

8 Steps to Changing the Channel on Flood Readiness

Darwin Durnie

Chief Resiliency and Flood Mitigation Officer
Town of Drumheller

Michelle Tetreault

Communications
Public Works Management Corp





Changing the Channel: Putting the River at the Heart of the Valley

Overview

- 8,000 population
- 100km riverbank
- 3500 dwellings
- \$22 M DMAF
- \$28 M ACRP
- \$5M Town



Changing the Channel

We are a Flood Community

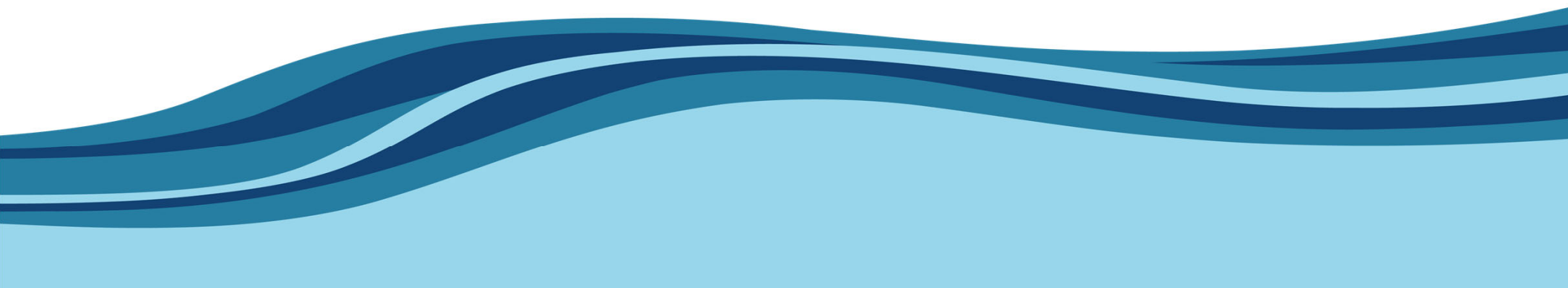
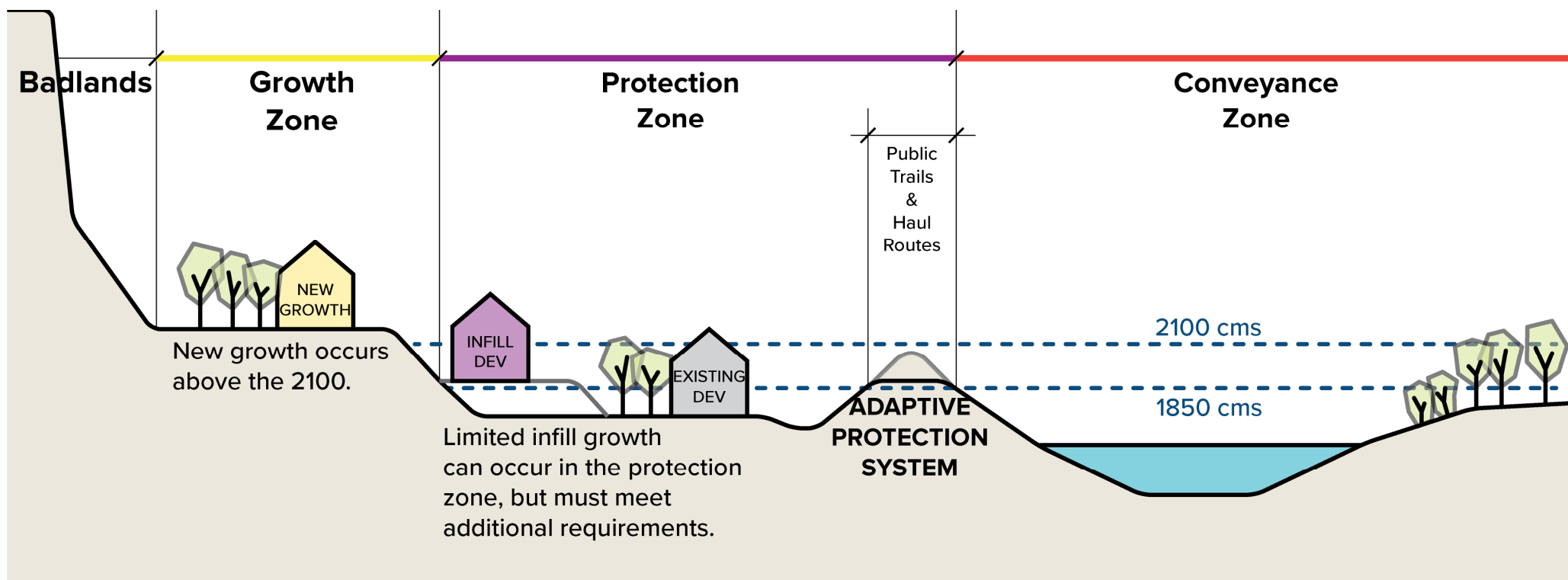
- Communications & Engagement
- Regulatory Approvals
- Conveyance Capacity
- Structural Measures
- MEP Modernization



Planning Assessment Impact Study

- To become resilient community needed to look at foundational policies and bylaws
- Put the river at the heart of planning

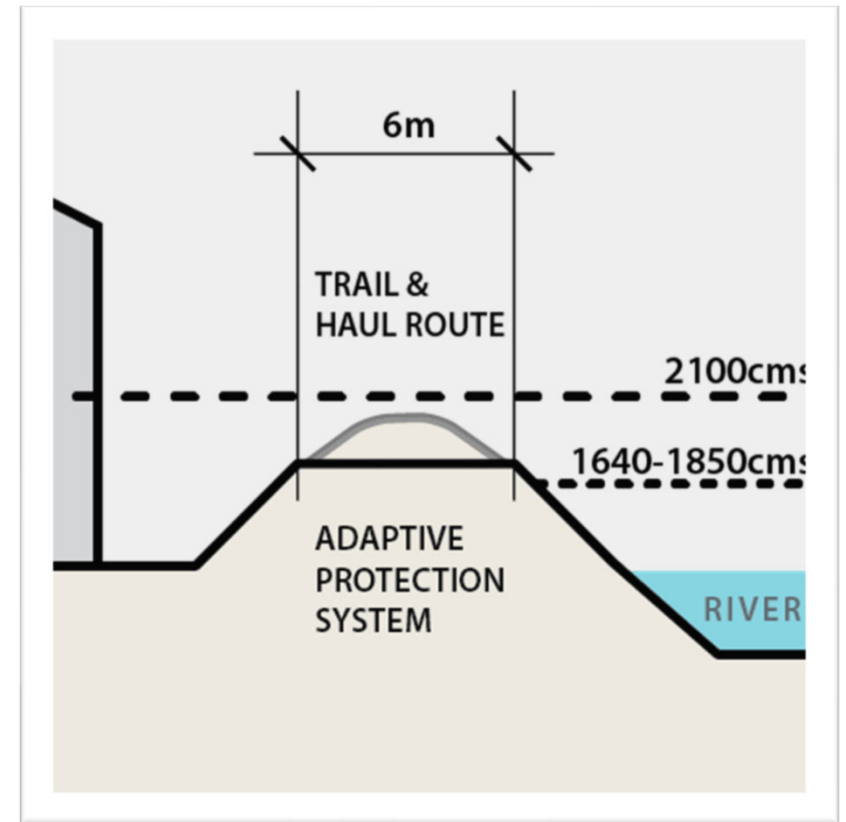




Step 1 – Design Basis

ADAPTATION

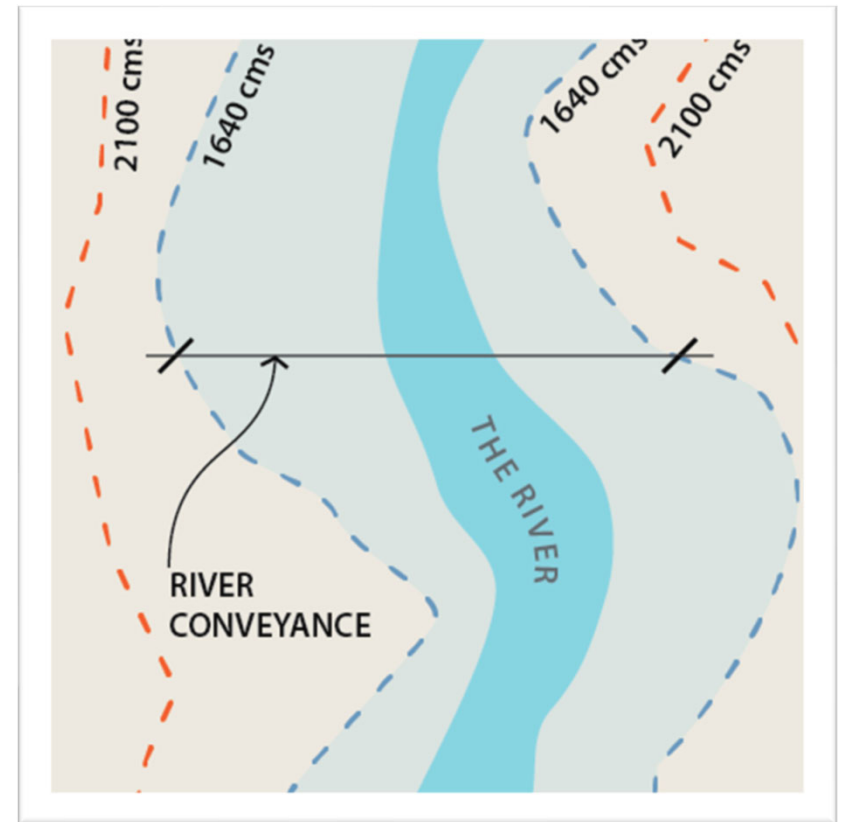
We start by **establishing a design basis**. Here, we identify the conditions that drive the design of our flood protection system. An adaptable system needs to protect to a range of flow-rates that will protect people and property in a variety of flood scenarios. We use berms that are designed to help us raise the barriers when the river rises.



Step 2 – Conveyance Capacity

ROOM TO FLOW

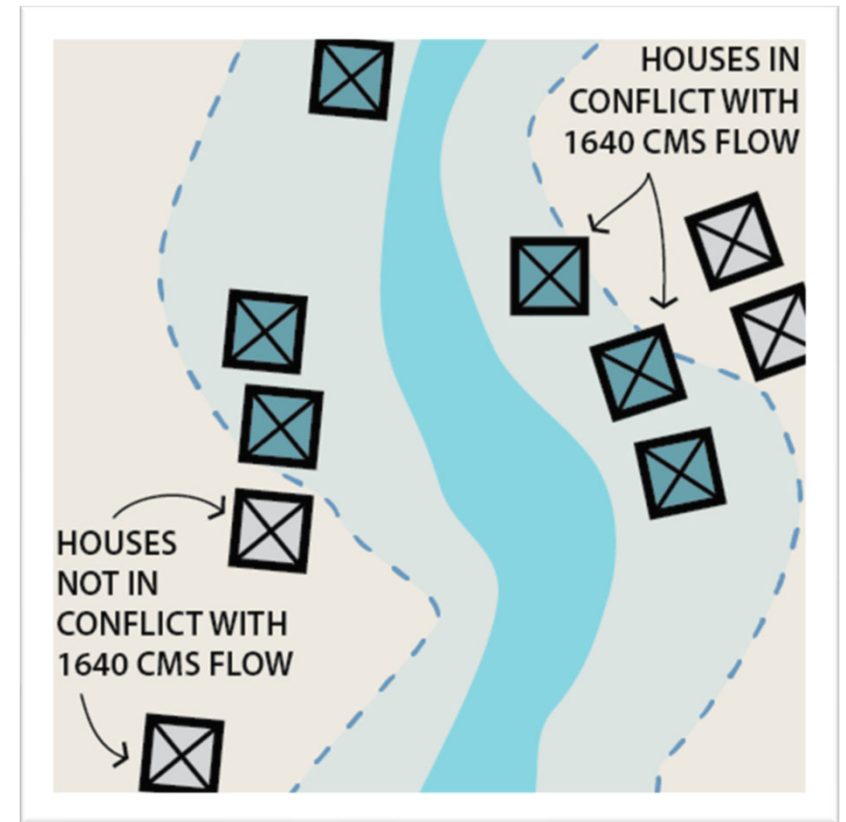
We use our target flow rates to map where the river wants to go. **The conveyance map shows us where the river needs this room to flow.** In Drumheller, there are two lines of defense: (i) 1640-1850 cms, and (ii) 2100 cms. These two lines both play important and separate roles in the multi-barrier protection system.



Step 3 – Know Your Flow

UNDERSTAND THE RISK

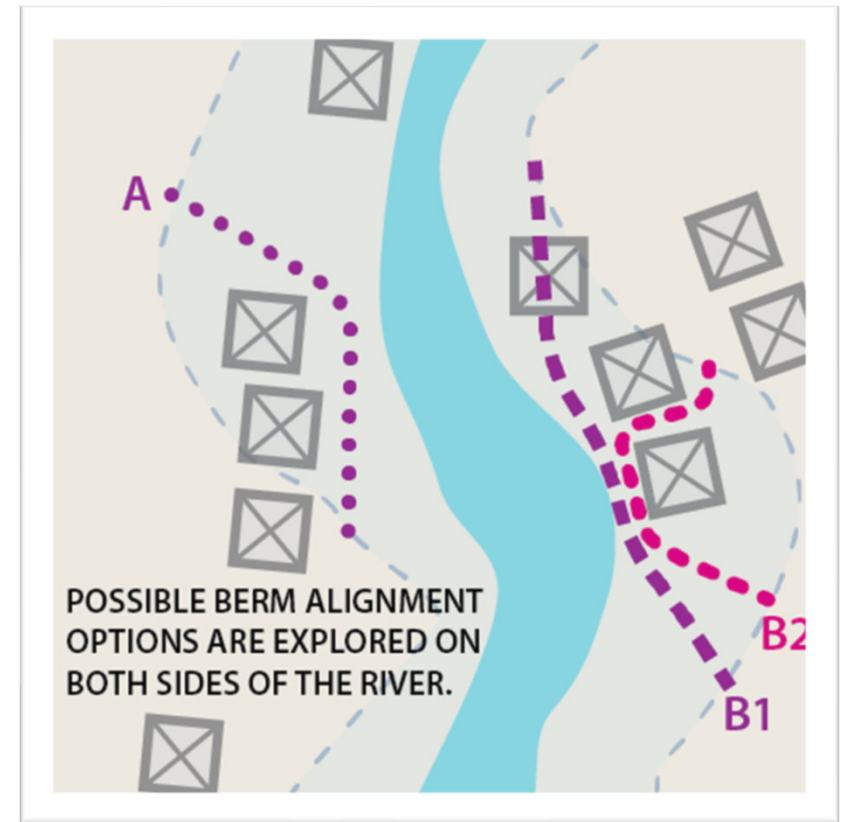
Using the conveyance map, we can start to Know Your Flow. **Knowing Your Flow means understanding what flow rate threatens your safety and property.** Floods like those experienced in 1915 (2000 cms), 2005 (1450 cms), and 2013 (1310 cms) showed how vulnerable we can be. Knowing Your Flow helps us all prepare for the next event.



Step 4 – Alignment Review

STRUCTURAL MEASURES

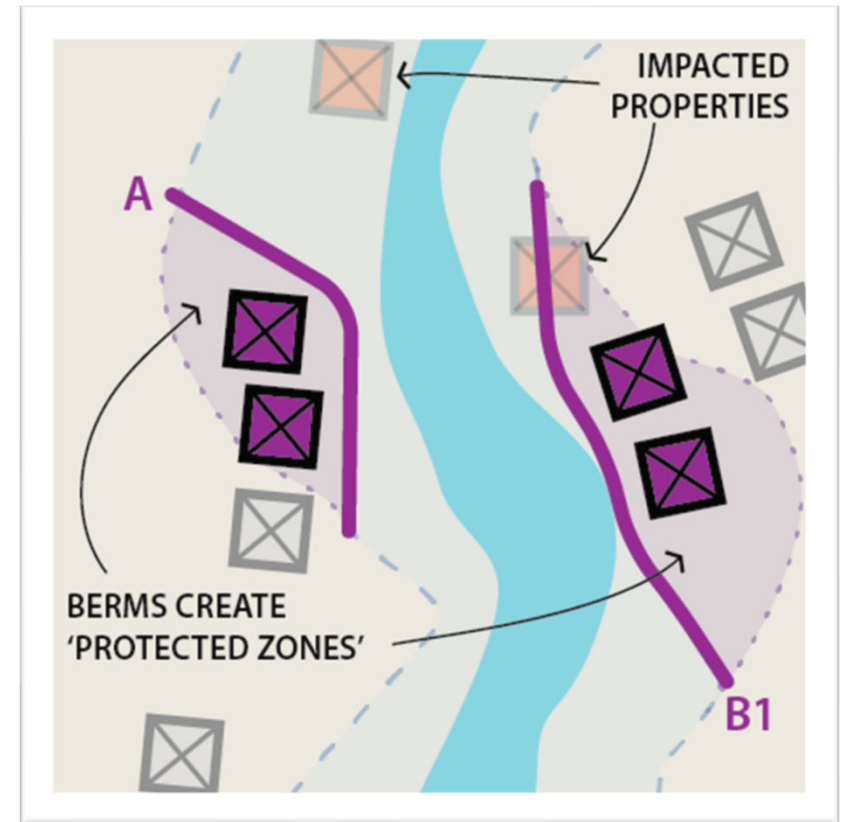
Once we know where existing development is threatened by the river, **we review potential berm alignments to understand where and what type of structural measures are feasible.** This analysis has two key goals: (i) make room for the river by keeping the channel as wide as possible, and (ii) protect existing property and assets.



Step 5 – Protected Zone

PROTECTION ZONES

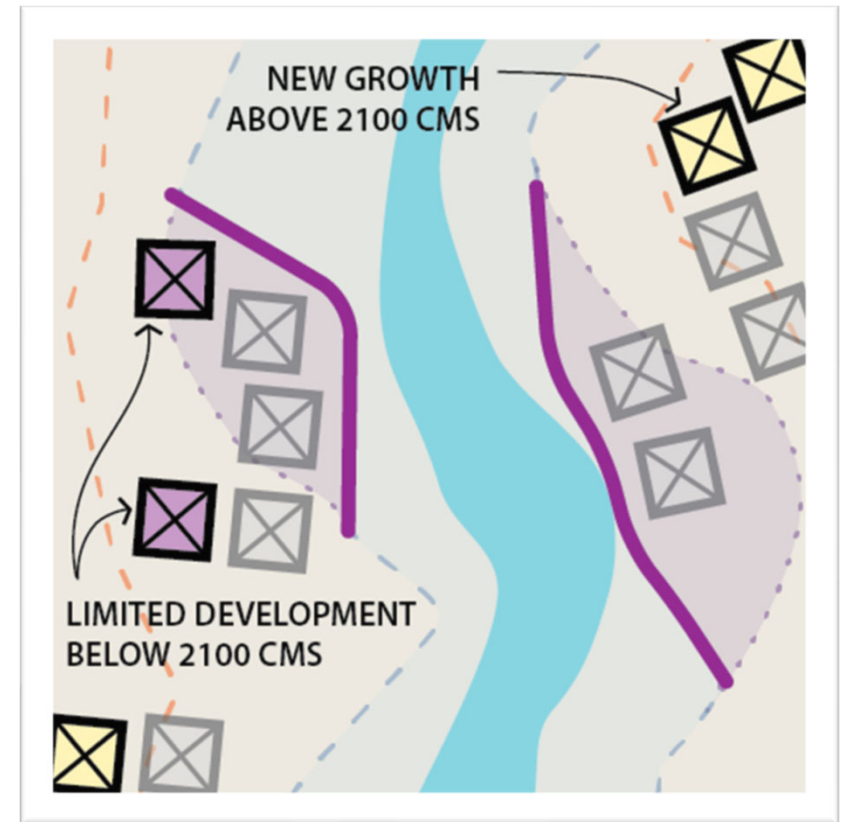
Most properties can be protected by structural measures like berms, but **some are in conflict for reasons of river capacity, berm height, geotechnical considerations, cost, or operational complication.** In the figure, one house is not feasibly protected by a berm. Another house is in the path of the berm alignment that protects the most properties.



Step 6 – Growth Areas

BEYOND 2100

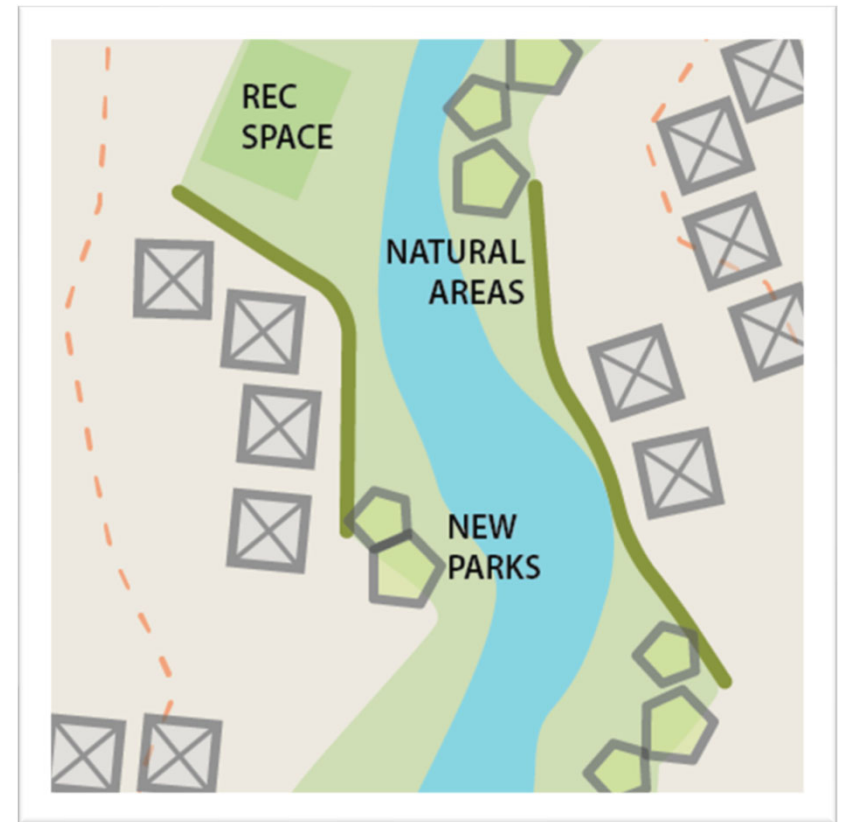
In the coming decades, Drumheller needs to move out of the river's path. This means that **new growth will happen outside of the 2100 cms line**. Limited infill below the 2100 cms line will be subject to additional conditions that make it more flood-resilient while this gradual migration occurs.



Step 7 – Conveyance Zone

ROOM FOR THE RIVER

The area left to the river is called the conveyance zone. **In a flood, this zone provides space for the river to expand.** The rest of the time, it is home to natural spaces, recreational amenities, and low-impact uses that invite the river back into everyday life. This zone also enhances Drumheller's climate adaptation, helping store carbon and regulate micro-climates.



Step 8 – Trails & Open Space Network

EDUCATION

As it is completed, **flood protection will be leveraged as an amenity.** The 2100 line will become a regional trail between the train bridges at Midland and East Coulee. This trail will tie-in to local paths that will link residents to the river and the rest of the Valley's destinations. Educational pavilions along the trail will teach visitors about the history of our valley and its changing climate.



Communication Channels - Traditional

- Dedicated website
- @Drumhelleralert (FB, Twitter, IG)
- Newsletter
- Internal Comms
- Utility Inserts
- Print/Radio



Communication Channels - New

- Mascot
- Youtube Channel
- Facebook Live
- Stakeholders





ON THE TRAIL

with Morris the Hike-Asaurus

ON THE TRAIL with Morris the Hike-Asaurus

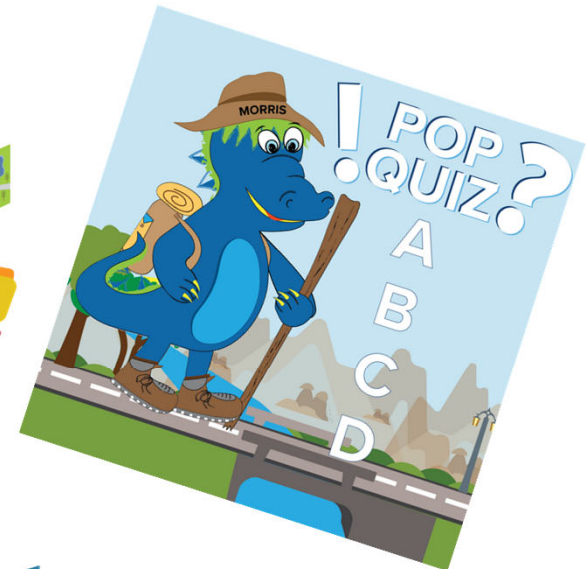
Rumour has it, the town is going to be cutting down trees. Let me consult my rumour stick. In fact, this stick of mine used to be a tree so it ought to know. In fact, my friends, yes indeed, some trees are coming down.

The process is going to start fairly soon in Centennial Park and it turns out, many of these trees are at the end of their life cycle. They actually pose a safety risk and need to come down, which will also make room for berm construction. Know this, the folks at the town have a great respect for trees and understand all of the good they do for the environment. That's why they are developing a tree plan to ensure they maintain an equal or greater ecological value.

BE PREPARED – 72 HOUR EMERGENCY KIT



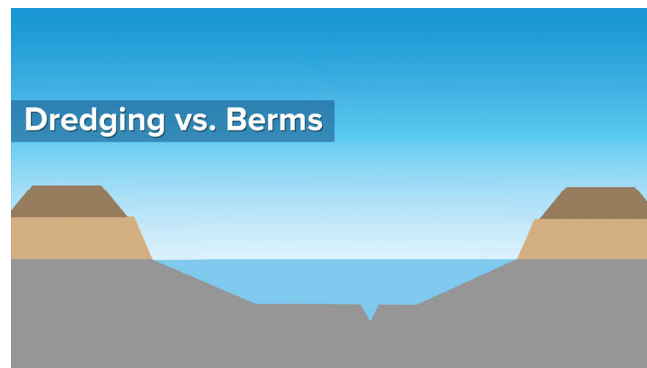
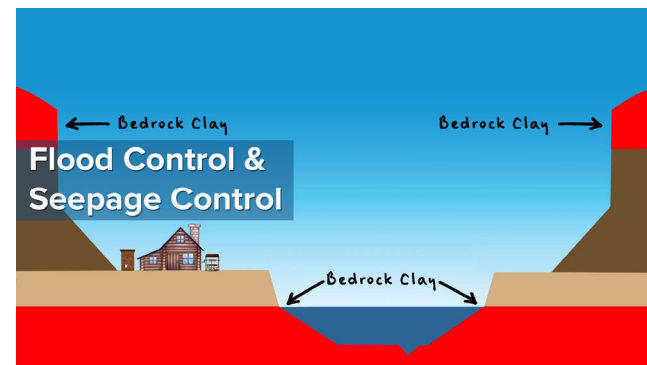
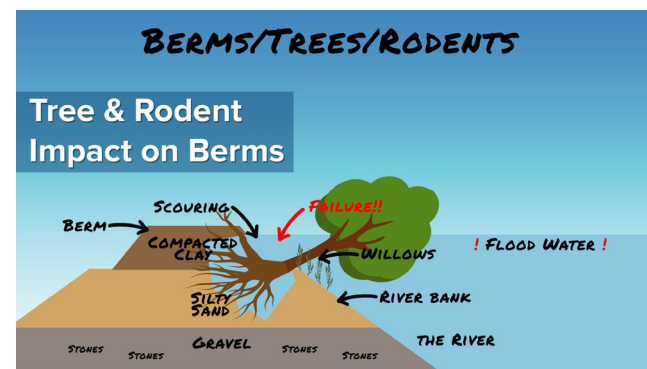
Planning ahead and preparing for a flood means having a 72-hour emergency kit with basic supplies, personal items and important documents ready to go at a moment's notice.



[f](#) [t](#) [i](#) [v](#)
@drumhellerALERT



Flood Mitigation Update: Berm Design



DRUMHELLER VALLEY
DINOSAUR CAPITAL OF THE WORLD

We're changing the channel
on Flood Readiness!

QUESTIONS?

