

Wetlands On My Lands

A Landowner Guide for Restoring and
Maintaining Wetlands in Alberta



Ducks Unlimited Canada
Conserving Canada's Wetlands

Active by nature.

Good for my land. Good for my Business.

As a landowner, you know good business and good stewardship go hand in hand. Maintaining or improving the quality of your land is key. That's why you work to keep your wetlands healthy. You know these areas provide a slough of benefits to your operation.

Wetlands retain and slowly release water – which reduces the effects of flooding in the spring and recharges the groundwater through the growing season. Your livestock relies on the areas around your wetlands for clean drinking water and hay. You know these bodies of water are helping your farm reach its full potential.

The folks at Ducks Unlimited Canada also know what is good for your land is good for your business. They work with you to help you be successful. They work with you to help conserve this land for your children and for the future.

Ducks has some great advice about a number of farming practices that will improve your bottom line by improving the environment - including this guide, which will help you make the most of the benefits that come with conserving and restoring your wetlands.

Contact your nearest Ducks office (1-866-479-3825 in Alberta) or visit yourland.ducks.ca to learn more.



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"The land was very wet 30 years ago. I spent my whole life draining it. Now I'm working just as hard to bring the wetlands back. Restoring my wetlands will improve my stock water and late season grazing for our bison herd."

Ross Adam, Grande Prairie, Alberta

ALL ABOUT WETLANDS

Wetlands – or areas where water permanently or temporarily collects – provide several benefits that are often overlooked until those benefits have been lost. Wetlands and habitats that surround them play an important role in improving the quality and quantity of our water supplies in addition to providing valuable wildlife habitat.

As a landowner, restoring a lost wetland brings with it a number of benefits.

- Reduce the negative impacts of drought and floods by retaining run off water
- Increase quantity and quality of ground and surface water resources
- Increase forage
- Reduce soil erosion and watershed sedimentation
- Reduce greenhouse gases by absorbing carbon emissions

Step 1: Plan Your Restoration Project

Now that you've decided to restore wetlands on your property, the first step is to plan your project. This step shouldn't take much time, but will help ensure your project is successful.

Site selection

While site selection can be done at any time of the year, it's a good idea to do it during the spring runoff to get an idea of where water flows and lies on your property. The sites to look at are previously drained wetlands as the soils are suitable and the seed bank for the wetland plants is already there.

Do a quick visual assessment, or use a laser level to ensure the boundaries of the wetland are contained within your property.

Identify the wetland you would like to restore

Slough/marsh wetlands and prairie potholes are the easiest type of wetlands to restore. The wetland can simply be restored by re-contouring (ditch plugging) part of the drainage ditch back to the original ground level to restore water retention. This is the simplest and most cost-effective method, which uses on site soil material to recontour the drainage works to pre-drainage conditions.

An excellent way to identify the wetlands to be restored is through the use of aerial photographs. These can be ordered through Alberta Sustainable Resource Development's Air Photo Distribution Service. Your local municipality may also have aerial photographs available for a fee.

Make a list of equipment you will need

On-farm equipment, such as a tractor or skid steer loader with bucket or blade, is usually sufficient. If these are not available, contracting a skid steer loader or a small earth mover (dozer) will do the job. In

addition, seeding equipment to restore vegetation to the earth works will also be required. In most cases, broadcasting the seed followed by harrowing will complete this task.

Plan your budget

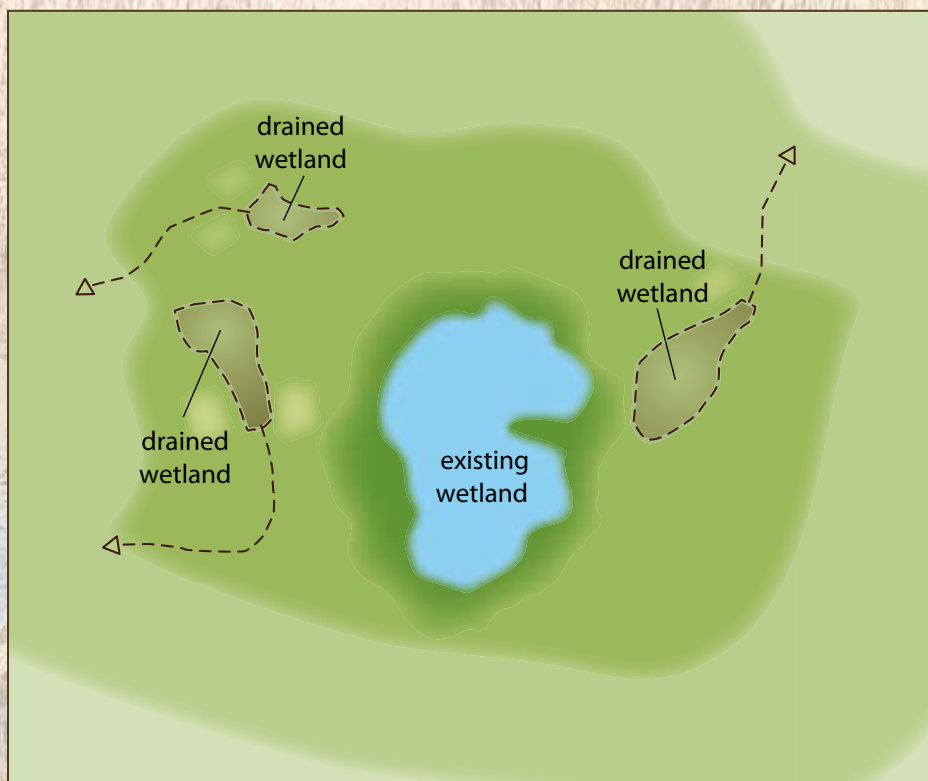
If you wish to contract out your restoration project, costs will vary. Using your own equipment can significantly reduce these costs. Also, wetland restoration is considered a Beneficial Management Practice under Agriculture and Agri-Food Canada's National Farm Stewardship Program, so eligible producers can receive technical assistance and funding.

Restoration Considerations

- > Observe where water naturally lies in the spring or after heavy rainfalls
- > Try to restore the wetland near other wetlands or wildlife habitat features on the property

Existing Ditch to Be Filled and Recontoured

Figure 1. Example of land with drained wetlands



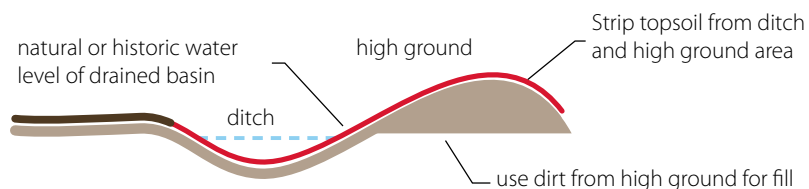
Step 2: Getting Started

Once you've completed step 1, it's time to start moving dirt! The graphics below outline how to get started.

topsoil		water	
mineral soil		water level	
stripped topsoil		bottom of ditch	

Step A

Strip topsoil from ditch and high ground area and stock pile for later.



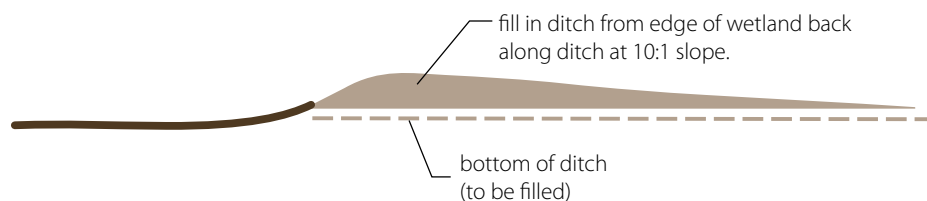
Step B

Using dirt from high ground, fill in the ditch to restore the wetland bank and recontour the ground to natural level.



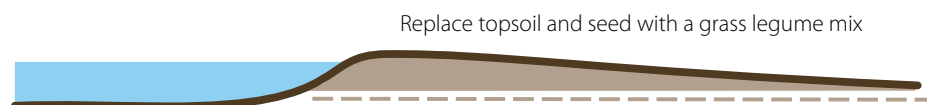
Step C

Recontour fill downstream.



Step D

Spread the topsoil back over the filled ditch and disturbed ground and seed the area with a grass legume mix.



Step 3: Long Term Care and Maintenance

Maintenance of your restored wetland should be minimal. Conducting annual checks on the restored works will ensure no unusual settlement or erosion.

Wetland vegetation

Wetland vegetation is important to a wetland's ecosystem, so if you notice an abnormal algae problem or an increase in the amount of vegetation (over 75 per cent of the wetland area), some techniques to consider:

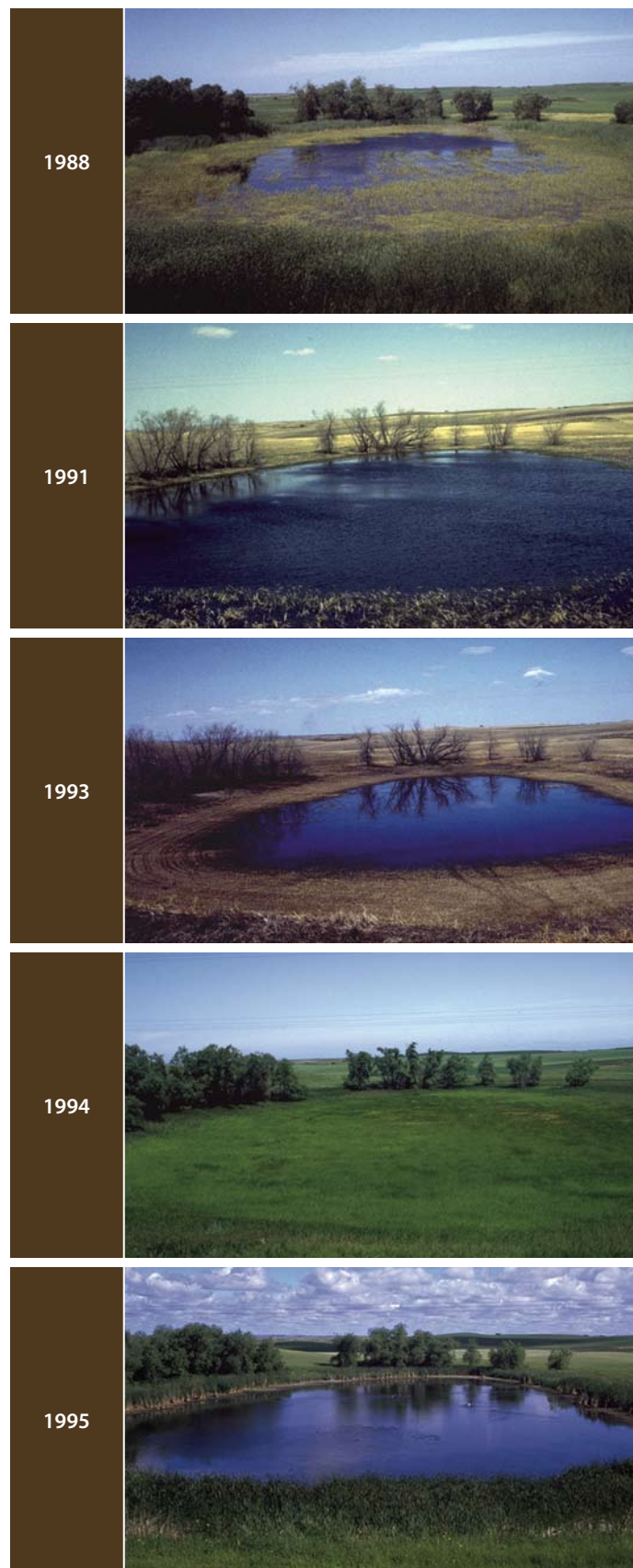
1. Prevention: Verify there is an intact buffer, reduce nutrient inflows, and if present, check septic system for leaks. Ensure only pre-treated effluent from livestock penning areas are entering the wetland area.
2. Physical Intervention: Mechanical vegetation control. For example, over ice mowing in the winter or haying in drought conditions.
3. Chemicals: NOT RECOMMENDED! Pesticides are potentially dangerous near water and use is restricted to certified individuals.

Images on page three show how the same wetland can change over time, through natural climate variations.

Small prairie wetlands that have been drained are the easiest to restore. In most cases the wetland can simply be restored by plugging the ditch back to the original ground level to hold water in the wetland at its historical level. This restoration method is the most simple and cost effective, as it utilizes material on-site for the plug. In some cases you may wish to plug the ditch along its entire length (also known as re-contouring) to return the downstream land to its original condition prior to drainage.

Wetland Variation Through Time

Changes in wetlands, as seen in these photos, are a natural part of healthy wetland ecosystems and the benefits they offer.



Other wetland and upland enhancement techniques

Once you have restored your wetland, or if you have other existing wetlands on your property, you may consider enhancing them for improved water quality and wildlife. Here are a few techniques you might be able to use:

- Establish a buffer of undisturbed grasses, trees or shrubs around your wetland. Buffer widths should be a minimum of 20 m (60 ft) but any buffer is better than no buffer!
- Plant native fruit-bearing shrubs around your wetland to increase wildlife cover and food availability. Appropriate species lists can be obtained from your local nursery.
- Establish some trees within your wetland buffer to provide a more effective and permanent buffer.

Enhancing your existing wetland

In order to enjoy the many benefits wetlands provide, we must keep them functioning at their best. Here are some ideas:

- Maintain a healthy area of native vegetation around your wetlands (called a *riparian* area). It is best not to remove, graze or cut vegetation in wetlands areas, but if you do, wait until after July 20th, the end of the waterfowl nesting season.
- Weed problems in riparian areas can be managed with mechanical methods and some restricted chemical options (see Alberta Agriculture and Food's annual *Crop Protection Blue Book* under "Restrictions" for information on the use of herbicides for control of weeds in these areas). It is important to minimize disturbance of natural vegetation as much as possible by treating weed patches only. Regular monitoring for weed problems is recommended.
- Remove garbage from site and dispose in local approved sites.
- Exclude livestock from the wetland and riparian areas by ideally fencing off the wetland from livestock whenever possible.
- Don't allow excessive amounts of nutrients or chemicals to enter wetlands or the protected area. This includes wastewater from domestic, industrial and livestock use.
- Buffer zones should be used when conducting pesticide applications on crops adjacent to wetlands and surrounding riparian areas. Check product labels for any buffer zone recommendations. Spraying when a light breeze is blowing away from wetland areas is recommended.

Annual wetland variations

Due to variations in our climate, all wetlands vary in water depth and vegetative growth from year to year. In drier situations, the absence of water may also occur. This is part of the natural cycle of wetlands and is no cause for concern. Maintaining the wetland's ability to hold water and suitable vegetative buffer zones will ensure that all is in place when the water returns.



Did You Know?

- > Restoring wetlands on your land can help your farm reach its full potential, while maintaining a diverse landscape for the future.
- > A wetland preserved in its natural state provides the maximum benefits to your land and the environment.
- > Ducks is more than just wetlands! Working with Canadian farmers, ranchers and landowners to complement your restoration efforts, our staff are armed with ideas and incentives to help you implement sustainable agricultural and environmental practices throughout your farm or pasture. Learn more at yourland.ducks.ca.



- > Before and after photos of reclaimed wetlands.

Wetlands Provide a Slough of Benefits!

> **Filter Your Water**

Wetlands improve water quality through filtration. As water passes through a wetland, impurities are removed.

> **Recharge Groundwater**

Wetlands recharge groundwater supplies by soaking up surface water and letting some of it seep back into the ground where it's filtered even further.

> **Moderate Climate Change**

Wetland plants take carbon dioxide from the air and "sequester" the carbon in the soil, removing a potentially harmful greenhouse gas from the air, and replacing it with life-giving oxygen.

> **Reduce the Effects of Drought**

Wetlands can provide a valuable source of water and livestock forage during times of drought.

> **Reduce the Effects of Flooding**

Wetlands help reduce the effects of flooding and soil erosion by storing runoff water and releasing it slowly downstream.

> **Are Important to the Economy**

Wetlands provide opportunities for tourism, boating, bird watching, nature photography, hunting, fishing and other activities.

> **Support Biodiversity**

Wetlands support biodiversity and provide habitat for plants, birds, mammals and fish.



Resources and Information

If you need assistance with your wetland restoration project, help is available.

Ducks Unlimited Canada

Ducks has worked with Canadian farmers, ranchers and landowners to restore and conserve wetlands since 1938. We can provide you with technical assistance for your project and in some cases, financial assistance.

Call 1-866-479-DUCK (3825) or visit yourland.ducks.ca for more information.

Assistance is available by calling the DUC office nearest you. Alberta DUC offices are located in Brooks, Calgary, Camrose, Edmonton, Grande Prairie, Hanna, Lethbridge, Red Deer, and St. Paul.



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For more information:

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