

1.0 Introduction

1.1 Purpose of Report

The Red Deer River originates in the Canadian Rocky Mountains in Banff National Park and flows over and through mountains, foothills, rangeland, residential land, industrial land, oil and coal deposits, cities, towns, parks, reserves, forests and croplands for 724 km across southern Alberta, joining the South Saskatchewan River 8 km across the Saskatchewan border. The Red Deer River is fed by numerous inflowing tributaries, groundwater and glacial runoff and melt waters from the Rocky Mountains. Its watershed includes 18 municipal districts/counties and 55 urban centres (cities, towns, villages and summer villages, but excluding hamlets) (RDRWA, 2008).

The purpose of this state of the watershed report is to summarize the current knowledge of the Red Deer River watershed pertaining to land-use, water quality, water quantity, fisheries and selected biological indicators to comment on the environmental integrity of the Red Deer River watershed. This report has been created for all Red Deer River Watershed Alliance (RDRWA) members and other watershed stakeholders, including residents, regulators, policy makers, industry and non-governmental organizations. The report will provide the background information that is required for improved watershed management decisions by regulators, policy makers, landowners and industrial users. Specifically, it is designed to answer the following questions:

- What is the health of the Red Deer River Watershed?
- What data/knowledge gaps exist?
- Are there critical or emerging environmental, economic or social issues?
- What are the cumulative impacts of land use and land conversion on biodiversity, ecosystem functioning, ecosystem connectivity, hydrologic cycles, groundwater, recreation and long-term resource availability?
- What is happening in the watershed with respect to trends and why are these changes occurring?

1.2 Scope of the Report

The geographic scope of this State of the Watershed report is the watershed boundaries of the Red Deer River within Alberta. The Red Deer River was divided into 15 subwatersheds named for their largest tributaries: Panther River, James River, Raven River, Little Red Deer River, Medicine River, Blindman River, Waskasoo Creek, Buffalo, Threehills Creek, Kneehills Creek, Michichi Creek, Rosebud River, Berry Creek, Matzhiwin Creek and Alkali Creek (Figure 1), named after the major waterbodies in the subwatersheds (RDRWA, 2008).

The scope of data collected and used in this report was constrained to recent water quality and water quantity reports, land use data provided from our partners and select data pertaining to biological indicators, all selected by the RDRWA Technical Advisory Committee. When data analyses were readily available, trends over time related to indicators were summarized and presented in this report. As such, this report includes historical and the most recent data that was available. Indicators of condition and risk were previously selected by our partner experts to determine what variables would be summarized to gauge the State of the Watershed, and ultimately predict watershed health.

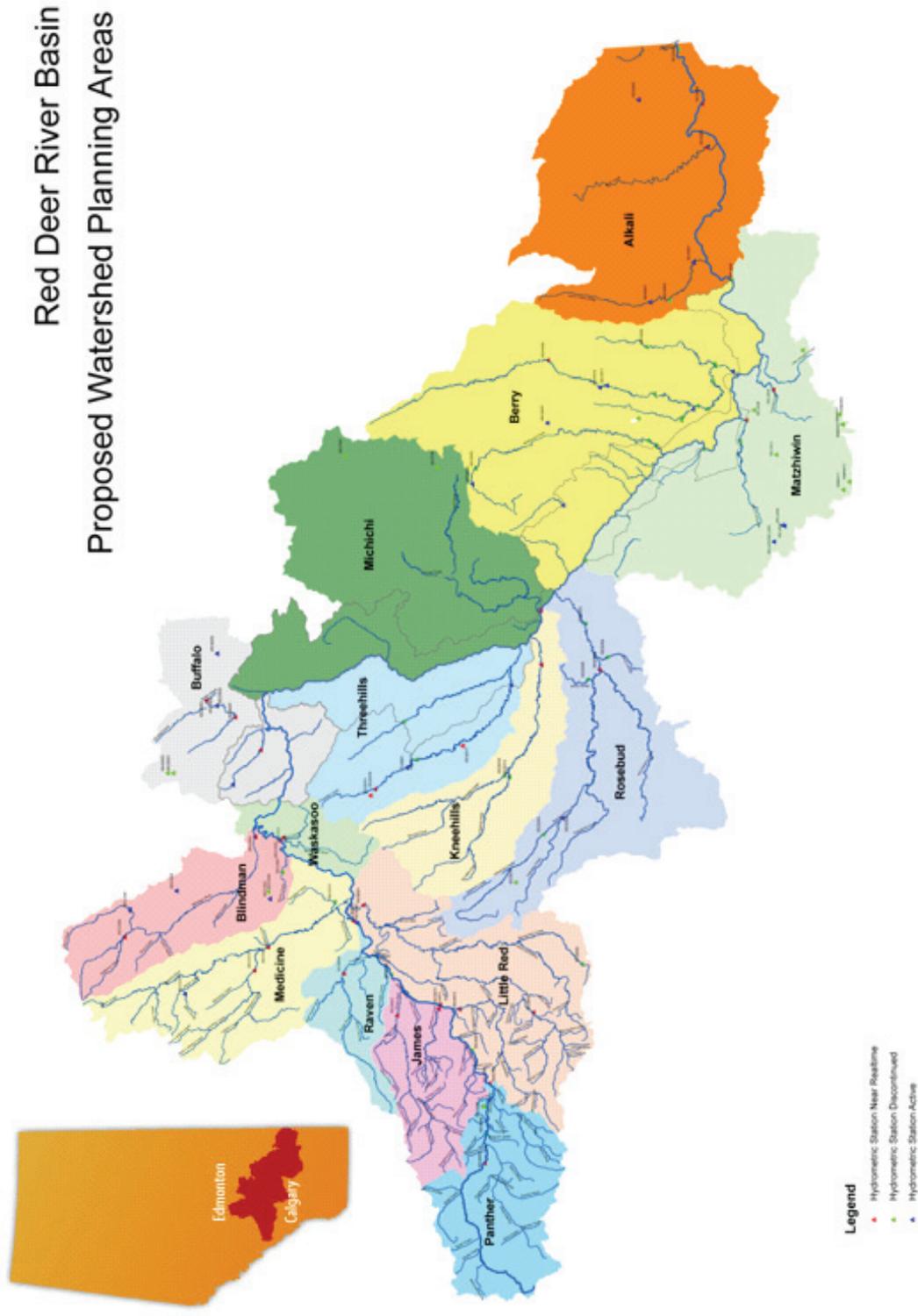


Figure 1. The 15 subwatersheds that comprise the Red Deer River watershed in Alberta.

1.3 RDRWA Background

The RDRWA is multi-sector, non-profit, inclusive, collaborative partnership that was formed in 2005 (RDRWA, 2008). Their vision is for a healthy, dynamic and sustainable watershed through the efforts of the entire community by (1) providing a forum for information exchange and dialogue, (2) raising awareness on watershed issues, (3) promoting the use of best practices and integrated management of land and water resources, (4) fostering the preservation and enhancement of water quality management, and (5) championing the wise management of water quantity and supply.

As the Watershed Planning and Advisory Council (WPAC) for the Red Deer River watershed, designated under the Government of Alberta's *Water for Life Strategy*, the RDRWA leads watershed planning, develops best management practices, fosters stewardship activities, reports on the state of the watershed and educates users on the importance of water resources in the Red Deer River watershed. The RDRWA works with government in an adaptive management cycle of basin planning and evaluation. It undertakes a variety of actions to benefit watersheds, including collaborating with land managers, providing advice and support to Watershed Stewardship Groups, presenting issues to the Alberta Water Council, raising awareness about the state of the watershed, building long-term partnerships that examine watershed issues and making recommendations to water/land use decision-making authorities.

1.4 Institutional and Regulatory Authorities

1.4.1 Federal Government

The *Canadian Environmental Protection Act* (CEPA) is the main federal law to protect the environment. With respect to water resources, CEPA empowers the federal government to create and enforce regulations regarding toxic substances, fuels and nutrients in lakes and surface waterbodies. CEPA enables the federal government to undertake environmental research, develop guidelines and codes of practice and conclude agreements with provinces and territories. Environment Canada administers CEPA but assesses and manages the risk of toxic substances jointly with Health Canada.

The *Fisheries Act* is the guiding act that enables Fisheries and Oceans Canada to protect fish and fish habitat. Fish habitat by definition includes spawning grounds and nurseries, rearing, food supply and migration areas on which fish depend to carry out their life processes. It is the mandate of the Department of Fisheries and Oceans to preserve healthy marine and freshwater aquatic ecosystems in support of scientific, ecological, social and economic interests. The *Fisheries Act* prohibits any activity that results in the harmful alteration, disruption or destruction (HADD) of fish habitat, protects fish populations from pollution and recommends mitigation measures where loss of habitat is unavoidable. Work carried out near a fish-bearing watercourse must have the approval of Fisheries and Oceans Canada. Failure to comply with the Act may result in fines or imprisonment.

The *Canadian Environmental Assessment Act* (CEAA) is a federal statute that requires federal departments, agencies and certain Crown corporations to conduct environmental assessments for proposed projects and activities before providing federal support to a project. Environmental assessment is a planning tool used to identify the potential effects of a proposed project on the environment, which comprises the air, water, land and living organisms, including humans. By eliminating or minimizing potential adverse environmental effects through the implementation of

mitigation measures, project proponents can ensure that these effects are addressed, and thereby contribute to the goal of sustainable development. Environmental assessment provides decision-makers with the information required to make project-related decisions that are compatible with a healthy, sustainable environment for both present and future generations. The CEAA is administered by the Canadian Environmental Assessment Agency.

Additional federal acts that are designed to protect water resources and associated habitats and wildlife include the *Canada Water Act*, *Canada Wildlife Act*, *Species at Risk Act* and the *Migratory Bird Convention Act*. Brief descriptions of these acts are provided in Table 1.

1.4.2 Provincial Government

The Government of Alberta is committed to sustainable development through an integrated resource management (IRM) approach to protect the environment and manage Alberta's resources. IRM requires a comprehensive, interdisciplinary approach to the management of water, timber, air, public land, fish, wildlife, range, oil, gas and mineral resources. The Alberta Government initiated the development of a province-wide comprehensive strategy called *Water for Life: Alberta's Strategy for Sustainability* in 2001. The purpose of the strategy was to identify short-, medium- and long-term plans to manage effectively the quantity and quality of the province's water systems and supply. The three main goals of the strategy are to ensure that Albertans have a safe and secure drinking water supply, healthy aquatic ecosystems and reliable and high-quality water supplies for a sustainable economy (Alberta Environment, 2003). The provincial government uses both the *Water Act* and the *Environmental Protection and Enhancement Act* to enforce regulations regarding the preservation of Alberta's water supplies.

The *Water Act* supports the conservation and management of water and allows for regional differences in water management to be reflected through the development of water management plans, as outlined in the *Framework for Water Management Planning* released in 2002. The EPEA is intended to support and promote the protection, enhancement and sustainable use of all aspects of the environment, from land to water. It covers conservation, reclamation, pesticide use, waste control and wastewater and storm drainage.

Other provincial acts that can be utilized to protect Alberta's water resources include the *Agricultural Operations Practices Act*, *Safety Codes Act*, *Regional Health Authorities Act*, *Wildlife Act*, *Public Lands Act*, *Provincial Parks Act*, *Wilderness Areas*, *Ecological Reserve*, *Natural Areas and Heritage Rangelands Act* and policies such as the *Wetlands Policy*. Brief descriptions of these acts are provided in Table 1.

1.4.3 Municipal Governments

Municipalities have broad powers over water within their lands to ensure the protection of aquatic environments. Subject to any other enactment, a municipality has the direction, control and management of the rivers, streams, watercourses, lakes and other natural bodies of water within the municipality, including the air space above and the ground below.

The *Municipal Government Act* (MGA), Land Use Bylaws, Area Structure Plans and Municipal Development Plans can be used by municipalities to protect and maintain watershed health and integrity. Brief descriptions of these acts are provided in Table 1.

Table 1. Legislation and policy involving water and watershed management in Alberta.

Legislation/Policy	Description
Federal <i>Fisheries Act</i> – Department of Fisheries and Oceans Canada (DFO)	Regulates and enforces on harmful alteration, disruption and destruction of fish habitat in Section 35.
<i>Canadian Environmental Protection Act</i> (CEPA) – Environment Canada (EC)	Aimed at pollution prevention and the protection of the environment and human health to contribute to sustainable development.
<i>Canadian Environmental Assessment Act</i> – Canadian Environmental Assessment Agency	Requirement by federal departments, agencies and certain Crown corporations to conduct environmental assessments for proposed projects and activities before providing federal support to the project.
<i>Canada Water Act</i> – Environment Canada (EC)	Aimed to ensure that water issues of national significance are conserved, developed and managed.
<i>Canada Wildlife Act</i> – Environment Canada (EC)	Designed for the creation, management and protection of wildlife areas for wildlife research activities, or for conservation or interpretation of wildlife.
<i>Species at Risk Act</i> – Environment Canada (EC), Parks Canada, Department of Fisheries and Oceans Canada (DFO)	Provides legal protection of wildlife species and the conservation of biological diversity.
<i>Migratory Birds Convention Act</i> – Canadian Wildlife Service (CWS)	Aimed to protect and conserve migratory birds, both as individuals and populations, as well as their nests.
Provincial <i>Water Act</i> – Alberta Environment (AENV)	Governs the diversion, allocation and use of water. Regulates and enforces actions that affect water and water use management, the aquatic environment, fish habitat protection practices and in-stream construction practices.
Provincial <i>Environmental Protection and Enhancement Act</i> (EPEA) – AENV	Management of storm water, contaminated sites, storage tanks, landfill management practices, hazardous waste management practices and enforcement.
Provincial <i>Agricultural Operations Practices Act</i> (AOPA) – Natural Resources Conservation Board (NRCB)	Regulates and enforces on confined feedlot operation and environment standards for livestock operations.
Provincial <i>Municipal Government Act</i> (MGA) – Municipal Affairs	Provides municipalities with authorities to regulate water on municipal lands, management of private land to control non-point sources, and authority to ensure that land use practices are compatible with the protection of aquatic environment.
Provincial <i>Public Lands Act</i> – Sustainable Resource Development (SRD)	Regulates and enforces on activities that affect Crown-owned beds and shores of waterbodies and some Crown-owned uplands that may affect nearby waterbodies.
Provincial <i>Safety Codes Act</i> – Municipal Affairs	Regulates and enforces septic system management practices, including installation of septic field and other subsurface disposal systems.

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<i>Regional Health Authorities Act – Alberta Health</i>	RHA have the mandate to promote and protect the health of the population in the region and may respond to concerns that may adversely affect surface and groundwater.
<i>Wildlife Act – SRD</i>	Regulates and enforces on protection of wetland-dependent and wetland-associated wildlife, and endangered species (including plants).
<i>Provincial Parks Act & Wilderness Areas, Ecological Reserve and Natural Areas Act – SRD and Community Development</i>	Both Acts can be used to minimize the harmful effects of land use activities on water quality and aquatic resources in and adjacent to parks and other protected areas.
<i>Provincial Wetlands Policy</i>	This policy will be used to protect wetlands and mitigate losses through a “No Net Loss” policy.
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Land Use Bylaws (Municipal)	The bylaw that divides the municipality into land use districts and establishes procedures for processing and deciding upon development applications. It sets out rules that affect how each parcel of land can be used and developed and includes a zoning map.
Area Structure Plans (Municipal)	Adopted by Council as a bylaw pursuant to the <i>Municipal Government Act</i> that provides a framework for future subdivisions, development, and other land use practices of an area, usually surrounding a lake.
Municipal Development Plans	The plan adopted by Council as a municipal development plan pursuant to the <i>Municipal Government Act</i> .
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