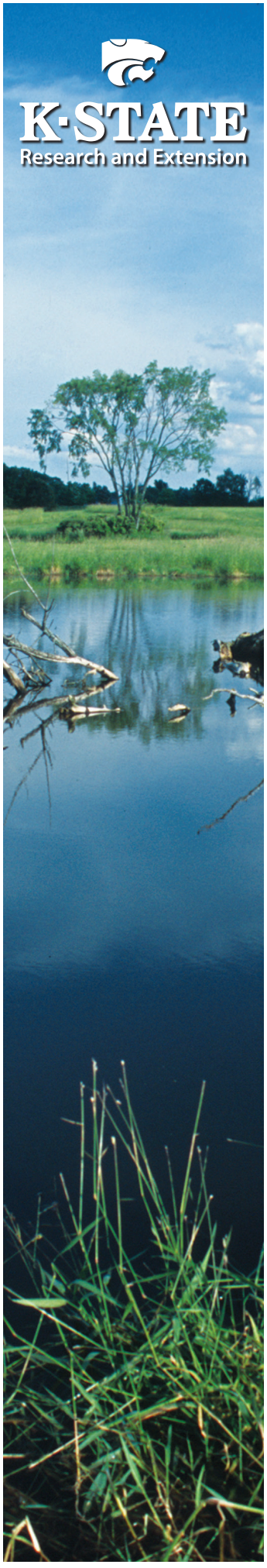

K-STATE Research and Extension

Water Primer: Part 7

Municipal Water Supply

Kansas statute defines public water suppliers. Public suppliers must meet various water quality standards. Public water suppliers are concerned with both quantity and quality of source or "raw" water supplies, treatment and distribution systems, and securing reserves for projected demands. Safe, reliable water is the expectation of individuals, businesses, and industrial water users connected to a public water supplier. Kansas has about 900 public water supply systems, which include cities, towns, and rural water districts, as well as many smaller entities such as trailer parks and housing subdivisions. Public water supply, often called municipal water supply, accounts for about 10 percent of the total water use in Kansas (Figure 1). However, many public water supply systems also supply water for industrial users in addition to homeowners, businesses, schools, churches, and others, including outdoor water uses, such as landscape irrigation.

In general, the eastern portion of Kansas, with higher rainfall amounts and limited groundwater sources, depends on surface water as the major source of water supply as compared to the western portion of Kansas. Much of the population of Kansas is concentrated in the eastern portion of the state in regions 7 and 8 of Figure 2. Six of the 10 most populated counties are concentrated along the Kansas River. This population concentration is reflected in municipal water use, as shown in Figure 3. In addition, there is a concentration of industrial water use in this river corridor, which includes the water needs for power production. The remaining concentration of municipal water use is in the Wichita area. The importance of surface waters as a water supply source for eastern Kansas is indicated by Figure 4. The major river basin subdivisions' names and locations are shown in Figure 5. The six eastern watershed basins use surface water as

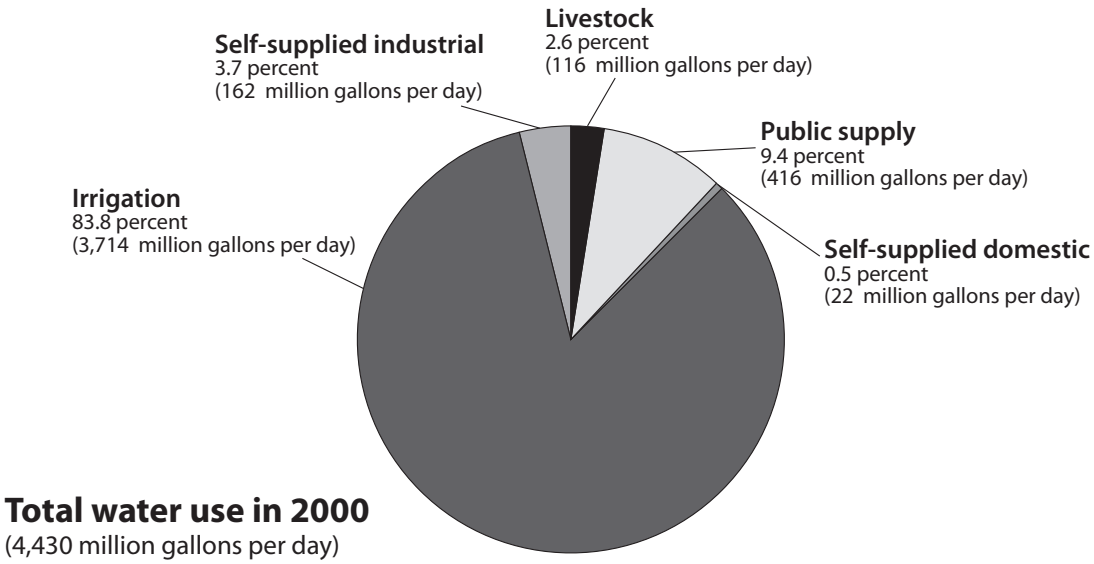

Figure 1: Major categories of water use in Kansas, 2000. USGS Fact Sheet 2004 – 3133

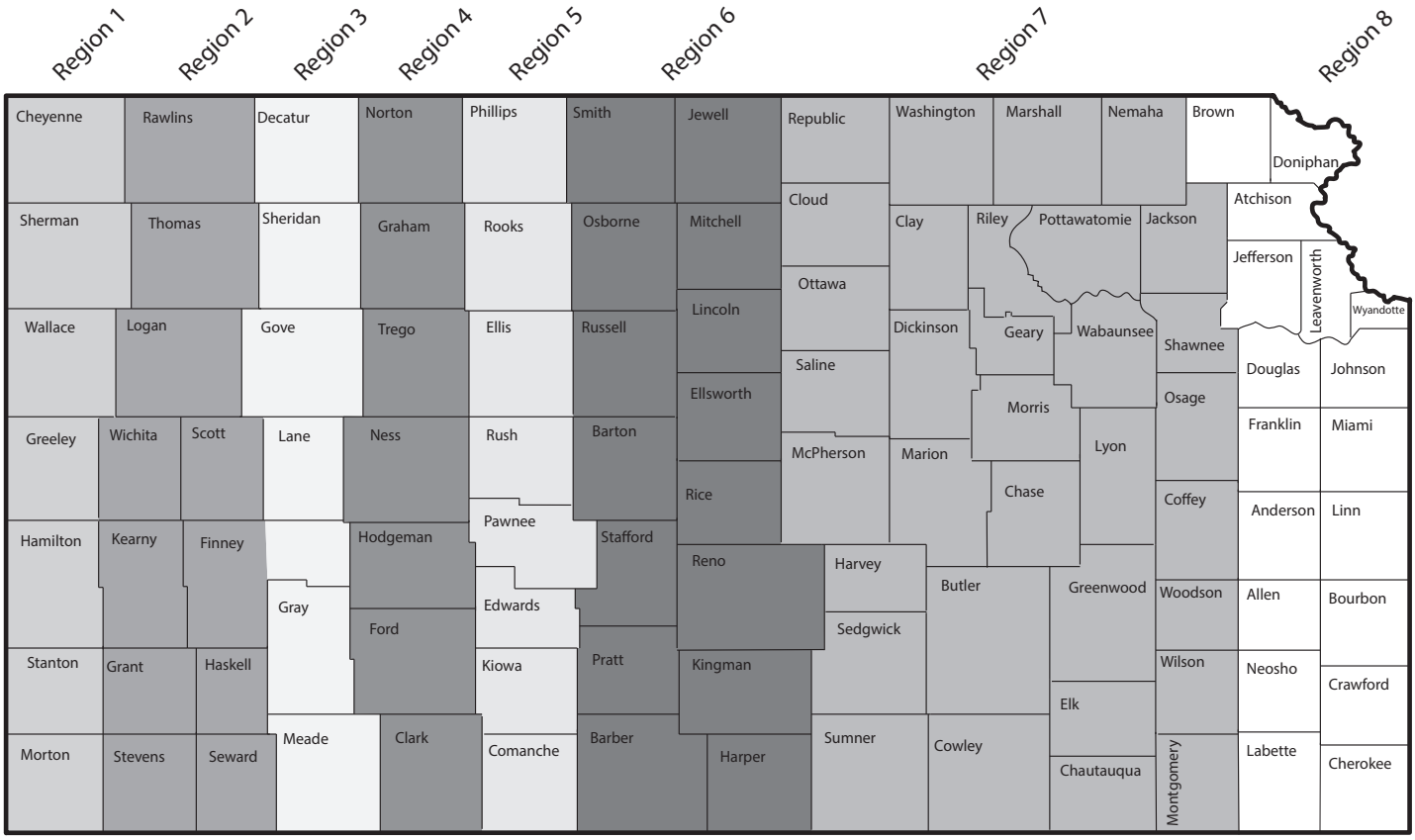

Figure 2: Regions used for Gallons per Capita Per Day (GPCD) Analysis. KDA – DWR and USGS. 2010. Kansas Municipal Water Use 2010. pp. 41.

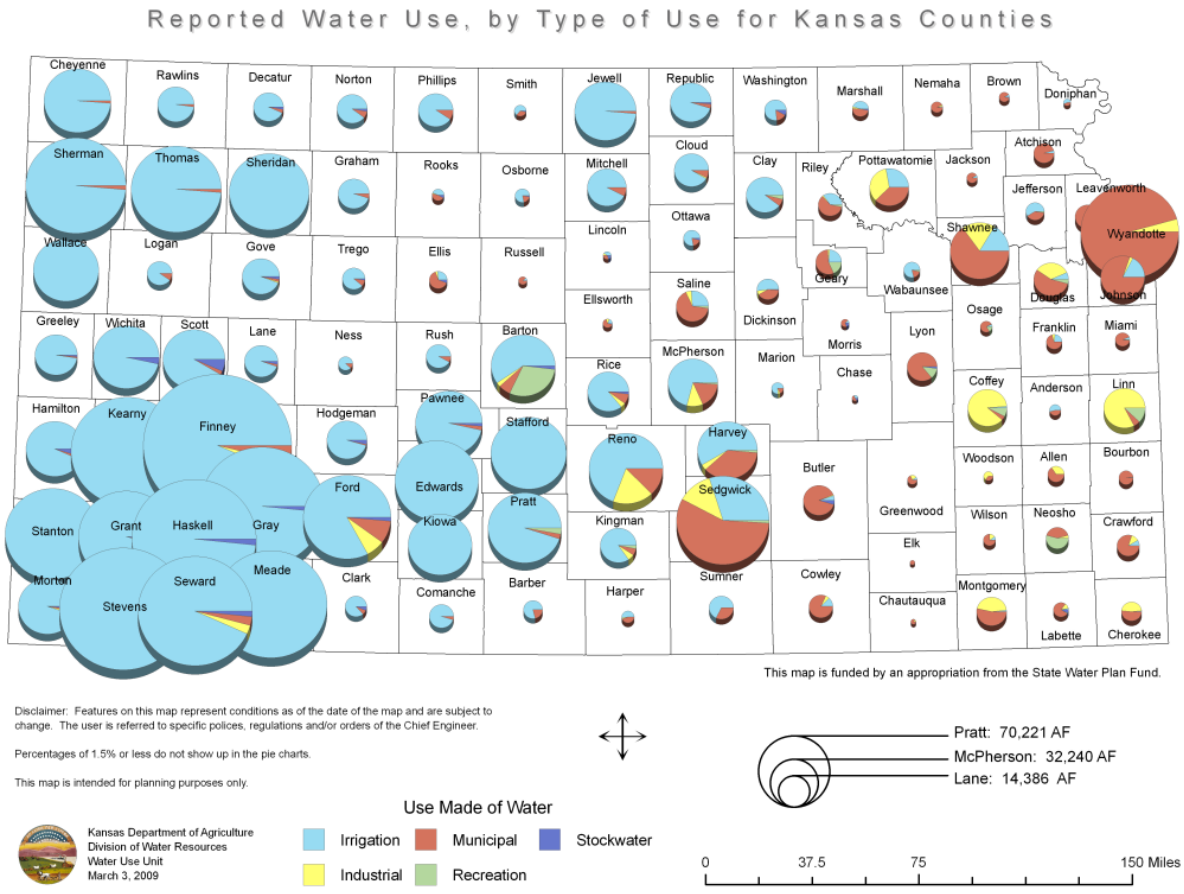

Figure 3. Distribution of water use by type in Kansas.

the primary water supply. In the western watersheds, only the lower Arkansas (LARK) basin has a significant use of surface water as a public water supply source.

Surface water flow varies greatly (see *Water Primer Part 4, Surface Water*, MF3023), so surface water storage in reservoirs is essential and can serve as the primary water source or as an emergency source during low flow periods due to droughts. Reservoir management can be challenging because of competing and conflicting demands for water stored within a reservoir. Reservoir water storage can be used for public water supply, flood control, power production, navigation, and recreation.

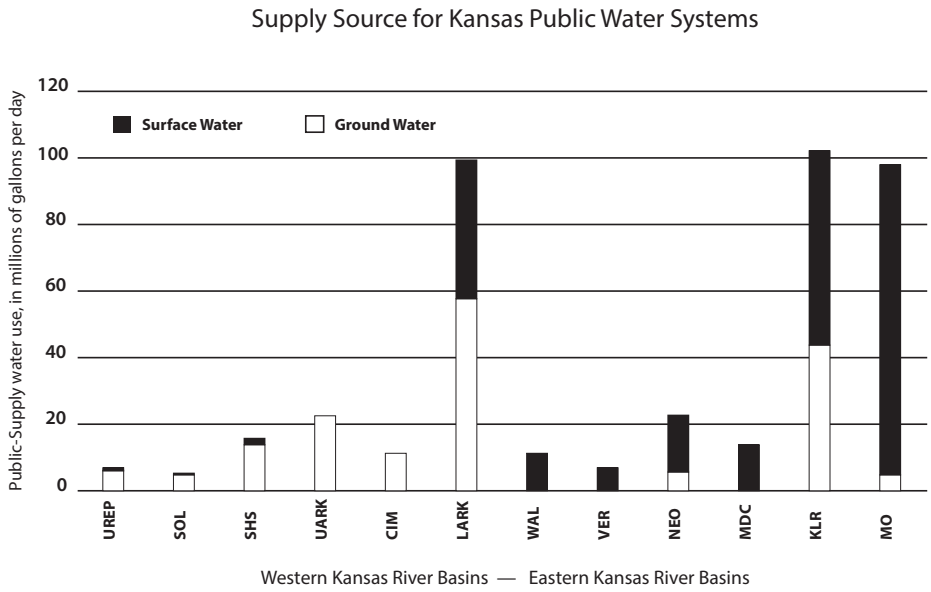

Figure 4: Source of water supply for public water systems in Kansas, 2000. (Adapted from USGS Fact Sheet 2004-3133)

Regional water use, calculated in gallons per day per capita (GPCD), is based on the water use and population served by the supplier. The state is divided into eight regions so usage for individual supplies can be more fairly compared. The GPCD increases from east to west in Kansas because of the variation in rainfall. GPCD includes outdoor water usage for landscape and lawn irrigation. This increases significantly in the lower precipitation areas in western Kansas. In 2010, the average GPCD was 125; however, the range was 273 GPCD in Region 1 to 81 GPCD in region 8 for a small utility (utilities serving fewer than 500 people). Figure 6 shows the trend comparison of GPCD by region from 1991 to 2010.

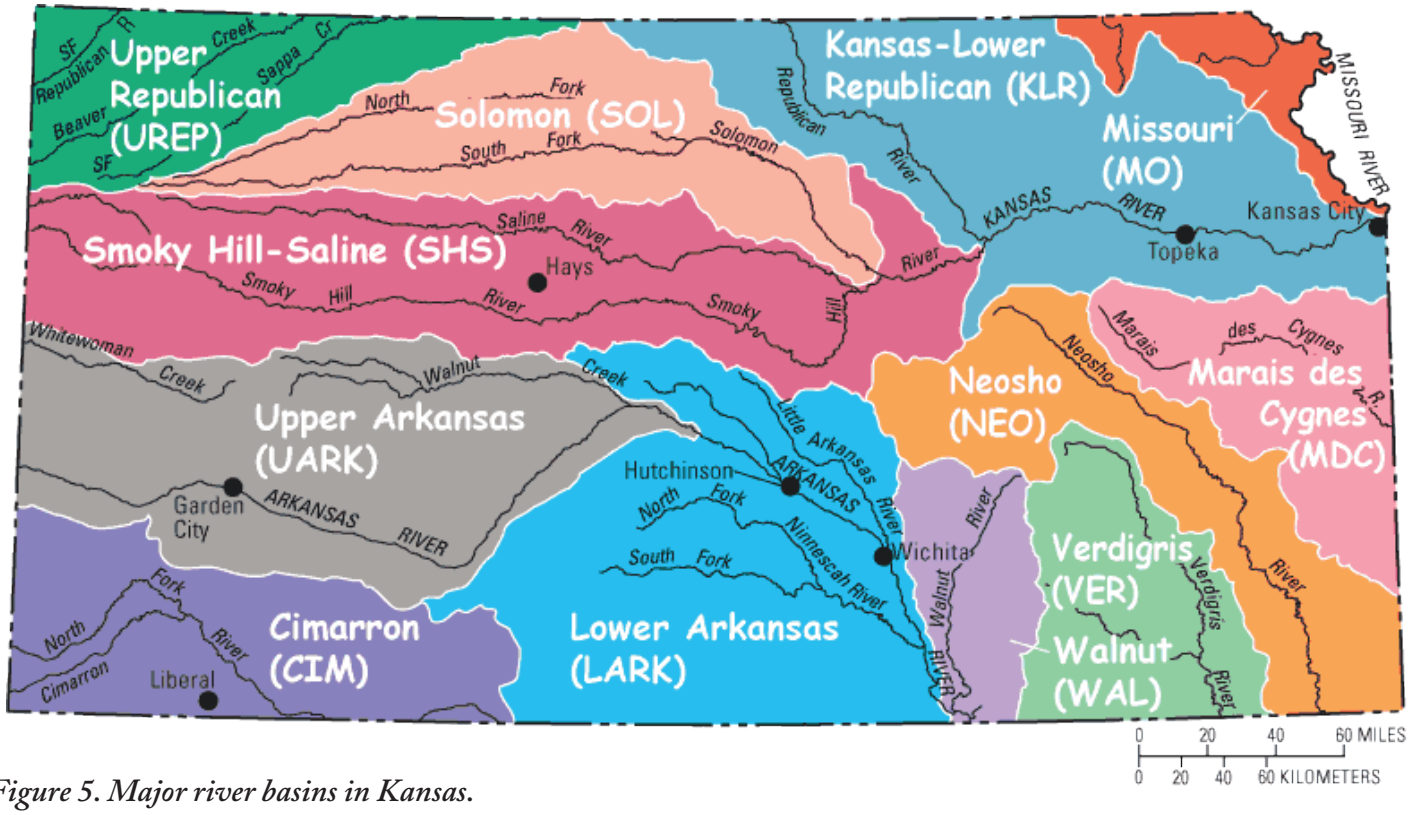

Figure 5. Major river basins in Kansas.

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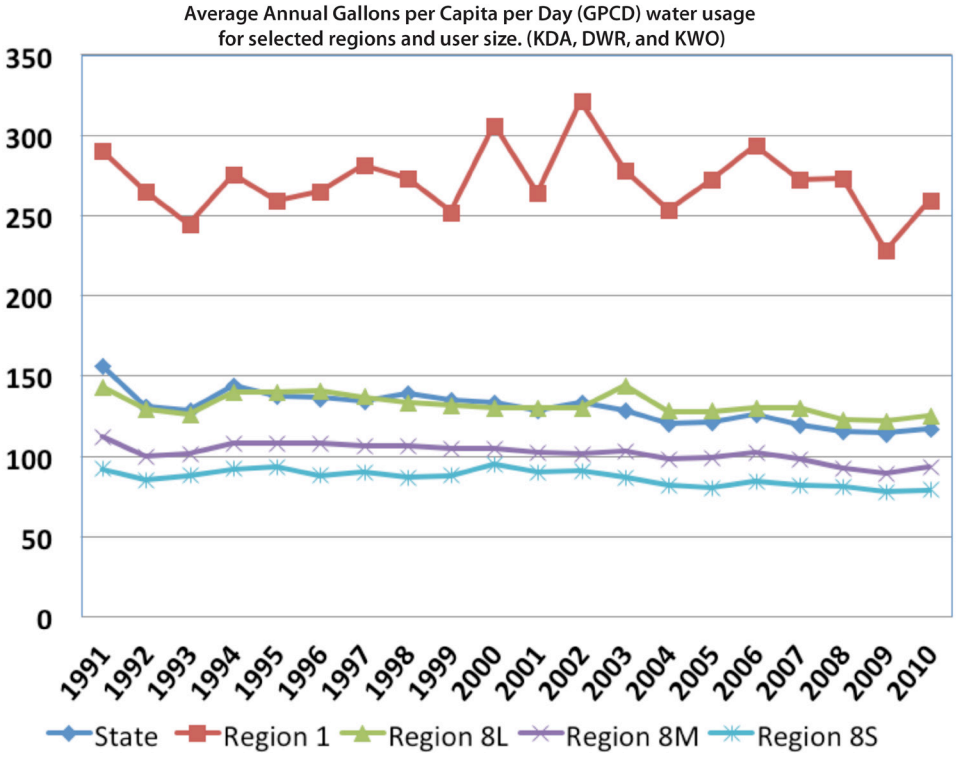

Figure 6. Average annual GPCD for Kansas and selected regions. Region 8L refers to utilities' serving more than 10,000 people, 8M to utilities serving from 500 to 9,999 people, and 8S to utilities serving fewer than 500 people. (KDA-DWR and USGS. 2010).

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