

Water Quality

Upper Llano River Watershed



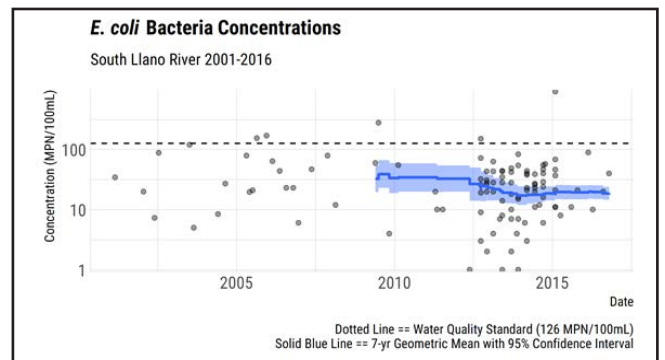
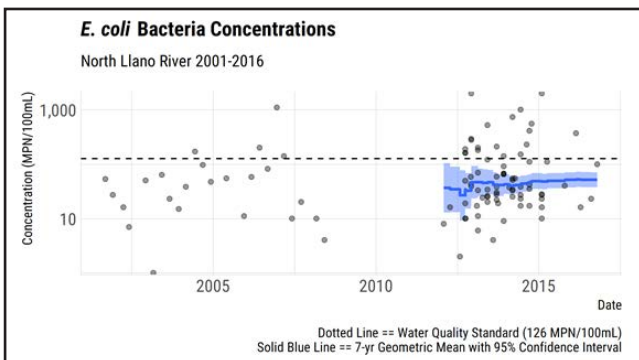
Photo credit: Robert Stubblefield

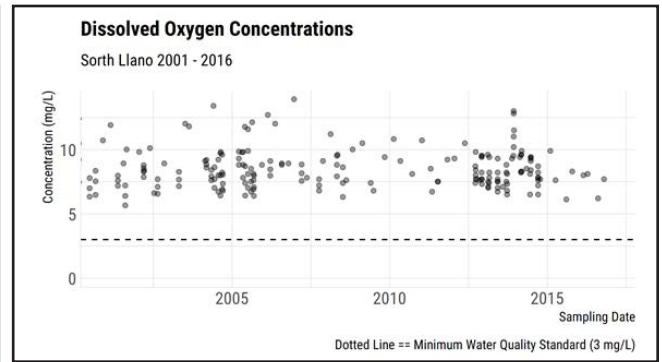
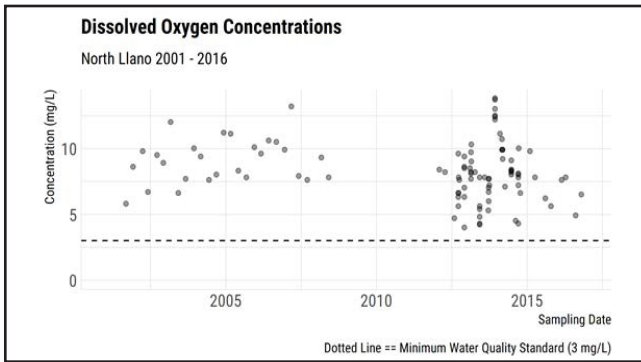
The Llano River, a clear, spring-fed perennial river and major tributary of the Colorado River, is a true gem of the Texas Hill Country. The waters of the Upper Llano, which include the North and South Llano rivers, are characterized by healthy water quality, consistent critical flows and diverse aquatic communities. These characteristics support a diverse, vibrant terrestrial and aquatic ecosystem. The Upper Llano Watershed Protection Plan (www.llanoriver.org) identifies potential threats to water quality and recommends management measures that will continue to protect and improve water quality. Below we discuss water quality parameters and sources that can impact recreation and aquatic life.

RECREATION

Escherichia coli (*E. coli*) is a bacterium monitored to indicate the possible presence of fecal matter in water bodies. In high concentrations, *E. coli* indicates an increased risk that recreational users, for example swimmers and kayakers, might contract gastrointestinal illnesses. In the Upper Llano watershed, the water quality standard is a geometric mean of 126 MPN (most probable number)/100mL during a 7-year period. This measurement means the most likely number of bacteria colonies found in a 100 mL sample of water.

Although the water quality standard in the North Llano has occasionally been exceeded, the geometric mean remains well within water quality standards for safe recreation. Through the end of 2016, the 7-year geometric mean was 52 MPN/100 mL. The South Llano has even fewer recorded exceedances and the 7-year geometric mean through the end of 2016 was only 19 MPN/100mL.





AQUATIC LIFE

Dissolved oxygen is the primary parameter monitored to evaluate if a water body can support aquatic life. If the concentration of dissolved oxygen falls too low, fish and other organisms cannot survive. The Upper Llano meets the state water quality standard if 90% of the time the daily minimum concentration of dissolved oxygen is above 3 mg/L. Additionally, if more than 10% of the daily average measurements fall below 5 mg/L, there is a concern. No measurements fell below 3 mg/L during the last 7-years in both the North and South Llano rivers.

SOURCES

There are numerous potential sources of fecal bacteria and depressed dissolved oxygen.

Septic Systems – Failing septic systems do not adequately treat wastewater. The untreated waste becomes a source not only of fecal bacteria and pathogens, but contributes nutrients to waterways. This can lead to algae blooms and decreased dissolved oxygen. Homeowners can prevent wastewater releases by having a service provider inspect and maintain their septic system.

Livestock/Agriculture – Livestock can contribute to *E. coli* and nutrient loads when they are near streams and deposit waste that runs directly into the water body. Overgrazing also leads to erosion that degrades water quality. Runoff from crop fields can contribute nutrients and sediment to a water body, leading to decreased dissolved oxygen. Landowners can prevent these negative impacts by implementing a range of soil and water conservation practices on their property. Local SWCD (<http://www.ulswcd.com/>) and NRCS offices (<https://www.nrcs.usda.gov>) can link landowners with the appropriate technical and financial assistance needed to implement these practices.

Wildlife – Exotic deer and feral hogs contribute to riparian habitat degradation and decreased water quality. Fecal waste from these animals directly contribute increased bacteria and nutrient loads to the river, while overgrazing and wallowing increases erosion and soil runoff and degrades riparian habitat. Population management of these animals and fenced riparian areas designed to exclude wildlife browsing will help decrease the negative impact on water quality.

Urban Runoff – Impervious surfaces, such as roads, parking lots and rooftops, increase surface runoff and decrease the amount of water that infiltrates into the soil. This additional runoff increases the opportunity for potential pollutants to reach streams and rivers. Runoff can include stormwater, pet waste, leaky wastewater pipes, lawn fertilizers and urban wildlife, all potential sources of bacteria and nutrients that can negatively impact water quality. AgriLife Extension provides resources for homeowners interested in installing practices and landscapes that will minimize pollutant runoff from their properties (<https://wateruniversity.tamu.edu/about/diy/>).

PARTNERS

Texas Tech University at Junction Llano River Field Station, Texas Water Resources Institute, Llano River Watershed Alliance, Texas Parks and Wildlife Department, Texas State Soil and Water Conservation Board

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For more information, visit llanoriver.org.