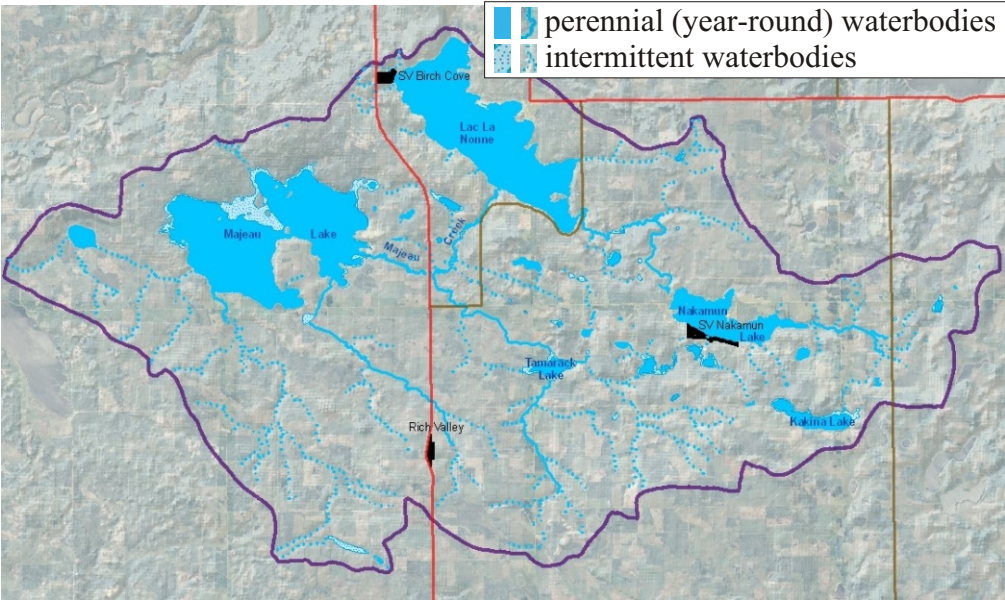




Riparian Areas and Agricultural Land Use in the Lac La Nonne Watershed

Riparian areas can be defined as land that is adjacent to a stream, river, lake or wetland that contains vegetation that, due to the presence of water, is distinctly different from the vegetation of adjacent upland areas. These areas are an important part of the watershed because they can filter contaminants before reaching water bodies and provide wildlife habitat. How the land is used and managed can have a significant impact on the health and function of riparian areas. This document, intended for educational purposes as a supplement to recently compiled “State of the Watershed” information, focusses on agricultural land use and its relationship to and potential impact on riparian areas and water quality.

Shoreline: A Measure of Potential Riparian Area in the Watershed

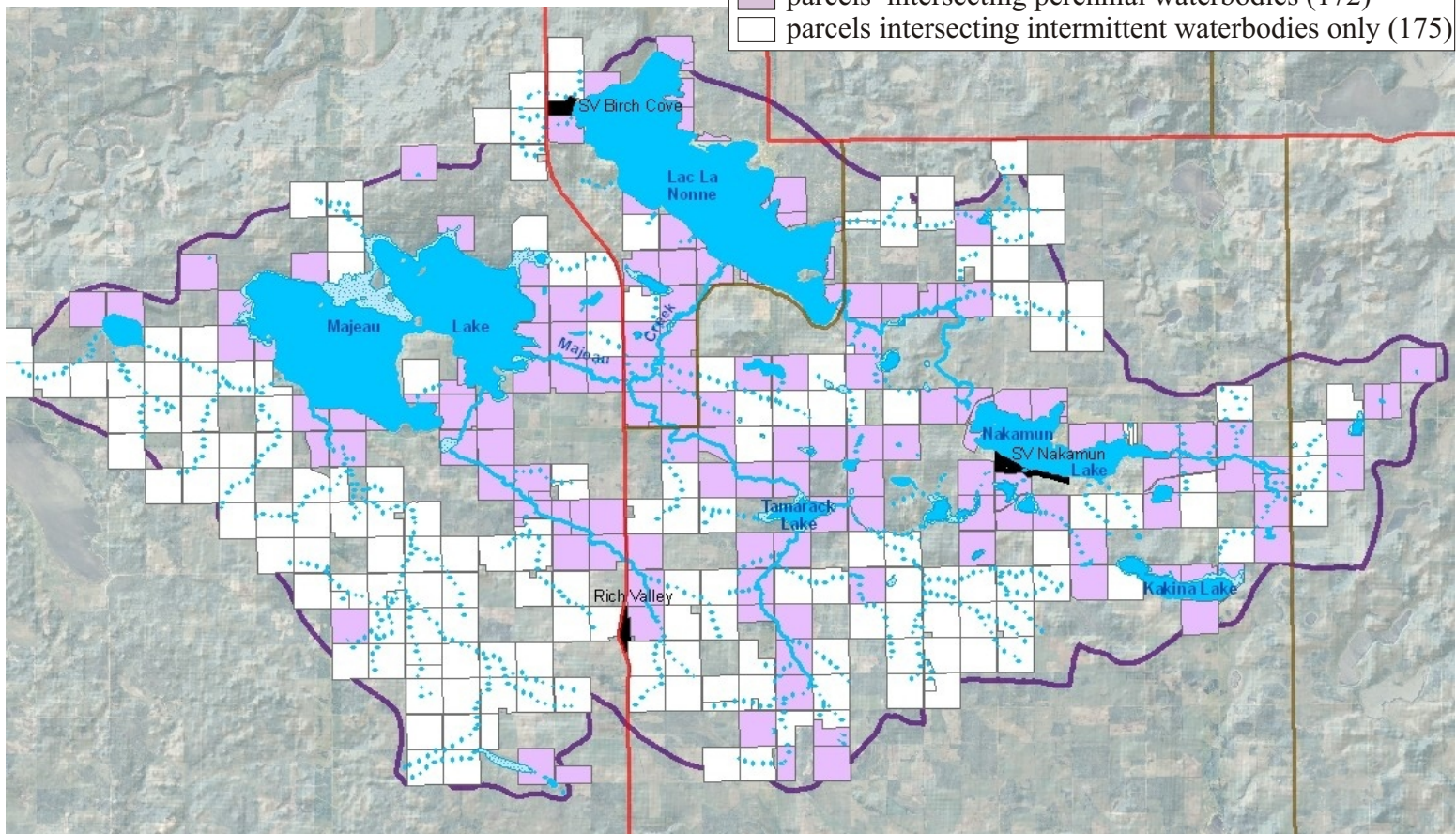


Watershed Hydrology and Length of Shoreline*:

Perennial Stream Shoreline:	42.3 km x 2 sides = 84.6 km
Perennial Lake Shoreline:	126.5 km
Intermittent Stream Shoreline:	225.0 km x 2 sides = 550.0 km
Intermittent Lake Shoreline:	97.7 km
Total Shoreline:	
Perennial Shoreline =	211.1 km
Intermittent Shoreline =	647.7 km
Total:	211.1 + 647.7 = 858.8 km**

* data courtesy Alberta Environment
 ** note this is an overestimate because some overlap exists between intermittent and perennial lakes

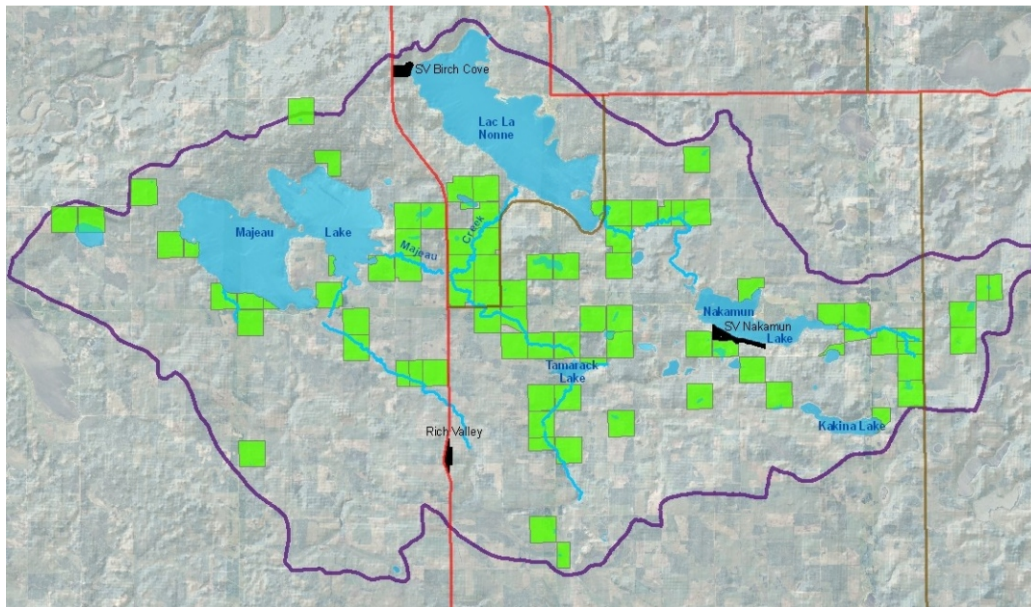
“Riparian Parcels” in the Watershed



"Riparian Parcel" Land Use (2006)

Although non-agricultural land use (e.g. residential and recreational properties, transportation, energy and aggregate extraction, etc.) can have a significant impact on the health and function of riparian areas, this section focuses on agricultural land, specifically land used for pasture and annual crop production. It is important to note that the maps below only indicate that a certain land use was identified during a 2006 survey and is **on the same parcel of land as a perennial waterbody**, the land use is **not necessarily adjacent to or impacting a riparian area**. The discussion offers a brief summary of some potential impacts of pasture and annual cropping on riparian areas and water quality as well as listing, in general terms, possible beneficial measures or management practices (BMPs) to address those impacts. Site specific assessments would still be necessary to best determine potential land use impacts and the most effective and appropriate mitigative measures..

"Riparian - Pasture" Parcels: 94 parcels contain perennial water bodies and pasture

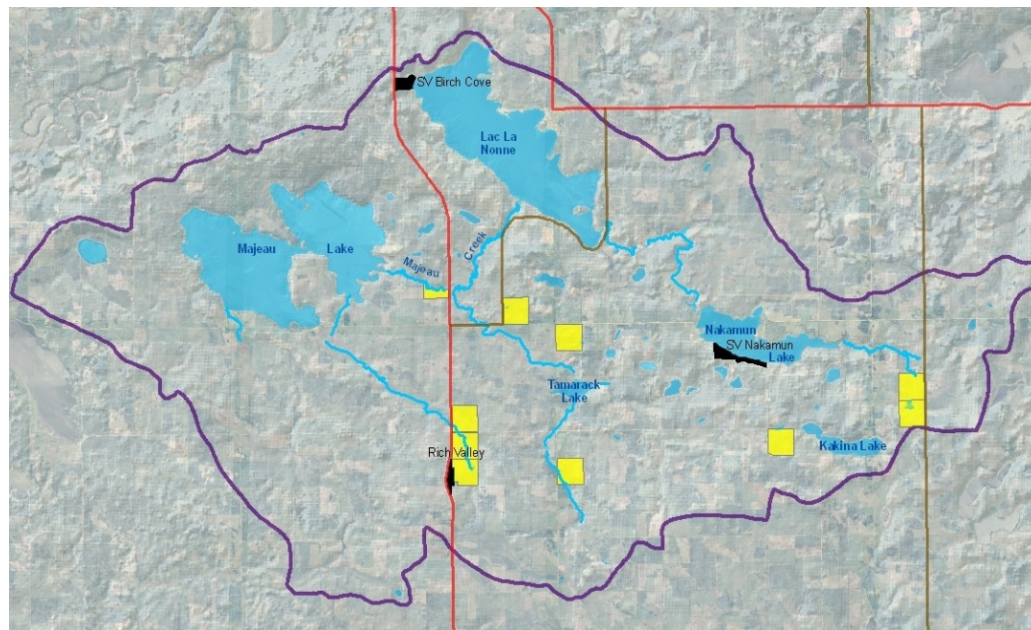


The use of land for livestock production through grazing (pasture) has the potential to impact water quality mainly through the transport of nutrients and pathogens from manure and as a result of potential negative impacts on vegetation.

BMPs that can help mitigate these potential negative impacts when implemented properly include:

- 1) **Riparian area management** techniques such as the use of fencing and rotational grazing to provide rest, alternative watering systems, and the establishment or restoration of vegetative buffers;
- 2) **Grazing management planning**;
- 3) **Wintering site management**;
- and 4) **Erosion control structures**.

"Riparian - Crop" Parcels: 10 parcels contain perennial water bodies and annual crops



The use of land for annual crop production presents many challenges when attempting to minimize the potential impact to water quality. The application of nutrients (fertilizers and manure), the use of pesticides, clearing of natural vegetation, and soil tillage are all practices associated with annual crop production that can have a negative effect on water quality.

Risks can be minimized by:

- 1) utilizing practices such as zero or **reduced tillage** and seeding equipment that cause less soil disturbance;
- 2) using **precision farming** (GPS guided) equipment for more efficient fertilizer and pesticide application where economical;
- 3) improved **crop residue**

management (straw and chaff) to reduce erosion potential and 4) the use of **grassed waterways and vegetated buffer strips** as natural filters to protect water bodies. It is important to note that these practices must be agronomically and economically feasible to be considered sustainable.