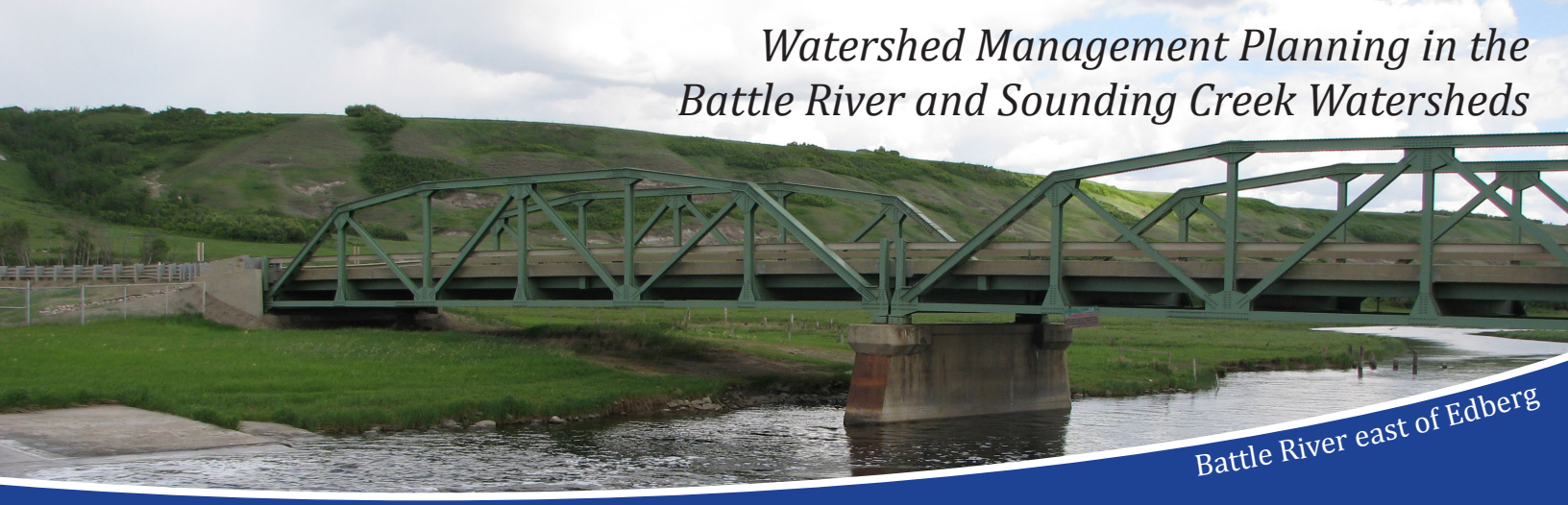
Watershed Management Planning in the Battle River and Sounding Creek Watersheds



Battle River east of Edberg

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Recommendations for Non-point Source Pollution Management

Agricultural Management

- Encourage agricultural producers to develop Environmental Farm Plans.
- Provide educational programs and technical assistance to support agricultural producers in implementing beneficial crop, grazing and manure management practices.*

*See page 2 of fact sheet for specific BMPs

- Explore opportunities to compensate landowners for costs associated with implementing BMPs.

Natural Areas

- Protect riparian areas (shorelines) and wetlands that are currently in good health and undertake riparian and wetland restoration projects in unhealthy areas.

Storm and Waste Water Management

- Utilize "Low Impact Development" (LID) techniques in stormwater management and encourage residents to do the same.

*See page 3 of fact sheet for LID techniques

- Encourage residents to limit the use of fertilizers, pesticides and other harmful lawn-care and household products.
- Expand educational efforts related to the installation, maintenance, use and life-expectancy of private sewage systems. Use financial incentives to encourage people to upgrade failing or inadequate systems.
- Explore alternative sewage management strategies (e.g. regional systems).

BATTLE RIVER WATERSHED ALLIANCE

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Complete recommendations and other fact sheets in this series are available at www.battleriverwatershed.ca

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Agricultural Beneficial Management Practices

Wetlands and fields in the Battle River watershed

Manure Management

- Do not spread manure on frozen or snow-covered ground. If necessary, increase manure storage capacity in order to eliminate the need to spread manure in winter.
- Compost manure to reduce the volume produced
- Test the nutrient content of manure and soil to ensure manure applications do not exceed crop requirements. Apply manure based on phosphorus (rather than nitrogen) requirements.
- Consider developing manure management plans for individual farm or ranch operations.

Grazing Management

- Limit livestock access to natural water sources and dugouts and utilize off-site watering systems.
- Utilize grazing techniques such as rotational grazing in order to prevent overgrazing.
- Ensure seasonal feeding and bedding sites are located a minimum of 30 metres from any water bodies.

Cattle along Battle River south of Camrose

Crop Management

- Utilize conservation/minimum tillage.
- Convert marginal crop land, flood-prone areas, and ephemeral (temporary) wetlands and creeks to permanent and native vegetation.
- Reduce the number of acres in summer fallow by planting cover crops or retaining crop residues or stubble on the land.
- Plant crops along the contours of the land (across rather than up and down the hill slope).

Manure and Fertilizer Application

- Apply only the amount of manure and fertilizer needed to meet annual crop nutrient uptake rates.
- Where possible, apply manure and fertilizer through direct injection.
- Where manure is surface-applied, vertical beaters are the preferred method. Incorporate manure into the soil immediately after application.
- Do not apply manure, fertilizer or other chemicals in flood-prone areas or along the shorelines of creeks, rivers, lakes and wetlands.

Farmer's field in the Battle River watershed

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Low Impact Development Techniques

Rain Gardens and Bioswales

Rain gardens are areas planted with native, water-loving plants that are located strategically to capture stormwater runoff. They are often located near downspouts or other locations where stormwater pools. Bioswales are long, linear rain gardens that are often used in place of roadside curbs and gutters. The natural vegetation of rain gardens and bioswales helps to purify stormwater and increase infiltration into the ground.

Bioswales and permeable pavement

Residential rain garden

Permeable Pavement

Permeable pavement reduces the volume of stormwater runoff by allowing rain water and snowmelt to filter into the ground. There are various types of permeable pavement, including pervious concrete and asphalt, permeable pavers, and grass pavers. Impermeable surfaces may also be reduced through limiting street and sidewalk widths and driveway lengths.

Collecting rainwater in a rain barrel

Rainwater Harvesting

Rain events often occur very quickly and result in high volumes of runoff in urban areas. Through the use of rain barrels or other means of water storage, this water may be used for a number of purposes, including watering gardens, lawns, trees and other plants. Depending on regulations within a particular jurisdiction, this water may also be used for flushing toilets and washing clothes.

Green roof

Green Roofs

Green roofs use plants on rooftops to retain and utilize rain and snowfall before it even reaches the ground. Additional benefits of green roofs include providing more green space, creating habitat for birds and insects, and insulate underlying surfaces (which may reduce building heating and cooling costs).

About the Battle River Watershed Alliance

The Battle River Watershed Alliance (BRWA) was created in 2006 as a non-profit society. Shortly after its formation, the BRWA was selected by Alberta Environment, under *Water for Life: Alberta's Strategy for Sustainability* (Government of Alberta 2003), as the designated Watershed Planning and Advisory Council (WPAC) for the Battle River and Sounding Creek watersheds in Alberta.

Under Alberta's Water for Life strategy, Watershed Planning and Advisory Councils have a role to lead in watershed planning, develop best management practices, foster stewardship activities within the watershed, report on the state of the watershed and educate users of the water resource.

The BRWA works in partnership with communities, watershed stewardship groups, all four orders of government (municipal, provincial, federal and First Nations), industry, academia, environmental organizations and residents to promote the health and sustainable management of the land and water resources of the Battle River and Sounding Creek watersheds using the best science and social science available.

We exist to have a watershed that sustains all life by using sound knowledge, wisdom, and wise actions to preserve our watershed for future generations.

Where We Work:
The Battle River and Sounding Creek Watersheds of Alberta