

# Strategic Priorities for Watershed Resiliency in the Sturgeon River Watershed

**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.

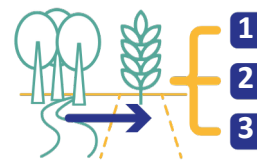
## 5 KEY GOALS OF THIS REPORT



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

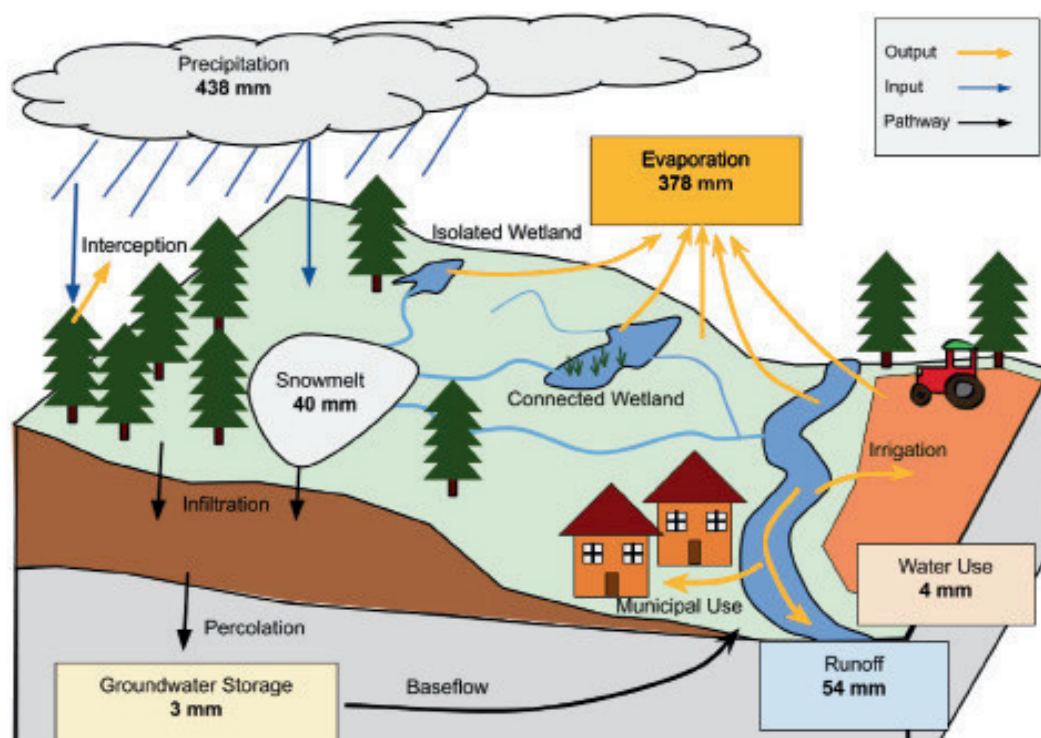
**8 Streamflow Indicators** were created to measure resilience based on:



- **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



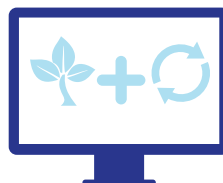
Update hydrological model as it is refined



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

