

## What is a Watershed?

Most of the rain and snow falling outside your window will eventually find its way to a local water body – rolling downhill across the land, forming rivulets and joining small streams, and finally emptying into a river or lake. That area of land or “gathering ground” from which water drains to your local water body is your watershed.

Watersheds vary in size and scope. On a grand scale, the Rocky Mountains divide Canada into three very large watersheds which discharge into the Pacific, Atlantic, and Arctic oceans. On the other hand, the land surrounding an ornamental pond in your backyard can also be a watershed. Whether large or small, every place on earth is a part of a watershed.

The bodies of water found in our watershed include rivers, lakes, streams, seasonal creeks, wetlands, ponds, and aquifers containing groundwater. However, these bodies of water can only be as healthy as their supporting land. In the North Saskatchewan River Watershed, water flows over and through rangeland, residential land, industrial land, oil and coal deposits, cities, towns, parks, reserves, forests, and croplands.

All our combined actions, whether commercial, industrial or personal, contribute to our watershed’s health. This is a key idea behind a watershed approach.

## What is a Watershed Approach?

Every community in the North Saskatchewan River Watershed directly impacts the watershed in their area. These impacts should be monitored and managed to ensure the sustainability of the entire watershed. An integrated watershed management approach brings all the people living in a watershed together to make decisions that respect the watershed as a whole.

Landowners, stakeholders, and municipalities cooperate with the federal and provincial governments to manage water resources. This is because watersheds cross jurisdictional boundaries and fractured, politicized management can break up ecosystems.

Local communities share in the responsibility, knowing their ‘downstream’ is somebody else’s ‘upstream’. What each user does in the watershed affects water quality for all users. This is especially important when we consider that the biggest problem in most watersheds is non-point source pollution – pollution that comes not from a single source like a factory or a treatment plant, but from thousands of small sources like homeowners fertilizing their lawns or motor oil washing off roads into storm drains.

An integrated watershed management approach also makes watersheds the focus for management, rather than just the water. When we protect and enhance the watershed as an ecosystem, we recognize the relationship between human needs, ecological processes, and water quality. The state of our water is intimately connected to the health of the land, the presence of diverse plant and animal species, and the choices we make about human land use.

Communities can start up their own watershed groups in order to balance the human, social, and ecological demands on their watersheds – today and for future generations. This Toolkit is designed to help local watershed groups become educated and take action. Read on to find out what you can do in your community!



Learning about your local watershed is the first step toward improving your water quality, the health of the environment, and the amount of water available. The best way to learn about your watershed, its importance, and your role in protecting it is through a group effort. Investigating your watershed can be an interesting project for schools, youth groups, cottage owners, agricultural groups, landowners, counties, and municipalities.

Your watershed can include a local lake, stream, or wetland, or it can be the region surrounding your town. It might include the source of your water supply or the place you like to swim, fish, or bird watch.

Finding out the answers to watershed questions isn't hard. Get a group together and use these sample topics to get started!

**Drinking Water Quality** - What is the source of your drinking water? What is the quality of your water?

(Test it to find out! Check out [www.agric.gov.ab.ca/navigation/sustain/water/index.html](http://www.agric.gov.ab.ca/navigation/sustain/water/index.html) for an introduction to water quality monitoring.)

**Geography** - Do you know the boundaries of your local watershed? (Survey your area or check topographical maps to find out your watershed boundaries. They are marked by the higher continuous ridges that determine the direction the water drains in. To see how you fit into the province's river system, check out the map of Alberta's seven river basins at [www3.gov.ab.ca/env/water/basins/index.html](http://www3.gov.ab.ca/env/water/basins/index.html)).

**Ecology** - How healthy is the land that makes up your watershed? Are there chemical pollution or erosion issues in your area? Does the land have any other problems? (Talk to people who have lived in the neighbourhood for a long time to see if they've noticed any changes.) Which plant and animal species live in your watershed? Do you know of any endangered species in your area? (The Alberta Government lists species at risk at [www3.gov.ab.ca/srd/fishwl.html](http://www3.gov.ab.ca/srd/fishwl.html)).

**Your Community's Impact** - How do you and your neighbours affect the quality of water in your watershed? How is your community sewage disposed of? How are your watershed resources used in your local economy? Who uses the water that drains from the area where you live and work to groundwater, streams, rivers, and lakes? How do people downstream from you feel about the water you leave for them?

**Political Influence** - What regulations and policies affect your water use? What are the jurisdictional boundaries that affect your community?

**Cultural Values** - What values do the people in your watershed hold about land and water? What are the historic uses of land and water in your community? (Check with your local library or historic society. The First Nations in your area may preserve oral histories about how the land was traditionally used.)

**Making Changes in Your Watershed** - What are some areas that need improving in your watershed? Do you know of anyone making innovative environmental changes in your area? Does your local watershed have its own watershed group? (If it doesn't, then you can start one! A directory of active watershed groups in Alberta is available at [www.albertawatersheds.org](http://www.albertawatersheds.org)).

Do regular visual surveys by driving or hiking through your watershed and noting changes in activity every season. Challenge your group to become the local experts on your watershed.



Because a watershed is made up of all the land and water over a large area, your options for projects that would help your watershed are limited only by the amount of resources, creativity, and effort you want to put in. Every action counts! Here are some suggestions to try in your area.

**Save Water** - You could choose to do a community-wide water efficiency awareness drive. Water efficiency saves you money if your water is metered. If you have a well, it will prolong the life of your well and your water pump. By using less water, you leave more water in the rivers, lakes, and streams for wildlife and other users downstream.

**Back Yard Watershed Care** - Consider your own back yard. There are a variety of ways you can reduce your personal impact. Cut back on the pesticides, herbicides, and fertilizers used on your property. Or, try landscaping your yard with plants other than lawn grass to reduce water and chemical use and give yourself a break from mowing and raking. Try composting your kitchen scraps and yard debris. There are many things you and your neighbours can do at home to help out the watershed.

**Wetland Appreciation** - Consider restoring a wetland that was unnaturally drained in past years or creating a new wetland where one never existed before. Ducks Unlimited Canada can help your group with this project.  
[www.ducks.ca](http://www.ducks.ca)

**Living By The Lakeshore** - If you live on or visit a shoreline, you can become an environmentally-friendly resident or guest. Reduce your impact on the lakeshore by maintaining a more natural shoreline. This means less yard work and more time for leisure activities. Always ensure that your sewage is safely disposed of. The Living by Water project has more tips online at [www.livingbywater.ca](http://www.livingbywater.ca)

**Riparian Area Management** - The vegetation along a stream, heavily influenced by the presence of water, is called a riparian area. When this vegetation is healthy, it acts as a buffer to filter and improve water quality. If your backyard borders a creek, maintain a buffer of native vegetation along your creek. If you have livestock, learn about grazing management for healthy riparian areas. Read about the St. Paul Community Pasture in the Watershed Success Stories section of this toolkit.

**Ground Water Well Testing** - You could test all water wells in your community. Contact your regional health authority. Often, they provide free water quality testing to rural residents with private drinking water wells. A map of regional health authorities is available at [www.health.gov.ab.ca/rhas/rhamap.htm](http://www.health.gov.ab.ca/rhas/rhamap.htm) Agriculture and Agri-Food Canada – Prairie Farm Rehabilitation Association (PFRA) may have done a study in your area and already tested some wells. Check out [www.agr.gc.ca/pfra/water/groundw.htm](http://www.agr.gc.ca/pfra/water/groundw.htm) for details.

See the right-hand side of this toolkit for more detail on each of these projects. In addition, the North Saskatchewan Watershed Alliance maintains a list of community watershed projects at [www.nswa.ab.ca/Take\\_Action/Project\\_Factsheets.shtml](http://www.nswa.ab.ca/Take_Action/Project_Factsheets.shtml)

Check them out to see what's been happening in your area.



It is easy to underestimate how much watersheds do for us. When watersheds are healthy, their contribution is often taken for granted. It is only once they have been compromised that we notice how effectively they once worked.

Healthy watersheds provide us with many benefits and services that improve our quality of life. These benefits can be categorized into three main points:

**Human Health** – A healthy watershed provides us with a good source of water for our treatment plants and wells.

Well-managed groundwater aquifers provide abundant well water. Rivers and streams are clean enough to swim in, and the fish are safe to eat.

**Ecological Health** – A healthy watershed has the ability to recover from human or natural disasters. It provides habitat for diverse species and naturally filters contaminants and sediments from our water supply. Water bodies moderate extreme weather, reducing the severity of floods and droughts. Intact watersheds decrease erosion, preserve our natural resources, and keep the hydrologic cycle functioning properly.

**Economic Health** – A healthy watershed helps us to maintain renewable economic resources. Clean water enhances irrigation, agriculture, and industrial activity and saves us money on water treatment. Natural areas provide opportunities for recreation, ecotourism, fishing, hunting, trapping, bird watching, photography, hiking, and the economic spinoffs that accompany them. They also provide medicinal plants for harvest and increase nearby property values. Hydroelectricity generation provides power to light and heat our homes and businesses.

If we take care of our watersheds, the health of our land and our communities will follow closely behind. Responsible watershed stewardship creates jobs while respecting our connection to the Earth. And, it provides one final benefit – watershed protection is cheaper and more efficient than clean-up measures.





There is a strong connection between watershed health and human health. When a watershed is properly cared for, the water used for drinking and recreation will be safer and cleaner.

Water from an unhealthy watershed can contain hazardous levels of illness-causing agents like *Giardia* spp., *Cryptosporidium* spp., *Escherichia coli*, and toxins from blue-green algae blooms. It can contain effluents, chemical byproducts, and heavy metals from industries and manufacturing plants. It can also be contaminated with pesticides, human medications that enter the water supply through sewage, and harmful nitrates from fertilizer, livestock and human wastes.

An unfortunate example of the precious link between watershed health and human health is the Walkerton crisis of May 2000. Cited as the worst *E. coli* outbreak in Canadian history, 7 people died and a reported 2300 residents (of the Ontario town's population of 5000) were treated for symptoms from a bacterial infection. An investigation revealed that *E. coli* 0157:H7, found in cattle manure, was the primary contaminant that entered the wells that supplied the town's water.

The cattle farmer was using best management practices, but inadequate monitoring and water treatment allowed the contaminant to pass into all the homes in the town. Once diagnosed, the water supply was turned off for a period of time until the water distribution system could be cleaned up. As a result of the Walkerton incident, many provinces have since tightened regulations on well head protection, farm environmental plans, water treatment facilities and testing policies.

A watershed can become contaminated very easily, so taking care of our watershed is everybody's responsibility. As a result of industrial, agricultural and personal waste runoff, everybody is contributing to the quality of our drinking water. The choices we make every day determine the health of our watershed and our communities.

*Giardia* spp.



*Cryptosporidium* spp.



*E. coli*





Maintaining watershed health directly impacts ecological health, encompassing everything from clean water to healthy riparian areas. It is important to understand that maintaining a healthy watershed means more than keeping the water clean - it also includes sustaining a complex network of aquatic and land-based ecological systems throughout the entire area.

Thriving riparian zones (the areas along the water's edge) provide habitat for aquatic plants and breeding and feeding areas for many species of birds, animals, and insects. Healthy riparian areas also protect spawning areas for fish and allow them to live in a more favourable environment.

Intact wetlands act as nature's kidneys by filtering out contaminants such as sediments, chemical residues, and animal wastes. They absorb excess nutrients, prevent topsoil from running off, and reduce the impact of sewage and storm drain runoff. Wetlands also recharge groundwater, absorb floodwaters to lessen their severity, and contribute to increased soil moisture, local cloud formation and rainfall.



River valleys and stream beds act as natural travel corridors for many animals and migrating birds. By maintaining good riparian zones and natural habitats along these corridors, we can help to ensure the health of many of these species. This creates havens of biodiversity in the midst of human activity. When your watershed is healthy, waterfowl, fish, and other animals will thrive, strengthening the web of ecological interaction your area.



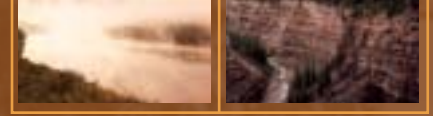
Healthy watersheds provide support for our economy. The North Saskatchewan River Watershed has a rich supply of resources that we use locally and are exported nationally and internationally.

These include:

| Natural Resource    | Economic Applications   |
|---------------------|---|
| Trees               | Forestry and lumber products  |
| Coal/Salt/Minerals  | Mining  |
| Water               | Hydroelectric dams, cooling for industrial processes, drinking, wastewater disposal, fishing and recreation |
| Oil and Gas         | Fuel, refined oils and petroleum byproducts   |
| Animals             | Hunting, trapping, photography and recreation   |
| Soil                | Agricultural production   |
| Grasslands / Forage | Cattle grazing  |
| Whole Ecosystems    | Tourism, recreation, and scientific research  |

Here in Alberta, we rely on these resources to provide us with economic stability. The development of these resources and the spinoff economic activity they create is what puts food on our tables. Therefore, it is important that we manage these resources responsibly to maintain them for the future.

Integrated watershed management balances development with natural resource conservation, economic security, and social well-being. Good planning can preserve a sense of community, create productive land use patterns, and enhance the economic and environmental value of resource lands.



### Organizing Your Watershed Group

*“Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it is the only thing that ever has.”*

– Margaret Mead

Starting your own watershed group is easier than it might seem. If you are concerned about your area and have a vision of how things could be different, there are probably others in your community who feel the same. Talk to your friends and neighbours to see how they feel. If there’s enough interest, call everyone together for a meeting where you can:

- Choose a name and decide what issues are appropriate for your community and your members to work on.
- Make note of all the assets you have and what you need. Include the time and skills of your members.
- Brainstorm about the kinds of projects group members would like to tackle and define how you’ll measure success.
- Set a social atmosphere for the group. Plan get-togethers and make sure everyone feels included and appreciated.

You may wish to designate someone as a facilitator to keep group discussion moving forward. Stick to a consensus style of decision making and seek out common ground to provide a focal point for the group.

Once you have established your group’s needs, talk to everyone you can think of and ask them if they know anyone who can help. Sooner or later, you’ll find the perfect person for the job! Here are some resources that will also help:

Building Community Partnerships: A Guide for Creating Effective Land and Water Stewardship

This booklet is available from Alberta Agriculture, Food and Rural Development or online at

[www.agric.gov.ab.ca/sustain/water/quality/lwstablecontents.html](http://www.agric.gov.ab.ca/sustain/water/quality/lwstablecontents.html)

Another useful guide to watershed partnerships can be found online at

[www.ctic.purdue.edu/KYW/Brochures/BuildingLocal.html](http://www.ctic.purdue.edu/KYW/Brochures/BuildingLocal.html)