



# Wetland Management: Implementation Guidelines



Wetland near Ferintosh, AB

*Serving the Battle River and  
Sounding Creek watersheds  
in Alberta*

Susanna Bruneau  
Research & Stewardship  
Coordinator  
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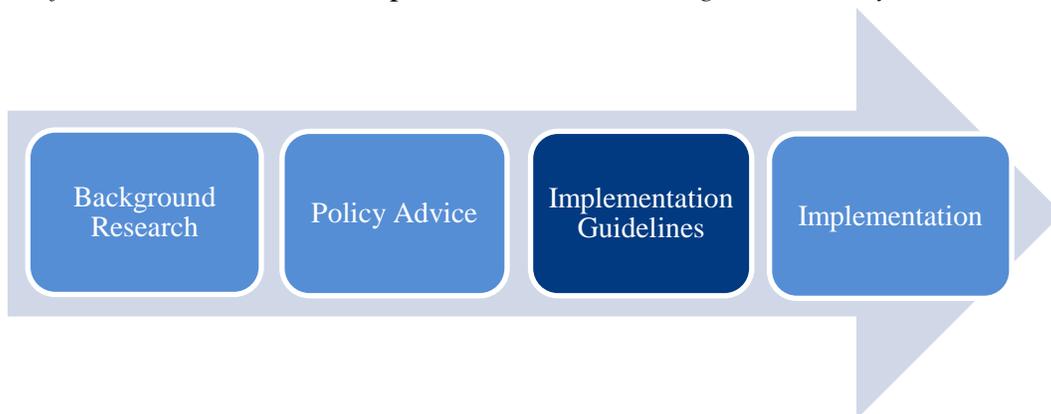
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## About This Document

The health of wetlands in the Battle River watershed is an area of concern. In particular, the impact of unhealthy areas on nutrient levels poses a threat to water quality and the overall resilience and health of aquatic ecosystems in this watershed. It is important to build a greater understanding of wetlands in this watershed in order to manage them effectively.

The following document outlines the BRWA's implementation guidelines for wetlands management in the Battle River and Sounding Creek watersheds in Alberta. Wetlands are one component of the BRWA's watershed management planning (WMP) process.

These guidelines were developed with broad input from watershed residents, stakeholders and decision-makers, and is supported by information compiled in the BRWA's *Wetland Management: A Review of Policies and Practices* report, and *Wetland Management: Policy Advice*.



**Policy research and development process**

## Guideline Purpose

The purpose of this implementation guidelines document is to provide recommendations for beneficial management practices and strategies that should be implemented to support the improvement of wetland health in the Battle River and Sounding Creek watersheds in Alberta.

*Not all of the following recommendations are suitable on a general basis. It is recommended that an evaluation of current issues, the type of operation, and land characteristics be done before selecting management options.*

## Guideline Objectives

Overall objectives of this document:

- Promote the implementation of actions and strategies that help to:
  - Improve and maintain wetland health
  - Address the root causes of wetland loss and degradation
  - Restore wetlands that have been removed
- Provide information to watershed residents, stakeholders, and decision-makers on recommended management actions for wetland management; and
- Support regulatory discretion and adaptation to local and regional circumstances in the implementation of these actions.

## Using the Guidelines

These implementation guidelines apply to the Battle River and Sounding Creek watersheds within Alberta, and are intended for all residents, stakeholders, and decision-makers within these watersheds. This includes all four orders of government (municipal, provincial, federal and First Nations), urban and rural residents, agricultural producers, business and industry, environmental and community organizations, academia, watershed stewardship groups, and any other watershed stakeholder. Specific guidelines for each stakeholder group, as applicable, are described in each section. Some guidelines will appear multiple times as some apply to multiple stakeholders. The section numbers in the adjacent column refer to the section(s) in the *Wetland Management: A Review of Policies and Practices* report from which the guideline was derived. More information background on a particular guideline can be found there. Some do not have associated section numbers as this information was either not able to be covered in the policy report, or additional information has become available.

The BRWA's WMP process is non-regulatory. For the policy advice and implementation guidelines developed in each of the BRWA's 12 watershed management priority areas, implementation is dependent on the voluntary actions of watershed residents, stakeholders and decision-makers. In addition, implementation of these recommendations is based on an adaptive management approach. The BRWA recognizes that we do not have a complete understanding of the natural and social systems functioning within the Battle River and Sounding Creek watersheds. Implementation actions are viewed as experiments that may or may not result in the desired outcomes; lessons learned through these experiments allow us to collectively improve watershed management approaches over time.

The BRWA will work to support the implementation of policies and management practices that align with the goals and objectives outlined in this document.

## Implementation Guidelines

### 1 Wetland Knowledge and Understanding

*Increase knowledge and understanding of the status, functions, and values of wetlands in the Battle River and Sounding Creek watersheds.*

#### Objective:

Recognize and address additional challenges in wetland management relating to human attitude and understanding.

#### Implementation Guidelines:

*All wetland managers, decision-makers, and education stakeholders*

Guidelines	Policy report section
1.1 Incorporate the value of wetlands in the context of climate change and managing extremes.	5.5, 7.4
1.2 Valuation of public goods and services provided by wetlands and account for losses of these in all compensation and conservation programs.	6
1.3 Develop an education strategy regarding the impacts of off highway vehicles (OHVs) and other motorized vehicle use in riparian areas and wetlands.	6.3.1
1.4 Promote and implement the Alberta provincial wetland policy and the wetland mitigation hierarchy of avoid, minimize, and replace.	8.2.1
1.5 Collaborate to identify ecological, hydrological, economically, and socio-cultural significant wetlands.	9.3
1.6 Work with other stakeholders to integrate local and traditional ecological knowledge into wetland education, management, and decision-making.	
1.7 Support the Wetland Education Network administered by NAWMP to promote wetland education throughout the agriculture, municipal, industry, First Nations, and Government of Alberta sectors, as well as for the public.	

***Municipal governments***

<b>Guidelines</b>	<b>Policy report section</b>
<b>1.8</b> Valuation of public goods and services provided by wetlands and account for losses of these in all replacement and conservation programs.	6
<b>1.9</b> Identify ecological, hydrological, economically, and socio-culturally significant wetlands within municipal boundaries.	9.3
<b>1.10</b> Promote general knowledge for citizens and elected officials about the importance of all wetlands, including ephemeral and seasonal wetlands.	

***Alberta Urban Municipalities Association (AUMA)/Alberta Association of Municipal Districts and Counties (AAMDC)***

<b>Guidelines</b>	<b>Policy report section</b>
<b>1.11</b> Encourage valuation of public goods and services provided by wetlands and account for losses of these in all compensation and conservation programs.	6
<b>1.12</b> Work with other stakeholders to promote general knowledge for elected officials about the importance of all wetlands, especially ephemeral and seasonal wetlands.	

***Battle River Watershed Alliance***

<b>Guidelines</b>	<b>Policy report section</b>
<b>1.13</b> Continue education and awareness efforts that focus on the role of wetlands in mitigating the impacts of drought, including desertification, biodiversity maintenance, flood attenuation, and potential conflicts with wildlife for water.	5
<b>1.14</b> Work with other stakeholders to integrate local and traditional ecological knowledge into wetland management and decision-making.	

*Alberta Environment and Parks*

<b>Guidelines</b>	<b>Policy report section</b>
<b>1.15</b> Integrate knowledge of cumulative loss impacts into implementation of the provincial wetland policy.	2.3, 4.6
<b>1.16</b> Work with other stakeholders and research groups to expand evaluation measures of human value of wetlands within Alberta Wetland Policy.	6
<b>1.17</b> Work with other stakeholders to integrate local and traditional ecological knowledge into wetland management and decision making.	

*North American Waterfowl Management Plan (NAWMP) & Ducks Unlimited Canada*

<b>Guidelines</b>	<b>Policy report section</b>
<b>1.18</b> Continue education and awareness efforts that focus on the role of wetlands for ecosystem system services, biodiversity maintenance, flood attenuation, and wildlife needs.	5
<b>1.19</b> Work with other stakeholders and research groups to expand and apply technical expertise and wetland inventory mapping for use by landowners, NGOs, and municipalities.	8.2.1.2, 9.4, 10.1
<b>1.20</b> Continue in the work on the Wetland Education Network to promote wetland education throughout the agriculture, municipal, industry, First Nations, and Government of Alberta sectors, as well as for the public.	

## 2 Wetland Restoration

*Strategically restore altered and drained wetlands within the Battle River and Sounding Creek watersheds by addressing social, economic, and ecological spheres of influence.*

### Objective:

Improve wetland function and health

Strategically restore wetland that have been removed to restore important ecological functions.

Well-managed riparian areas and wetlands buffer the destructive impacts of floods and droughts, especially when efforts are combined on a watershed basis.

### Implementation Guidelines:

*Landowners, managers, and producers*

Guidelines	Policy report section
2.1 Working with partners, utilize programs offered by government and NGOs to improve and restore wetlands on private property and agricultural lands.	4.1, 9.1
2.2 Restore and improve ecological and hydrological function of wetlands and their buffers.	4.5
2.3 Incorporate wetland restoration into on-farm flood and drought adaptation and management plans and water quality maintenance.	5.2, 5.3
2.4 Restore drained and altered wetlands to increase watershed resilience to climate change impacts.	7.4
2.5 Utilize reverse auctions for wetland restoration.	9.2

***Municipal governments***

<b>Guidelines</b>	<b>Policy report section</b>
<b>2.6</b> Encourage wetland restoration through government and NGO programs.	4.1, 9.1
<b>2.7</b> Incorporate wetland restoration into flood and drought adaptation and management plans, source water protection, stormwater management, and water quality maintenance.	4.2, 5.2, 5.3
<b>2.8</b> Working with partners, utilize or supply programs offered by government and NGOs to improve and restore wetlands on municipal property and lands.	4.4.2, 9.1
<b>2.9</b> Restore and improve ecological and hydrological function of wetland buffers.	4.5
<b>2.10</b> Limit compensation credit for stormwater management wetlands to low quality/function wetlands.	5.2
<b>2.11</b> Restore and improve networks of wetlands in both urban and rural settings.	5.4

***Wetland restoration agents***

<b>Guidelines</b>	<b>Policy report section</b>
<b>2.12</b> Restoration actions need to capture the full range of wetland types, areas, functions, pond permanence, and other wetland values that occurred historically within the watershed <sup>12</sup> .	2.2, 2.3, 5, 5.4, 9.3, 10.1.3
<b>2.13</b> Use native grass and shrub species in restoration projects.	4.1, 7.3
<b>2.14</b> Encourage wetland restoration through government and NGO programs.	4.1, 9.3
<b>2.15</b> Strategically restore drained and altered wetlands to increase watershed resilience to drought, flood, and other impacts of climate change.	7.4
<b>2.16</b> Facilitate reverse auctions for target area restoration.	9.2
<b>2.17</b> Compensation for wetlands lost within the Battle River Basin must be applied within the Battle River Basin, and be located as near as is practical to the wetland where impact occurred <sup>3</sup> .	

***Battle River Watershed Alliance***

<b>Guidelines</b>	<b>Policy report section</b>
<b>2.18</b> Encourage wetland restoration through government and NGO programs.	4.1, 9.1
<b>2.19</b> Work with other stakeholders to establish wetland restoration projects in key areas in the watershed, incorporating factors that support healthy watershed functions.	9.3

**Alberta Environment and Parks**

<b>Guidelines</b>	<b>Policy report section</b>
2.20 Restoration actions need to capture the full range of wetland types, areas, functions, pond permanence, and other wetland values that occurred historically within the watershed <sup>4,5</sup> .	2.2, 2.3, 5, 5.4, 9.3, 10.1.3
2.21 Integrate with programs offered by government and NGOs to improve and restore wetlands on municipal property and lands.	4.1, 9.1
2.22 Encourage wetland restoration through government and NGO programs.	4.1, 9.1
2.23 Monitor restored wetlands for function in accordance with development-related wetland restoration plan <sup>6</sup> .	4.2.1, 9.1, 9.5
2.24 Limit replacement credit for stormwater management wetlands to low quality/function wetlands.	5.2
2.25 Continue the Watershed Resilience and Restoration Program to support restoration natural/green infrastructure to develop flood and drought adaptation and management plans.	5.3
2.26 In collaboration with other stakeholders, restore and improve networks of wetlands in both urban and rural settings.	5.4
2.27 Develop a wetland restoration agency certification process to facilitate the creation of more restoration agents.	9.1
2.28 In collaboration with other stakeholders, create framework for wetland restoration and implement additional recommendations provided in the Alberta Water Council's <i>Recommendations for a New Wetland Policy</i> <sup>7</sup> .	9.3

*Alberta Agriculture and Forestry*

<b>Guidelines</b>	<b>Policy report section</b>
<b>2.29</b> Encourage landowners and managers to utilize programs offered by government and NGOs to improve and restore wetlands on private property and agricultural lands.	4.1, 9.1
<b>2.30</b> Encourage wetland restoration through government and NGO programs.	4.1, 9.1
<b>2.31</b> Encourage wetland restoration for on-farm flood and drought adaptation and management plans and water quality maintenance.	5.2, 5.3

*North America Waterfowl Management Plan (NAWMP) & Ducks Unlimited Canada*

<b>Guidelines</b>	<b>Policy report section</b>
<b>2.32</b> Encourage wetland restoration through government and NGO programs.	4.1, 9.1
<b>2.33</b> Work with other stakeholder to establish wetland restoration projects in key areas in the watershed, incorporating factors that support health watershed functions.	9.3

### 3 Wetland Conservation

*Maintain existing wetland area and function within the Battle River and Sounding Creek watersheds by addressing social, economic, and ecological spheres of influence*

**Objective:**

Strategically conserve wetlands to maintain important ecological functions.

Highlighting ecosystem services provided by wetland into the formal decision-making process is key to developing systemic adaptive management and planning.

**Implementation Guidelines:**

*All wetland managers and supporting organizations*

Guideline	Policy report section
3.1 Support and implement beneficial non-point source pollution management practices <sup>8</sup> through incentive programs and other support mechanisms.	4.1, 5.2
3.2 Maintain and enhance ecological and hydrological function of wetlands and their buffers.	4.5, 5.4
3.3 Promote and support voluntary wetland conservation actions.	9.1

*Landowners, managers, and producers*

<b>Guideline</b>	<b>Policy report section</b>
<b>3.4</b> Reduce use of pesticides, herbicides, and chemical fertilizers, especially near wetlands.	4.1
<p><b>3.5</b> Implement beneficial crop management practices in order to maintain and improve health of wetlands in the watershed, including<sup>9</sup></p> <ul style="list-style-type: none"> <li>▪ Grow winter wheat and other fall seeded crops</li> <li>▪ Avoid cultivating near the edges of wetlands by implementation of a minimum buffer width of 100 meters</li> <li>▪ Delay mowing and baling of grassed waterways and other wet areas until mid-July</li> <li>▪ Use a flushing bar when cutting and baling</li> <li>▪ Grow perennial forages for hay in wet areas to provide habitat for birds, small mammals, amphibians and insects, and hiding cover for fawns.</li> </ul>	4.1, 4.5
<p><b>3.6</b> Encourage livestock producers to implement beneficial grazing management practices in order to maintain and improve the health of wetlands areas in the watershed, including<sup>10</sup></p> <ul style="list-style-type: none"> <li>▪ Exclude livestock from (or limiting livestock access to) surface water bodies and water ways and utilizing off-site/off-stream watering systems.</li> <li>▪ Implement alternative grazing techniques, such as rotational grazing, in order to prevent overgrazing.</li> </ul>	4.1, 4.5
<b>3.7</b> Utilize the Environmental Farm Plan process to examine on-land practices and undertake management practices that promote wetland stewardship.	4.1, 4.5
<b>3.8</b> Utilize programs offered by government and NGOs to maintain wetlands on private property and land.	4.1, 9.1
<b>3.9</b> Maintain and enhance riparian vegetation around wetlands.	4.2, 5.3
<b>3.10</b> Minimize consolidation of wetlands through drainage or as compensation for many small ones lost.	5.3.1, 10.1.3

***Municipal governments***

<b>Guideline</b>	<b>Policy report section</b>
<b>3.11</b> Utilize programs offered by government and NGOs to maintain wetlands on municipal property and lands.	4.1, 9.1
<b>3.12</b> Maintain and enhance riparian vegetation around wetlands.	4.2, 5.3
<b>3.13</b> Include wetland buffer/setback regulations to preserve ecological and hydrological function for private and municipal lands in municipal development plans and land use bylaws.	4.5
<b>3.14</b> Establish larger protected/conservation areas, reserves, and buffers around wetland environmentally/ecologically significant areas (ESAs).	4.5
<b>3.15</b> Establish Critical Function Zones established around wetlands based on knowledge of species present and their use of habitat types <sup>11</sup> .	4.5
<b>3.16</b> Maintain and improve networks of wetlands in both urban and rural settings.	5.4
<b>3.17</b> Prevent loss or alteration of existing wetlands by strengthening compliance in regards to removal and alteration of wetlands.	8.1, 8.2
<p><b>3.18</b> Expansion of infrastructure to support drainage should not be permitted unless there is a compelling reason for expansion<sup>12</sup>.</p> <ul style="list-style-type: none"> <li>▪ If expansion is permitted, no significant adverse effect on existing and cumulative hydraulic, hydrological and hydrogeological effects as a result of new drainage.</li> <li>▪ If expansion is permitted, the highest level of wetland compensation is recommended.</li> </ul>	8.2.1.2

*Drainage Districts*

Guideline	Policy report section
<p><b>3.19</b> Expansion of infrastructure to support drainage should not be permitted unless there is a compelling reason for expansion<sup>13</sup>.</p> <ul style="list-style-type: none"> <li>▪ If expansion is permitted, no significant adverse effect on existing and cumulative hydraulic, hydrological and hydrogeological effects as a result of new drainage.</li> <li>▪ If expansion is permitted, the highest level of wetland compensation is recommended.</li> </ul>	8.2.1.2

*Resource companies*

Guideline	Policy report section
<p><b>3.20</b> Restrict work in, around, and through wetlands to when soils are frozen. Follow other suggested best practices for access roads, etc.<sup>1415</sup></p>	4.3
<p><b>3.21</b> Expansion of infrastructure to support drainage should not be permitted unless there is a compelling reason for expansion<sup>16</sup>.</p> <ul style="list-style-type: none"> <li>▪ If expansion is permitted, no significant adverse effect on existing and cumulative hydraulic, hydrological and hydrogeological effects as a result of new drainage.</li> <li>▪ If expansion is permitted, the highest level of wetland compensation is recommended.</li> </ul>	8.2.1.2

*Alberta Energy Regulator*

Guideline	Policy report section
<p><b>3.22</b> Limit wetland damage by ensuring adequate mitigation is applied during construction of well pads, pipeline crossings, and restoration after construction has completed.</p>	4.3
<p><b>3.23</b> Restrict work in, around, and through wetlands to when soils are frozen.</p>	4.3

***Alberta Environment and Parks***

Guideline	Policy report section
3.24 Prevent loss or alteration of existing wetlands by strengthening compliance in regards to removal and alteration of wetlands.	8.1 & 8.2

***Alberta Agriculture and Forestry***

Guideline	Policy report section
3.25 Encourage arable and livestock producers to implement beneficial management practices in order to maintain and improve health of wetlands in the watershed.	4.1, 4.5
3.26 Promote the Environmental Farm Plan process as the foundation for encouraging agricultural producers in the Battle River and Sounding Creek watersheds to examine practices on their land and undertake management practices that promote environmental stewardship and watershed sustainability.	4.1, 4.5

***All Government of Alberta ministries and operations***

Guideline	Policy report section
<p>3.27 Expansion of infrastructure to support drainage should not be permitted unless there is a compelling reason for expansion<sup>17</sup>.</p> <ul style="list-style-type: none"> <li>▪ If expansion is permitted, no significant adverse effect on existing and cumulative hydraulic, hydrological and hydrogeological effects as a result of new drainage.</li> <li>▪ If expansion is permitted, the highest level of wetland compensation is recommended.</li> </ul>	8.2.1.2

## 4 Wetland Planning and Management

*Plan and manage wetlands for watershed sustainability within the Battle River and Sounding Creek watersheds by addressing social, economic, and ecological spheres of influence.*

### Objective:

Wetlands monitoring is required to build a greater understanding of wetland conditions and trends and identify areas of concern in the Battle River and Sounding Creek watersheds.

Strategically restore wetlands that have been removed, and conserve existing wetlands.

### Implementation Guidelines:

*All watershed stakeholders, wetland managers, decision-makers, and economic agencies*

Guideline	Policy report section
4.1 Full range of wetland types, areas, functions, pond permanence, and other wetland values that occurred historically within the watershed represented and captured in conservation actions <sup>1819</sup> .	2.2, 2.3, 5, 5.4, 9.3, 10.1.3
4.2 Maintain mosaic of habitats on the landscape to maximize ecological/economic synergies and reduce trade-offs.	2.3, 5.3.1, 6.4, 9.3
4.3 Control and prevent the spread of invasive species that could impact wetland health.	7.3
4.4 Promote and implement the Alberta provincial wetland policy and the hierarchy of wetland mitigation.	8.2.1
4.5 Maintain and protect naturally occurring wetlands.	9
4.6 Establish regional / watershed wetland management objectives in collaboration with watershed communities and stakeholders.	9.3, 10.1.3
4.7 High priority in landscape planning to maintain and improve connectivity should be given for wetlands in close proximity to each other, based on their functions <sup>20</sup> .	9.3, 10.1.3

*Landowners, managers, and producers*

<b>Guideline</b>	<b>Policy report section</b>
<b>4.8</b> Use tools like <i>Stepping Back from the Water</i> <sup>21</sup> , <i>Field Manual on Buffer Design for the Canadian Prairies</i> <sup>22</sup> to determine optimal buffer before development of lands near waterbodies.	4.5
<b>4.9</b> In collaboration with other stakeholders, utilize natural/green infrastructure to develop flood and drought adaptation and management plans.	5.3

*Municipal governments*

<b>Guideline</b>	<b>Policy report section</b>
<b>4.10</b> Incorporate wetland and riparian management when planning and approving new developments.	4.4.2, 4.5
<b>4.11</b> Use tools like <i>Stepping Back from the Water</i> <sup>23</sup> , <i>Field Manual on Buffer Design for the Canadian Prairies</i> <sup>24</sup> , and riparian setback models to determine optimal buffer before development of lands near waterbodies. <i>Note:</i> Use of setback tool could be part of development permit process and done at developer's expense.	4.5
<b>4.12</b> In collaboration with other stakeholders, utilize natural/green infrastructure to develop flood and drought adaptation and management plans.	5.3
<b>4.13</b> Develop a management strategy for off highway vehicles (OHVs) and other motorized vehicle use in riparian areas and wetlands.	6.3.1
<b>4.14</b> Manage, utilize, and re-introduce beaver activity to promote healthy wetlands <sup>25</sup> .	7.1
<b>4.15</b> In collaboration with other stakeholders and partners, define and identify ecological, hydrological, economically, and socio-cultural significant wetlands within municipal boundaries.	9.3, 9.4, 10.1.1

*Cows and Fish*

Guideline	Policy report section
4.16 In collaboration with other stakeholders and partners, assist landowners to determine optimal buffers surrounding wetlands and other applicable beneficial management practices.	4.5

*Conservation groups and other non-profits*

Guideline	Policy report section
4.17 In collaboration with other stakeholders and partners, develop a management strategy for off highway vehicles (OHVs) and other motorized vehicle use in riparian areas and wetlands on private and public/municipal/Crown land.	6.3.1
4.18 Develop a regulatory framework pertaining to relocation of beaver for restoration purposes.	7.1

*Battle River Watershed Alliance*

Guideline	Policy report section
4.19 Develop and apply a wetlands monitoring and restoration strategy as joint work by the Government of Alberta and the designated Watershed Planning and Advisory Council for the Battle River Basin, as well as for the Sounding Creek Basin <sup>26</sup> .	8.2.1.2

**Wetland restoration agents**

Guideline	Policy report section
4.20 Minimize wetland consolidation of wetlands as compensation for many small ones lost.	5.3.1, 10.1.3
4.21 Manage, utilize, and re-introduce beaver activity to restore and promote healthy wetlands.	7.1

**Alberta Environment and Parks**

Guideline	Policy report section
4.22 Integrate ephemeral wetlands into wetland policy mitigation framework.	2.1.1, 8.2.1, 10.1.3
4.23 Incorporate wetland management and conservation in the North Saskatchewan Regional Plan and Red Deer Regional Plan.  Include wetlands within the Biodiversity Management Framework for the NSRP and RDRP.	4.4
4.24 Develop a management strategy for off highway vehicles (OHVs) and other motorized vehicle use in riparian areas and wetlands on Crown land.	6.3.1
4.25 Develop a regulatory framework and guidance pertaining to relocation of beaver for restoration purposes.	7.1
4.26 In collaboration with other stakeholders and partners, complete wetland inventories for all sub-watersheds, and counties in Battle River & Sounding Creek.	9.2, 10.1.1
4.27 Create framework for wetland restoration and implement other recommendations provided in the Alberta Water Council's <i>Recommendations for a New Wetland Policy</i> <sup>27</sup> .	9.3
4.28 Integrate wetland conservation and restoration into the Alberta carbon offset credit system; develop carbon-offset credits for wetland conservation and restoration, especially in target areas.	9.5

Guideline	Policy report section
<p><b>4.29</b> To maintain healthy watershed function, at a minimum, the greater of (a) 10% of each major watershed and 6% of each sub-watershed, or (b) 40% of the historic (pre-European settlement) watershed wetland coverage, should be protected and restored<sup>28</sup>.</p>	
<p><b>4.30</b> Develop and apply a wetlands monitoring and restoration strategy as joint work by the Government of Alberta and the designated Watershed Planning and Advisory Council for the Battle River Basin, as well as for the Sounding Creek Basin<sup>29</sup>.</p>	

*Alberta Water Council*

Guideline	Policy report section
<p><b>4.31</b> In collaboration with other stakeholders and partners, develop guidelines and tools for municipalities and counties regarding implementing wetland policy and additional beneficial management practices in regards to urban wetland management.</p>	

*North America Waterfowl Management Plan (NAWMP) & Ducks Unlimited Canada*

Guideline	Policy report section
<p><b>4.32</b> In collaboration with other stakeholders and partners, define and identify ecological, hydrological, economically, and socio-cultural significant wetlands within municipal boundaries.</p>	6, 9.3, 9.4, 10.1.1
<p><b>4.33</b> Complete wetland inventories for all sub-watersheds, and counties in Battle River &amp; Sounding Creek.</p>	9.2, 10.1.1
<p><b>4.34</b> Integrate wetland conservation and restoration into the Alberta carbon offset credit system; Develop carbon-offset credits for wetland conservation and restoration, especially in target areas.</p>	9.5

<b>Guideline</b>	<b>Policy report section</b>
<b>4.35</b> To maintain healthy watershed function, at a minimum, the greater of (a) 10% of each major watershed and 6% of each sub-watershed, or (b) 40% of the historic (pre-European settlement) watershed wetland coverage, should be protected and restored <sup>30</sup> .	

## Endnotes

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- <sup>1</sup> Environment Canada (2013). *How much habitat is enough?* 3rd ed. Environment Canada, Toronto, Ontario. Retrieved from <http://ec.gc.ca/Publications/default.asp?lang=En&xml=1B5F659B-B931-4F37-A988-3DD73DF656B7>
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- <sup>3</sup> Alberta Environment and Sustainable Resource Development. (2014). *Approved water management plan for the Battle River basin (Alberta)*. Alberta Environment and Sustainable Resource Development Planning Report. Retrieved from [http://www.qp.alberta.ca/documents/orders/orders\\_in\\_council/2014/714/2014\\_299.html](http://www.qp.alberta.ca/documents/orders/orders_in_council/2014/714/2014_299.html)
- <sup>4</sup> Environment Canada (2013).
- <sup>5</sup> Hayashi et al. (2016).
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**This is our battle: the watershed we all share, and the fight to maintain a healthy environment, vibrant communities and a stable economy.**

**Battle River Watershed Alliance**

**Gateway Centre  
4825 51 Street (2<sup>nd</sup> floor)  
Camrose, Alberta  
T4V 1R9  
1 888 672 0276**

**[www.battleriverwatershed.ca](http://www.battleriverwatershed.ca)**

**Connecting People to Place for Action**



Roadside wetland near Kingman, AB