

Missouri Department of Natural Resources
Total Maximum Daily Load Information Sheet

Tributary to Big Otter Creek

Water Body Segment at a Glance:

County: Henry
Nearby City: Brownington
Length of impairment: 1.0 mile
Pollutant: Low dissolved oxygen
Source: None listed
Water body ID: 1225

Scheduled for TMDL Development: 2015

Prior TMDL: TMDL for pH approved by EPA 2004¹



Description of the Problem

Designated beneficial uses of Tributary to Big Otter Creek

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health associated with Fish Consumption
- Whole Body Contact Recreation – Category B

Use that is impaired

- Protection of Warm Water Aquatic Life

Standards that apply

- In the Missouri water quality standards found in 10 CSR 20-7.031 Table A, the criterion for dissolved oxygen, or DO, in streams is a minimum of 5 mg/L (milligrams per liter or parts per million).

Background information and water quality data

History and pH:

The Tributary to Big Otter Creek in northern St. Clair County and southern Henry County drains a 75 acre area of acidic coal wastes. The Department of Natural Resources reclaimed this area in 1998 at a cost of \$955,964. A 25 acre lake provides water to dilute the acid mine drainage, and a small dilution pond was constructed to collect the numerous acid seeps. The area was revegetated with native and cool season grasses.

Sulfide minerals, commonly found in coal and the surrounding rock, oxidize when exposed to the air and are subsequently dissolved by surface flows and groundwater. This weathering process results in the formation of sulfuric acid, which shows up in the surface runoff and shallow groundwater that feed

¹ Available online at <http://dnr.mo.gov/env/wpp/tmdl/1225-trib-big-otter-tmdl.pdf>

the creeks. Freshwater aquatic life cannot tolerate acidic (low pH) water. Water quality sampling in 1999 showed the Tributary to Big Otter contained water too acidic to meet state water quality standards. The U.S. Environmental Protection Agency, or EPA, approved the TMDL for the Tributary to Big Otter Creek on October 21, 2004. See the related information sheet for Big Otter Creek and Tributary at: <http://www.dnr.mo.gov/env/wpp/tmdl/info/index.html>. Since 2001, 35 of 44 pH measurements (79.5 percent) on this stream have failed to meet the pH standard. This is greater than the allowable exceedance rate of 10 percent, and thus this segment is still judged to be impaired for low pH (Figure 1). Water quality monitoring of Tributary to Big Otter Creek continues.

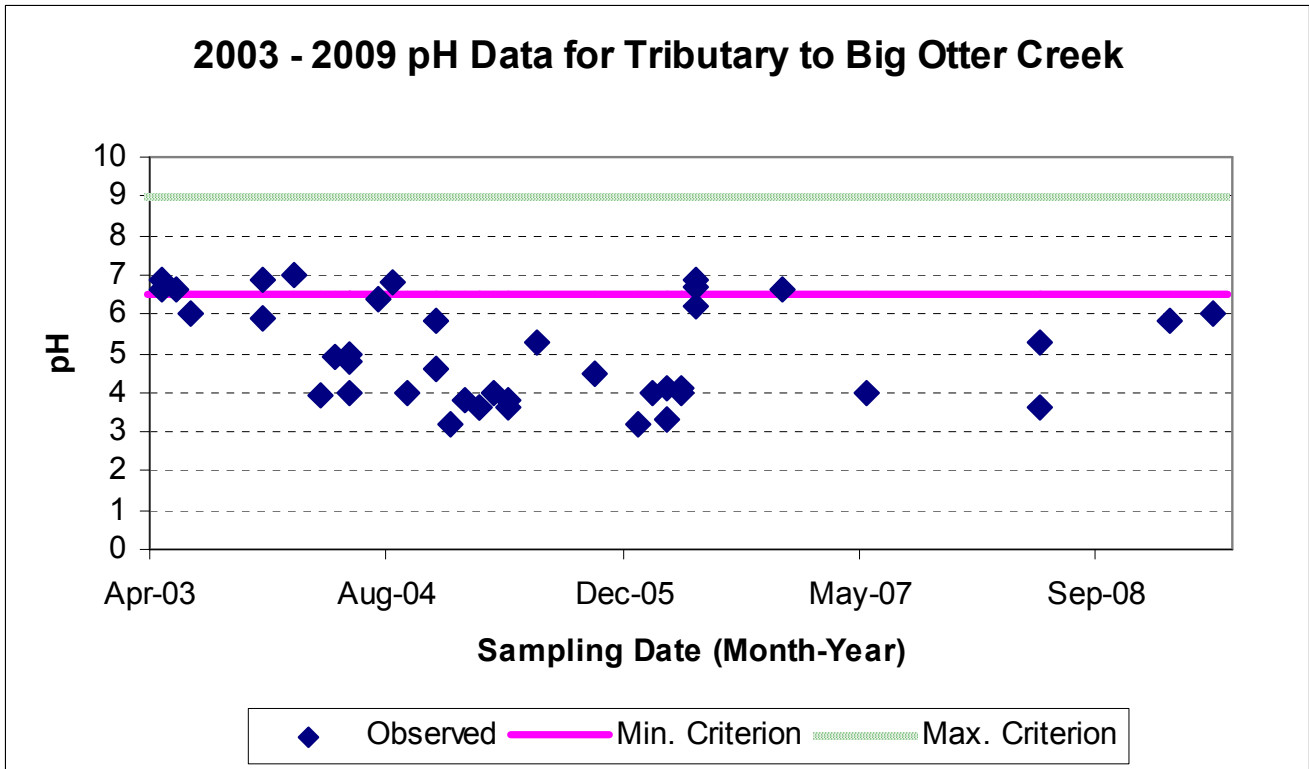
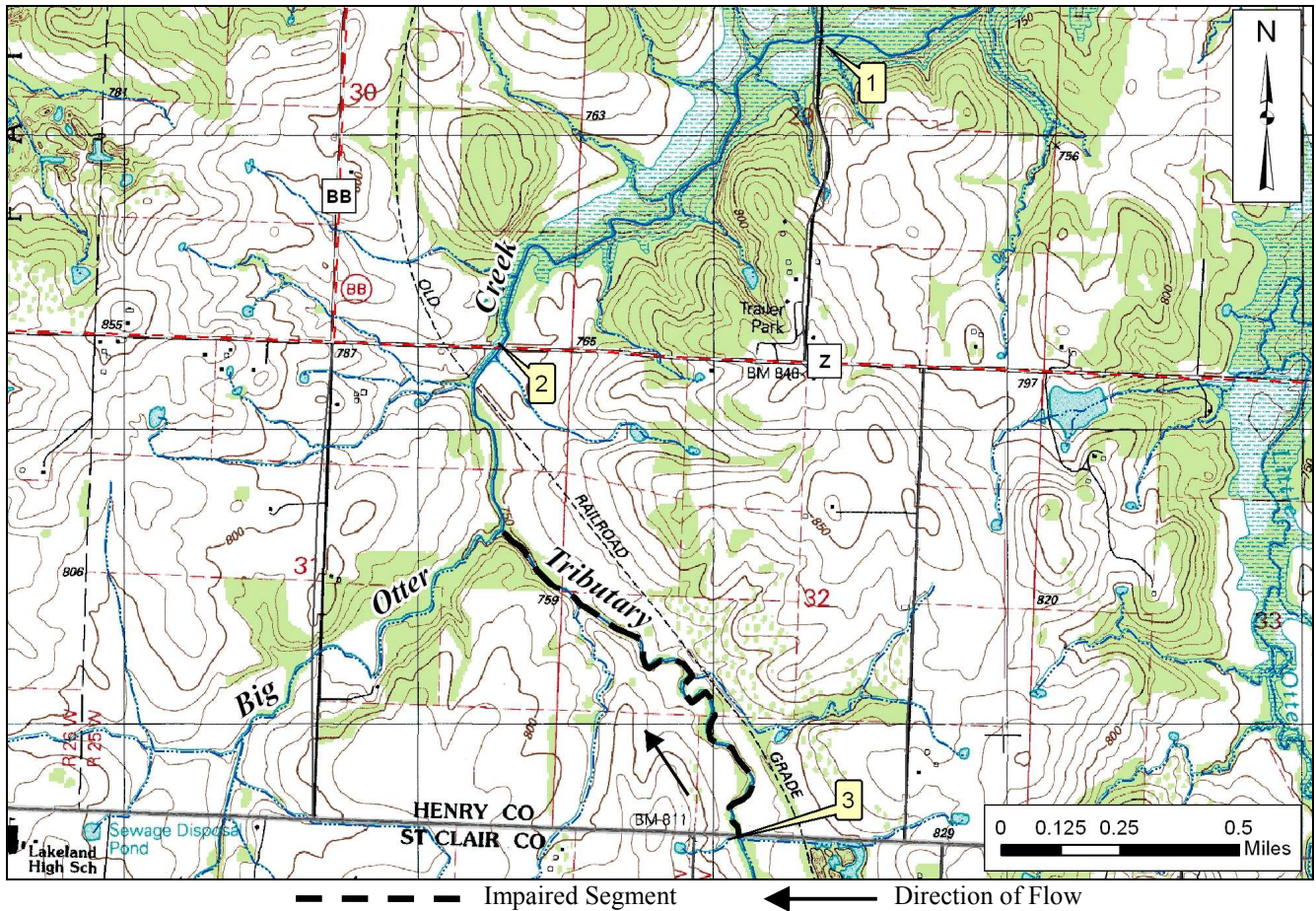


Figure 1

Low dissolved oxygen:

Dissolved oxygen levels in Tributary to Big Otter Creek do not always meet the state’s minimum water quality criterion of 5 mg/L. Dissolved oxygen is important as many aquatic organisms require high levels of oxygen to survive. Evidence of the low dissolved oxygen impairment is based on data gathered by the department from 2003 to 2009. For dissolved oxygen, if more than 10 percent of measurements in a water body fail to meet the water quality criterion, that water body is judged to be impaired. In the case of Tributary to Big Otter Creek, five of 33 samples (15.2 percent) did not meet the water quality criterion (Figure 2 next page). It is not known what is causing the dissolved oxygen to be low.

Big Otter Creek and Tributary to Big Otter Creek in Henry and St. Clair Counties, Mo., Showing Sampling Sites and Impaired Segment



Site Index	
Site #1	- Big Otter Cr. near mouth
Site #2	- Big Otter Cr. at State Hwy Z
Site #3	- Trib. Big Otter Cr. 0.5mi. bl. AML

For more information call or write:
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