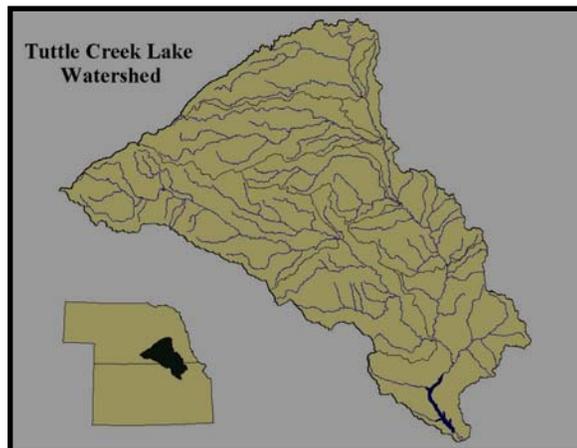
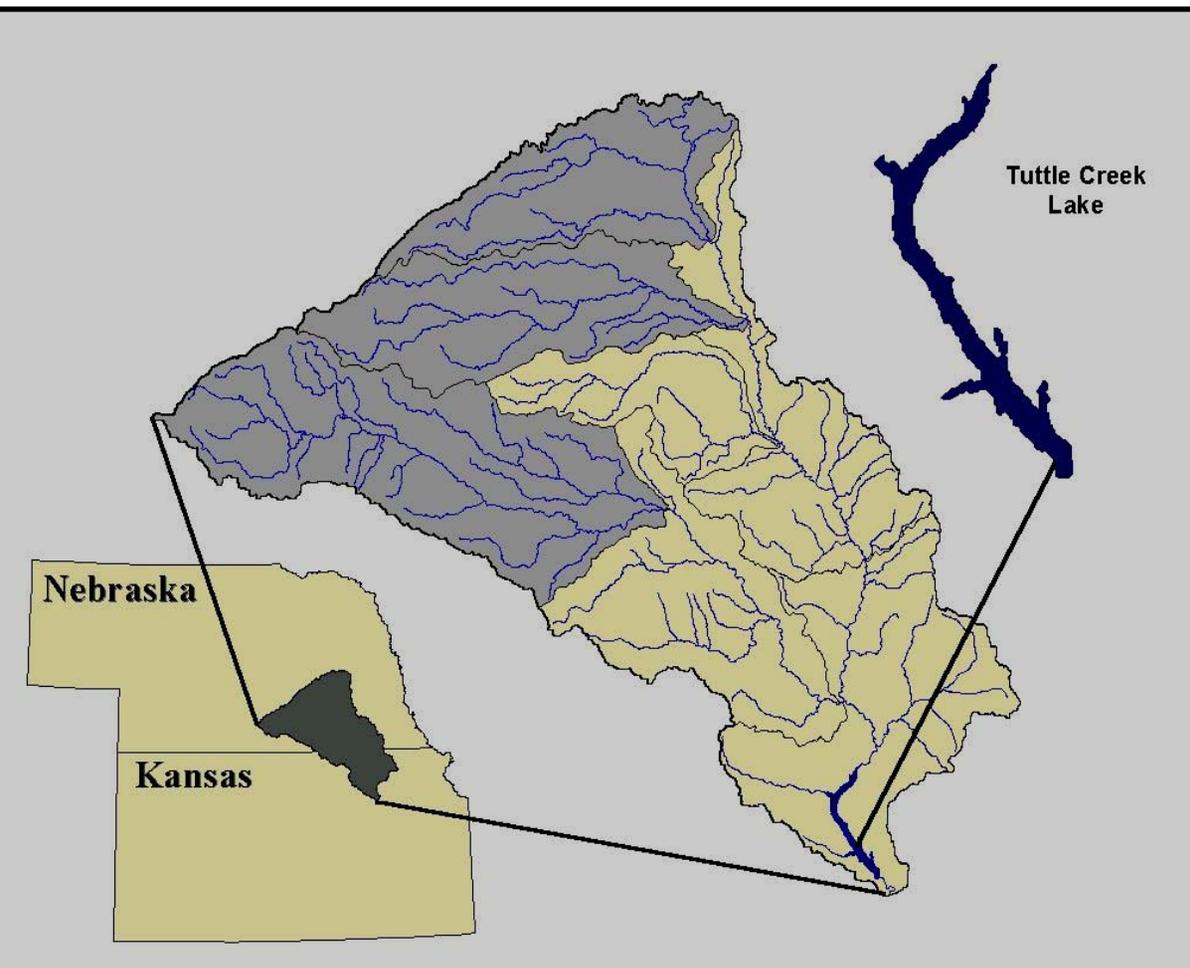


# TUTTLE CREEK LAKE INTERSTATE TARGETED WATERSHED GRANT PROJECT NEBRASKA AND KANSAS

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# WATERSHED LOCATION AND CHARACTERISTICS

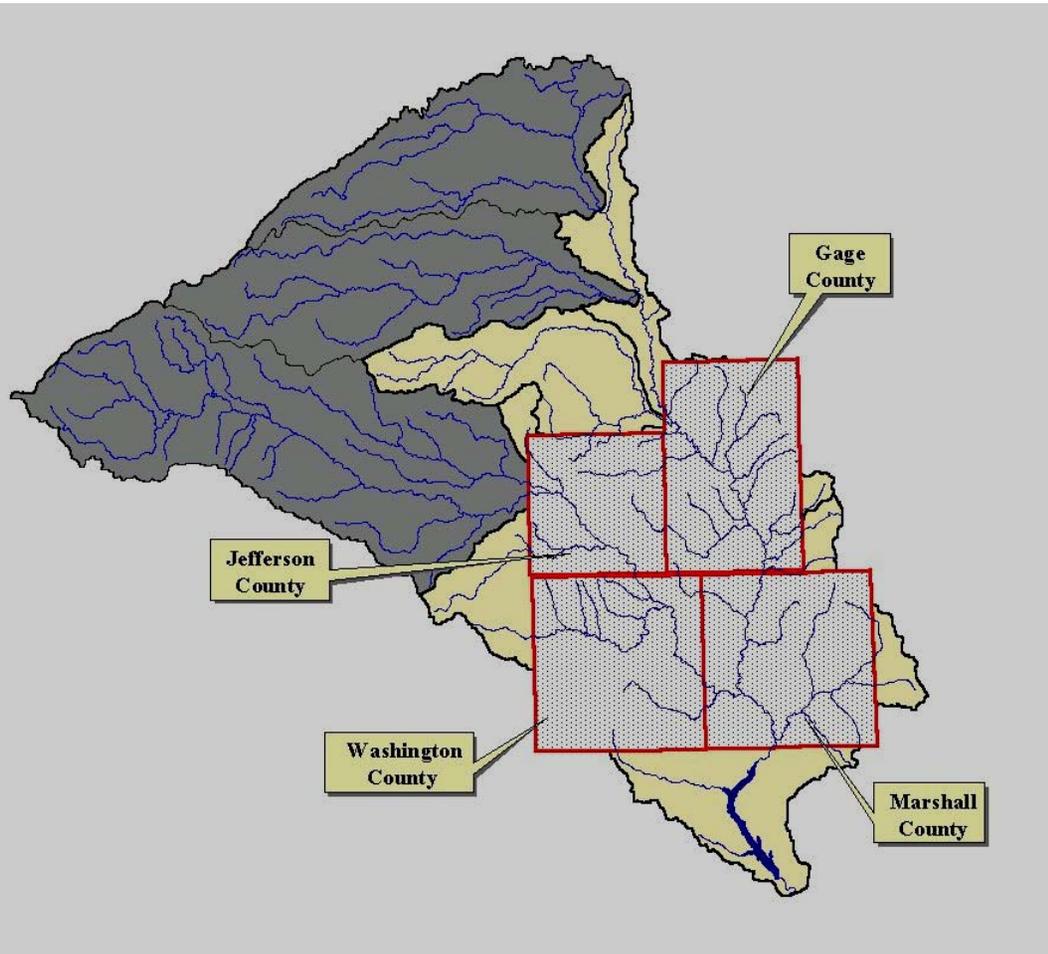


- Tuttle Creek Lake is a 14,000 acre impoundment located in northeast Kansas at the lower end of the Big Blue River.
- Watershed covers 9,628 square miles with about three-fourths of the drainage in Nebraska.
- Land use is predominately row crop agriculture with about 72% of the land in corn, grain sorghum, or other crops.
- Long-term mean annual precipitation is 32 inches. Slopes generally exceed 10% in critical sub-watersheds. Soils are predominately silty clay loams.



**Figure 6. Tuttle Creek Lake looking north from the east side of Randolph Bridge howing sediment accumulation in the conservation pool (photo by Michael Kemppainen, USGS, Lawrence, Kansas).**

# WATERSHED BACKGROUND AND HISTORY



- Tuttle Creek Lake supplies up to 50% of the flow of the Kansas River which provides public drinking water for Kansas City, Topeka, and Lawrence
- Water quality problems include excessive runoff of sediment, nutrients, herbicides, and bacteria
- Critical four-county area of nonpoint source runoff determined from natural resource assessment maps
- Tuttle Creek Lake Watershed Partners in Nebraska and Kansas have worked together for more than 10 years to address water quality issues

# CORRECTIVE ACTIONS

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- ❖ Demonstrate a process for achieving multi-jurisdictional water quality goals in a large agricultural watershed by targeting and implementing best management practices in critical sub-watersheds.
- ❖ Use Targeted Watersheds Grant funds with existing Clean Water Act, Farm Bill, state, and local program funds to accomplish project goals.
- ❖ Install no-till farming systems, riparian buffer strips, and other conservation practices, and enhance educational efforts.
- ❖ Use market-based incentives to encourage and support landowner adoption of best management practices.

# EXPECTED OUTCOMES

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- Reduce average sediment “delivery” rate to Tuttle Creek Lake by 25 percent from 0.67 tons per acre to 0.50 tons per acre and reduce annual volume loss in Tuttle Creek Lake by 249 acre-feet.
- Reduce average total phosphorus “delivery” rate to Tuttle Creek Lake by 20 percent from 3.11 pounds per acre to 2.49 pounds per acre and annual total phosphorus loading to Tuttle Creek Lake by 638 tons per year.
- Reduce atrazine and alachlor concentrations in Tuttle Creek Lake below the public drinking water criteria of 3 ppb and 2 ppb, respectively, and remove Tuttle Creek Lake from the Section 303(d) list for atrazine and alachlor.

# IMPLEMENTATION GOALS

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- ❑ Provide cost-share assistance and/or rental, incentive, and maintenance payments to 50 landowners for installation of no-till cropping systems.
- ❑ Provide cost-share assistance and/or rental, incentive, and maintenance payments to landowners for installation of 1,000 additional linear miles of riparian buffer strips.
- ❑ Develop nutrient and herbicide management plans for 25 individual farms or ranches.

# IMPLEMENTATION GOALS

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- ❑ Provide cost-share assistance and/or rental, incentive, and maintenance payments to landowners for restoration of 25 riparian wetlands in the 100-year floodplains of streams.
- ❑ Provide maintenance payments to 25 landowners for reconditioning of existing conservation practices such as riparian buffer strips, terraces, tile outlets, and grassed waterways.
- ❑ Provide cost-share assistance to 25 landowners for installation of streambank stabilization practices.

# IMPLEMENTATION GOALS

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- ❑ Provide cost-share assistance to 25 landowners for installation of fencing, alternative off-stream watering sites, portable shelters, or stabilized stream watering points for livestock.
- ❑ Provide incentive payments and cost-share assistance to 25 landowners for plantings of recommended specialty forest products in riparian buffer strips.
- ❑ Conduct a minimum of 5 on-farm or field day demonstrations of conservation practices and provide seminars about eligible conservation practices to 150 or more landowners.

# WHERE IS THE PROJECT HEADED BEYOND TWG 2005?

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- Lessons learned will be used to make necessary changes to implementation of conservation programs and measures of success.
- Tuttle Creek Lake Watershed Partners will continue to meet annually and work together to remediate water quality problems through existing conservation programs.





**BEFORE**



**AFTER**



**Figure 12. Streambank stabilization may involve installation of rock bendway weirs, resloping eroding banks, and planting riparian buffer strips. Streambank stabilization practices can significantly reduce sediment loads as shown by the above “before” and “after” photographs of the Little Blue River. Streambank erosion can account for 25 percent or more of the total sediment load of a stream (photos courtesy of NRCS).**



Questions?