Strategic Priorities for Watershed Resiliency in the Sturgeon River Watershed

NSWA
NORTH SASKATCHEWAN WATERSHED ALLIANCE

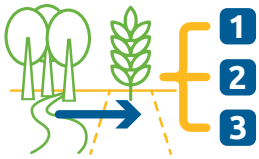
Defining Watershed Resiliency: Maintaining key hydrological features to perform various functions and absorb natural and human disturbance without shifting outside the bounds of normalcy.

Purpose of Report: Use models to predict which conservation or restoration strategies have the best effect on streamflow

5 KEY GOALS OF THIS REPORT

Create a set of indicators for assessing watershed resilience

Develop hydrologic & land use models for the watershed



Model scenario simulations of the impact of climate and land use changes on indicators

Recommend conservation and restoration areas

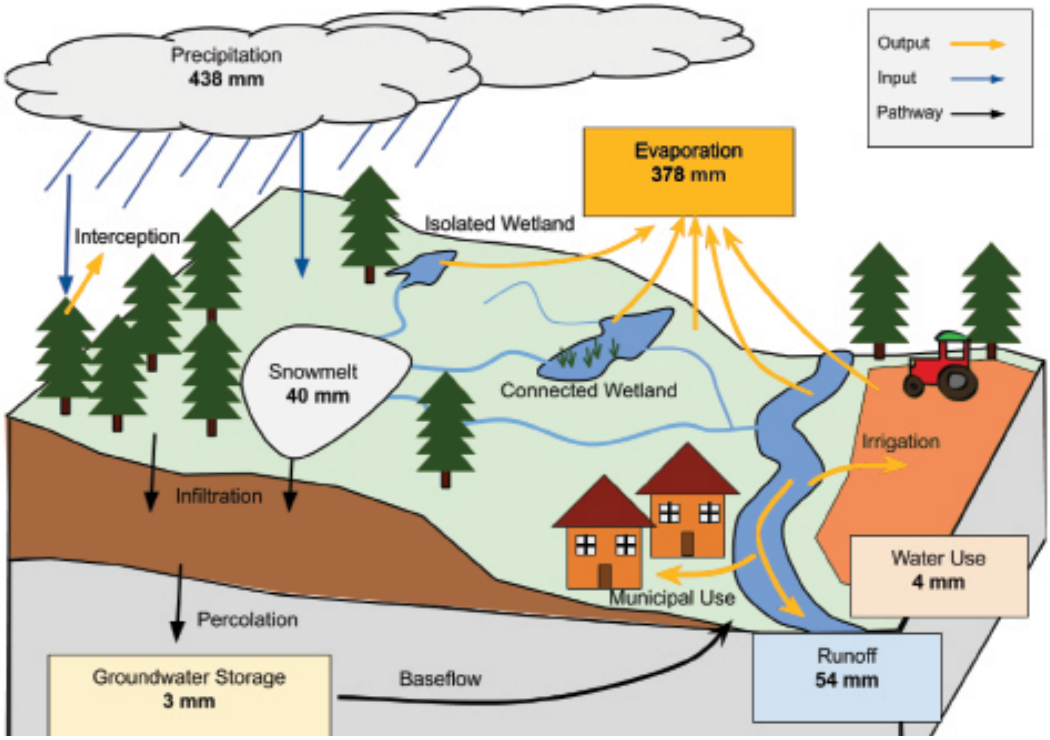
Create a user-friendly web-based tool to view model simulation scenarios

8 Streamflow Indicators were created to measure resilience based on:

- **MAGNITUDE:** peaks, lows, and frequency of flows
- **TIMING:** flood and drought events
- **YIELD:** changes in annual water yield and availability

Models were used to assess the effect of these elements on streamflow:

- Landscape and climate
- Current and future land use
- Conservation or restoration strategies



Landscape and land use shape the driving processes in the Sturgeon River watershed's water balance

- Evaporation is a dominant factor in the system
- A lot of the water in the VR system doesn't make its way into rivers and streams

= Low streamflow

Results

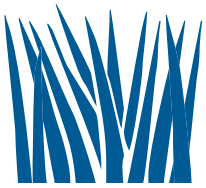
Using the hydrologic-land use model, three types of restoration strategies were simulated to understand their influence on the watershed's streamflow

3 TYPES OF RESTORATION

LOW POTENTIAL → HIGH POTENTIAL

Forest Restoration
LOWEST POTENTIAL

- Reduce peak streamflow in urban areas (downstream of Big Lake)
- Provide shade and slow runoff
- Reduce flooding



Grassland Restoration
MODERATE POTENTIAL

- Reduce high flow and frequency of flooding events in eastern portions of the watershed
- Help annual water yield downstream of Big Lake

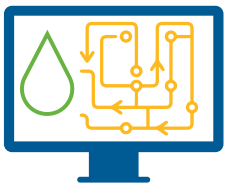
Wetland Restoration
HIGHEST POTENTIAL

Best strategy to:

- Reduce peak streamflow
- Provide consistent water supply
- Ensure reliable timing of peak flow

Suggests past loss of wetlands = big impact on SR watershed's hydrology

Recommendations



Update hydrological model as it is refined

Select locations for potential conservation or restoration projects

Assess specific field sites for feasibility of restoration activities

Model a combination of conservation and restoration strategies

Engage with stakeholders and funders for long-term success

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For more information, please visit: www.nswa.ab.ca
To read the full report, click here.