

Wilson Lake Water Supply

February 2009

Kansas Water Office

Issue

The Smoky Hill-Saline Basin Section of the *Kansas Water Plan* contains a priority issue on regional public water supply that recognizes Wilson Lake as a possible source of dependable water supply. Central portions of the Smoky Hill-Saline Basin rely on water from surface storage in the eastern portion and/or ground water available from local aquifers. Three public water suppliers have expressed interest to the Kansas Water Office in Wilson Lake as a source of water supply, if it is made available. These are Hays, Russell and Post Rock Rural Water District. Hays and Russell have resolutions on record to indicate those interests.

Studies to assess the viability and costs of reallocation of storage to water supply at Wilson are necessary to determine if water storage for municipal and industrial purposes is available for purchase by the State.

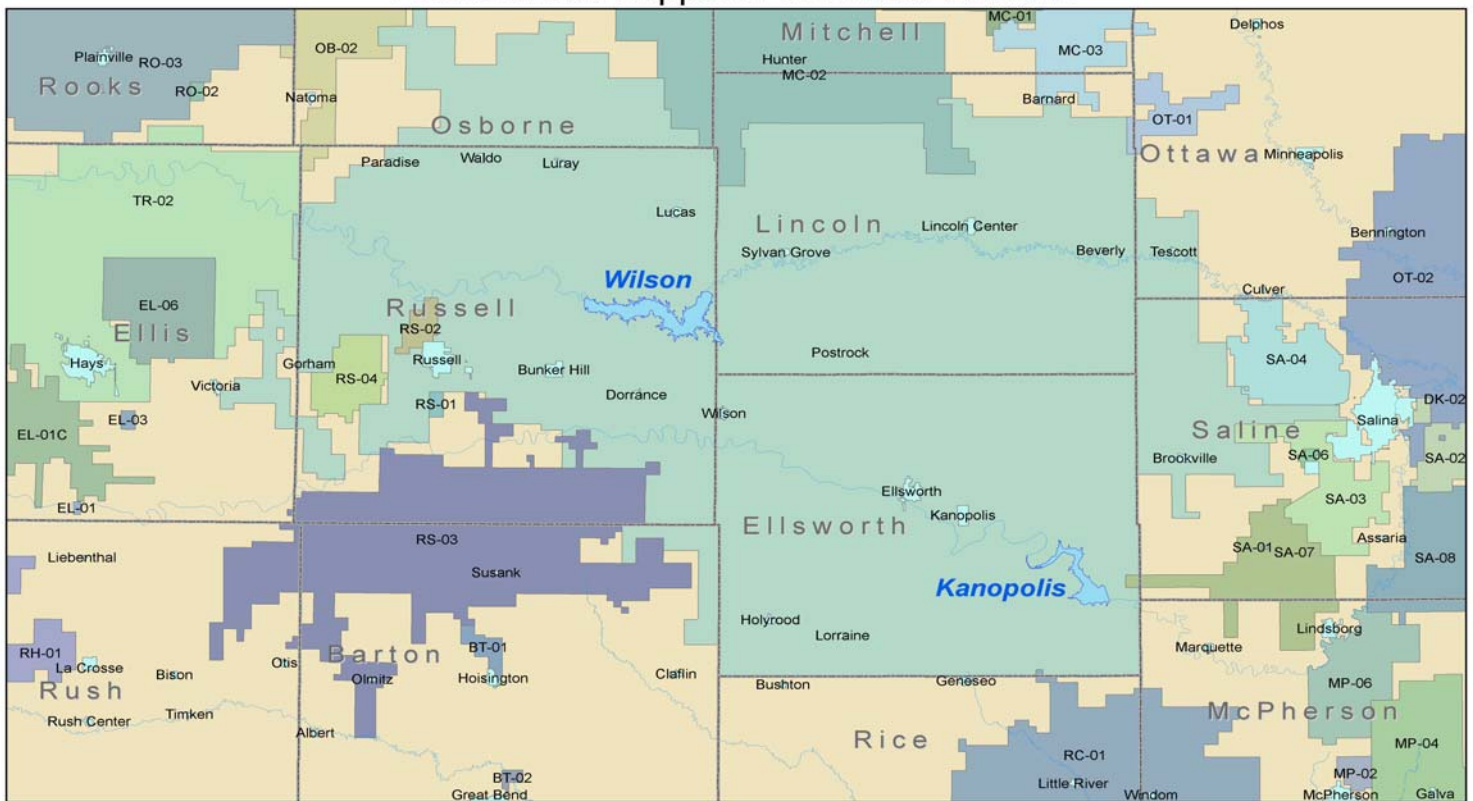
Background

Preliminary studies of Wilson Lake and potential water supply began in the 1980's. There are several key reports that provide the basis for further evaluation of Wilson Lake.

The Corps of Engineers (USACE) prepared a draft Environmental Assessment (EA) on use of Wilson Lake for municipal water supply and reallocation for that purpose (USACE, 1997). The EA indicates that the environmental and cultural resource effects of a reallocation from multipurpose storage are minimal. The report notes that although the EA did not identify significant issues or impacts that would preclude a recommendation to reallocate multipurpose storage to water supply at Wilson Lake, additional work would need to be completed. However, the Kansas Water Office (KWO) and local water suppliers were not prepared to negotiate a contract for storage in Wilson Lake at that time. The EA was not finalized.

The KWO published the Wilson Lake Yield Report that concluded a 50,000 acre-feet water supply pool would yield 9.1 million gallons a day (MGD) through the year 2044 (KWO, 2004). In order to project the amount available for reallocation, the yield study considered streamflow depletions, existing upstream water usage and projected capacity of the reservoir.

Public Water Suppliers in Central Kansas



The costs of treatment and delivery of water from the reservoir has been addressed in the Wilson Lake Water Treatment Plant, Facilities Concept Design Report (Burns & McDonnell, 2005). The concept design examines in detail a new Reverse Osmosis (RO) water treatment plant (WTP) near Wilson Lake. The report also provides recommendations for the transmission system needed to serve Russell, Hays, and other public water suppliers throughout the north central region of Kansas. The capital costs for a forty year, four phase development, are approximately 72 million dollars. The bulk of the cost is in Phase 1 which is approximately 60 million dollars and includes 41 million dollars for the potable transmission pipeline.

Burns & McDonnell has reevaluated water demand projections for Hays, Russell, the Post Rock Rural Water District, and other water users in the Wilson Lake area. Based on the study, all users other than Hays, Russell, Ellsworth, Victoria, and the Post Rock Rural Water District show a decreasing demand and are assumed to have an adequate supply. Currently, the average demand that is being met for the main water users is 6.2 MGD and the maximum demand is 10.9 MGD. By 2050, the average demand is expected to increase to 10.0 MGD and the maximum demand to 18.4 MGD. This increase in water demand is due to anticipated population and industrial growth. The additional raw water needed to meet this average demand is estimated to be 5.1 MGD.

The Kansas City District, COE performed lake elevation simulations under climatic conditions of the years 1950 through 2007, with and without the use of 5.1 MGD from the lake. The simulations also include an option of operating with a two foot increase to the normal pool. Preliminary model runs have been completed; however, further refinement of the historic inflow data is needed to more accurately simulate lake elevations in climatic conditions experienced through the period of record, including the 1950's. Additionally, data from the bathymetric survey conducted in 2008 will also need to be incorporated.

Burns & McDonnell has started the process of evaluating the lake elevations and the potential impacts to recreation, environmental resources, facilities and commercial activities.

Steps Forward

The planning process will continue and incorporate the ideas, comments, and concerns of the stakeholders. If water supply is shown to be viable, the Corps will have to conduct a reallocation study. This would be federally funded and probably run \$500,000 to \$600,000. Recent information from the Corps indicates that they have received \$300,000 for this effort. The planning and reallocation process may take several years and may or may not conclude that Wilson Lake is the best option for additional water supply for central Kansas. There will be many opportunities for public input.

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Current Studies/Status

Under a Corps of Engineer's program designed to provide planning assistance to states, a study is underway to evaluate the feasibility, and identify some environmental impacts of the potential use of Wilson as a source of public water supply. The components of the Wilson Lake water supply studies are in various stages of analysis. Current studies include an updated water demand analysis, lake elevation modeling, detailed evaluation of potential impacts and alternative lake management options.