

## **Fresh water: Are there ample supplies?**

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ADA - Water is one of life's essential elements, but some people require more than others to support their activities. Recent efforts by communities in other parts of the state to purchase and pipe water from the Arbuckle-Simpson Aquifer near Ada have heightened the awareness of the importance of fresh water.

The area surrounded by the Arbuckle-Simpson Aquifer has been blessed for years with an abundant supply of fresh water, a very valuable natural resource. When that supply becomes threatened, communities like Ada that rely on it naturally become concerned and want to protect it.

We will answer these and other questions in a series titled "Water: Our Lifeblood."

To do this, we have talked with water specialists as well as community leaders and area residents impacted by the proposed sale of water.

Dr. Randall Ross of the U.S. Environmental Protection Agency, Robert S. Kerr Environmental Research Center in Ada, has provided much of the information about the aquifer and Ada's water supply.

Ross points out that the Arbuckle-Simpson Aquifer System contains an estimated 9 million acre-feet of ground water, approximately three times the volume of Lake Texoma.

The aquifer underlies 500 square miles of physiographic formation, consisting of highly-fractured limestone, dolomite, sandstone, and shale, ranging in thickness between 5,000 and 9,000 feet and having an average saturated thickness of 3,500 feet.

The aquifer receives approximately 4.7 inches of recharge each year, which amounts to 112 million gallons per day.

The city of Ada obtains its water supply from Byrd's Mill Spring, which flows from the Arbuckle-Simpson Aquifer and from wells that produce water from that same aquifer.

"Ada has one of the most unique and reliable water resources in the country," Ross said. "Most people who use this resource are unaware of its source, its potential and its vulnerability."

In a recent presentation prepared for the dedication of a new fountain in Ada, paying tribute to Byrd's Mill Spring, Ross acquainted residents with Byrd's Mill Spring and the Arbuckle-Simpson Aquifer, its capabilities and limitations.

Byrd's Mill Spring is approximately 13 miles south of Ada.

Portions of the Arbuckle-Simpson aquifer are approximately 2,500 feet thick. Much of the recharge area of the aquifer is currently used for ranching and agricultural activities.

The water that supplies both the city of Ada and the rural water districts in Pontotoc County originates from a group of rocks called the Arbuckle-Simpson Aquifer.

This aquifer is the source of water for the Blue River and approximately 93 springs, including Byrd's Mill Spring.

According to Ross, the ground water that discharges from Byrd's Mill Spring starts as rain and snow that fall over the recharge area of the aquifer. The water infiltrates or soaks into the ground, gradually recharging the ground water. The ground water eventually discharges to the surface at a spring or along a stream or river.

Recharge for the Arbuckle-Simpson Aquifer averages about 4.7 inches per year.

Ross points out that one of the myths about Byrd's Mill Spring is that the water comes from Colorado through an underground river. Actually, Ross says, the only source of recharge of the aquifer is precipitation that falls on the land overlying the aquifer.

Water from Byrd's Mill Spring flows to the Ada storage reservoirs by gravity. From there, it is chlorinated and pumped to the water towers, using five electric pumps.

A back-up generator at the water plant assures continued availability of water in the event of a power failure. Pressure from the pumps and gravity flow from the water towers and distributes the water through the city's system to homes and businesses throughout Ada and Pontotoc County.

Ada has 7 million gallons of in-ground storage at the municipal water plant. There are 2 million more gallons of overhead storage in three water towers. The newest was completed in 2001, using funds provided through an infrastructure sales tax approved by Ada residents in 1998.

To help clarify how water is measured, Ross points out that the basic unit of large-scale water measurement is the acre-foot. An acre-foot is the amount of water required to cover an acre of land to a depth of one foot. One acre equals 43,560 square feet; one acre-foot equals 43,560 cubic feet and 325,851 gallons. One cubic foot equals 7.48 gallons. One cubic foot per second equals 86,400 cubic feet per day, 448 gallons per minute, and 645,120 gallons per day.

The Arbuckle-Simpson Aquifer is one of the smallest of the major aquifers in the state, Ross says. It underlies about 500 square miles in south-central Oklahoma, primarily in Pontotoc, Murray and Johnston counties. Fresh water occurs to depths of more than 3,000 feet in portions of the outcrop area south of Ada.

[Next: Water controversy: Who owns it and who wants it.](#)

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