

Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

Mark Twain Lake

Water Body Segment at a Glance:

County:	Monroe and Ralls
Nearby Cities:	Paris, Monroe City, Stoutsville, Palmyra, Hannibal
Area:	18,600 acres
Pollutant:	Atrazine
Source:	Corn and sorghum production



State map showing location of watershed

Note: The long term average level of atrazine in Mark Twain Lake now meets state water quality standards. Therefore atrazine was removed as a pollutant for this lake from the 2002 303(d) List. However, mercury was added as a pollutant to the 2002 303(d) list based on mercury levels in Largemouth Bass. See the Mercury Information Sheet.

TMDL Priority Ranking: Delisted Dec. 17, 2003

Description of the Problem

Designated beneficial uses of Mark Twain Lake

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health associated with Fish Consumption
- Boating and Canoeing
- Whole Body Contact
- Drinking Water Supply

Use that is impaired

- Drinking Water Supply

Standards that apply

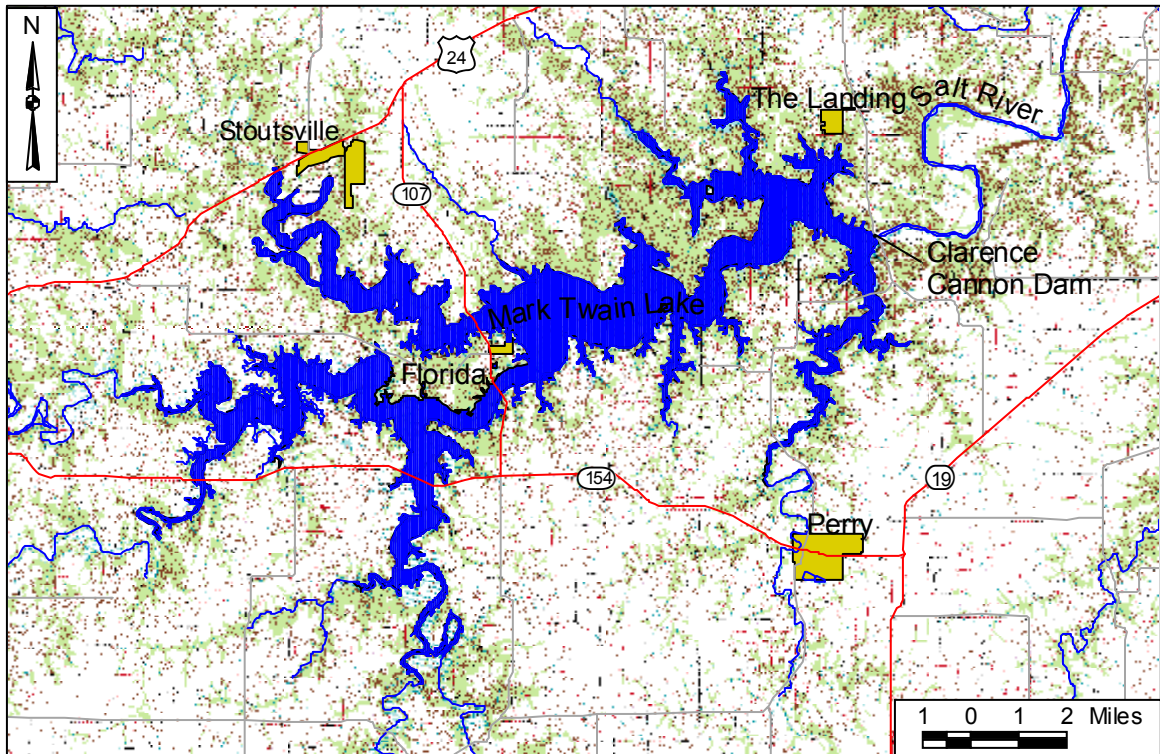
- Missouri's Water Quality Standards 10 CSR 20-7.031, Table A, allows a maximum of three micrograms per liter ($\mu\text{g/L}$) atrazine. Because this number is based on health risk associated with a 70-year exposure period, the three $\mu\text{g/L}$ is interpreted as a long-term average.

Background information and water quality data

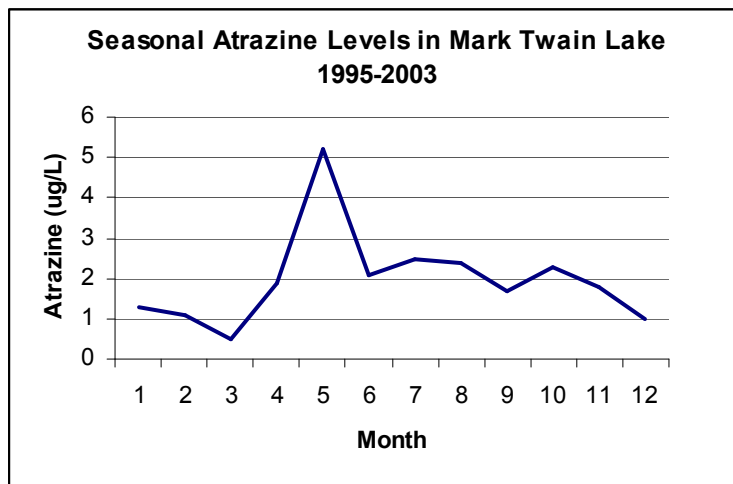
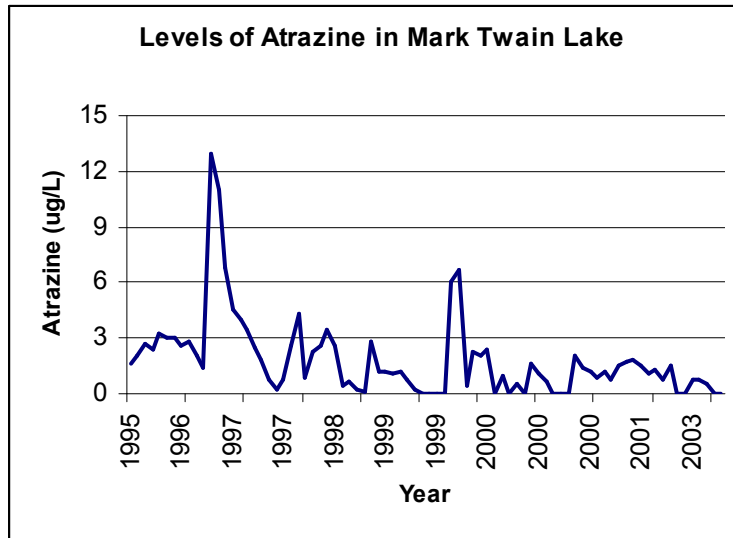
First proposed in 1937 to provide flood control on the Salt River, Mark Twain Lake was created during the early 1980s by the completion of the Clarence Cannon Dam by the U.S. Army Corps of Engineers. Its drainage area comprises 2300 square miles. The lake surface at normal pool covers 18,600 acres. The lake also serves as a drinking water supply source for a large area of northeastern Missouri. The Clarence Cannon Wholesale Water Commission, which provides drinking water for a number of communities in the area, utilizes the lake as its primary supply source.

Atrazine is a widely used herbicide for control of broadleaf weeds. It is the most heavily used herbicide on corn and grain sorghum in Missouri. Since 1993, its uses have been greatly restricted atrazine is considered a possible human carcinogen, so the state standard is set at three $\mu\text{g/L}$. Runoff from fields in the watershed caused high levels of atrazine in Mark Twain Lake in 1997 and 1999. Since 1999, however, atrazine levels have been significantly lower and the long term average as of 2003 was 1.83 $\mu\text{g/L}$ (see the graph below). For this reason, atrazine was removed as a pollutant of Mark Twain Lake on the 2002 303(d) List, approved by the U.S. Environmental Protection Agency on Dec. 17, 2003.

Map of Mark Twain Lake Area



Atrazine levels in Mark Twain Lake from 1995-2003



For more information call or write:

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