



Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

Mussel Fork Creek

Water Body Segment at a Glance:

Counties:	Sullivan to Macon
Nearby Towns:	Ethel
Length of impaired segment:	29 miles
Pollutant:	Bacteria
Source:	None Given
Water Body ID:	0674



State Map Showing Location of Watershed

Note: A TMDL for sediment was approved in 2006

Scheduled for TMDL development: 2013

Description of the Problem

Beneficial uses of Mussel Fork Creek

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health (Fish Consumption)
- Whole Body Contact Recreation – Category B
- Drinking Water Supply

Use that is impaired

- Whole Body Contact Recreation – Category B

Standards that apply

- Missouri's Water Quality Standards at 10 CSR 20-7.031(4)(C) state that the *E.coli* bacteria count shall not exceed 126 colonies per 100 milliliters of water (126 col/100 mL) for Category A and 206 col/100 mL for Category B waters. This count is the geometric mean during the recreational season (April 1- October 31) in waters designated for whole body contact recreation.

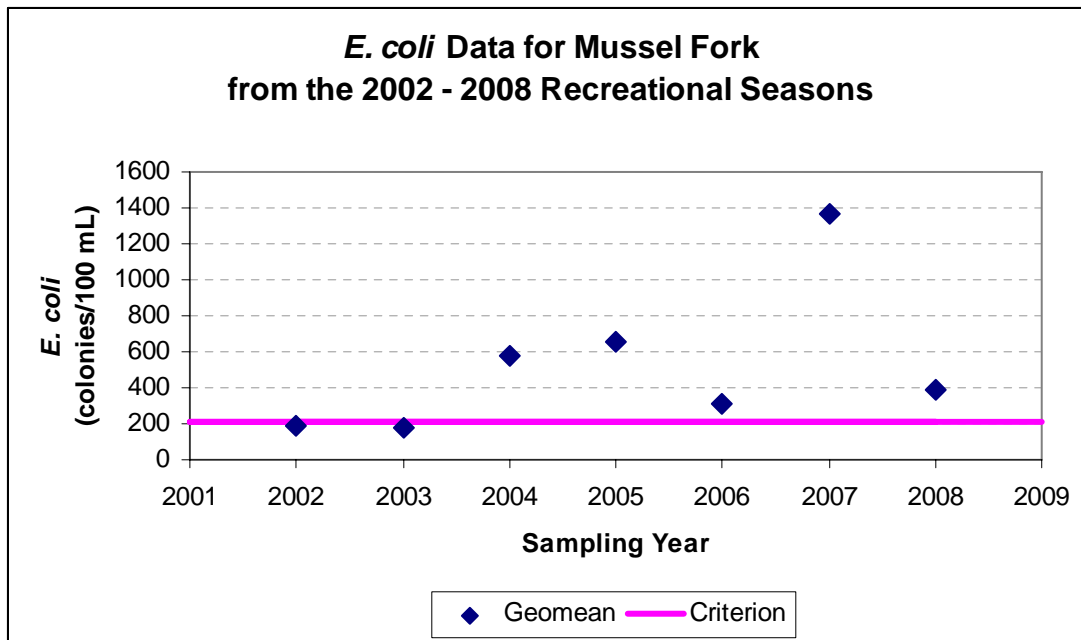
Background information and water quality data

Mussel Fork Creek is a rural, prairie stream in northern Missouri that flows south to join the Chariton River in Chariton County. The impaired segment starts in Sullivan County, cuts through the southwest corner of Adair County and continues into Macon County. A TMDL for sediment was written for Mussel Fork Creek and approved by US EPA in Sept. 2006. Evidence of a bacteria impairment is based on data gathered by the U.S. Geological Survey from 2002-2008.

Excessive amounts of fecal bacteria in surface water used for recreation are an indication of an increased risk of pathogen-induced illness to humans. Infections due to pathogen-contaminated waters include gastrointestinal, respiratory, eye, ear, nose, throat and skin diseases. *E. coli* are bacteria found in the intestines of warm blooded animals and are used as indicators of the risk of waterborne disease from pathogenic (disease causing) bacteria or viruses. Most *E. coli* strains are harmless, but some can cause serious illness in humans and are occasionally responsible for product recalls. The harmless strains are part of the normal flora of the intestines, and can benefit their hosts by preventing the establishment of pathogenic bacteria within the intestine^{1,2}. Missouri's bacteria criteria are based on specific levels of risk of acute gastrointestinal illness. The levels of risk correlating to these criteria are no more than eight illnesses per 1,000 swimmers in fresh water.

Mussel Fork Creek is designated as Category B for the whole body contact recreation use, which means it has places deep enough for total immersion (i.e., swimming), but they may be on private lands or inaccessible to the public. The listing methodology states that, to be considered not impaired by bacteria, a water body must meet the water quality criterion in each of the last three years of available data and that the geometric mean must consist of at least five data points within the recreational season. The *E. coli* criterion of 206 col/100 mL for Category B waters has been exceeded in Mussel Fork Creek every year from 2004-2008.

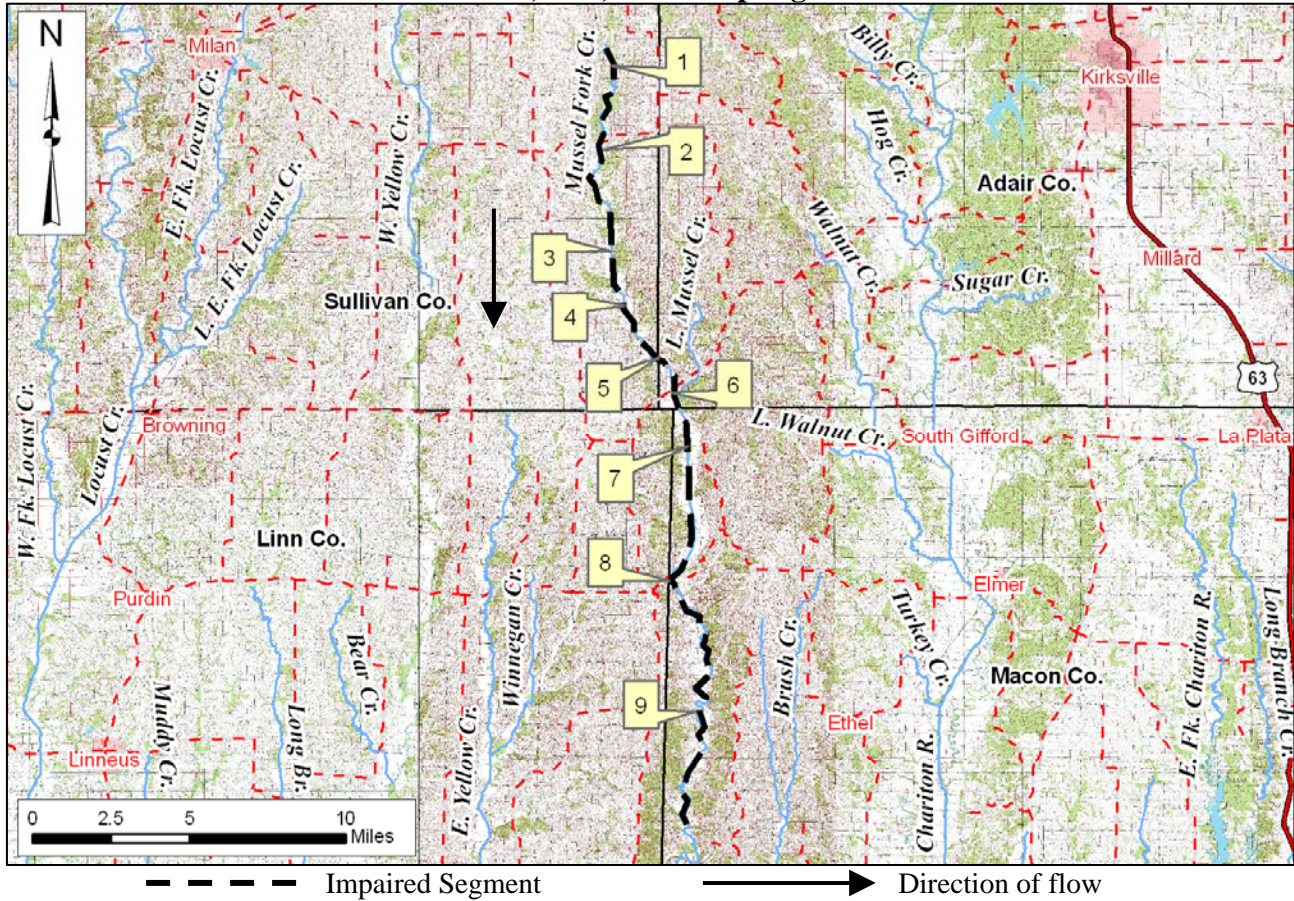
People can protect themselves from waterborne illness by avoiding contact with contaminated water. However, when swimming anywhere, it is wise to take commonsense precautions. These include washing hands before eating, showering after swimming and avoiding exposure to questionable water if you have open cuts or wounds.



¹ Hudault S, Guignot J, Servin AL (July 2001). "[Escherichia coli strains colonising the gastrointestinal tract protect germfree mice against Salmonella typhimurium infection](#)". *Gut* **49** (1): 47-55

² Reid G, Howard J, Gan BS (September 2001). "Can bacterial interference prevent infection?". *Trends Microbiol.* **9** (9): 424-8.

Map Showing Impaired Segment of Mussel Fork Creek in Sullivan, Adair and Macon counties, Mo., and Sampling Sites



Sample Sites	
1 – Mussel Fk. @ PSF Valley View	6 – Mussel Fk. @ Hwy. 11
2 – Mussel Fk. nr. Mystic	7 – Mussel Fk. 4 @ Aspen Rd.
3 – Mussel Fk. @ Talent Rd.	8 – Mussel Fk. @ New Boston
4 – Mussel Fk. @ Ivory Rd.	9 – Mussel Fk. nr. New Boston
5 – Mussel Fk. @ Co. Line	

For more information call or write:
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