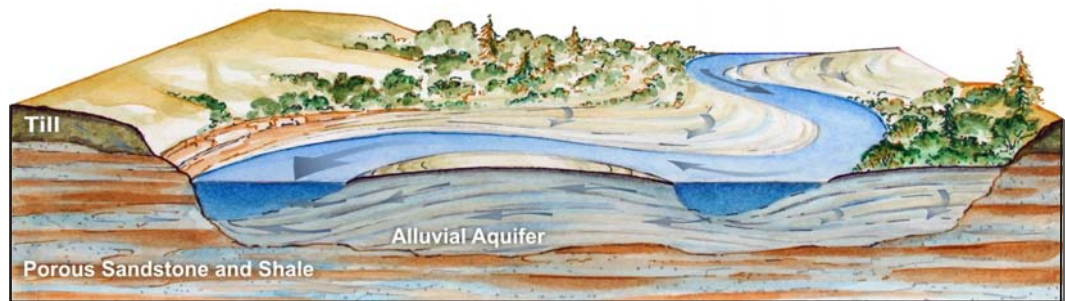


## How Is the Alluvial Aquifer Connected to the Elbow River?

Water flows slowly through the abundant gaps and spaces within the alluvial aquifer. The rate of flow through the aquifer varies from days to years depending upon the size of the spaces (porosity) and how well the spaces are connected (permeability). Groundwater from the alluvial aquifer flows into the river during periods of low river flow (fall and winter), and river water flows into the aquifer during times of high river flow (spring).

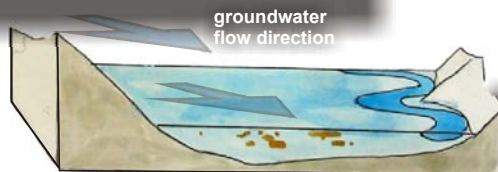


## What Are the Implications?

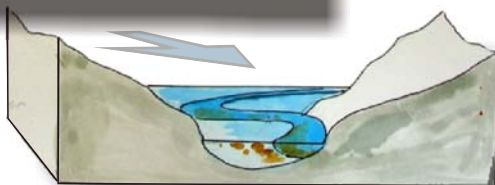
The connection of the alluvial aquifer to the Elbow River has important implications for the use and management of land within the Elbow River watershed. Contaminants originating from human activities on the aquifer can eventually make their way to the Elbow River.



Waterborne contaminants, originating from residential, agricultural, industrial and recreational activities, soak into the ground and into the alluvial aquifer. Potential contaminants include road salt, septic effluent, fertilizer, pesticides, animal waste, oil, detergent, and pharmaceuticals.



These contaminants move through the abundant gaps and spaces within the alluvial aquifer as flow sub-parallel to the river.



Downstream, contaminants move out of the alluvial aquifer into the Elbow River channel. This can be particularly rapid where bedrock constricts river flow. Elbow River alluvial groundwater and surface water eventually make their way to the Glenmore Reservoir and become drinking water for one in seven Albertans.

## What Are Potential Sources of Contamination?

Contaminants to the aquifer may originate from a variety of point (specific) and nonpoint (diffuse) sources.

Contaminant	Source
Pathogens	Septic systems, surface application and storage of manure, municipal sewer pipe leaks
Nitrate	Lawn and agricultural field application of fertilizers, septic systems, manure spreading and storage
Pesticides	Lawn and agricultural field application of pesticides, leakage from storage areas
Solvents	Leakage from garages, workshops, and storage areas; septic systems; dumps and landfills
Fuels	Leakage from garages, workshops, storage areas, vehicles, underground storage tanks, and pipes
Salt	Surface application of winter de-icing chemicals

