



# WELCOME

to the  
Astotin Creek Resiliency Study  
Community Session

August 2021

**We need your help to better understand  
and plan for the future of Astotin Creek.**

**Please feel free to ask any questions and to  
share your thoughts.**

**Thanks for participating.  
Your input is greatly appreciated.**

## ABOUT THE PROJECT

Astotin Creek and its tributaries have experienced three major flooding events in the past ten years. These events have caused flooded farmland, damaged county roads and threatened homes and industrial infrastructure within the Astotin Basin.

To help manage current and future water issues, Strathcona County is undertaking a detailed study to understand historical changes and current conditions for the Astotin Creek basin.

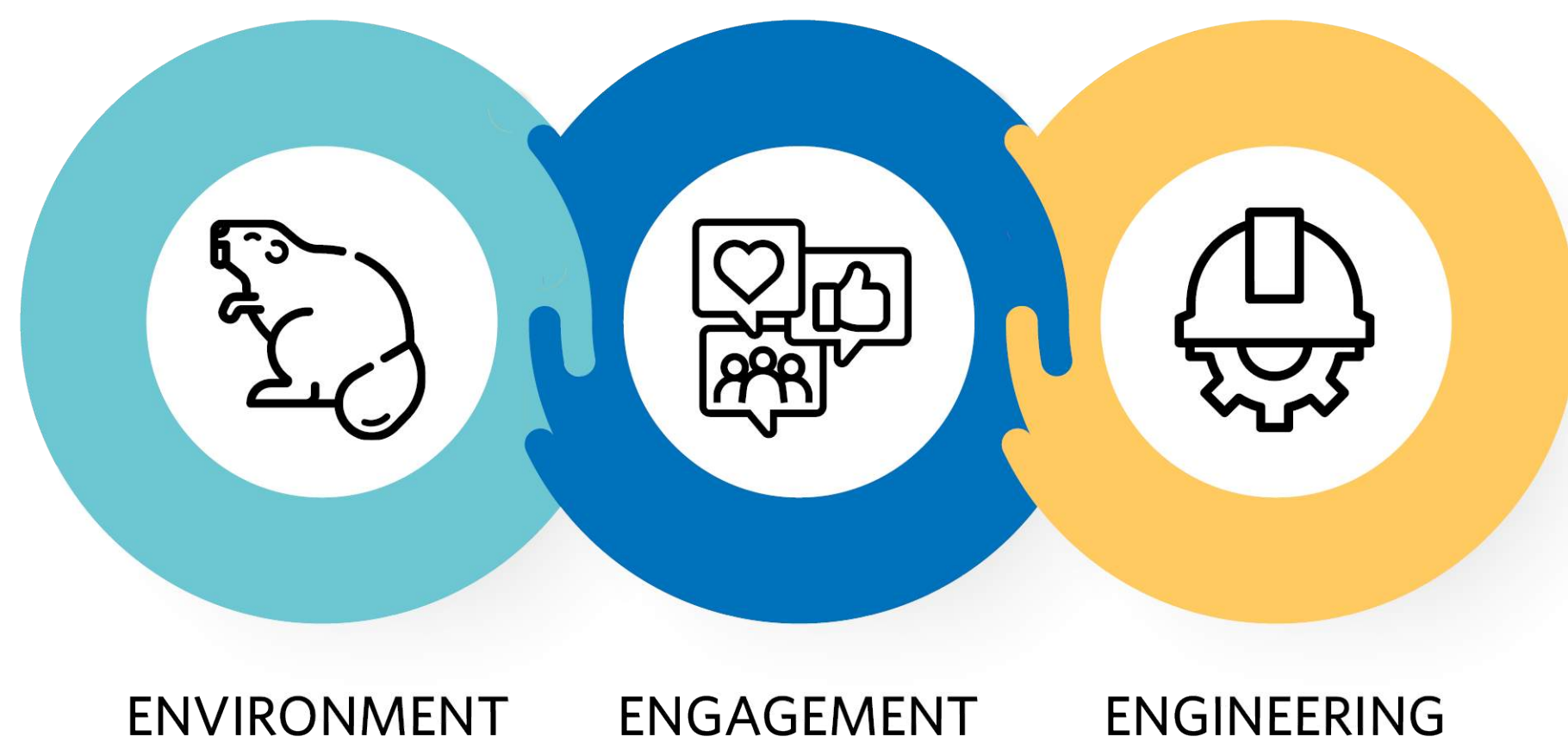
### The key goals of the study are to:

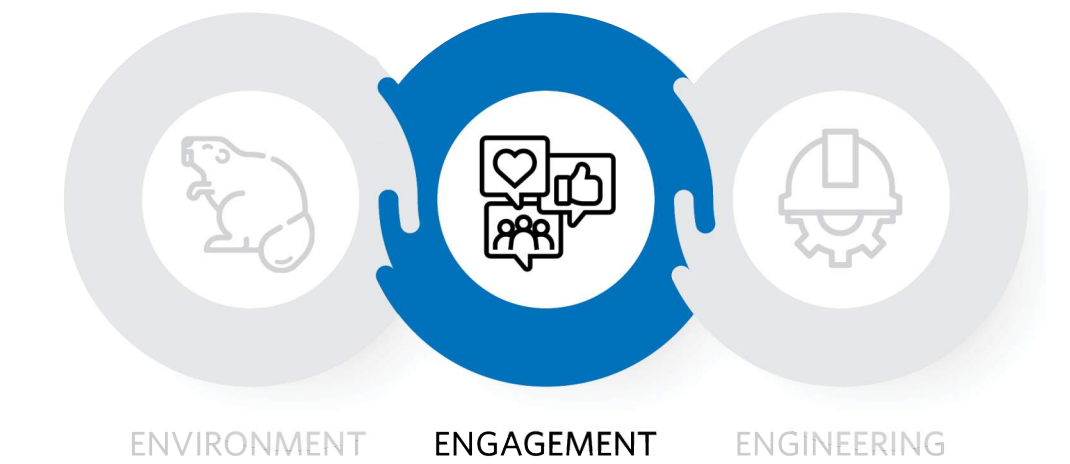
- Create an action plan that will address flood, drought, and water quality issues in priority areas within the Astotin Creek basin,
- Restore and enhance ecological connectivity and function in critical areas of the Astotin Creek basin, and
- Increase capacity, knowledge, awareness and participation by industrial landowners, private landowners, and agricultural producers in activities that can restore and maintain critical areas and functions of Astotin Creek.

The study will include technical assessments, analyses, planning and development of a Resiliency Action Plan. The technical work will be accompanied by Indigenous, stakeholder, and community engagement.

## Environment, Engagement, and Engineering

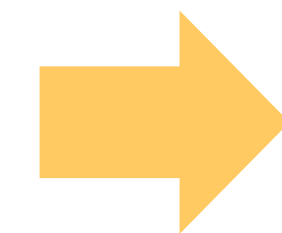
These three elements must be balanced when making decisions about Astotin Creek. The actions in the resiliency plan will reflect community and stakeholder input, sound engineering practices, and the need for a sustainable creek environment.





## ENGAGEMENT

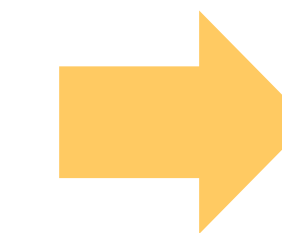
- Engagement Plan  
*Completed June 2021*
- Virtual Engagement Sessions  
*August 2021*
- Present preliminary engagement results to Advisory Committee  
*August 2021*
- Indigenous engagement  
*August 2021*
- "What we heard & did" summary  
*October 2021*
- Validation of Study and Action Plan with stakeholders  
*November 2021*



## On-going Engagement

### BASIN ANALYSIS

- Literature review  
*Completed July 2021*
- Fieldwork  
(Ecological & Hydrology)  
*Completed June 2021*
- Climate analysis  
*Completed June 2021*
- Public GIS Data Atlas  
*Completed July 2021*
- State of the Astotin Creek Watershed Assessment  
*August 2021*



### RESILIENCY ACTION PLAN

- Draft Resiliency Action Plan  
*November 2021*
- Presentation to Priorities Committee  
*November 2021*
- Resiliency Action Plan  
*December 2021*
- Presentation to Council  
*January 2022*

## ASSESSMENT OVER THE LENGTH OF THE WATERSHED 3 Land Use Zones



Upper Watershed  
Astotin Lake (Elk Island)  
Rural Residential Land Use



Middle Watershed  
Highway 15 Area  
Agricultural Land Use



Lower Watershed  
Bruderheim Area to N. Sask. River  
Industrial Heartland Land Use



## BIOPHYSICAL INVENTORY AND MAPPING

### What is involved

#### Field Surveys:

- Amphibians, breeding birds, mammals, fish habitat, water quality, vegetation

#### Mapping:

- Wetlands, streams & sub-watersheds

#### Searching existing data:

- Public databases (including citizen science – iNaturalist, NatureLynx)



## What we will describe

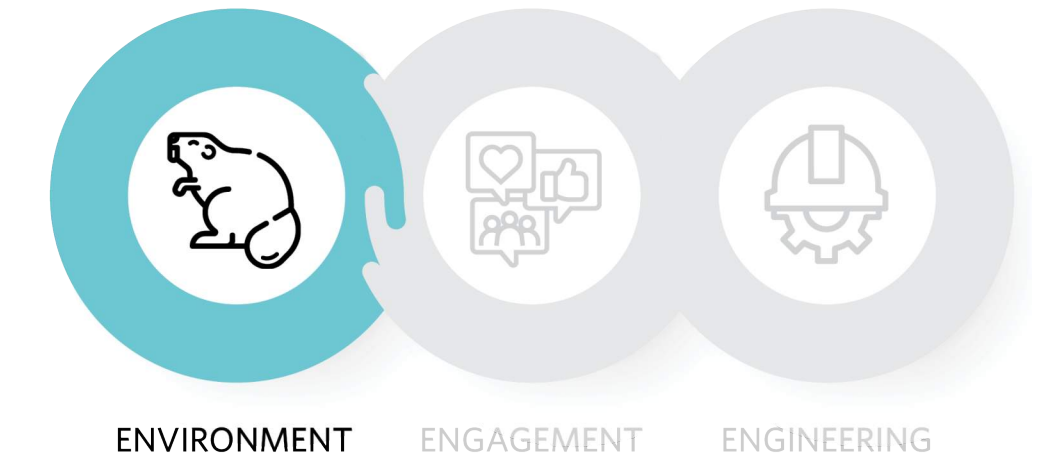
- Biodiversity and habitat along Astotin Creek
- Challenges to ecological function (i.e. Is the creek supporting the biological, chemical, and physical processes that a creek should support?)
- Potential for ecological restoration and water management

## How to participate

- Online Data Atlas – check it out, add to it!
- iNaturalist, NatureLynx – record your plant, wildlife and fish observations
- Tell us what you think of the watershed:

What you'd like to maintain – habitat, water quality, water quantity...?

What you'd change – water quality, invasive species ...?



Access Online:

<https://www.iNaturalist.ca>

<https://www.NatureLynx.ca>

<https://www.strathcona.ca/astotin>



## Survey and Base Data Collection

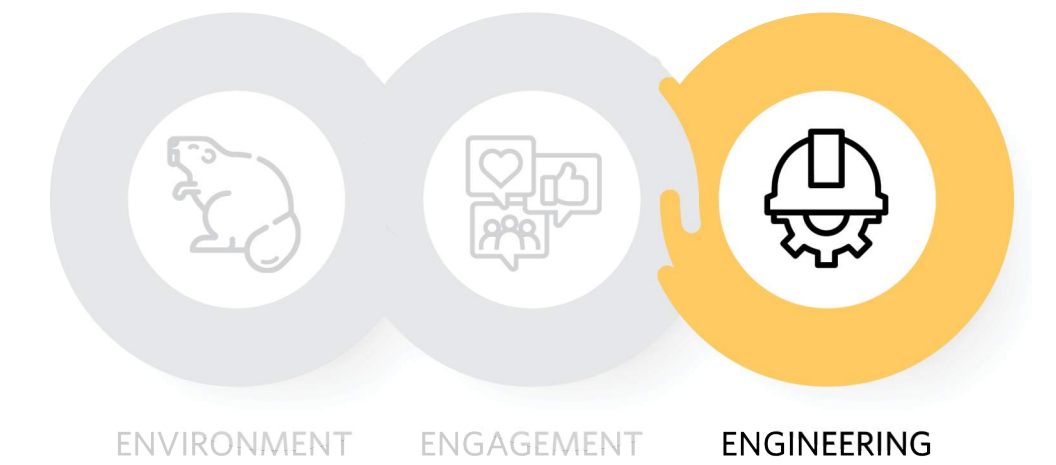
### What data was collected during our survey

- Survey of culverts, bridges, beaver dams, and other structures
- Water level and flow

This information will be used for the hydraulic model!

“Hydrology” is the science of studying the water system including precipitation and surface flows.

“Hydraulic modelling” is a mathematic model of a fluid flow system.







## HYDROLOGICAL ASSESSMENT

### What's involved in completing a hydrological assessment

Hydrological assessment allows us to understand the current water system and determine how that may change in the future.

"Hydrology" is the science of studying the water system including precipitation and surface flows.



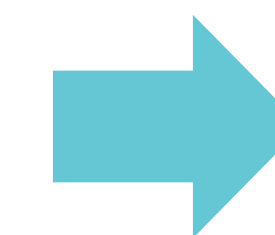
#### What data goes into the analysis?

- Climate data
- Rainfall intensity, duration, and frequency curves
- Flow data
- Land use information (past and present)



#### What types of analysis do we do?

- Analysis of climate change impacts on flood risk frequency. Climate change data includes: precipitation, snowpack and temperature data.
- Development of rainfall-runoff models for flood events specific to Astotin basin



#### What do we do with the analysis?

- We develop a hydraulic model that includes:
- Expected future flows taking into account climate change
  - Floods with different likelihood and frequencies
- We determine allowable water release rates for future developments.

## HYDRAULIC MODEL

### Model inputs include:

- LiDAR data
- Data collected from our field survey
- Estimated current and future flow (from the hydrological analysis)

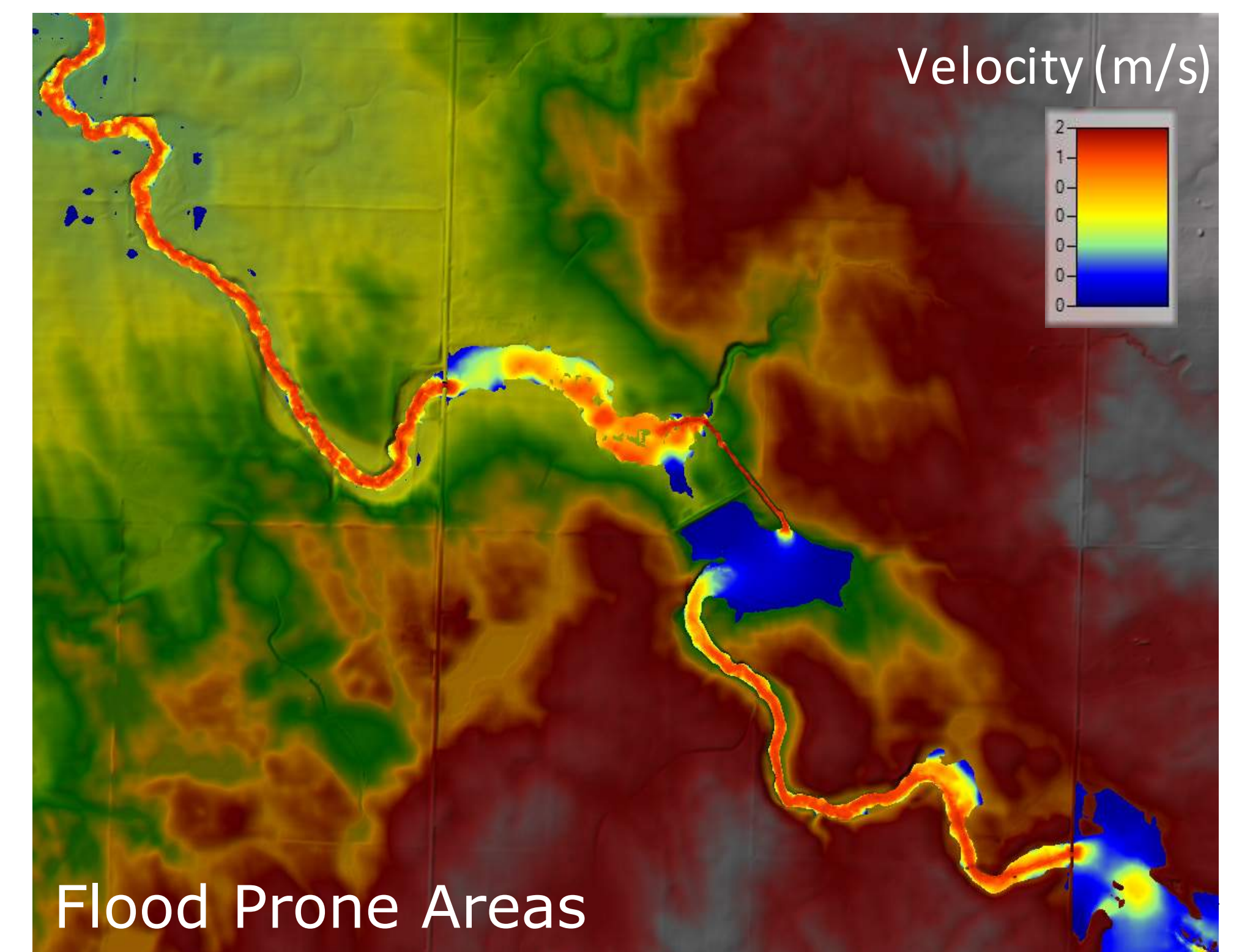
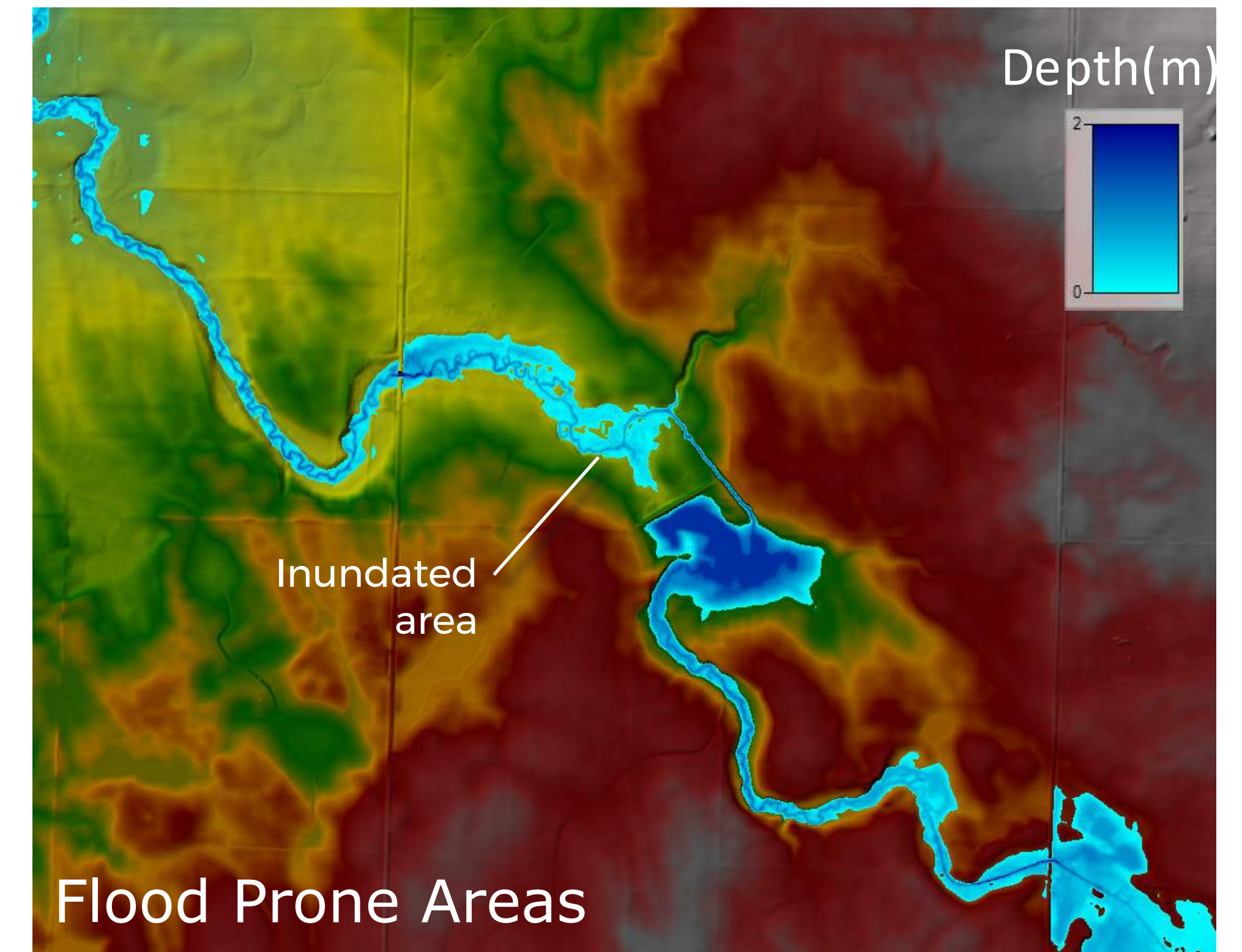
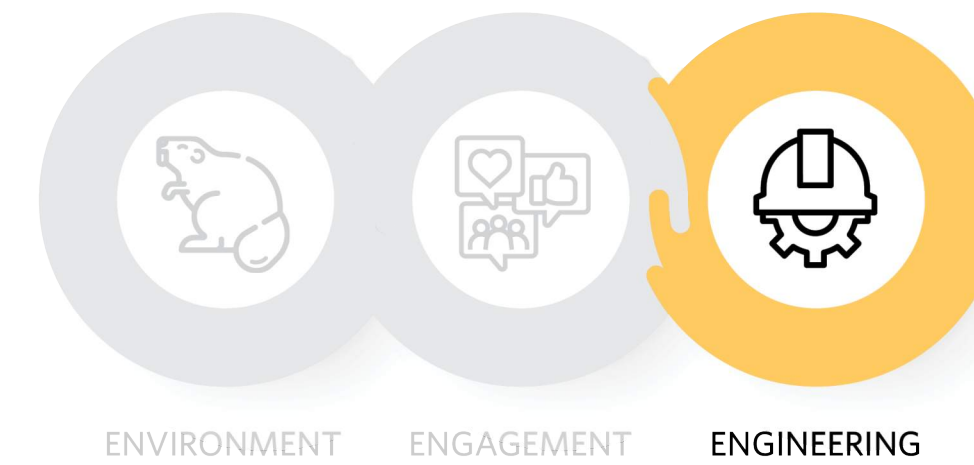
### Model outputs include:

- Flood inundation maps (current condition and future climate change)
- Flood hazard maps (based on simulated flood depth and flood velocity)
- Identification of undersized crossings (ie. culverts and bridges)

You can help us by sharing your knowledge with us!

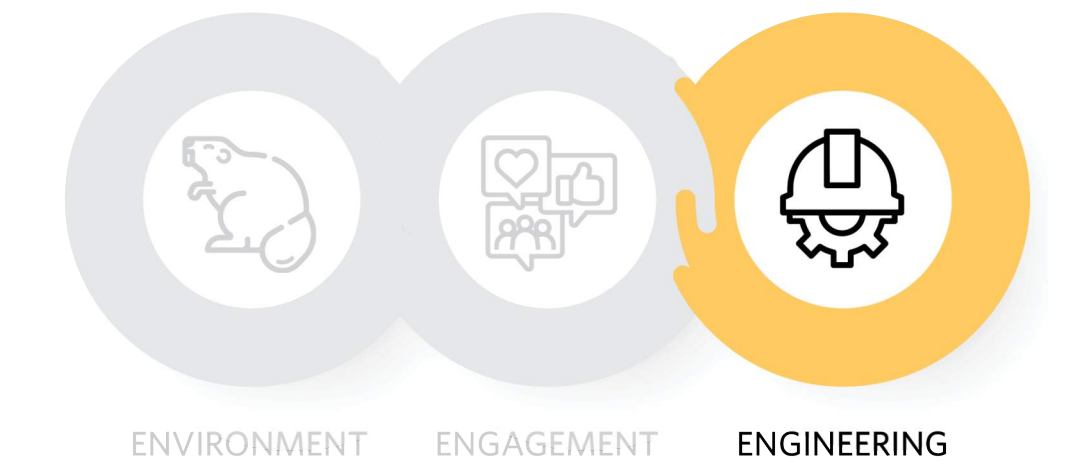
- Any information (extent and timing ) on the inundated areas during the historical flood events
- Any information on the possibility of the breach of beaver dams during the historical flood events

“Hydraulic modelling” is a mathematic model of a fluid flow system.



## OBJECTIVES

- To identify existing drainage challenges and opportunities in the watershed within the County jurisdiction.
- To determine the maximum allowable discharge rate for future developments.
- To recommend improvements in the watershed to reduce flood and drought impacts and enhance water quality.
- To complete conceptual design of the selected stormwater management controls including capital costs and long-term life cycle costs.



Our plan will include a toolbox of low impact development and conventional stormwater best management practices.



Naturalized Drainage Way

(Photo credit: Edmonton LID CIM Guide, 2016)

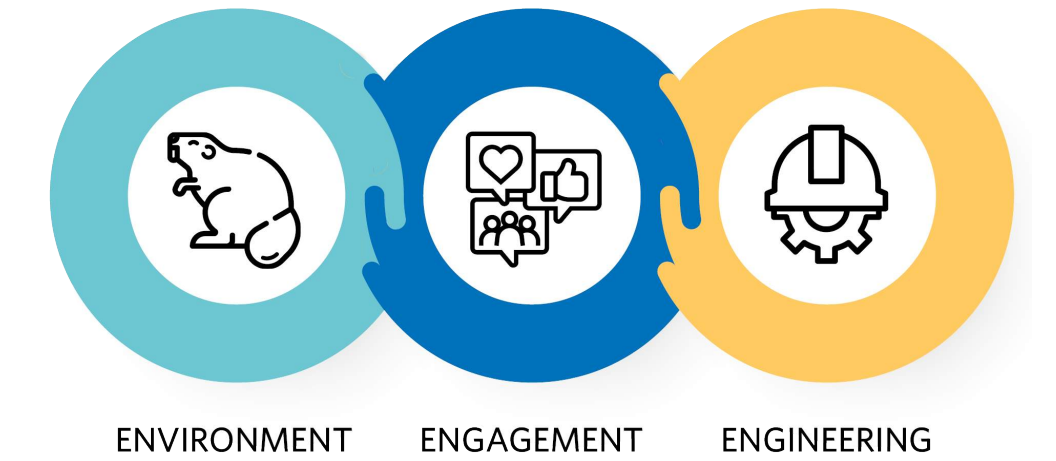


Wet Pond

(Photo credit: EPA Stormwater Wet Pond Guidebook, 2009)

## What is a “Resiliency Action Plan”?

The Resiliency Action Plan will be a prioritized set of recommendations and actions that the County, landowners, the public, and other stakeholders can use to guide development and conservation initiatives in the Astotin Creek Basin.



## How do I participate in the development of the Resiliency Action Plan?

### Help us understand

- What does a “resilient” Astotin Creek Basin mean to you?
- What is most important to you in the Astotin Creek Basin? What do you think is important to conserve?

“Resiliency refers to a creek’s ability to withstand and recover from drought and flood without the creek losing its ability to function, or suffering damage that it can’t recover from naturally without intervention”

### You can participate in the study by:

- Sharing your knowledge of historic flooding in the region by emailing [astotincreek@strathcona.ca](mailto:astotincreek@strathcona.ca) or answering the “Project Questions” survey
- Collecting biodiversity data using the iNaturalist or NatureLynx apps ([www.iNaturalist.ca](http://www.iNaturalist.ca) and [www.NatureLynx.ca](http://www.NatureLynx.ca))
- Accessing and adding to the Data Atlas on the project website ([www.strathcona.ca/astotin](http://www.strathcona.ca/astotin))

## Learn more and share your thoughts

### E-Newsletter Sign Up:

Visit the project webpage to view the Data Atlas and sign up for the newsletter.

[https:// www.strathcona.ca/astotin](https://www.strathcona.ca/astotin)

### Environmental Planning:

Contact the Environmental Planning team for more information or to provide input into the study.

Phone: 780.464.8047

Email: [astotincreek@strathcona.ca](mailto:astotincreek@strathcona.ca)

### Survey links:

Follow the links below to provide your input on this session and on the technical questions posed during this session

[Engagement evaluation](#)

[Project questions](#)

