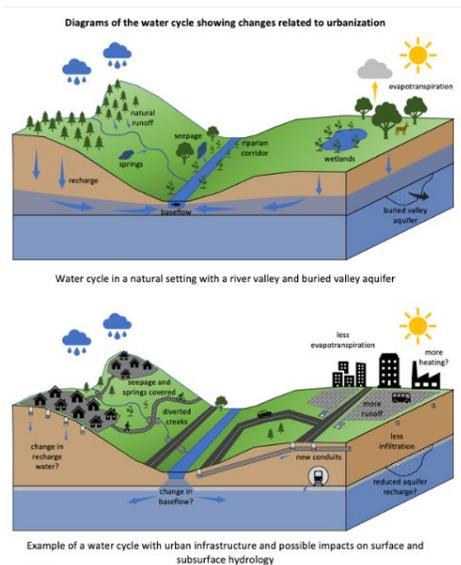


## Building water security and climate resilience into the City of Edmonton through innovative watershed management practices

The main objective of the proposed research project is to understand the complete urban water cycle for the City of Edmonton. This research will: advance the concept of using local groundwater as an alternative water source; improve our understanding of how urban geology influences surface water and groundwater; and demonstrate how considering the complete urban water cycle can aid watershed planning and urban development. While knowledge of urban drainage through creeks and storm water systems is established, and the knowledge of the regional groundwater setting is emerging, the complete urban water cycle is not well known at the city scale.



**RECIPIENT:**

University of Alberta – Professor Daniel Alessi



**PARTNERS:**

EPCOR, Alberta Geological Survey, City of Edmonton, North Saskatchewan Watershed Alliance



**TOTAL BUDGET:**

\$797,400



**PROJECT DATES:**

APR 2023 –

APR 2026



**AI FUNDING:**

\$375,000

## APPLICATION

This proposal fills a gap in our understanding of local and regional water cycle dynamics, providing an understanding of where, how and to what extent groundwater influences long-term water sustainability and security for an urban setting. It will result in the creation of a first 3D model of the City of Edmonton’s subsurface and allow for the assessment of local aquifers for complementary, alternative or emergency use.



# ALBERTA INNOVATES CLEAN RESOURCES

## ENVIRONMENTAL INNOVATION

### WATER INNOVATION PROGRAM

## PROJECT GOALS

- Bring together geological data from various sources; Leverage previous technical investigations to learn more about the City of Edmonton’s subsurface
- Examine whether two local aquifers can provide an alternative water source for the City of Edmonton during emergency scenarios
- Develop a 3D representation of surface and subsurface water cycling in the City of Edmonton
- Understand current and historical creek hydrology to set future creek flow objectives and facilitate watershed restoration

## BENEFITS TO ALBERTA

Water is essential to life, and sustains healthy and diverse ecosystems. Groundwater feeds wetlands, creeks and the North Saskatchewan River itself, and buffers the effects of drought on local life and livelihoods. The life cycles of some species of fish and wildlife are specifically dependent on groundwater. Water table levels also impact plant growth, affecting agricultural productivity and the abundance and health of vegetative land cover. Good quality water is essential to sustaining healthy people and communities, but is not equally and reliably available throughout the Province. Water safety, accessibility, and long-term sustainability is a must, and groundwater resources must be well understood within these contexts both to complement regional surface water assets and predict its societal potential.



**7 Students  
Trained**



**10 Publications**



**1-10 Project Jobs**

## CURRENT STATUS

### JAN 2024

Milestone 1 is complete. The Alberta Geological Survey has integrated subsurface data from the City of Edmonton, EPCOR, and previous mapping to create a preliminary 3D geomodel of the city; Two MSc students have completed training for HydroGeoSphere, an advanced hydrologic model for 3D surface and subsurface model; One MSc student has completed training for PCSWMM, an industry-standard model for stormwater movement through watersheds, and has developed an initial model for one of the urban creek watersheds in the city).