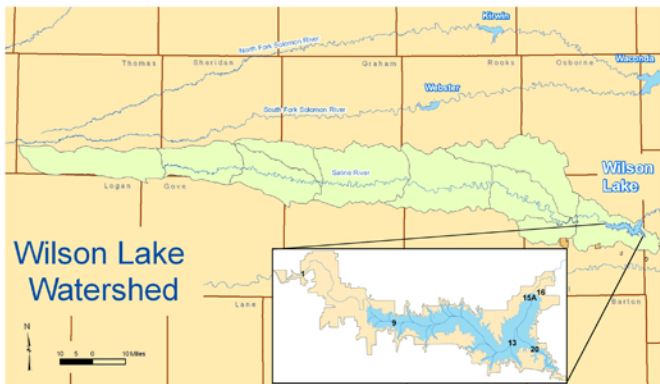


# Wilson Lake Water Quality Data

## 1999 - 2009



### Wilson Lake Watershed

#### Wilson Lake:

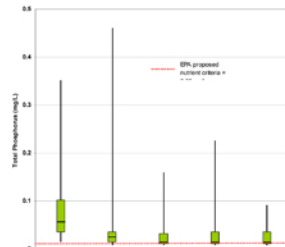
- Located at RM 130 of Saline River, 20 miles East of Russell KS
- Watershed = 1,917 sq miles (1,226,880 A)
- Capacity:
  - Flood Control: 529,800 A-F / 20,000 surface acres
  - Multipurpose: 233,600 A-F / 9,000 surface acres / 100 miles of shoreline
- Authorized project purposes: Flood control, irrigation, navigation, recreation, fish and wildlife and water quality improvement
- Average annual inflow = 97,845 acre-feet

The US Army Corps of Engineers Water Quality Program collects monthly data (April – September) at Wilson Lake. These graphs represent data collected between 1999 – 2009 from up to 5 sites. The sites include an inflow (#1), 3 lake sites (#9, 13, 15A, 20) and the outflow (#16). Variables of interest include: Total Nitrogen, Total Phosphorous, Sulfate, and Dissolved Oxygen.

#### Total Phosphorous

Phosphorous is an essential nutrient for aquatic life. Phosphorous limits algal growth; higher concentrations result in increased blooms. This nutrient typically exceeds proposed EPA nutrient criteria (0.02mg/L) for all sites. Annual and seasonal variability is also detected by our sampling.

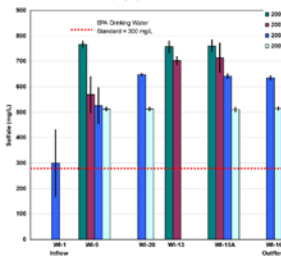
Total Phosphorous concentrations (mg/L) measured from all sites 1999-2009.



#### Chlorides and Sulfates

Chloride and sulfate ions are naturally occurring additions to Wilson Lake. Both follow the same general trend. Periods of high flow and high water decrease measured concentrations due to dilution. During drought, the compounds are more concentrated in a smaller volume of water. Both ions typically exceed the Kansas Department of Health and Environment established TMDL targets and EPA drinking water standards. Salinity can negatively impact freshwater fish and invertebrates, but at levels 10X higher than measured values from Wilson Lake.

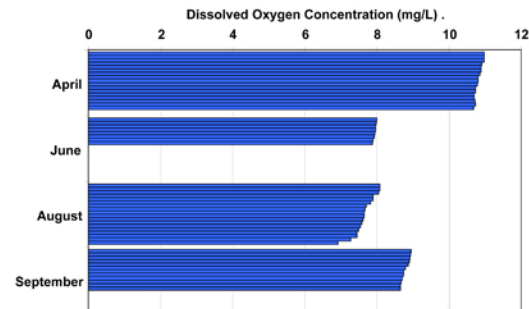
Sulfate levels (mg/L) at all sites from 2006-2009.



#### Dissolved Oxygen

Oxygen is a critical element to all aquatic life processes. During late summer and winter, low oxygen concentrations in deep water can impact aquatic life, fishing, and drinking water! The west to east orientation of Wilson Lake in relation to strong prevailing winds and good water quality work in tandem maintaining optimum conditions for aquatic life and benefit recreational users.

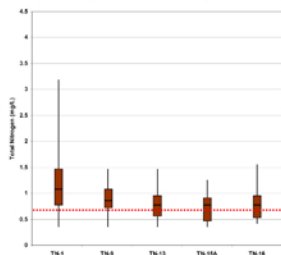
Dissolved oxygen profile measures at dam in 2008.



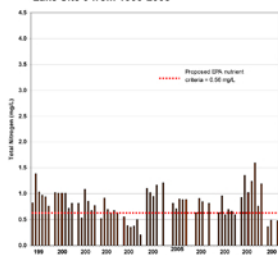
#### Total Nitrogen

Nitrogen is an essential nutrient to aquatic life. However, excessive concentrations result in algal blooms, low DO levels, taste and odor issues in drinking water, and even fish kills. Wilson Lake has some of the lowest surface TN concentrations of the KC District Lakes. Total nitrogen concentrations at all sites routinely exceed proposed EPA nutrient criteria (0.56 mg/L). The highest concentrations are typically measured from upper lake at the inflow site. Annual variability within sites is very common, and is dependent upon rainfall – more rain results in higher sediment runoff.

Total Nitrogen concentrations (mg/L) by site 1999–2009



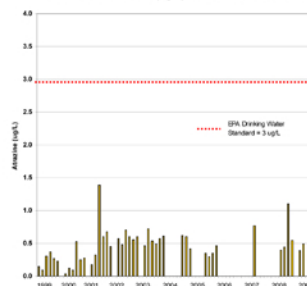
Total Nitrogen concentrations (mg/L) at Wilson Lake Site 9 from 1999-2008



#### Atrazine

Atrazine is the most widely used and most frequently detected herbicide throughout the Midwest. Measured concentrations rarely approach drinking water standards (3 ug/L) during spring sampling, which coincides with application and peak runoff.

Atrazine concentrations (ug/L) from 1999-2009 at Site 9



#### Water Quality Concerns:

- Sediment inputs
- Nutrients
- Sulfate
- Chloride



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