

SUMMARY FACT SHEET

Water Quality of the St. Croix River in the Twin Cities Metropolitan Area 1976-2015

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ENVIRONMENTAL SERVICES

Upstream of the metropolitan area, the **St. Croix River** flows through forests and wetlands, which naturally protect its water quality. Closer to the metro area, there are more areas dominated by human activity, such as agriculture and urban development, which can negatively impact water quality if not managed properly. A unique feature of the St. Croix is that the river widens near Stillwater, Minnesota, to form Lake St. Croix, a popular recreation area, that then flows into the Mississippi River.

Pollutants considered in assessing river water quality

Sediment is sand, soil, silt, or clay particles, measured as “total suspended solids,” from sources such as poorly managed construction sites or eroded fields, banks and gullies. Sediment can decrease the light available in rivers, harm aquatic life, and carry nutrients to receiving waters.

Nutrients, like phosphorus (measured as total phosphorus) and nitrogen (measured as nitrate), are substances used for growth and to support life. However, excessive nutrient levels (eutrophication) caused by materials like fertilizers, animal manure, pet waste, or grass clippings can cause excessive algae growth, which harms aquatic wildlife, insects, and fish.

Bacteria are microscopic living organisms, measured as “fecal coliform.” Harmful types of bacteria – from sources such as animal waste, untreated wastewater, and malfunctioning septic systems – can cause illness in humans.

Chloride is a component of salt. Common sources of chloride in urban areas include de-icing salts and home water softeners. Too much chloride can harm aquatic life.

How the St. Croix's water quality has changed, 1976 to 2015

Sediment decreased. Improvements in wastewater treatment technology, farming practices, land management, and stormwater management have likely contributed to lower sediment concentrations.

Phosphorus decreased. Wastewater treatment improvements, such as enhanced biological phosphorus removal, and bans on phosphorus in laundry detergent and lawn fertilizers, have likely helped reduce phosphorus.

Nitrogen increased. However, overall it is still low compared to the other rivers in the metro area and has been declining at Stillwater since the mid-2000s. Increased nitrogen can be caused by many factors, including changes to the landscape, increased use of fertilizers, expansion of livestock production, and increased pollution from a growing population and industrial activities.

Bacteria decreased. Better wastewater treatment, urban stormwater management, and agricultural practices may have contributed to this decrease.

Chloride increased. However, overall it is still very low. More winter road salt and home water softener use can contribute to increasing chloride.

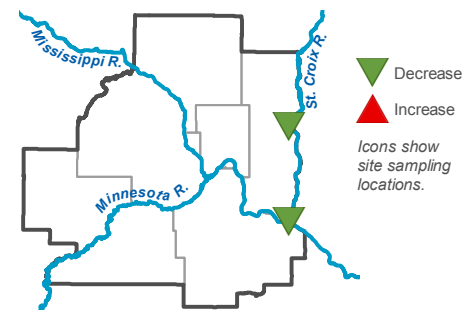
Despite improvements, the Minnesota Pollution Control Agency has declared that Lake St. Croix is impaired for nutrients/eutrophication (related to phosphorus). The impairment means the nutrient levels are higher than the water quality standard. However, many groups are working to protect and restore the water quality of the St. Croix.

IS THE ST. CROIX RIVER IMPROVING?

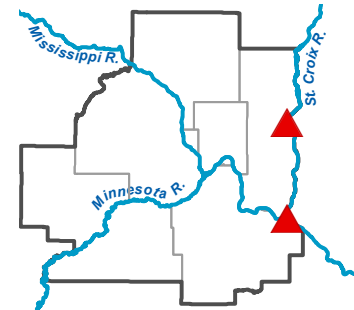
Concentrations of sediment, bacteria, and phosphorus decreased (conditions improved) from 1976 to 2015.

Nitrogen and chloride, on the other hand, increased (conditions declined), but the concentrations were generally low and the increases were relatively small. “Concentration” is the pollutant amount measured in a specific volume of water.

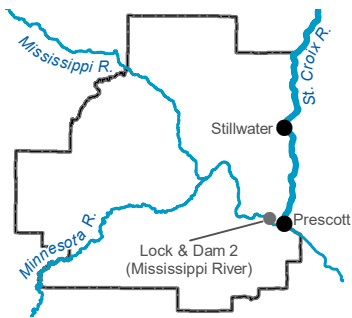
Sediment, Phosphorus, and Bacteria



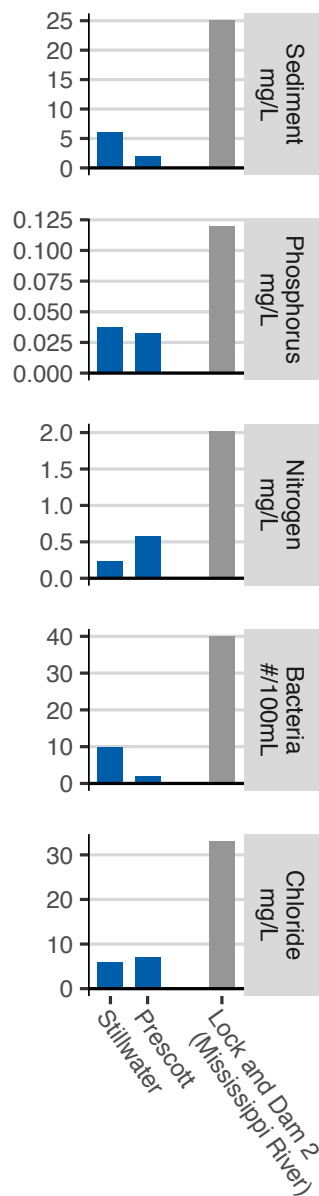
Nitrogen and Chloride



Site Locations



Typical (Median) Concentration, 2006–2015



Water quality within the metro area

Overall the water quality of the St. Croix is very good. The river is known as one of the most pristine in the Midwest, surrounded by a large percentage of natural areas like forests and wetlands, which helps to support good water quality. In fact, from 2006 to 2015, the median concentrations of sediment, nutrients, bacteria, and chloride were lower in the St. Croix, than the Mississippi at Lock and Dam #2.

The chart compares the Mississippi River at Lock and Dam 2, which is close to where the St. Croix flows into the Mississippi, to the two sites on the St. Croix that were assessed in this study. The St. Croix water helps to reduce the concentration of the pollutants in the Mississippi.

More information

The following documents are available on the Metro Council website: metro council.org/river-assessment.

Complete Report: Regional Assessment of River Water Quality in the Twin Cities Metropolitan Area 1976-2015: Minnesota, Mississippi, St. Croix Rivers

Summary Report

Related Fact Sheets

- Regional Rivers Overview
- Minnesota River
- Mississippi River

About the study

This work supports the policies of the Metropolitan Council's regional plans (Thrive MSP 2040, Water Resources Policy Plan, and Master Water Supply Plan) to promote the long-term sustainability and health of the region's water resources, including surface water, wastewater, and water supply.

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For questions

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