

A Study of Groundwater Conditions in the Sturgeon River Basin

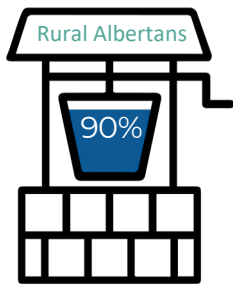
What is Groundwater?

Groundwater is water from rainfall or snowmelt that seeps below ground and is stored in the spaces between rock particles and sediment. Geologic areas with more permeable sediment produce flowing, useable quantities of groundwater known as aquifers.

About this report:

- Summarizes hydrogeological conditions in the Sturgeon River basin using existing studies
- Explores the role that groundwater plays in sustaining the River and lakes in the basin
- Addresses existing data gaps and provides recommendations for addressing gaps

The Role & Importance of Groundwater

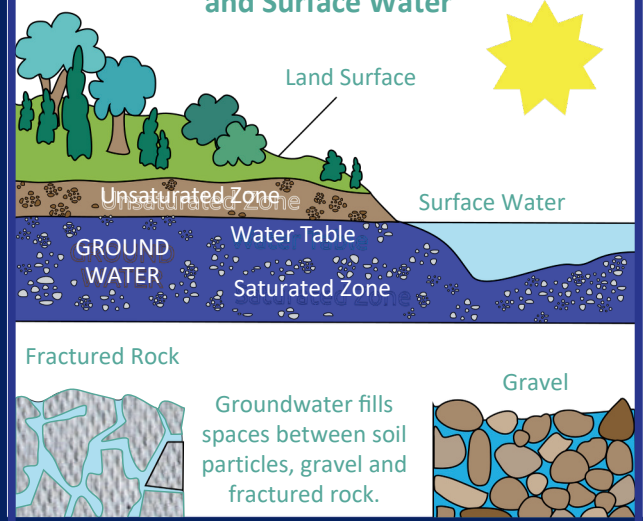


- Provides water for agricultural and industry use
- Provides base flows for rivers and lakes that maintain water levels
- Is a key source of drinking water for many rural residents

DID YOU KNOW?

Ninety percent (600,000) of rural Albertans rely directly on groundwater for their drinking water.

Connecting Groundwater and Surface Water



Groundwater Recharge Areas = Snow & rain runoff soak into soil and move below ground and replenish groundwater areas and aquifers.

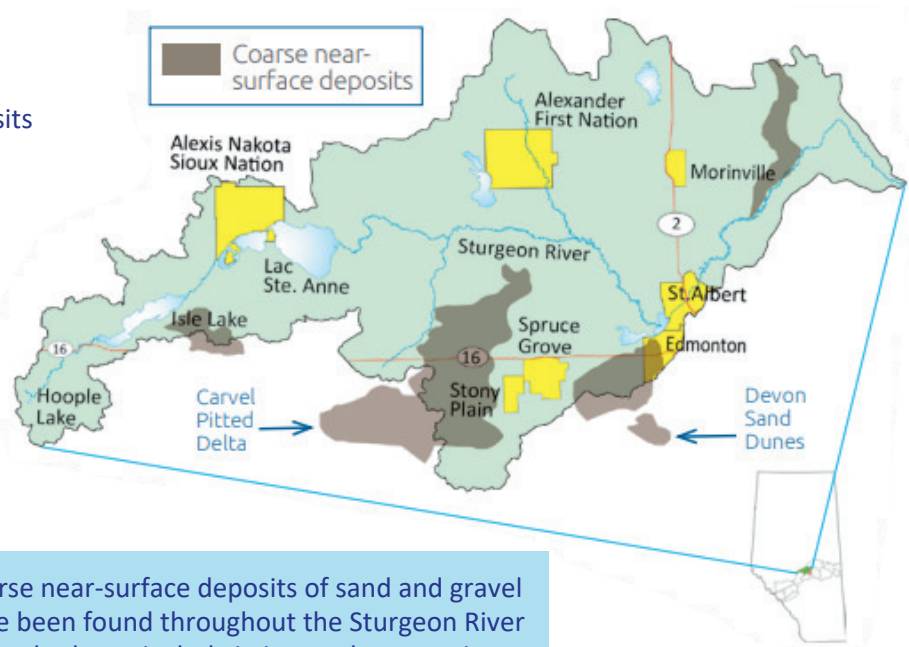
Groundwater Discharge Areas = Groundwater escapes above surface through water bodies or springs.

Groundwater Recharge Areas

- Are driven by gravity and topography
- Usually occur in uplands
- Are often associated with coarse deposits

The Carvel Pitted Delta

The Carvel Pitted Delta is a groundwater recharge zone within the Sturgeon River watershed. It is important to protect recharge areas which replenish aquifers. These aquifers are sustainable sources of drinking water and are used for agricultural and industrial purposes.

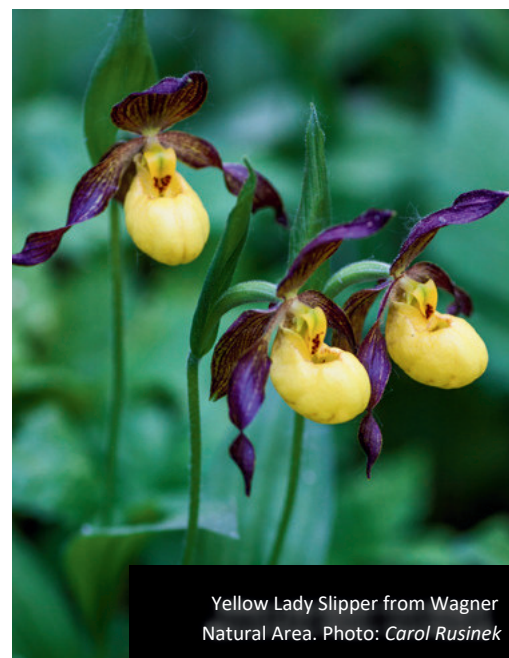


Coarse near-surface deposits of sand and gravel have been found throughout the Sturgeon River watershed, particularly in its southern portions.

Groundwater Discharge Areas

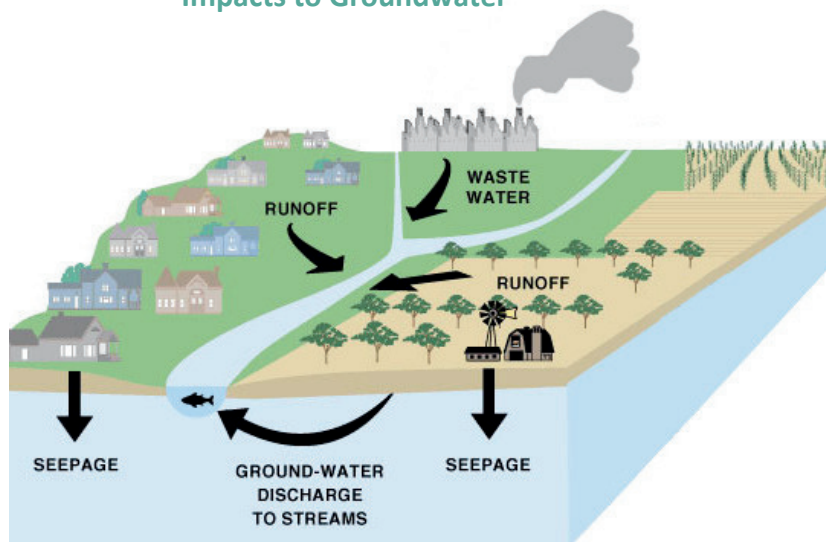
- Usually occur in lowlands or valleys and are associated with river, lakes, wetlands (e.g. fens), seeps or springs
- Can also occur in areas of rapidly changing topography, such as where aquifers become exposed in hillsides and show up as springs
- Groundwater discharge from seeps or springs often appear rusty or reddish due to natural levels of iron in the bedrock

“Wagner Bog” (actually a fen) is a discharge zone. South of this natural area is an upland groundwater recharge zone. A sand and gravel aquifer provides a pathway for groundwater flow from the recharge area to the fen. The supply of mineral-rich groundwater allows many unique moss and orchid species to flourish in the Wagner Natural Area.



Yellow Lady Slipper from Wagner Natural Area. Photo: Carol Rusinek

Impacts to Groundwater



Current Issues for Groundwater

- Risk of contamination of aquifers or drinking wells from urban runoff, roadways, agriculture or improperly decommissioned wells
- Increased use of groundwater that depletes the aquifer
- Land development in important recharge zones
- Unknown effects of climate change on aquifers and groundwater levels

Action Items for the Sturgeon River Watershed



Maintain or improve water quality



Meet the watershed's instream flow needs



Maintain or Improve aquatic ecosystem health



Protect and sustain groundwater quality and supply



Incorporate watershed management into land-use planning

Sturgeon River Watershed Alliance

For more information, please visit: www.nswa.ab.ca

To read the full report, view

