

Water quality monitoring in Newfoundland and Labrador

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Water quality studies have been undertaken in the province by both the federal and provincial governments for over 20 years, but it was not until 1977 that a provincial Water

Quality Network Plan was implemented to provide continuous reliable data. Specific objectives at the time were to provide baseline water quality data at representative sites

throughout the province, to specifically study known water quality problems, to assess relationships between competing land and water uses, and to provide a basis for water quality management through development of water quality guidelines and site objectives. Most monitoring was restricted to stations in the eastern portion of the Island of Newfoundland until the mid-1980s. A comprehensive multidisciplinary study of the hydrology and water quality of the Waterford River basin was conducted from 1980 to 1985. By early 1986, the Canada-Newfoundland Water Quality Monitoring Agreement was signed, and this cost-shared and work-shared agreement now provides for regular sampling of over 60 index stations, including two stations in Labrador.

Most waterbodies in the province are drainage systems,

and water quality is characterized by low conductivity and acid neutralizing capacity and relatively high concentrations of organic carbon. A comparison of remote rivers to urban rivers on the eastern part of the island shows that major ion concentrations are elevated in urban runoff, often more than an order of magnitude above background. Many trace metals are positively correlated to major ions and to each other, and they often exhibit strong seasonal variation correlated to temperature or to acidity. Total concentrations of trace metals can become elevated in response to erosional events caused by high water flow or by ice scour of sediments. In general, correlations between water quality parameter concentrations and daily mean flow are weaker than those related to seasonal temperature variation.