

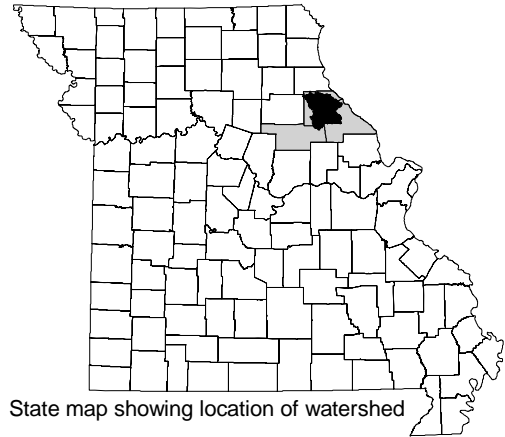
Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

Salt River

Water Body Segment at a Glance:

County: Ralls, Pike
Nearby Cities: Paris, Hannibal
Length of impairment: 39 miles
Pollutants: Iron (10 miles)
Manganese (39 miles)
Source: Clarence Cannon Dam



State map showing location of watershed

Note: This river was deleted from the 2004/2006 303(d) List because the criteria for manganese and iron have been removed from Missouri's Water Quality Standards. The Salt River remains on the List for mercury (see Mercury Info Sheet)

Water Body Removed from List: Sept. 27, 2007

Description of the Problem

Beneficial uses of Salt River

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

Use that was listed as impaired

- Drinking Water Supply

Standards that apply

- There are **no longer** criteria in the Missouri Water Quality Standards (10 CSR 20-7.031) for manganese and iron. The standard used to be 50 µg/L (micrograms per liter or parts per billion) as the maximum amount of manganese allowed for Drinking Water Supplies and 300 µg/L for iron. These were aesthetic criteria that sought to protect a water supply against possible taste, odor and laundry staining problems caused by excessive amounts of manganese and iron. Exceedence of those criteria was not a threat to human health.

Background Information

Clarence Cannon Dam is the dam forming Mark Twain Lake. The lake is 18,600 acres in size. The former impairments showed up in the Salt River below Clarence Cannon Dam.

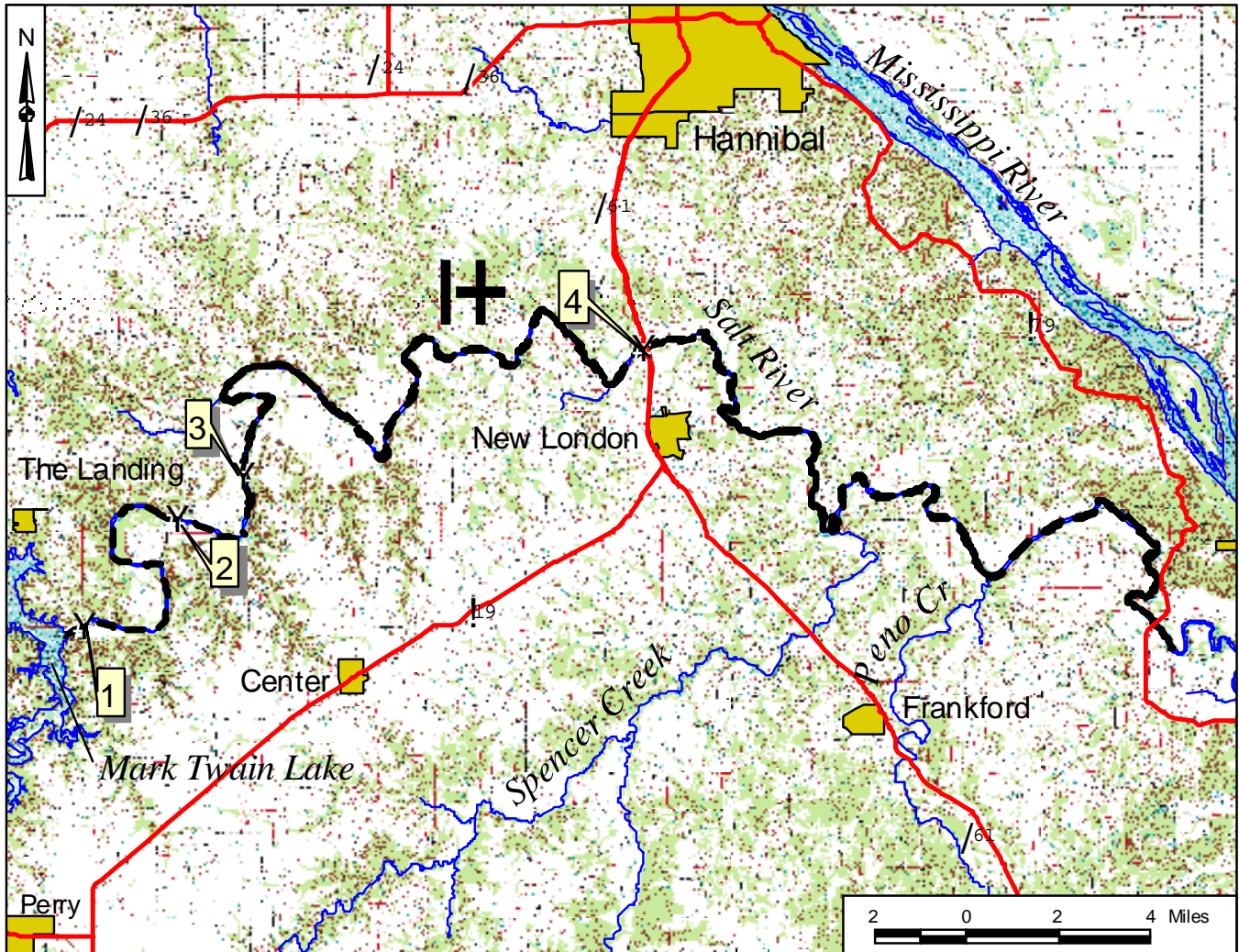
Iron and manganese are common metallic elements found in soil and rocks. As water flows through iron and manganese-rich soils, these elements can get into surface waters and groundwater. This is a natural process. Iron and manganese do not present any human health hazards. These minerals can react with tannins in coffee, tea and in other beverages, producing a black sludge, which affects both taste and appearance. Iron causes a reddish-brown staining of laundry, porcelain, dishes, utensils and glassware. Manganese causes a brownish-black staining of the same articles. Soaps and detergents do not remove the stains, and use of chlorine bleach can intensify the stains. Iron and manganese can build up in pipelines, pressure tanks, water heaters and water softeners and causes equipment problems and energy cost increases due to mineral deposits.

Water with low dissolved oxygen exiting Clarence Cannon Dam usually has iron and manganese primarily in the dissolved rather than total metal form. Manganese tends to remain in solution for extended periods of time even after the water regains oxygen.

The Missouri Clean Water Commission voted to remove manganese and iron from the list of impairments to drinking water sources since they do not cause health problems, do not adversely affect aquatic life and can be removed by drinking water treatment facilities. That action took effect Dec. 31, 2005 and the U.S. Environmental Protection Agency removed this river from the 2004/2006 303(d) List Sept. 27, 2007.

A map of the area may be found below on the next page.

**Formerly Impaired Segment of Salt River in Ralls and Pike Counties, Missouri,
Showing Sampling Sites**



--- Formerly impaired segment → Direction of flow

For more information call or write:
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