The City of Calgary's Source Water Protection Plan

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The City of Calgary Water Resources
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Presentation at Bow River Basin Council forum

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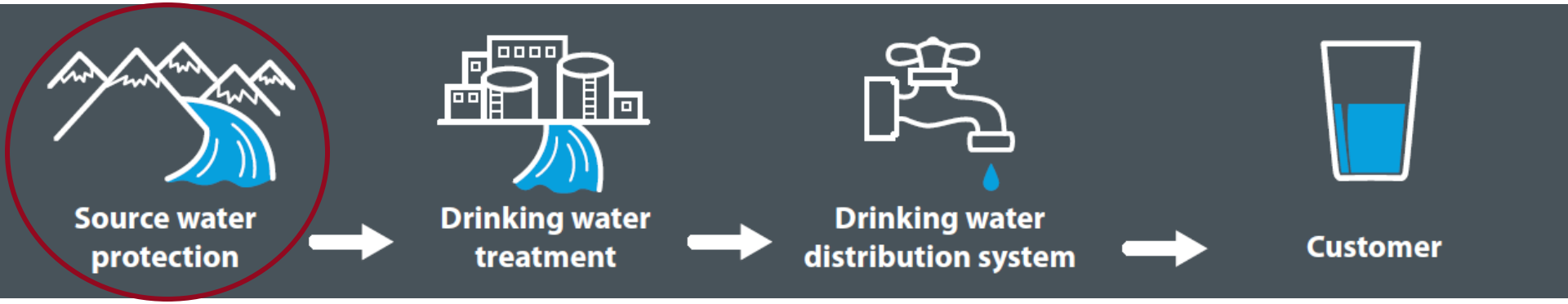
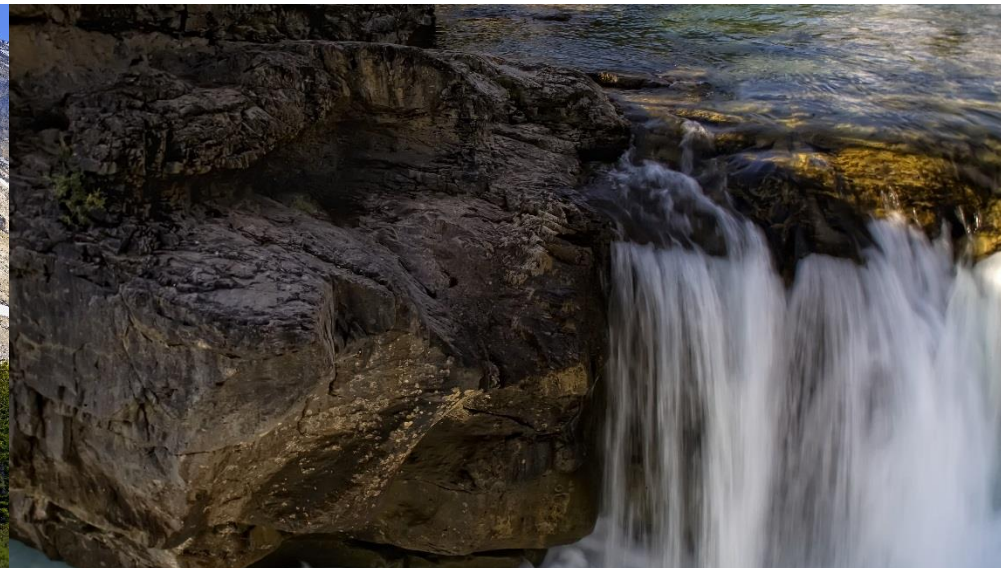
What is Source Water Protection?

Source water protection: The first barrier in a multiple barrier approach to providing clean, safe drinking water





Source Water Protection Program Elements

Vision

Characterize Source Water + Source Watershed

Program Goals

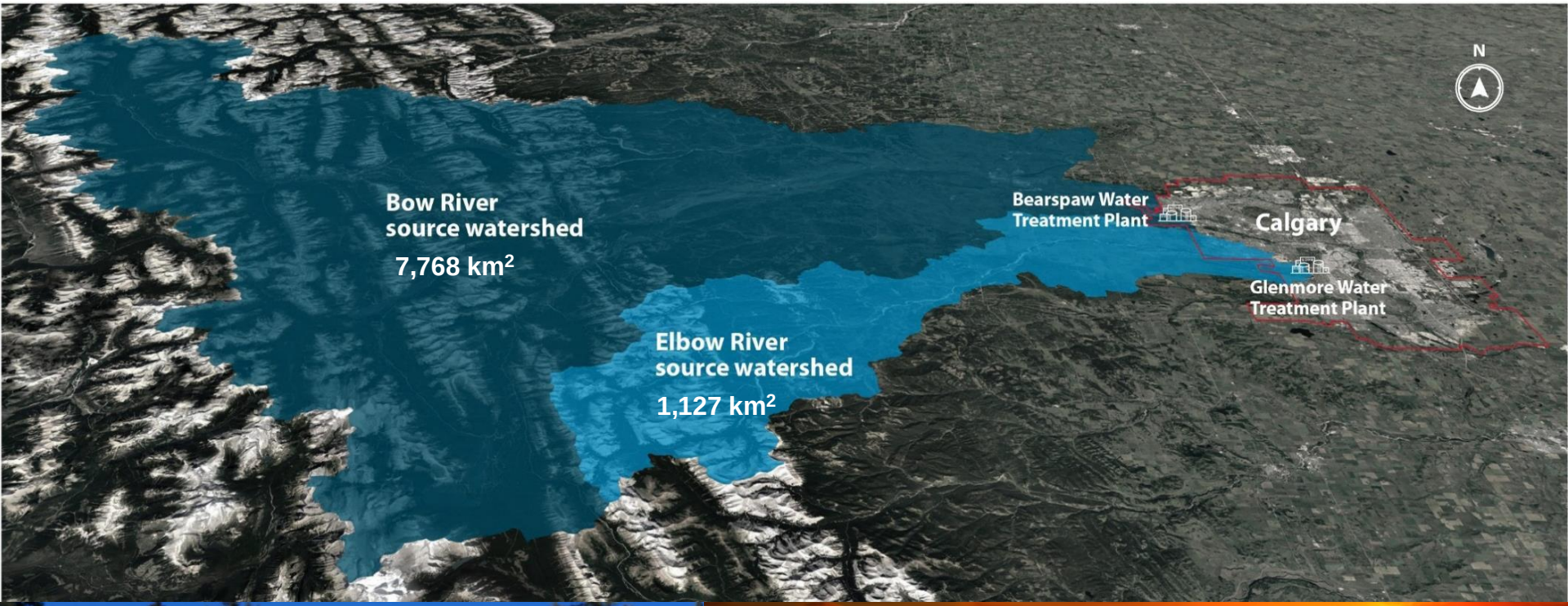
Action Plan

Engagement

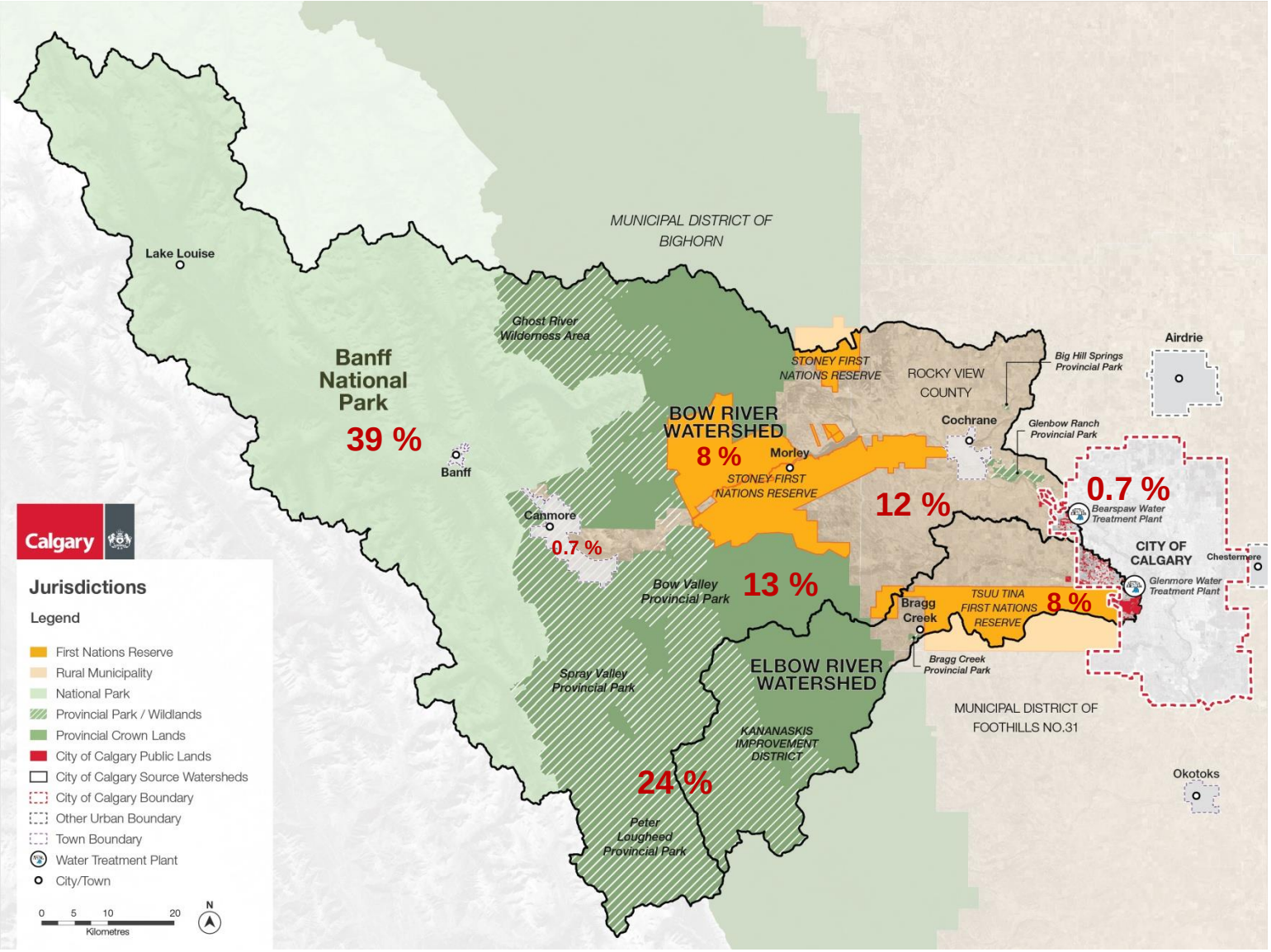
Vision

"Our source watersheds continue to provide clean, high quality water to the region, through proactive stewardship and management."

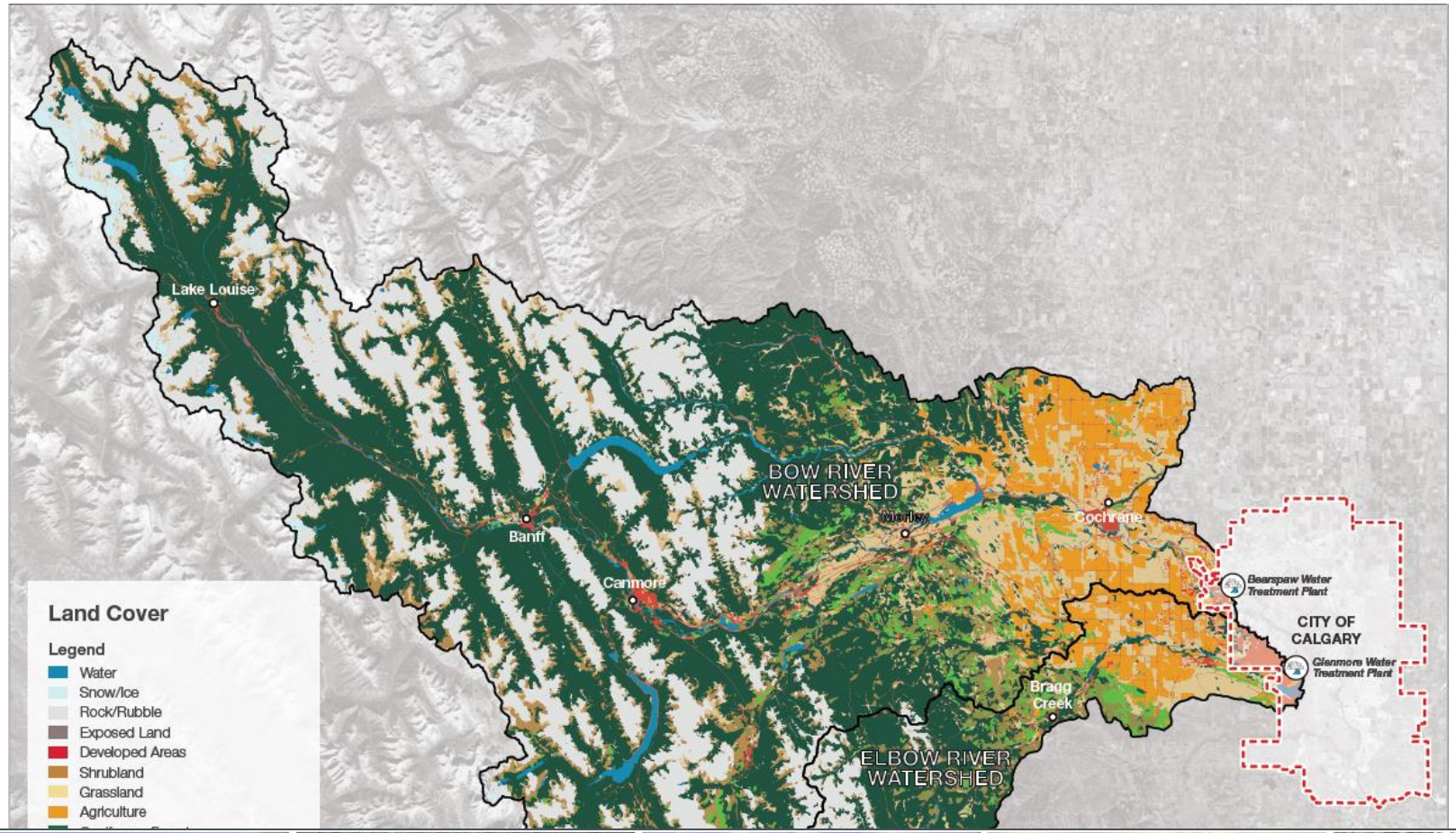
Where are Calgary's Source Watersheds?



Calgary's Source Watersheds: Jurisdictions



Calgary's Source Watersheds: Land Cover



Mountains and glaciers
26%

Forests
44%

Grasslands and shrubs
17%

Cultivated agriculture
5%

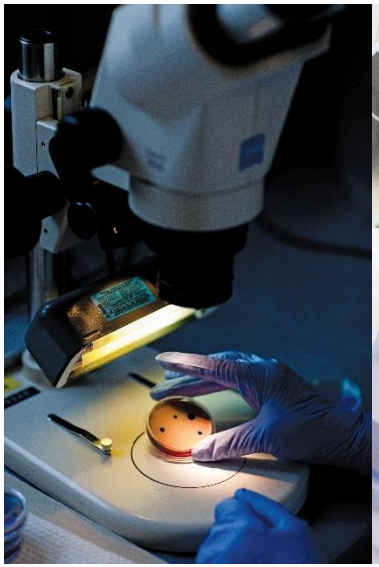
Developed lands
4%

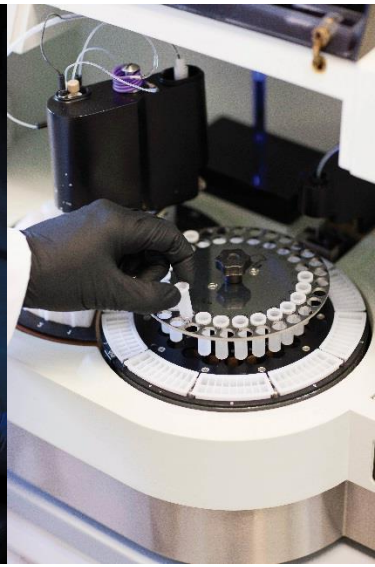
Source Water Quality

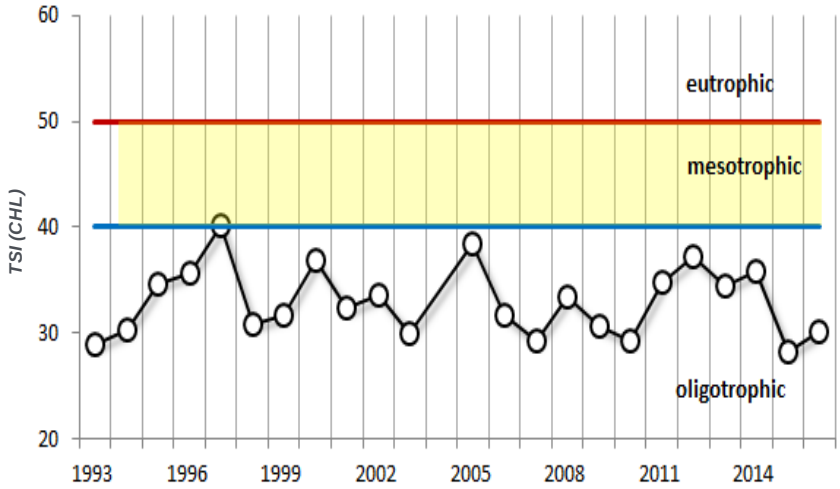
- Extensive monitoring shows:
  -Bow: Excellent source water quality
  -**Elbow: Good** source water quality

- Seasonally high turbidity, but The City's treatment plants are very good at sediment removal

- Reservoirs low in nutrients, but GR vulnerable to change







Trophic State Index: Glenmore Reservoir

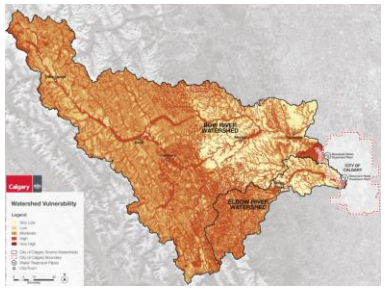
Source Watershed Risks: Overview

- **Comprehensive risk assessment completed in 2016**

- **Risk = Likelihood x Consequence**

Likelihood scores based on:

- Mapping **vulnerable areas**
- Potential **hazards / contaminant sources**
- **Travel times**
- **Regulations & management practices**



Consequence descriptor

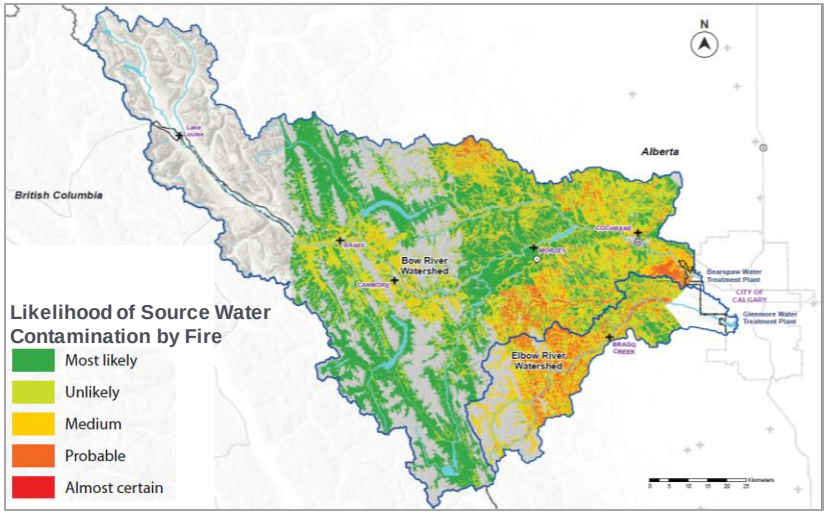
Likelihood descriptor

Score	Not applicable	Insignificant	Minor	Moderate	Severe	Catastrophic
Not applicable	0	1	2	4	8	16
Most unlikely	1	1	2	4	8	16
Unlikely	2	2	4	8	16	32
Medium	4	4	8	16	32	64
Probable	8	8	16	32	64	128
Almost certain	16	16	32	64	128	256

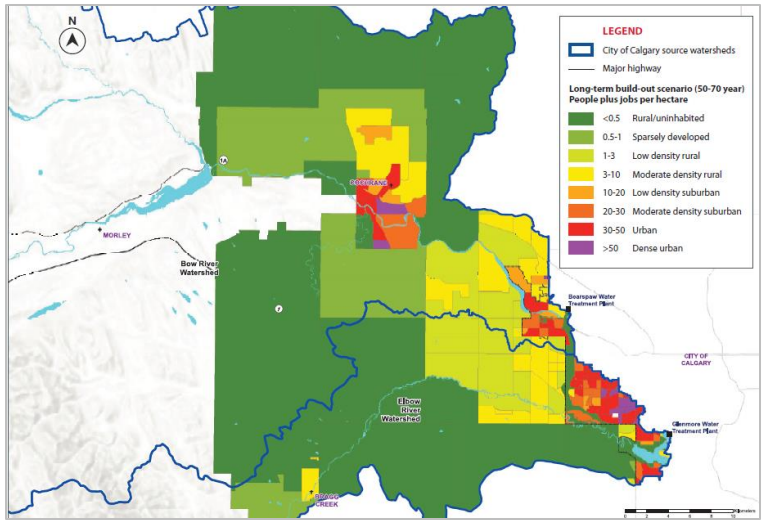
Low risk Medium risk High risk

Consequence scores based primarily on water treatment capabilities

Calgary's Source Watersheds: Risks



1. Major Wildfires



2. Stormwater

*Aim to address **cumulative risks*** of multiple activities opportunistically

Source Water Protection Plan: Timeline

Initiation + Planning	Stakeholder Engagement	*Draft* Source Water Protection Plan	Final SWPP Plan	IMPLEMENT
2016	Q1-Q2 2017	Q3-Q4 2017	Q1-Q2 2018	

Stakeholder Engagement

60 City staff

- Water Services
- Water Resources
- Parks
- Law
- Planning & Development
- Environment & Safety

50 Stakeholder groups

Industry: BILD Calgary, CP, Spray Lake Sawmills, Lafarge, golf courses

NGOs: Land Trusts, Action for Agriculture, environmental NGOs

Watershed Councils / Stewardship Groups

Government: **Parks Canada**; **Provincial** (*Alberta Environment and Parks, Alberta Energy Regulator, AHS, Alberta Agriculture and Forestry*); **Municipal** (*Rocky View County, Town of Cochrane, Town of Canmore, Town of Banff, M.D. of Bighorn, Town of Airdrie*)

First Nations: Tsuut'ina, Stoney Nakoda, Siksika, Kainai, Piikani

Universities: University of Calgary, University of Alberta

water
conservation
land
use
protection
quality
management
development
watershed
risks
Land
Source
Calgary
Development
source
Water
public
lands
private
stakeholders
education
practices
natural
actions
manage
impact
Education
fund
research
riparian
Regional
engagement
important
communication
Watershed
decisions
address
long
Forestry
Engagement
users
restoration
recreational
decision
plans
storm
within
mitigation
sediment
working
City
Protecting
document
impacts
Develop
community
reporting
forestry
data
OHV
term
species
approach
tools
resources
ensure
treatment
Alberta
time
people
AEP
means
increased
infrastructure
groups
provide
headwater
goals
plan
Manager
Protectio
erosion
change
access
etc
vs
clean
fire
social
conserve
maintain
Plan
control
process
cost
educate
planning
generations
fertilizer
cumulative
level
industry
managed
stewardship
drinking
flood
future
contaminants
regulations
efforts
coming
existing
urban
science
areas
Climate
monitoring
protect
drought
provincial
inputs
enforcement
ecosystems

Source Water Protection Plan

Protecting our source watershed through proactive collaboration

Available online at: http://www.calgary.ca/UEP/Water/Documents/Water-Documents/Source-Water-Protection-Plan.pdf

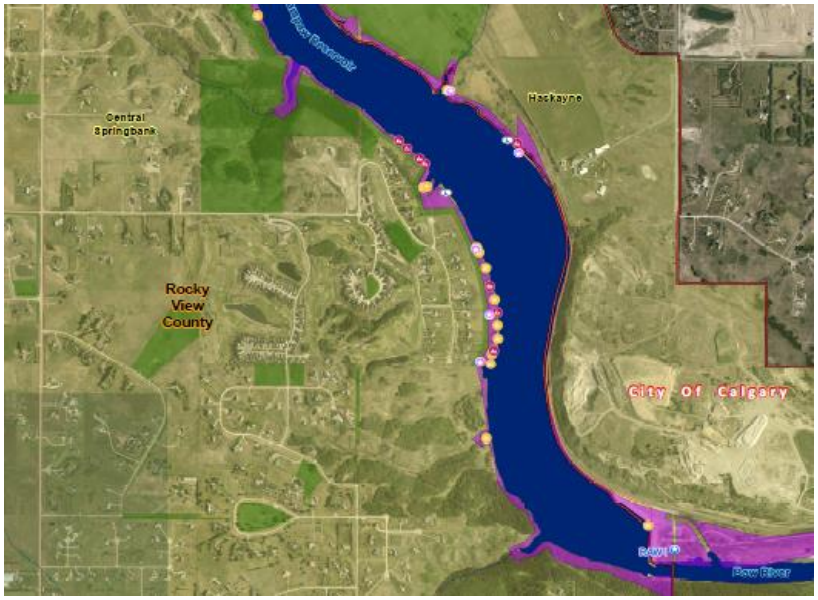
Land Use Goal & Key Actions

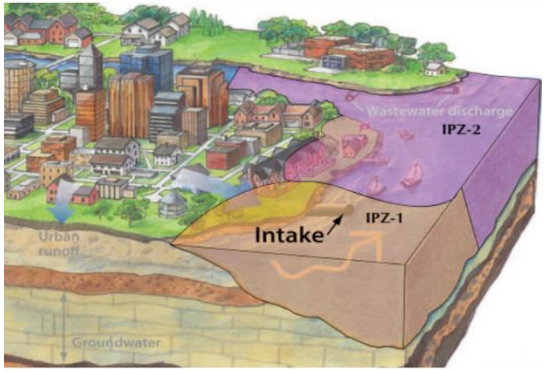
Goals

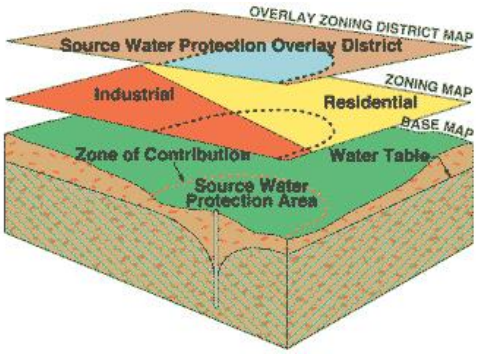
GOAL 1
Protect the source watershed with improved land use planning

Priority actions

- Develop and implement **recreation management strategies** and actions for the Bearspaw Reservoir
- Develop **drinking water protection zone** overlays and integrate with The City's statutory and regulatory instruments
- Integrate source water protection priorities in **regional land use and servicing plans and provincial regulations**







Calgary Metropolitan Region Board

Stormwater Goal & Key Actions

Goals

GOAL 2
Promote innovation in stormwater management to protect source water quality

Priority actions

- Prioritize **erosion and sediment control inspections** and enforcement within The City's source watersheds
- Evaluate and implement **stormwater management requirements** to meet source water quality objectives
- Prioritize **riparian, wetlands and green infrastucture projects** within The City's source watersheds

Partnerships Goal & Key Actions

Goals

GOAL 3
Leverage key partnerships for risk mitigation

Parks Canada Parcs Canada

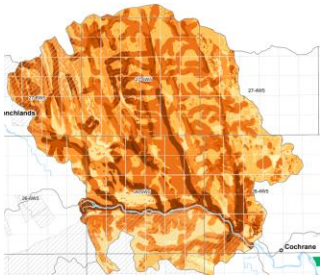
Alberta Wildfire

Alberta Government

Priority actions

Refine **wildfire management strategies** with fire management agencies

Conduct a **watershed investment study** to evaluate options to protect vulnerable source watershed lands



Update **emergency response plans** for spills and increase co-ordination with industry

Community & Education Goal & Key Actions

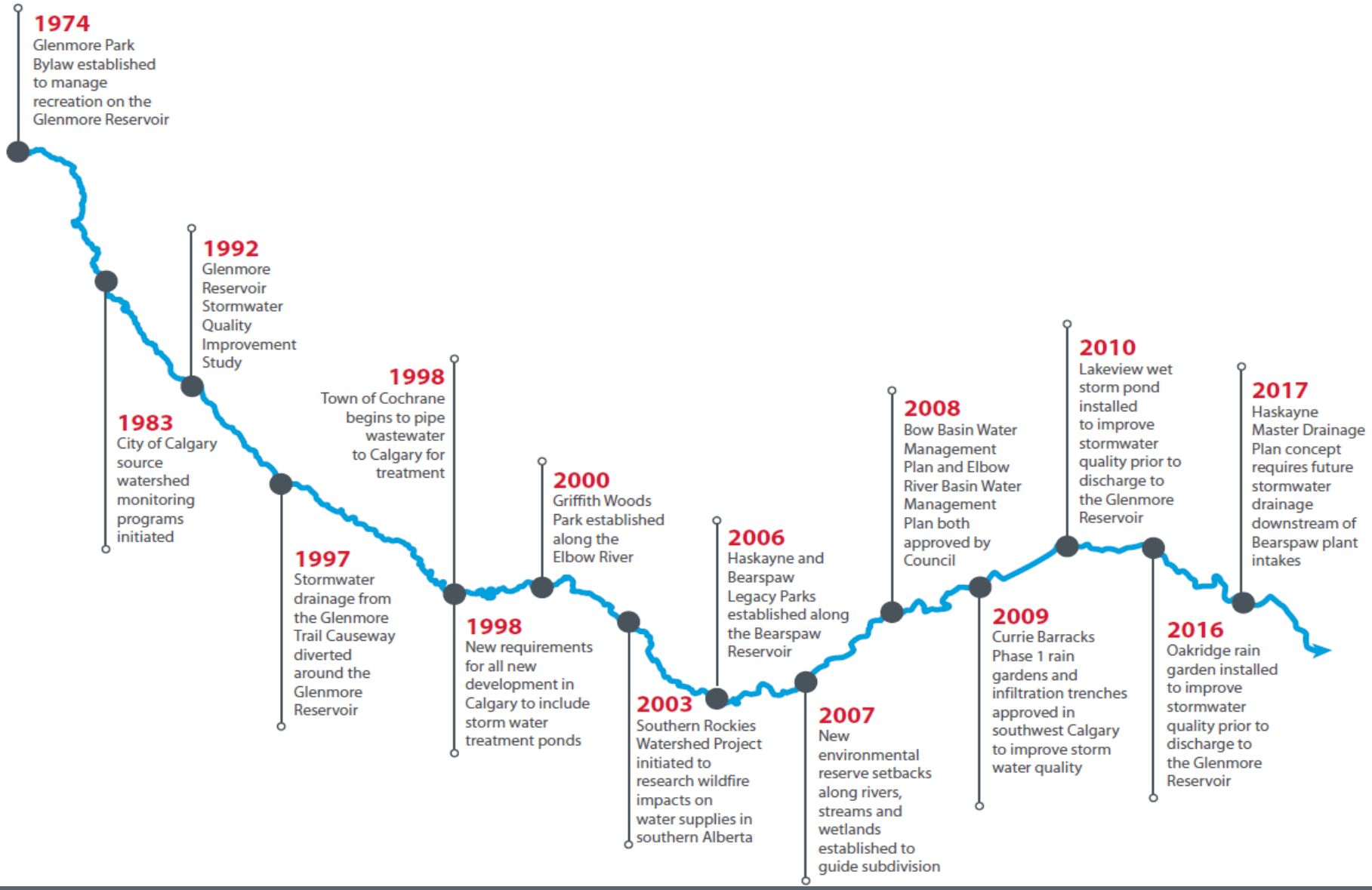
Goals

GOAL 4
Involve the community through education and research

Priority actions

- Conduct a **traditional use study** to explore First Nations' traditional knowledge on water and watersheds
- Provide guidance to **university research projects** in Calgary's source watersheds
- Develop a **source water education plan** to promote community and regional actions to reduce risks

Timeline of Past Actions



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Thank You! Questions?

Our Source Water Protection Plan is also now available online at: www.calgary.ca