

SALINA'S LIMITED WATER SUPPLY

ENVIRONMENTAL HEALTH ISSUE PROFILE

Community Action for a Renewed Environment (CARE)
Environmental Sustainability for the Salina Community

Issue:

We can no longer take Salina's water supply for granted. Our sources of water are diminishing. Our use of water has increased. The city of Salina had a wake-up call in 2006 when about half of the water supply dried up. Unless we use less water, shortages will continue and worsen.

Background:

Water is continually moving around, through, and above the Earth as water vapor, liquid water, and ice. In fact, water is continually changing its form. The Earth is pretty much a "closed system," like a terrarium. About 97 percent of all water is in the oceans and only three percent of all Earth's water is fresh water—and the majority of that is locked up in glaciers and icecaps. Of all the fresh water on Earth, only about 1 percent is usable by humans—and 99% of this exists as groundwater with less than 1% of that 1% found in rivers and lakes. Yet most of the water humans use in everyday life comes from rivers, which is about 0.0067 percent of all the Earth's water. Water is one of our most critical raw materials — even more important than oil, for there are no alternatives to clean, usable fresh water. Community health and economic development is dependent on adequate supplies of clean water. As usable supplies of water are reduced, competition for water will become greater, water cost will increase and allotments will decrease, and water quality regulations will tighten. As fresh water quantity diminishes, wildlife populations will be greatly impacted on a worldwide basis.

Standards:

There are no standards to guide water usage—for residents or for industry. With plentiful and cheap water supplies, people waste water. Between 2003 and 2007, Salinans used an average of 124 gallons per person per day, with a somewhat lower level – about 109 gallons – in 2008. Yet other cities, when confronted with water shortages, used common sense measures to cut their water use dramatically. Hays, for example, reduced its usage from 200 gallons per person per day in 1994 to only 89 gallons today.

Community-specific indicators:

What does the data say?

- Drought conditions alone are not the problem—water shortages and dropping water levels continue despite years with normal rainfall amounts.
- Watering lawns accounts for between 30% and 60% of water usage.
- Water levels in city wells dropped ten feet from 1996 to 2006 (although levels have risen some since then as the river got back some of its flow).
- River flow rates are lower now than during the 1930s dust bowl.
- Kanopolis Reservoir's capacity was 49,474 acre feet in 1983 (the last time an official measurement was made) and it is forecast to drop to 26,833 acre-feet by 2050; we are somewhere in between those numbers now.

- Smoky Hill River is the source of about half of Salina’s water supply. The average flow rate in the river is lower now than in the 1930s and decreasing over time, despite “normal” rainfall.
- City wells are the source for the other half of Salina’s water supply. Groundwater levels in city wells have dropped over time. City wells draw from the “alluvial aquifer,” the water in the ground under and near the river. Water levels in the aquifer and in the river are connected.
- Groundwater under the old Schilling Airbase contains a plume of toxic chemicals. The faster we pump out groundwater, the closer that plume moves toward city wells. If toxicants reach city wells, the wells will be unusable for drinking water, reducing Salina’s water supply even more.
- Kanopolis Reservoir, upstream from Salina on the Smoky Hill River, is gradually filling up with silt. That means less water for release into the river channel. The city of Salina declared a water emergency in 2006 when the river nearly ran dry.

Who is affected?

All Salina residents and businesses are affected by the availability (or lack) of an adequate water supply. Some citizens consider themselves exempt from the problem because they have private wells, but those wells draw from the same alluvial aquifer as the city wells.

How is the community affected?

If we do not manage our water supply better, we will experience more frequent water emergencies involving drastic cutbacks in water usage. We will eventually be unable to support the water needs of our current citizens and businesses, decreasing our quality of life and making population growth and economic development difficult.

What are the environmental conditions?

Salina is located in a semi-arid region. Scientific models predict that the Central Plains region will become hotter and drier in coming years.

What are the contributing factors and behaviors of the community?

Our habits of water use come from a history of assuming that water sources are unlimited. These patterns – wasteful and careless use of water – might work in a less arid climate but cannot be sustained where water is more limited. Old habits are hard to change.

How does the community protect itself?

- Encourage water conservation education and practices—through schools, scouts, 4-H, civic groups, community organizations, media coverage, water bill inserts, etc.
- Promote or provide water-conserving products to the public free or at reduced cost, such as low-flow shower heads, faucet aerators, toilet kits, washing machines and other products, smart irrigation systems, etc.
- Provide water audits to the public, free or at reduced cost, to detect water leaks and to recommend water-saving (and cost-saving) measures.
- Amend city codes to require water-conserving fixtures and appliances in new construction and remodeling projects.
- Impose penalties for wasting water; establish “baseline” usage rates based on family size—not on the size of home—excessively large homes with pools, large lawns, and landscaping would pay more per gallon for the excess water used over and above the baseline rates.

- Sponsor a community challenge or competition to save water.
 - Promote acceptance of a new “normal” look for lawns and outdoor environments—using native plants that use less water and are better adapted to our local climate.
 - Encourage upstream areas along the Smoky Hill to reduce irrigation and conserve water.
- We must conserve water today to avoid disaster tomorrow.**

Data sources:

Where did the data come from?

Sources: Salina Municipal Water Conservation Plan, Appendix B; documents from Salina Utilities Department; Salina Journal articles by Duane Schrag in 2006, 2007, see <http://www.salina.com/www/water/water.html>; National Wildlife Federation; City of Hays website, http://www.haysusa.com/html/utilities_div.html#Water; Plumbing fixture information: <http://www.toolbase.org/Technology-Inventory/Plumbing/low-flow-plumbing-fixtures>; U.S. Global Change Research Program, climate change effects on the Great Plains: <http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts/regional-climate-change-impacts/great-plains>; Kansas Water Office, www.kwo.org; *The Kansas Lifeline* (publication of Kansas Rural Water Assn.), November 2009 issue, p. 6-7, “Reservoirs’ Future Depends on Today’s Actions,” by Dennis Schwartz.
 Data 360 Data graphs: source United Nations 2006 Development Program report for water usage per day per person in countries around the world: http://www.data360.org/dsg.aspx?Data_Set_Group_Id=757

Age of data?

All data is three years old or newer except where indicated.

Additional data needed?

Could use more precise information about Kanopolis siltation if available.

Paper prepared by Ann Zimmerman, Ken Barnard, and Doug Rudick, January 2010.