Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

Pond Creek

(Effective Oct. 30, 2009, name corrected in Missouri Water Quality Standards from "Trib. to Pond Cr.")

Water Body Segment at a Glance:

County: Washington
Nearby Cities: Mineral Point and Potosi
Length of impaired segment: 1.0 mile
Length of impairment within segment: 0.5 miles
Pollutant: Inorganic Sediment
Source: Barite Tailings Pond
Water Body ID: 2128


State map showing location of watershed

Scheduled for TMDL Development: Approved by EPA 2010

Description of the Problem

Designated Beneficial uses of Pond Creek

- Livestock and Wildlife Watering
- Protection of Warm-Water Aquatic Life
- Protection of Human Health (Fish Consumption)

Use that is impaired

- Protection of Warm-Water Aquatic Life

Standards that apply

Standards for inorganic sediment may be found in the general criteria section of the WQS, 10 CSR 20-7.031(3)(A), (C) and (G)where it states:

(A) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses.

(C) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses.

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

And from 10 CSR 20-7.031(4)(H):

(H) Solids. Water contaminants shall not cause or contribute to solids in excess of a level that will interfere with beneficial uses. The stream or lake bottom shall be free of materials which will adversely alter the composition of the benthos, interfere with the spawning of fish or development of their eggs or adversely change the physical or chemical nature of the bottom.

Background information and water quality data

This water-quality-limited stream in Washington County has historically been misnamed in Missouri's Water Quality Standards and 303(d) lists as Trib. to Pond Cr. Effective Oct. 30, 2009, the name of this water body segment (WBID 2128), as listed in 10 CSR 20-7.031, Table H, was changed to Pond Creek in order to agree with how the stream is identified in the U.S. Geological Survey's Geographic Name Information System (GNIS; http://geonames.usgs.gov/ pls/gnispublic/). Future Missouri 303(d) lists will reflect this correction and the impaired segment, on which a TMDL will be developed, will be referenced throughout this document as Pond Creek. Beginning with the 2004-06 303(d) List, the U.S. Environmental Protection Agency, or EPA, listed the entire classified segment length of one mile as impaired instead of the previous listing of only the upper 0.5 mile (see map on last page).

The pollutant affecting Pond Creek is inorganic sediment (i.e., silt, sand or gravel) associated with soil erosion or erosion of mine-waste materials or stockpiles. When these solids get into a stream, they settle onto the bottom and smother stream substrates, aquatic invertebrate animals and fish eggs. The inorganic sediment impairing Pond Creek is thought to be a product of barite mining in the area.

Barite, or barium sulfate, was mined in many areas of southern and eastern Washington County for its many commercial and industrial uses. The first step in processing barite is to wash the mined material to separate the barite ore from the red clay and gravel found with it. The separated clay and gravel are discharged to tailings ponds and allowed to settle out. Overflows of water from these tailings ponds, especially during active washing, can contain suspended clay material that subsequently can be deposited on the bottom of receiving streams.

Visual inspections of this stream, conducted for years before the first 303(d) listing in 1998, were made immediately downstream of a then active barite settling pond (King Arthur's Dam) on upper Pond Creek and showed an excessive amount of red clay fines being deposited in the stream. Although all mining in the area ceased by early 2002, fine material continues to be deposited in the creek below King Arthur's Dam.

In October 2002, the department conducted a qualitative examination of the aquatic invertebrate benthic community of this stream, two other streams with inactive barite tailings ponds, and one without a barite tailings pond, which was used as a control. The results of this survey are summarized in the table below.

Summary of qualitative aquatic invertebrate sampling of four streams in eastern Washington County, Oct. 2002.

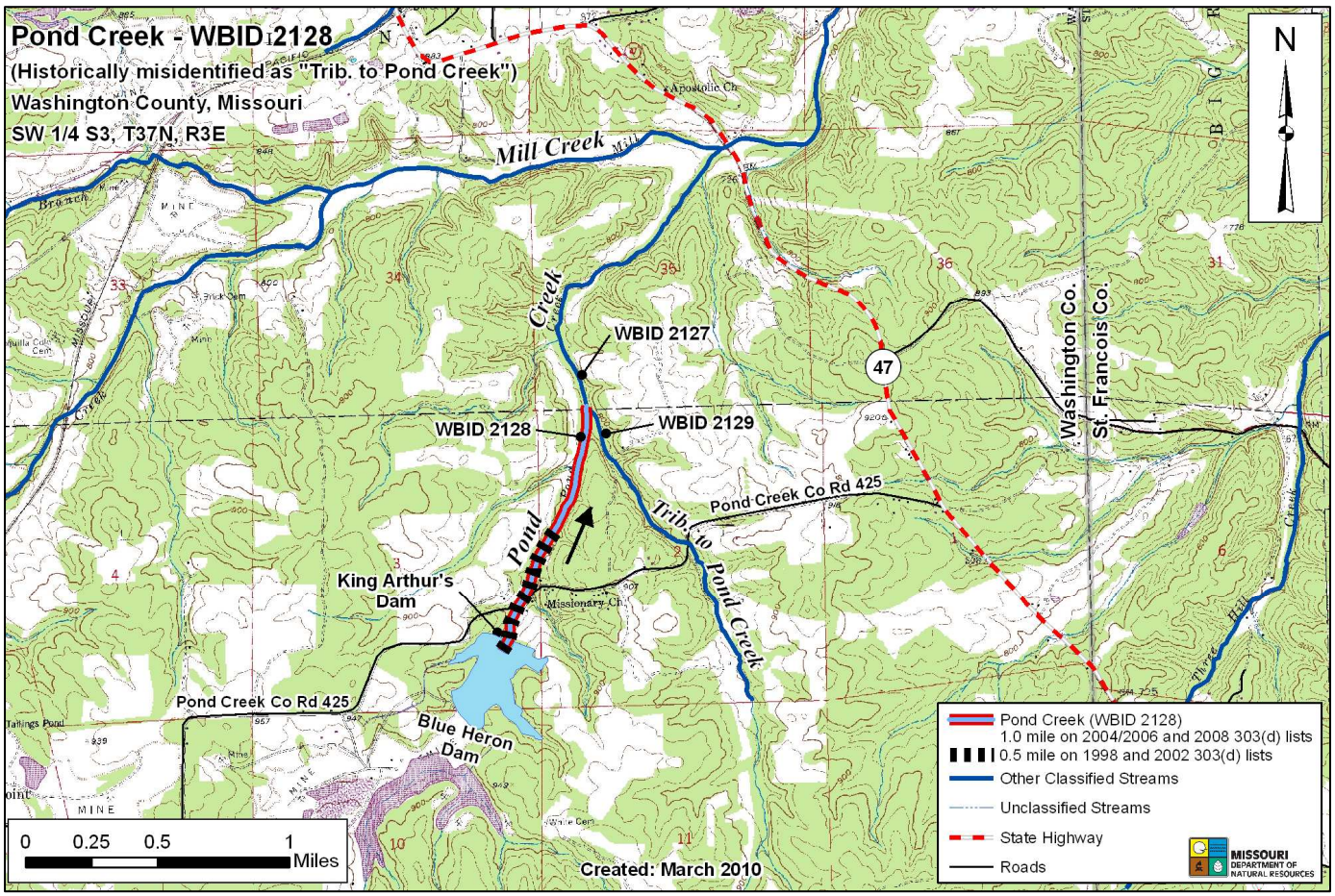
Stream	*Total Number of Taxa*	*Total Number of EPT* Taxa*
Tributary to Pond Creek – inactive tailings pond	23	7
Tributary to Mineral Fork – inactive tailings pond	20	6
Rubeneau Creek – control	16	6
Shibboleth Branch – inactive tailings pond	17	5

* EPT= Ephemeroptera, Plecoptera and Trichoptera (Mayflies, Stoneflies and Caddisflies); the three taxonomic orders of aquatic insects most intolerant of poor water quality.

In the 2002 study, Pond Creek had the highest number of EPT taxa and the highest number of total taxa of the streams studied and may have represented a typical number for an unimpaired stream of this size in this area of the state. Regardless, since the general water quality standards were not

being met (i.e., excess sediment), Pond Creek continued to be included in the 2002, and subsequent, 303(d) lists of impaired waters.

Map of impaired segment of Pond Creek in Washington County, Mo.



Direction of flow

The Environmental Protection Agency (EPA) approved the "Tributary to" Pond Creek TMDL for inorganic sediment on Dec. 23, 2010.

For more information write or call:
Missouri Department of Natural Resources
Water Protection Program
P.O. Box 176, Jefferson City, MO 65102-0176
1-800-361-4827 or 573-751-1300 office
573-522-9920 fax
Program Home Page: www.dnr.mo.gov/env/wpp/index.html