



CHAPTER ONE

INTRODUCTION

Bighorn River, Alberta – a tributary of the North Saskatchewan River.



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The waters of the Saskatchewan River basin rise in the eastern slopes of the Rocky Mountains and flow across the Prairie Provinces to Lake Winnipeg, a vast inland sea. Most of the flow in the Saskatchewan River originates in the mountains, with the rest contributed by prairie runoff. The basin's terrain ranges from high alpine to foothills to rolling prairie to boreal plain. The lower basin features the largest freshwater delta in North America. Approximately three million people live in the basin, 95 percent of them in urban centres in Alberta and Saskatchewan. Not surprisingly, those three million people have profoundly altered the landscape of the basin.

PURPOSE OF THE REPORT

This report aims to fulfill, at least in part, the goal that those who make decisions and recommendations concerning the waters and associated resources within the Saskatchewan River basin do so with an understanding of the entire basin. One of the objectives is to reveal the overall condition of the basin by assembling existing information so that interested groups can review it easily. In this way, the report will contribute to integrated water resources management in the basin.

The report pays particular attention to hydrology, water use, water quality, and biodiversity aspects of the basin. It uses currently available data and information. No new data were obtained for this project, although some of the interpretations of existing data are new. As far as possible, information from all basin jurisdictions is brought to a common language and terminology.

Water management in the Saskatchewan River basin is complex. To foster a better appreciation of the agencies and organizations with responsibility for water management, the report identifies and describes water-related institutional arrangements in the basin.

The basin is subject to a number of water demands and water stresses, particularly evident in the South Saskatchewan sub-basin, where some 500 000 ha of irrigated agriculture consume significant quantities of water each year. These demands and stresses have led to a number of collaborative processes and formal arrangements unique to the Saskatchewan River basin. All three provinces in the watershed are in the process of developing water strategies to address issues in their respective portions of the basin. As well as this, the Prairie Provinces Water Board (PPWB) provides a means by which provincial water managers and federal representatives may equitably share the waters of transboundary streams, such as the Saskatchewan River. Because of shared experience and geography, there is a long history of partnership and collaboration in water management in the basin.

Since 1993, the Partners FOR the Saskatchewan River Basin has promoted stewardship and sustainability, delivering more than 20 major educational and informational projects. Partners FOR the Saskatchewan River Basin continues to strive for excellence, maintaining that the primary client is the River. On June 23, 2006 the Board of Directors agreed to prepare a State of the Basin Report for the Saskatchewan River basin. This project was made possible through the generous financial support of Alberta Environment, the Saskatchewan Watershed Authority, Manitoba Water Stewardship, Ducks Unlimited Canada, the Calgary Foundation, the Alberta EcoTrust, and Environment Canada.

INTEGRATED WATER RESOURCES MANAGEMENT

The origins of Integrated Water Resources Management (IWRM) lie in the increased environmental awareness of the early 1970s. Prior to that time, the dominant role of water managers and policy makers was to provide a sufficient supply of water at the appropriate time to meet reasonably foreseeable human needs. Unfettered flowing water was described as 'waste water' and dams as 'water conservation structures.' As populations grew and the economy developed, the necessity to accommodate the many overlapping and sometimes



Overlooking the South Saskatchewan River as it flows through the city of Saskatoon

conflicting needs of various land and water uses became more evident. This resulted in efforts to balance human and ecosystem needs through inclusion of environmental considerations in water resources management activities. Indicators of increased environmental awareness include creation of departments of the environment, both nationally and provincially, and the holding of the United Nations Conference on Human Development in 1972.

In the 1980s, the call for environmentally sustainable economic development became more pronounced. A report of the World Commission on Environment and Development stressed the link between environmental and economic concerns and popularized the term 'sustainable development.'¹ The report called for holistic approaches to environmental management to ensure both human progress and human survival. More recently, at the Johannesburg Summit in 2002, the nations of the world agreed to 'develop integrated water resources management and water efficiency plans.' If sustainable development is considered as a goal, then IWRM is a process for achieving that goal.

Many definitions of IWRM can be found, but they all imply managing water resources to achieve publicly acceptable multiple objectives, including environmental, social and economic objectives. This requires not only interdisciplinary approaches to water management, but also attention to institutional arrangements, public engagement and capacity building. Integration in IWRM means more than simple coordination. It implies a holistic yet strategic approach. Sound science is a cornerstone of IWRM. This report uses the concepts of the Global Water Partnership: that is, IWRM is 'a process that promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.'

The river basin is usually seen as the most appropriate spatial unit for IWRM, as the basin can encompass both natural processes and human uses. Other considerations include the hydrologic regime, ecological integrity, economic value of water, consideration of both structural and non-structural responses to water problems, inclusion of risk and uncertainty in project assessment, and public involvement.² IWRM, therefore, requires a process that integrates social, economic, environmental, and technical matters now, and in the future.

STRUCTURE OF REPORT

This report begins with an overview chapter that includes a discussion of the environmental indicators used later in the report. The next chapter reviews institutional arrangements currently in place, followed by a chapter describing the basin's water towers. This is the name given to the mountain and foothills region that produces most of the water flowing in the basin. There are then several chapters containing more detailed reviews of the major sub-basins of the basin. The report ends with a chapter concerning Lake Winnipeg, and a chapter reviewing key vulnerabilities facing the entire basin.

This report gives a snapshot of the Saskatchewan River basin based on information sources available in 2008. Key sources are identified throughout. Because of the basin's physical size and complexity, a report such as this can only be a summary. Interested readers can pursue the identified sources for more detailed information.

The report does not make recommendations. Based on the snapshot presented, readers are invited to draw their own conclusions concerning actions required for sustainable water management in their own portion of the basin. The Partners FOR the Saskatchewan River Basin will be holding meetings and discussions to identify possible next steps.

HOW TO USE THIS REPORT

This report may be read from start to finish, but other approaches can be used. A reader seeking a broad impression of the Saskatchewan River basin should read Chapter 2, which gives an overview, Chapter 3, which discusses institutional arrangements in the basin, and Chapter 12, which reviews vulnerabilities and threats to the basin as a whole. Readers seeking more information should read Chapter 4 and Chapter 11, which discuss the importance of the water towers and of Lake Winnipeg to the entire basin. Finally, readers having an interest in a specific part of the basin should read the appropriate sub-basin chapter. As we are all upstream of other water users, please read the chapter that discusses the part of the basin immediately downstream of your chapter.

ENDNOTES

- ¹ World Commission on Environment and Development 1987. *Our Common Future*. Oxford University Press. Oxford, UK.
- ² Kreutzweiser, R.D. 1995. "Water Resource Management: Canadian Perspectives and the Great Lakes Water Levels Issue". In *Resource and Environmental Management in Canada*, edited by Bruce Mitchell. Oxford University Press. Oxford, UK.