P.O. Box 400 Lowell, AR 72745 **Ph** 479.756.3651 **Fx** 479.751.4356

Beaver Water District

FOR MORE INFORMATION CONTACT:
Amy L. Wilson, Director of Public Affairs
Beaver Water District
479-756-3651
awilson@bwdh2o.org

FOR IMMEDIATE RELEASE-NOVEMBER 10, 2009

RESULTS OF PUBLIC MONITORING OF BEAVER LAKE RELEASED TODAY

According to sampling and measurements conducted on Aug. 29 by 32 teams of volunteer citizen scientists at 34 sampling points, the water quality of Beaver Lake in 2009 compares well with results from sampling and measurements from the past three years of data. More than 200 people participated in the 4th Annual Secchi Day (pronounced like "Becky"). The event is co-sponsored each year by Beaver Water District, Audubon Arkansas, the U.S. Army Corps of Engineers-Beaver Lake, the U.S. Geological Survey, and the University of Arkansas Cooperative Extension Service.

Secchi depth is a measure of water transparency that involves lowering a black and white disk into the water and recording the measurement when the disk is no longer visible. Deeper depths indicate water that is clearer than shallower depths. In addition to Secchi depth readings, volunteers also collect water samples that are tested by Beaver Water District's lab.

"As usual, the measurements show we have good water quality in the northern portion of Beaver Lake, nearer the dam and poorer water quality upstream, which is what you would expect. That's because water quality in large, manmade reservoirs improves as the water moves downstream and sediment and pollutants settle out," said Dr. Robert Morgan, Manager of Environmental Quality for the District.

Secchi measurements this year ranged from less than one meter (a little over three feet) in the White River arm of the lake to more than 5.8 meters in the area of the Beaver Dam.

"The transparency of water is related to the concentration of particles, either organic, such as algae, or inorganic, such as sediment," Morgan explained. "During most years, sediment has settled out of the water by August so transparency is mostly related to algae on Secchi Day. A shallow Secchi depth

measurement indicates more algae in the water. Algal growth is not a health concern in Beaver Lake, but it can lead to taste and odor in drinking water. ”

Morgan said water transparency also may be related to weather conditions. Flooding causes lots of sediment to flow from tributaries into the lake. Increased sediment may also cause clarity of the water to decrease. For example, in 2008 Northwest Arkansas experienced two significant floods in the spring during which the flood gates at Beaver Dam were opened. The greatest Secchi depth recorded that year was 3.4 meters, more than 2 meters less than this year’s maximum. That makes sense, considering the fact that total rainfall for 2008 was almost 11 inches above average.

Each year, Beaver Water District’s lab technicians measure chlorophyll *a*, total phosphorous, and nitrate in each of the water samples. Chlorophyll *a* is a pigment in algae that is used to measure the density of the algal population in water. This year, the lake had chlorophyll *a* concentrations ranging from greater than 20 parts per billion in the headwaters of the lake to less than 3 parts per billion near the dam, which illustrates the gradient of water quality through the reservoir. Studies indicate that the potential for taste and odor events increases dramatically when chlorophyll *a* concentration reaches about 10 parts per billion. Phosphorous and nitrate are both nutrients that promote algal growth. As would be expected, the lake exhibited decreasing total phosphorous concentrations as samples moved from the headwaters of the White River to Beaver Dam. Nitrate concentrations increased from the headwaters to the dam as they have the past three years.

“Phosphorus from fertilizer and other sources attaches to soil particles. Storm water runoff carries with it a lot of soil particles and phosphorous. This is what is meant by the term ‘non-point source water pollution,’ ” Morgan said. “We want to reduce the amount of phosphorous that is entering Beaver Lake. We all need to understand that each of us contributes to pollution entering the lake. We all need to take responsibility for the actions we take that add to the pollution in the lake.”

Water quality is impacted by many human activities, including fertilizer runoff from lawns, erosion from unpaved county roads, and erosion from stream banks. Where residents have cleared stream side vegetation (also known riparian buffers) it is easier for the banks to erode. Eroding banks contribute sediment to the stream and degrade the water quality.

“All of these activities can negatively impact water clarity and water quality in Beaver Lake,” he said. “The District and its partners in Secchi Day are

committed to educating the community about best management practices that will curb impacts from these activities and protect the lake's water quality. After all, Beaver Lake is our drinking water. And abundant, quality drinking water is necessary for good health. It's also essential for a strong economic base and for quality of life for Northwest Arkansans."

Citizen scientists are the heart and soul when it comes to the success of Secchi Day, Morgan added.

"It simply wouldn't be possible for one or two people to get this many measurements in one day," he said. "I don't have enough lab technicians to get it done in the time frame of a day. With the public's help, we will have a whole decade of annual snapshots of Beaver Lake by 2015. This long-term data collection will allow us to evaluate trends in Beaver Lake. And it will be in large measure because we had an interested citizenry that cared about helping us monitor their drinking water source."

Michelle Viney, Conservation Program Manager for Audubon Arkansas, agrees.

"We were very excited to see this many people getting outside, enjoying the lake, and participating in the hands-on activities of the event. Over the past four years, we've been able to grow and keep participation at about 200-plus people on the day of the event. In addition to hands-on sampling and measurement activities, Secchi Day offers watershed residents educational exhibits and networking opportunities. It's a way for families and children to rally together to ensure that Beaver Lake continues to thrive for years to come."

Viney added that a new activity this year was the opportunity to build and take home rain barrels; 29 people registered, built barrels, and are now capturing and using rain water instead of allowing it to rush off their property unused.

"This is a great way to reuse rain water and divert it so that it soaks into the ground where you live, rather than letting it potentially carry sediment with phosphorous and other nutrients into tributaries that then flow into Beaver Lake," she said. "Getting involved like this and doing something that allows you to have a personal impact helps people invest in keeping Beaver Lake clean. It promotes awareness about how important Beaver Lake is for the health and economic welfare of Northwest Arkansas."

As it stands today, Beaver Lake water quality is good, but it will take education and people changing behaviors and practices to make sure the water quality stays as good tomorrow as it is today.

"Any scientist will tell you that to be good stewards of our source water, we have to keep an eye on the lake so that we know how it changes over time," Morgan said. "Only by collecting this and other data can we make a good analysis of the lake's condition."

A more detailed report and maps concerning Secchi Day 2009 may be accessed via the Beaver Water District website at www.bwdh2o.org. Next year's event will be held on Aug. 21, 2010. For more information and a photographic slide show set to music, visit www.bwdh2o.org.

About Beaver Water District

Beaver Water District supplies drinking water to more than 250,000 people and industries in Fayetteville, Springdale, Rogers, Bentonville and surrounding areas. These cities then resell the water to surrounding towns and communities. The District's mission is to serve our customers in the Benton and Washington County area by providing high quality drinking water that meets or exceeds all federal and state regulatory requirements in such quantities as meets their demands and is economically priced consistent with our quality standards. For more information, visit www.bwdh2o.org.