. Picturing the hydrologic cycle in our mind, we see the sun in the sky, clouds form over the ocean and dropping rain on to the land, and rivers carrying the runoff back to the ocean where the process is repeated.

However, you may recall but will be reminded at the second panel of a water transport path often forgotten. This is under-land flow or ground water. We should not take this aspect of the hydrologic cycle lightly in our area. The water you drink from the faucet, the water used by Mid-South industries, the water we sprinkle on our lawns comes from ground water beneath our feet that, from its beginning in Fayette County, has taken 2000 to 3000 years to reach the point beneath our feet. We are the largest consumer of ground water in the nation for municipal and industrial use, extracting approximately 200 million gallons per day or 300 Olympic size swimming pools of water. Put that into something more visual, that's 15 Lichterman lakes.

Our reliance on ground water has a start date. Does anyone know that date? 1886. Prior to this time, Memphis had dealt with three yellow fever epidemics with Memphis losing its charter after the most recent epidemic. In fact, people were fleeing the city and the continued existence of Memphis was threatened. When you visit the Memphis exhibits at the Pink Palace, you can see displays and read stories regarding the impact of these epidemics.

Memphis is here because of the ground water. RC Graves, president of the Bohlen Huse Ice Company drilled a deep well 350 feet, and what issued forth was an abundant source of high-quality water. Dr. Safford made this report of the discovery of this invaluable water source in 1890:

"The water was clear and sparkling, tonic and palatable. People drank of it. Crowds soon collected about the flowing fountain. Policemen were in requisition. The news spread like wildfire. The elixir of life had been found. Memphians of all degrees, high and low, old and young, with buckets and jugs, coffeepots and tin cans, waited in long files to be served, each in turn, from the gushing, hygienic well. And so for days. In good weather there could be

seen lines of baby carriages, each with its little occupant, reaching from the well a square or so away. Physicians gave prescriptions: 'Let the baby drink artesian water.'"

Where the last two panels speak to the history of ground water in Memphis, the middle two provide the key to sustaining the quality and quantity of our water.

Water is the next oil crisis. Wars in Africa are started over water availability. The Yangtze River in China ran dry for nearly 300 days. The World Health Organization estimates that nearly 1.4 million children die from unhealthy drinking water. Closer to home, heavy withdrawals in eastern Arkansas has caused farmer's wells that are used to pull ground water to the surface to go dry.

Here in the Mid-South region, we have two major threats to our drinking water supply: overuse and contamination. Overuse occurs when we consume more water than nature can replenish. Approximately 60% of the water we consume in our household is used to water our lawns. How many times do we see landscaping sprinklers watering during rain events? Does the faucet need to run continually while we brush our teeth? Altering just a few of our daily activities will go a long way to reduce wasting water.

In the fourth panel, we read about the difference in water quality regulation between developed and undeveloped countries. In undeveloped countries, wastewater is often discharged directly into streams and lakes that are the same source for drinking water. Though in the United States we regulate wastewater discharge, other forms of contamination threaten our drinking water: industrial waste and the improper disposal of household chemicals.

Fortunately, in Shelby County we have a protective clay layer underground that helps to protect our ground water and thus drinking water. Unfortunately, there are places where this clay is naturally absent. I spoke before about the water beneath our feet being 2000 to 3000 years old. Close to these holes in the clay, we see water that is 16 years old. What does this mean? At these same locations, contamination can readily get into our drinking water supply.

We must be conscious of our activities to prevent adverse effects to the rivers, lakes, ground water, and ecosystem. Remember that the components of the hydrologic cycle are not isolated events, but are intertwined...interconnected.

These water panels speak to the importance of water. We are thankful to the Buckman Family and the Pink Palace Museum for allowing the Ground Water Institute to share our expertise and ideas to the development of this important water display.

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