NEWS

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GBRA promotes aquifer data collection program

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SEGUIN……You're driving to an unfamiliar location when you decide you'd better look at a road map. As you fumble through the glove compartment, you find the only map in your car is so old that the paper is cracking. Fortunately, your problem is easily solved by stopping at any gas station or convenience store and buying a new map.

What if you didn't have this option? Imagine trying to reach your destination using outdated information that didn't show current roads and highways. This is the situation facing many of the organizations and individuals charged with developing long-term plans for the state's underground water resources, called aquifers. They need current, valid data in order to ensure their plans and projections meet future water requirements. Unfortunately, many aquifers have few if any test wells to provide this information, making them the geographic equivalent of 'uncharted territory'

For this reason, the Guadalupe-Blanco River Authority (GBRA) is promoting a public education campaign to generate awareness of the need for a district-wide, aquifer data collection effort, said GBRA general manager Bill West, Jr. GBRA's statutory district ranges from Kendall to Refugio County and includes four major aquifers -- the Trinity, Edwards, Carrizo, and Gulf Coast.

"Our immediate concern is the Trinity Aquifer area because of the lack of available data and tremendous population growth," West said. "However, we also need to start looking at monitoring locations for the Carrizo and Gulf Coast aquifers because it won't be long before population growth and the demand for water begins to affect them as well."

According to West, GBRA has been protecting and managing the water resources of the Guadalupe River Basin since 1935. "We are actively involved in regional water planning efforts and are interested in supporting partnerships between agencies and individuals to help fill this information void."

One proposed data collection project will be a cooperative effort between the Center for Water Research at the University of Texas at San Antonio (UTSA) under the direction of Dr. Weldon W. Hammond, Jr., and the United States Geological Survey (USGS) San Antonio Office headed by George B. Ozuna.

"GBRA, USGS and the Center for Water Research are in the process of compiling a list of candidate wells and property locations," said West. "We hope that counties, water districts or private individuals who have existing wells or property strategically located over one of these aquifers will offer them for evaluation. We need a lot of options to ensure a good geographic distribution and also because not all wells or properties will be viable candidates for the program."

More-more-more

Until recently, most aquifers could easily supply the pumping demands from private, municipal and agricultural wells. Except for occasional studies by government agencies and universities, there was very little incentive to study the geology or behavior of aquifers. This lack of historic data presents a serious challenge for the river authorities, state agencies and regional groups involved in current efforts like the Senate Bill 1 State Water Plan.

Complicating the issue is the fact that aquifers are underground and difficult to evaluate. In addition, not all aquifers are created equal. Some, like the Carrizo, are sandstone aquifers that hold large amounts of water and recharge slowly. Others, like the Edwards, are porous limestone or karst aquifers that recharge quickly but can also deplete quickly due to overpumping and natural outflows from springs.

Today, many aquifers are beginning to show signs of stress as more wells are drilled to satisfy the demands of a growing population. These wells are also sending warning signs such as declining levels and poor water quality – especially during long dry periods like the summer of 2000. At the height of the drought, frustrated homeowners and worried local officials could not keep up with complaints about low water pressure, wells that were drying up and dire predictions about severe water shortages.

As a result, some counties and communities have enacted or are considering a moratorium on new subdivisions, creating minimum lot sizes, requiring builders to prove wells have sufficient capacity to supply a subdivision's buildout, and other options designed to curtail growth and protect existing groundwater supplies.

However, many of these measures might not be necessary if better data was available about an aquifer's flow patterns, historic pumping, or how demand might affect water levels in various climatic situations.

Hammond and Ozuna would prefer to develop regional data for an aquifer instead of on a county by county basis. This gives a more accurate picture of the aquifer and its resources and enables the costs to be shared among a number of entities.

The ideal candidates are existing wells with a data history, because they make excellent subjects for continuous monitoring. They should also be located away from other producing wells that might affect their levels. These wells can produce several kinds of valuable data including changes in aquifer level and various indicators of water quality. As more data is collected, data models can be continually improved and updated.

However, wells without data history are also being requested since they can be used for periodic or seasonal data collection. They are also useful for 'synoptic' testing, when certain wells are all tested at the same time to provide a simultaneous 'snapshot' of the aquifer.

According to Ozuna, the Edwards Aquifer has a fairly effective data network already established. But there is very little information about the Trinity Aquifer that underlies portions of Kendall, Hays and Comal Counties. Each of these counties is experiencing increased population growth and demand for water.

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In addition to their groundwater supplies, many aquifers also contribute to the baseflow of rivers and streams. For example, the Edwards Aquifer and its spring outlets at Comal and San Marcos Springs can contribute up to 80% of the baseflow of the Guadalupe River in times of drought.

There is also evidence that the Trinity Aquifer may be a substantial contributor to the baseflow of the Upper Guadalupe River, including inflow to Canyon Reservoir. By monitoring wells and their data, scientists will know which reaches, or segments, of the river are receiving water from the Trinity Aquifer. They can also determine which reaches are receiving the greatest percentages of water.

Besides existing wells, the Center for Water Research and USGS also want to find properties that might be suitable sites for new test wells. In all cases, landowners would be asked to give the Center permission to access their wells periodically for data collection. There will be no cost to the landowner since the cost of monitoring and data collection will be paid by various entities and programs.

Those interested in volunteering their wells or property for evaluation are asked to contact Hammond at 210-458-4455 or email whammond@utsa.edu, or Ozuna at (210) 691-9200 or email gbozuna@usgs.gov. If possible, callers should have information about the geographic location of their well or property, approximate depth, casing record, where the pump is located and if historic pumping records exist.

One couple who has stepped forward to meet this challenge is Dub and Dolly Smothers, who recently donated a site on their Boerne property for a test well over the Trinity Aquifer. The Smothers, who have lived on their property since 1991, said they became aware of the need for data while attending a presentation at the Center for Water Research last February.

The presentation featured a visual computer model of how drought and population demand would affect the Trinity Aquifer's water supply over the next 50 years, including the urgency for more accurate data. "I left that meeting determined to do whatever I could to promote water awareness and conservation," said Smothers.

After talking with Pam Hodges, Kendall County's representative and vice chair of the GBRA board of directors, the Smothers offered a test well site on their property. Not only did their land have a protected well location to provide pure data, but the Smothers also paid a private firm, Aqueduct Enterprises, to drill the well and install monitoring equipment. The data generated by Aqueduct and similar companies can also be provided to the USGS, the Center for Water Research, counties and other agencies.

The USGS, which is a bureau of the Department of the Interior, serves the nation by providing reliable scientific information to assess and manage the nation's water resources. The USGS currently has over 7,000 surface and groundwater monitoring sites throughout the U.S. Most data is collected on a four-hour basis and provided through the Internet to various agencies for their use. As part of a cooperative effort with the Texas Water Development Board through its Senate Bill 1 activities, the USGS operates and maintains over 45 monitoring wells in Texas. Currently, only three of these monitoring wells are in the Trinity aquifer of the Texas Hill Country.

The UTSA Center for Water Research, under the direction of Dr. Weldon W. Hammond, Jr., was established in 1987 with a grant from the National Science Foundation. It is a non-profit organization funded by UTSA and various public and private research projects whose primary goal is to provide water resource technical support and research to the San Antonio/South Texas/Texas Hill Country region. It also assists individuals and community groups with their efforts to educate the general public about water issues and is a component of the UTSA College of Sciences.

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