

Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

Shibboleth Branch

Water Body ID: 2119

Water Body Segment at a Glance:

County:	Washington
Nearby City:	Potosi
Length:	1.0 mile
Pollutant:	Lead and zinc in sediment
Source:	Mill tailings (abandoned)



State map showing location of watershed

Schedule for TMDL development:

TMDL development schedules are subject to change.

The most current schedule for TMDL development is available on the department's website at dnr.mo.gov/env/wpp/tmdl/wpc-tmdl-progress.htm

Other TMDLs:

The U.S. Environmental Protection Agency approved a TMDL for inorganic sediment, dissolved cadmium, lead and zinc, and bed sediment cadmium, lead and zinc for water body 2120 of Shibboleth Branch on December 23, 2010. This TMDL is available online at

<http://dnr.mo.gov/env/wpp/tmdl/2120-shibboleth-br-record.htm>

Description of the Problem

A water body is considered impaired when it fails to meet applicable water quality standards. Water quality standards consist of designated uses, water quality criteria, an antidegradation policy and implementation procedures. Shibboleth Branch is impaired due to exceedances of state water quality criteria that protect aquatic life designated uses.

Designated uses of Shibboleth Branch*

- Warm Water Habitat (WWH)
- Whole Body Contact Recreation Category B (WBC-B)
- Secondary Contact Recreation (SCR)
- Human Health Protection (HHP)
- Irrigation (IRR)
- Livestock and Wildlife Protection (LWP)

*In addition to these specific uses, all waters of the state are protected by the general water quality criteria that are specified in the state's Water Quality Standards at 10 CSR 20-7.031(4).

Designated Uses that are Impaired

- Warm Water Habitat (WWH)
- General Criteria

Criteria that apply

- Missouri has no numeric criteria for metals in sediment. Likewise, federal guidelines have not yet been established for toxic chemicals in stream or lake sediments. In lieu of such criteria, Probable Effect Concentrations, or PECs, suggested by McDonald, et al.¹, are used to assess toxicity in stream sediments. PECs are the concentrations at which some toxic effect on aquatic life is likely.
- Missouri streams are also protected by the general criteria found at 10 CSR 20-7.031(4). The particular general criteria that apply to Shibbleth Branch include:

(D) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal, or aquatic life.

(G) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community.

Assessment and Water Quality Data

The department judges a stream to be impaired by metals in sediment when the geometric mean of available metals data exceeds the recommended PEC values by 150 percent. For Shibbleth Branch, the lead PEC value was exceeded by 273 percent and the zinc PEC value was exceeded by 189 percent.

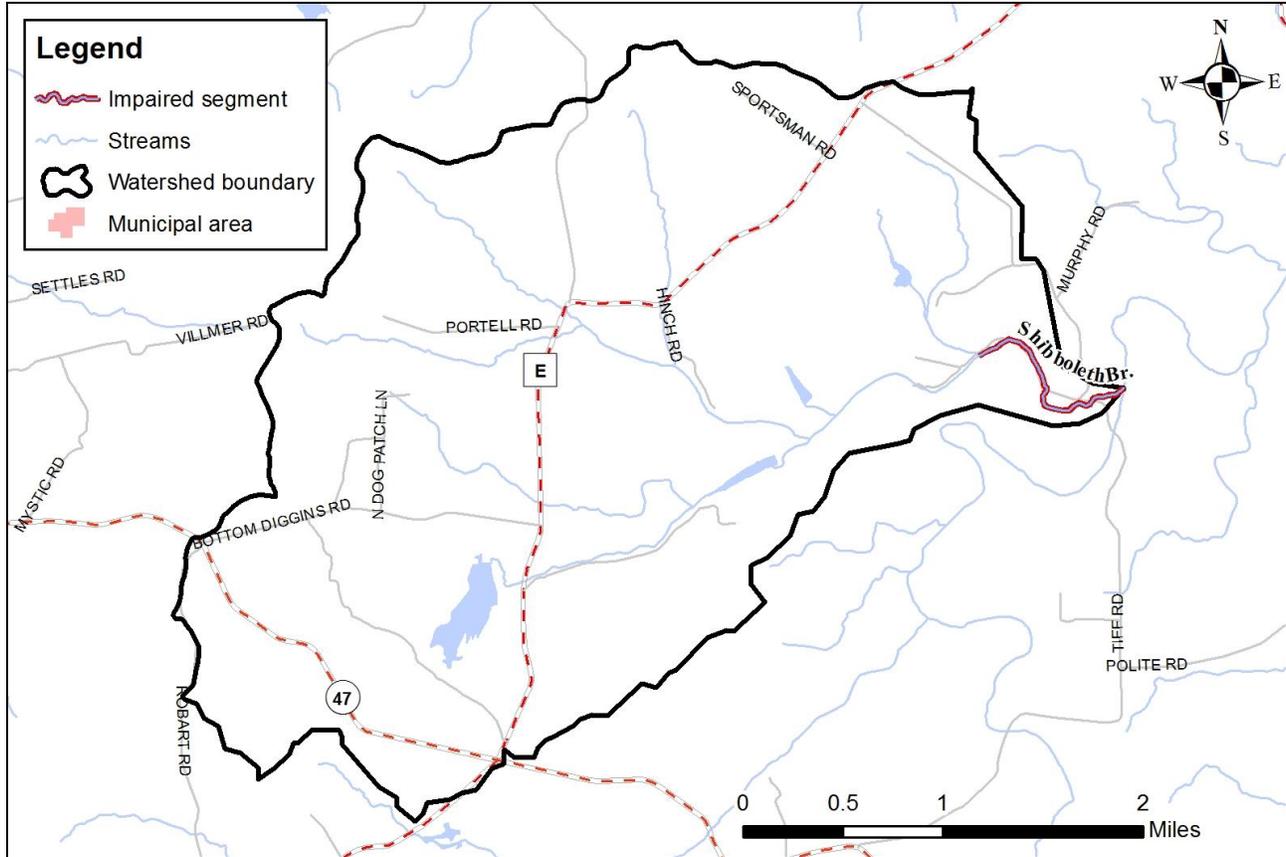
<i>Pollutant</i>	<i>PEC (mg/kg)</i>	<i>Shibbleth Branch Geometric Mean (mg/kg)</i>
Lead	128	349
Zinc	459	869

TMDL for Shibbleth Branch

The Shibbleth Branch TMDL will calculate the maximum amount of each listed pollutant that the stream can receive and still meet water quality standards. The TMDL will also identify all potential or suspected pollutant sources in the watershed and distribute the allowable pollutant loads among those various sources. When developed, the Shibbleth Branch TMDL will use the most current and available data. For this reason, the final TMDL may present information that differs from that contained in this information sheet.

¹ *Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems*, D. MacDonald, et al., 2000. USGS

Map of the Shibboleth Branch Watershed



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