

Groundwater Management

Water is one of Alberta's most important natural resources. It is one of the building blocks for balanced economic development in the province.

Both groundwater and surface water are found in relative abundance in many areas of Alberta. Only by careful use and protection of these resources can we count on a secure supply of water for future generations. Two primary pieces of legislation provide a framework for water management and protection.

The ownership of all groundwater and surface water is vested in the province. The *Water Act* provides a system for licensing all water diversions and use. It also requires licensed water well contractors to obtain an approval to drill and construct water wells.

The *Environmental Protection and Enhancement Act* provides control and prevention of the release of substances that may cause an adverse effect on water resources. It also requires proper reclamation or remediation of contaminated groundwater sites and environmental impact assessments to determine the effects that any major development will have on our water resources.

Groundwater supplies in Alberta are currently managed through:

- Inventory
- Allocation and licensing
- Protection and conservation.

In designing legislation and policies, groundwater and surface water are considered as two forms of the same resource because they are often connected. Although the interactions between them are not always easy to see or measure, both can be affected by human activities.

Inventory

Alberta Environment and Sustainable Resource Development (AESRD) maintains a comprehensive inventory of groundwater resources at the Groundwater Information Centre. The primary purpose of the centre is to collect, store and make available to the public all water well information in the Alberta Water Well Information Database (AWWID). Their data includes the following information.

Hydrogeological Information	Other Information
Water well drilling reports	Original well owner's name
Baseline water well testing reports	Legal land location
Geophysical logs	Driller's name
Lithology	Drilling dates
Water well chemistry reports	Well construction details
Yield test data	Intended use of water
	Anticipated water requirement

To contact the Groundwater Information Centre call: (780) 427-2770.

All this information is available to the public. It is useful to collect information about water sources and wells in your area before you begin new well construction.

AESRD's Groundwater Observation Well Network (GOWN) has over 230 active wells ranging in depth from 5-400 m (16-1312 ft.). Data on water quality and water level fluctuations from these wells provide information on the characteristics of various aquifers throughout the province.

A series of regional groundwater reports have been produced for counties and municipal districts in Alberta. These reports provide an overview of groundwater resources and characteristics. Shallow and deep aquifers are identified along with potential yield and water quality. These reports may be available at county offices or the Alberta Government Library. See Module 12 "Other Resources".

For more information on the Provincial Groundwater Inventory Program, see Module 12 "Other Resources".

To further our understanding of the occurrence and movement of provincial groundwater resources, AESRD has also partnered with the Alberta Geological Survey to run the Provincial Groundwater Inventory Program (PGIP). Airborne geophysical surveys are being conducted to collect geological data. Regional groundwater flow models are being developed using this data and water well and oil and gas drilling records. This work is being supported by the drilling of new boreholes, groundwater sampling and other field-based activities.

Allocation and Licensing

The right to divert and use groundwater and surface water may be obtained through a licence issued to the user. The terms and conditions of the licence are intended to protect the source of water supply, the rights of the licensee and the rights of other water users who are already using the water source.

Under the *Water Act*, the priority on the licence (the date) determines priority of use. A user who was licensed first has prior right to the water source before those licensed at a later date. These rights are valid as long as the specified use continues. It can be cancelled for:

- Not exercising the right to use the water (non-use)
- Non-performance of a condition of a licence.

During emergency situations, the government has the power to suspend a water licence and redesignate the water for other uses.

Licensing is not required when water is used for household purposes. The legislation clearly defines “**household purposes**” as the use of up to a maximum of 1,250 m³ of water per year per household (750 gallons per day (gpd)), for the purposes of human consumption, sanitation, fire prevention and watering animals, gardens, lawns and trees. A “household” is further defined as one or more individuals living in a single, private and detached dwelling place.

Legislation further provides that water for household purposes has priority over all other water uses, and has no priority in relation to other household users. This means that during times of shortage, household users are entitled to their statutory right before other users of water and all household users have equal priority.

The *Water Act* also provides for a new category of rights defined as the “**traditional agricultural user**” that applies to water historically used for watering livestock and pesticide application to crops. Users were given a one-time opportunity to register up to 6,250 m³ of water per year (3,767 gpd) for “traditional agricultural use”. This registration protects the landowner’s right to use water by assigning the registration a priority number “grandfathered” back to the date when the water was first put to use. Registration was voluntary, so if the landowner decided not to register, they could continue to use the water, but such use would not be protected.

Registration does not guarantee that a producing aquifer will always be capable of supplying the amount of water that you require. In addition, water required in excess of the registered amount, or for any other purpose (agricultural or otherwise), requires formal licensing.

The Water Act identifies three kinds of users:

- *Household user*
- *Traditional agriculture user*
- *Licensee.*

Formal licensing is required for water use from wells that supply:

- *More than two households*
- *Larger agriculture operations*
- *Municipal users*
- *Industrial users*
- *Other major water users.*

The applicant and the licensed water well contractor should discuss the purpose of any new well being drilled. If the well is going to be used for a non-household purpose it must be constructed in a manner that will allow it to be licensed. Wells that require licensing for diversion and use of groundwater cannot be constructed with a multi-aquifer completion.

To apply for a licence to use and divert water, contact a regional office of Alberta Environment and Sustainable Resource Development. See Module 11 "Contacts for more information" and see AESRD's "Guide to Groundwater Authorization", Module 12 "Other Resources".

Obtaining a Licence

For diversion and use of groundwater for any purpose other than household or traditional agricultural use, you will need to make application under the *Water Act* for a licence. You will be required to provide information about your project, such as:

- Location of your well(s), whether existing or newly drilled
- Anticipated depth interval that water will be taken from (depth to the aquifer)
- Total quantity of water needed
- Time frame for water use (year round or seasonal).
- A yield test
- A survey of nearby groundwater users

This information will be reviewed by AESRD to determine whether or not you will be required to give public notice of your project. If the project is large, public notice will be necessary. This gives local water users an opportunity to voice any concerns.

A licence may be issued after all the required information is received, all concerns are addressed and after a review of your file satisfies the Department that your well is capable of providing adequate water for your project without causing:

- Unreasonable interference with other water users
- Adverse effect on the aquifer or the environment.

Your licence may include conditions requiring you to submit monitoring data including water level fluctuations, quantities of water used and water quality. It may also include investigating any complaints from nearby water users and monitoring of existing water wells.

The licence will have an expiry date based on the nature of the project or the applicant's estimation of how long they will need the water.

Protection and Conservation

Protecting groundwater resources against overuse, mining and pollution is an integral part of any water management strategy.

Both the *Water Act* and the *Environmental Protection and Enhancement Act* provide protection for our water resources. For example, all licensed water well contractors must obtain an approval that authorizes them to drill water wells in the province. The approval is issued only if the company has certified journeyman water well drillers available to operate each one of their drilling machines. The standards for drilling, constructing and reclaiming wells is outlined in the Water (Ministerial) Regulation of the *Water Act* and it applies to all water wells, whether they are installed for temporary water supply or for long term use.

While regulations and legislation go a long way to protect our water sources, it is the users who have the greatest impact on the safety of the water supply.

We can no longer take for granted an unending supply of good quality groundwater. Water must be managed, protected and conserved for future use. Remember, our land-use activities can have a negative impact on groundwater quality and cumulative use can affect water availability.

See Module 9 "Plugging Abandoned Wells" for details on how to properly plug a well.

Fertilizers, pesticides, fuel storage tanks, landfills, animal waste and septic systems are examples of potential contamination sources. Always observe the regulated minimum setback distances from contamination sources. See Module 3 "Design and Construction of Water Wells".

