

Preserving Our Lifeline: A Report on the State of the Bow River

October 1994

Executive Summary

The Bow River provides lifeline benefits shared by hundreds of thousands of people living in the Bow River Basin. Electrical energy and water to sustain domestic uses, agricultural uses, natural ecosystems, recreation and industry all are provided by the river.

In turn, the human uses of the river influence the river's health. It is important to know the effects of these uses and to manage them to ensure both continued water use and long-term health of river and wildlife ecosystems.

Periodic reporting on the state of the Bow River, such as in this first report *Preserving Our Lifeline: A Report on the State of the Bow River*, is one of the major responsibilities of the Bow River Water Quality Council. This report provides a benchmark against which water quality and the effectiveness of strategies for river use management can be compared in future reports.

The Council was established in 1992 as an advisory body to the provincial Minister of Environmental Protection. Its broad mandate is to promote awareness, improvement and protection of Bow River water quality, foster cooperation among agencies with water quality responsibilities, and provide communication links among governments, interest groups and the general public. The Council includes representatives from urban and rural municipalities; irrigated and dryland agriculture; recreational, industrial and other interests; and first nations peoples within the Bow River Basin.

This report on the state of the Bow River assesses water quality, and describes water quantity, riparian (river margin) habitats, and aquatic habitats along the river. The assessment of the state of the river is not considered complete without an evaluation of the riparian and aquatic aspects of the ecosystem because of their interdependence with the quality and quantity of water flowing in the river. The report focuses on 1991 and 1992 data, although time-series data from 1985 to 1992 were also used where available.

In 1992, the water quality in the Bow River ranged from being unaffected by local human activity and suitable for all uses in the headwaters, to impacted by pollutants and restrictive for some water uses in the lower reaches. However, lack of appropriate data in some reaches restricts discussion of the reasons and sources for downstream water quality deterioration.

In 1992, the natural flow of the Bow River was 3 640 million cubic metres, approximately 91 percent of the long-term average flow of 4 010 million cubic metres. This flow was moderately less than normal.

In 1991 (the latest year for which consumption data had been compiled), 61.6 percent of the river's annual average flow over the long term was licensed for use, 37.8 percent was actually withdrawn and 27.4 percent was consumed. Irrigation and municipal users have the largest total licensed volumes and also withdraw the largest amounts of water. However, with municipalities returning to the river almost all their withdrawals in the form of wastewater effluents, irrigation is the largest consumer with 95.7 percent of the total water consumption.

Consumption of Bow River water varies greatly with the annual precipitation in the basin, as does the water available in the river. From 1981 to 1986, all uses of Bow River water together consumed between 23 and 47 percent of the natural flow.

Relatively undisturbed riparian forest, characterized by native balsam poplar and white spruce, with the occasional plains cottonwood, covers approximately 80 percent of the Bow River valley.

The Bow River supports 15 species of sportfish and is well-known as having one of the best recreational trout fisheries in North America. Rocky Mountain whitefish, brown trout and rainbow trout are the most common fish. The state of the Bow River fishery varies considerably along the river; however, overall a high-quality trout fishery has been maintained.

The Bow River valley supports a variety of wildlife. The state of the wildlife ecosystems are influenced by the degree of human activity and development, the amount and diversity of habitat, and the quality and quantity of river water.

The Bow River is generally in a reasonably good state; however, there are areas where improvement is needed:

- expansion and coordination of regional and local monitoring programs
- new approaches to sewage disposal
- controlling siltation in the river caused by human activities
- integrated river basin planning and management
- control of groundwater contamination from nearshore land sites
- management of water and effluent quantities as they relate to water quality (dilution of contaminants and safe allocation of river assimilative capacity)
- reduction of contamination from agricultural operations
- control of the effects of urban stormwater and rural runoff

Significant strides in identifying and addressing a wide variety of Bow River use issues have been made. Major challenges to improve river use management are still before us.

