

Alberta River Water Quality Bacterial Sub-Index: The Effects of Wastewater Treatment Plant Upgrades, Flow, and Other Basin Influences on Water Quality in the Bow, Red Deer, and North Saskatchewan Rivers

Upgrades to municipal wastewater treatment processes in Calgary (1997), Red Deer (1999), and Edmonton (1998) generally resulted in improved river water quality downstream of these cities. Enhanced treatment processes are designed to reduce the number of bacteria released by wastewater treatment plants to rivers. Resulting improvements are reflected in the bacterial sub-index component of the Alberta River Water Quality Index, as shown below. However, several other sources, including storm sewers, combined sewer outfalls, and surface runoff from agricultural fields or natural ecosystems, can contribute bacteria to rivers. In the summer of 2005, major rainfall events significantly increased the number of bacteria entering provincial rivers from these various sources, leading to a decline in Bacterial Index ratings. In the current reporting period (06-07), Bacterial Index values for the Bow and North Saskatchewan Rivers recovered somewhat, while the rating for the Red Deer River, both upstream and downstream of Red Deer, continued to decline. Alberta Environment is currently assessing potential causes for this downward tendency in the Bacterial Index for the Red Deer River.

