2024 Drought Risk and Management

Alberta Environment and Protected Areas
January, 2024

Agenda

1. Importance of Water in Alberta
2. Current Situation
3. Drought Risk
4. Drought Management

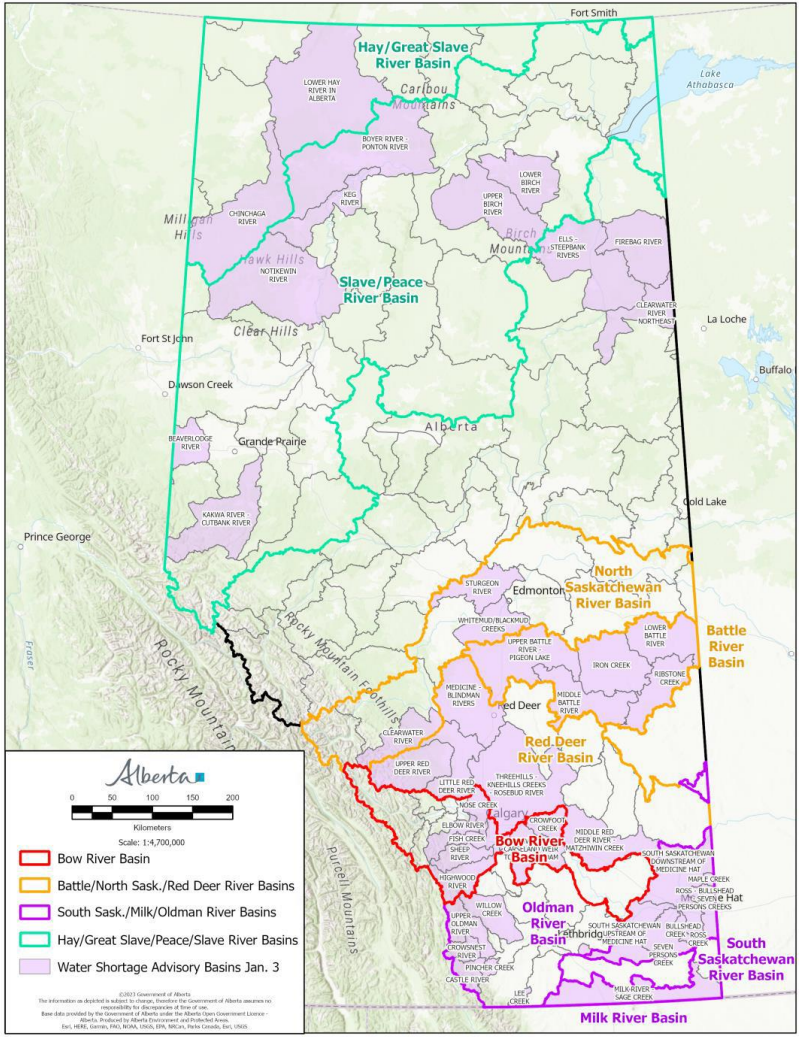
Classification: Public

Importance of Water in Alberta

Water is essential for:

Public Health and Safety	Drinking water supply and wastewater dilution
Agriculture	Farmers and ranchers, agri-business, feedlots
Aquatic Environment	Fish and other aquatic life, recreation
Industrial / Commercial business	Oil and gas, power plants, factories and plants, small businesses that use water, etc…
Meeting inter-provincial water apportionment obligations	

Classification: Public



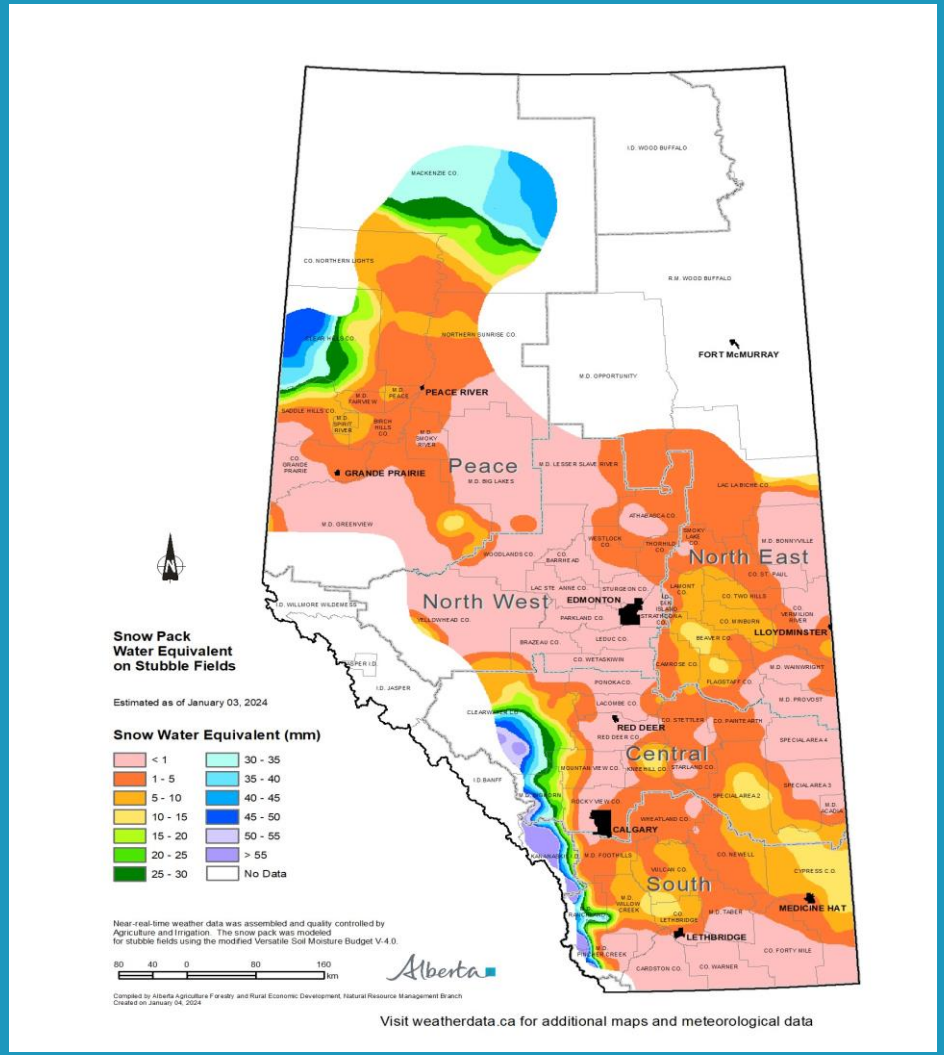
Current Situation

- Basins in critical water shortage condition due to low rainfall and high temperatures (over the summer):
  - Milk River and Oldman River basins.
  - South Saskatchewan River basin.
  - Bow River basin.
  - Red Deer and North Saskatchewan River basins.
  - Tributaries to the Peace, Athabasca, and Hay Rivers.

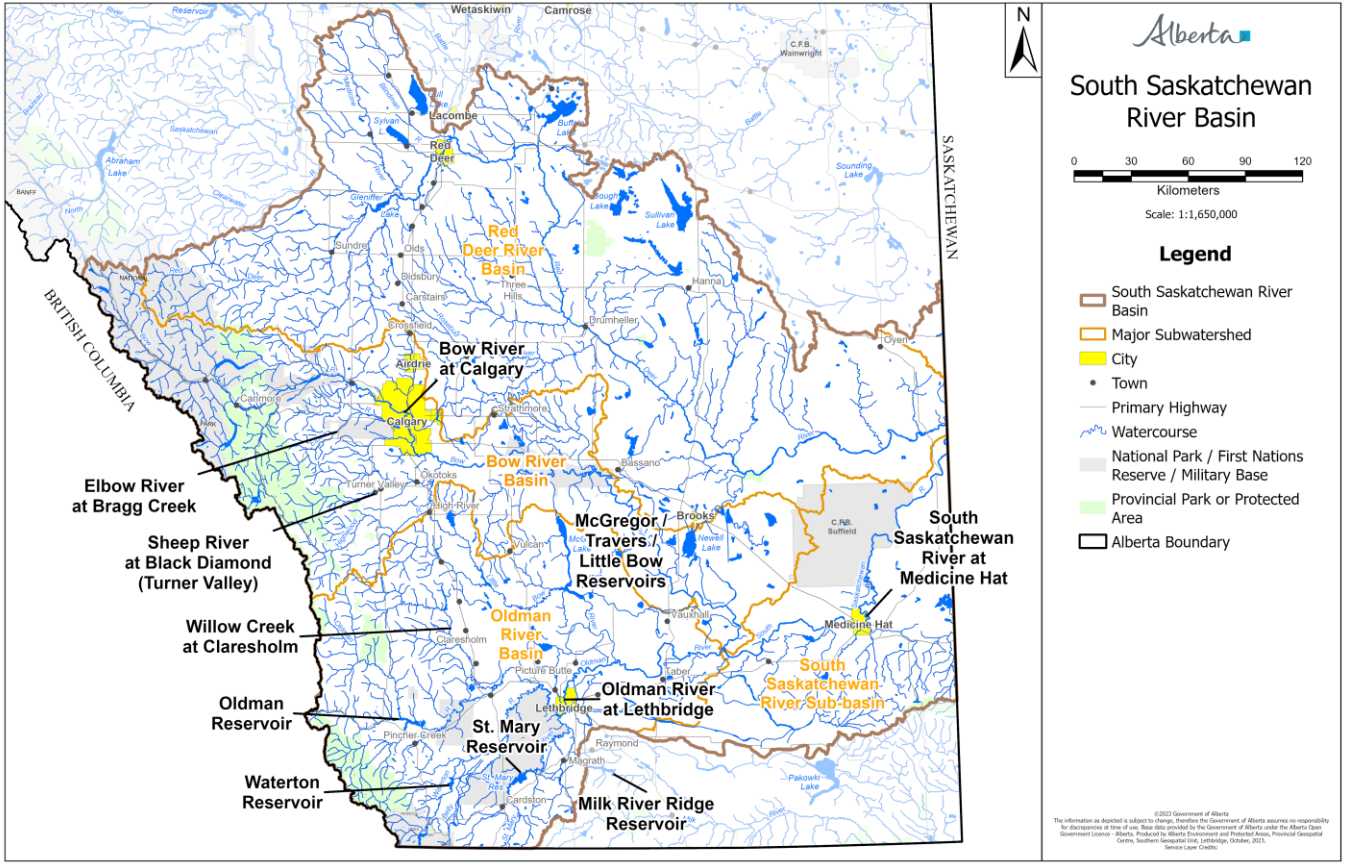
https://rivers.alberta.ca/

Current Situation

- For the most part, November and December have been warm and dry
- Since November 1st , precipitation has been well below average
- By mid-November snow packs had melted as far north as the Peace Region
- Many areas across the 4 agricultural zones remain virtually snow free



South Saskatchewan River Basin



Classification: Public

2023 Natural River Flows

July to September % of normal average natural flow volumes:

- Bow River Basin (7 monitoring locations) – 54% of historic natural flow
- Oldman River Basin (5 monitoring locations) – 37% of historic natural flow
- Milk River Basin (3 monitoring locations) – 41% of historic natural flow
- Red Deer River Basin (2 monitoring locations) – 59% of historic natural flow

Classification: Public

Bow River in SE Alberta

July 2022

July 2023

Classification: Public

Highwood River near Bow River Confluence

July 2022

July 2023

Classification: Public

Pincher Creek at Hwy 3

July 2022

July 2023

Classification: Public

Reservoirs: Current vs. Normal

As of January 4, 2024:

- Storage at Oldman Reservoir is at 28%
  - Normal at this time of year is 62-80%.
- Storage at St. Mary Reservoir is at 9%
  - Normal at this time of year is 45-73%.
- Storage at Pine Coulee Reservoir is at 28%
  - Normal at this time of year is 50-74%
- Storage at Waterton Reservoir is at 53%
  - Normal at this time of year is 48-70%

Classification: Public

Oldman Reservoir

Cowley drinking water intakes

Boat launch at provincial recreation area

Classification: Public

Oldman Reservoir

Classification: Public

St Mary’s Reservoir

Boat launch dock

View from the top of the dam

Classification: Public

St Mary's Reservoir

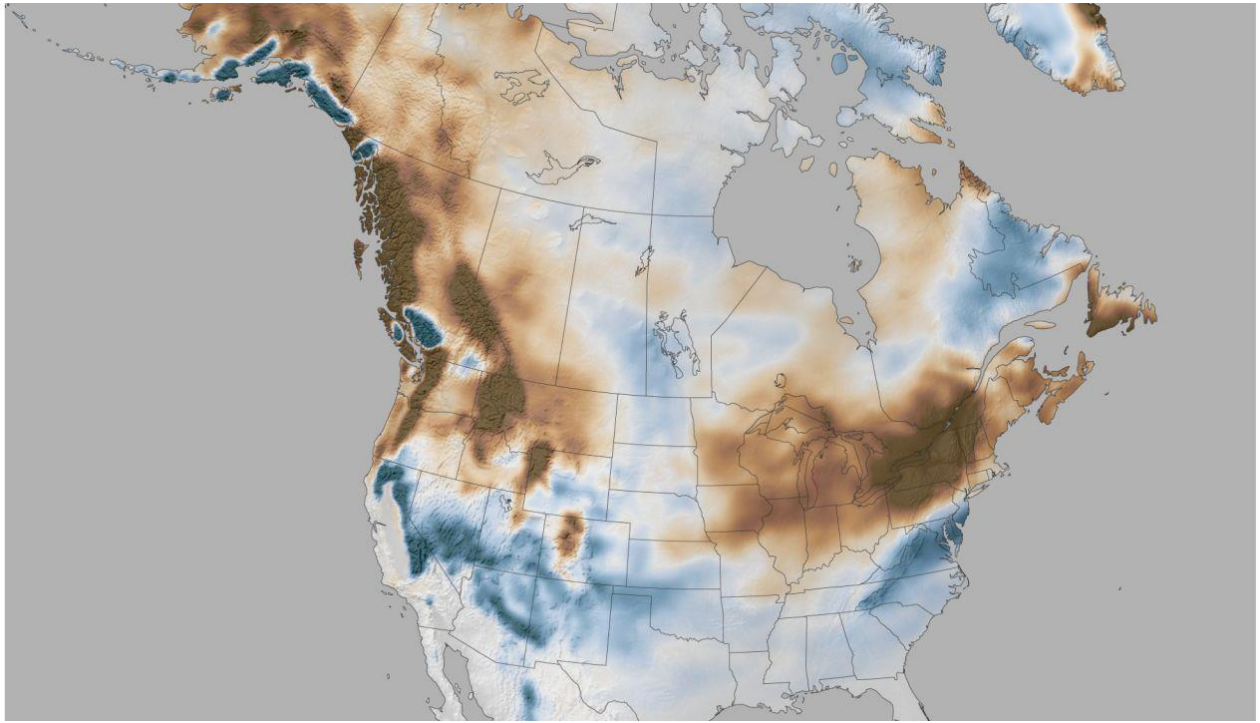
Classification: Public

Drought Risk: Long Range Forecast

- Dec-Jan-Feb forecast for Alberta (from ECCC)
  - El Nino winter (warm and dry) conditions are occurring, and there is a 62% chance of continuing into April-June 2024
  - 50-60% chance of above normal temperatures
  - Minimal precipitation and snowpack forecast* (*but hard to predict)
- Without significant precipitation, spring water levels are expected to be dire
  - “Insurance” from reservoirs used this year
- **Approach → Plan for extreme drought, hope for snow and rain**

Classification: Public

Drought Risk: Predicted El Niño Effects



Source: US National Oceanic and Atmospheric Administration

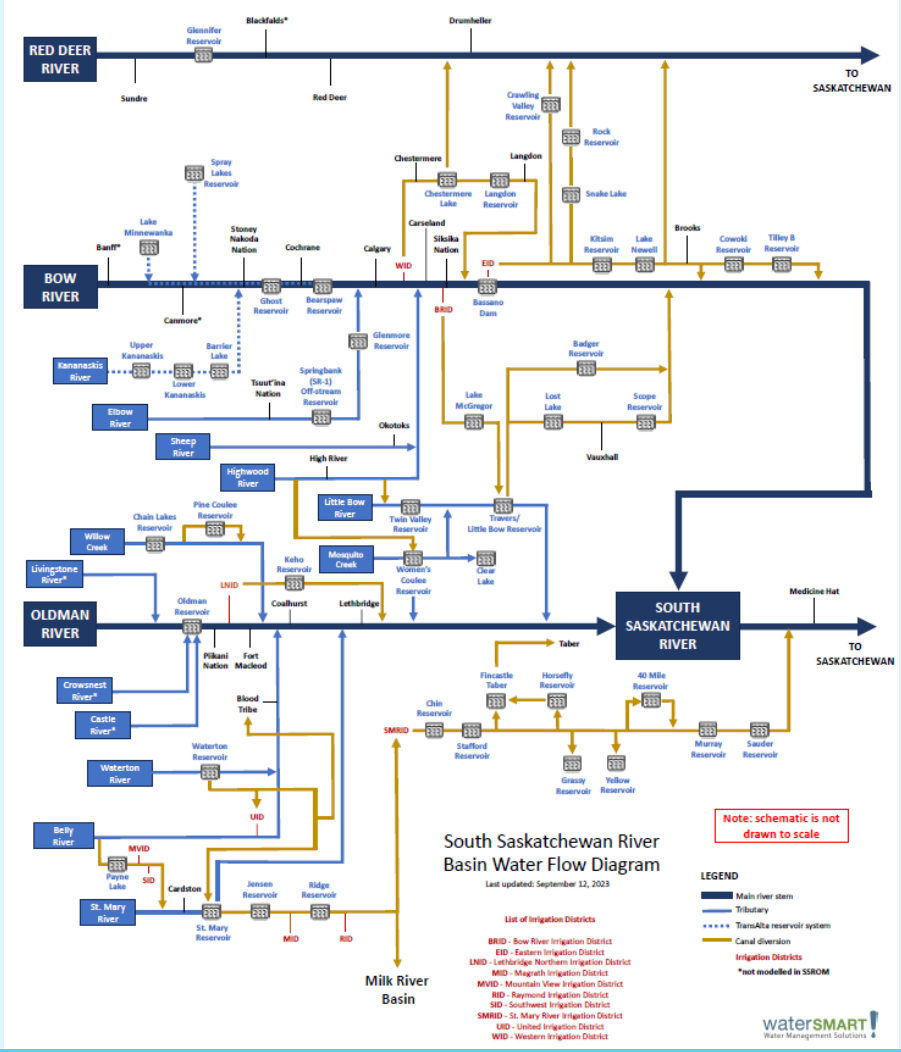
Snowfall during all stronger El Niño winters (January-March) compared to the 1991-2020 average.

Blues indicate more snow than average; browns indicate less snow than average.

Classification: Public

Drought Management is Complicated

- Network of interconnected rivers, water reservoirs and canals, intakes and outflows.
- Currently uses a priority system set by licence seniority (First in Time, First in Right).
- FITFIR will not effectively prioritize water based on need in a wide scale drought.



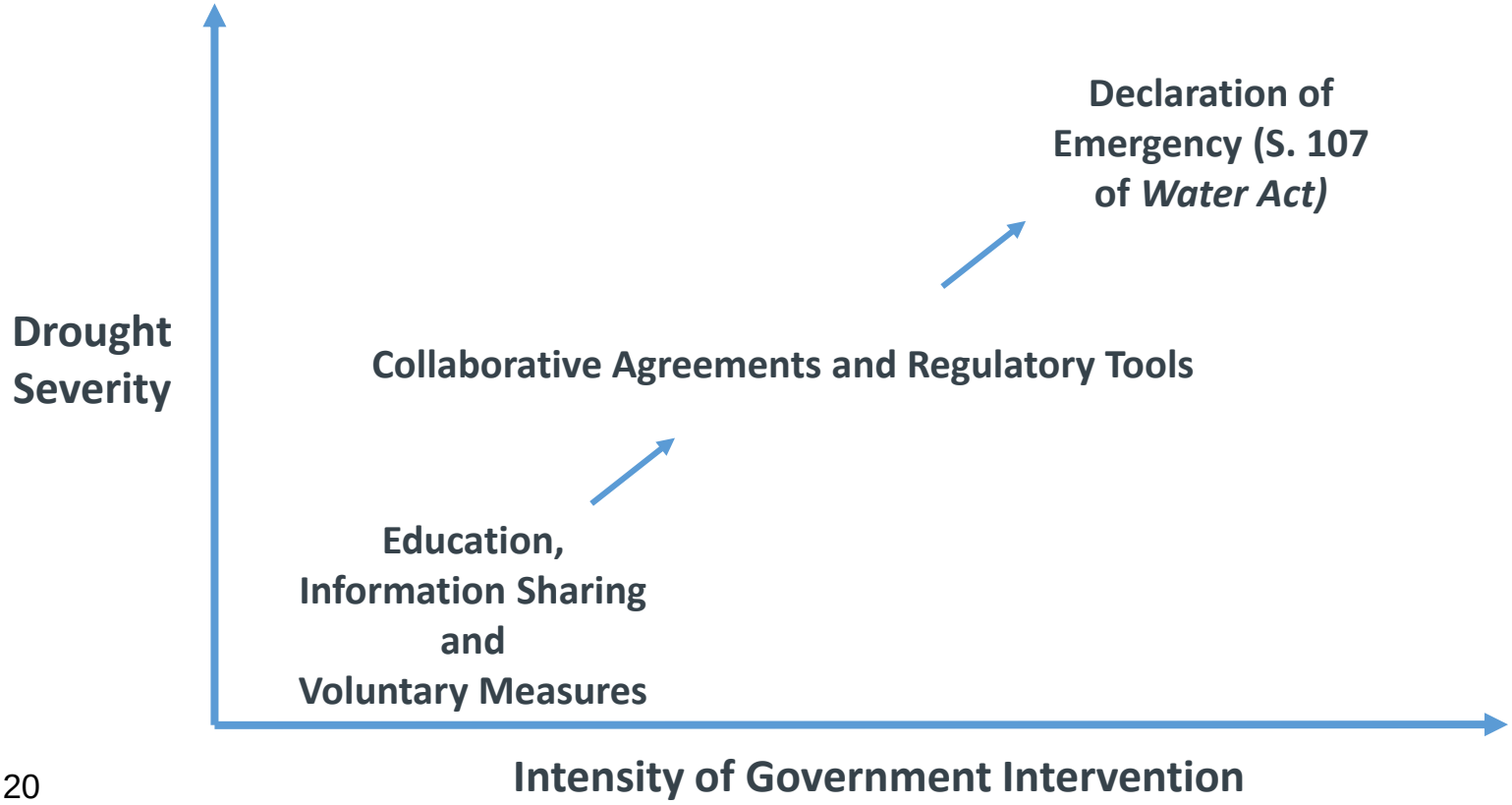
Classification: Public

Impacts

- EPA is actively communicating with licensees and stakeholders regarding the situation.
- Many are expressing concerns about the situation into Spring 2024.
- Some licence holders have been asked to stop taking water due to low river levels.
- EPA has worked with these licence holders to find alternative water sources.
- **The situation is having social and economic impacts.**

Classification: Public

Drought Management Tools



Classification: Public

Collaborative Agreements

- The South Saskatchewan River Operation Model (SSROM) will be used for flow modelling and for developing collaborative (water sharing) agreements
- SSROM will be supported by EPA models, data and information on river flows and precipitation forecasts
- Workshops with large water license holders and other key stakeholders to develop water sharing agreements based on likely water flow scenarios representing increasing levels of possible drought severity
- Develop a report that contains the draft water sharing agreements for each flow scenario

Classification: Public

Drought – Key Elements and Timeline

Monitor Snowpack

Monitor Rainfall, Rivers and Tributaries

November to December 2023
Information Sharing with Key Stakeholders

January to March 2024
Develop Collaborative Agreements

★ **Key Decision Point**
March/April to May 2024
Implement Collaborative Agreements

★ **Key Decision Point**
May/June to August 2024
Declaration of Emergency

Communication Plan Implementation

Classification: Public

EPA Drought Management Stages

1

Stage 1 Monitoring and Observation

Water availability trend is a concern

2

Stage 2 Active Management

Droughts are predicted to occur

3

Stage 3 Priority Call/Apportionment Risk

Assessment of apportionment or administration of priority

4

Stage 4 Multiple Water Management Areas

Large scale basin and/or Provincial drought conditions

5

Stage 5 Urgent and Critical Escalation of Drought Conditions

Emergency measures needed to protect the safety, heath or welfare of the public

Classification: Public

GOA Drought Response Activities

Focused teams have been established to develop:

- Operational preparedness and advanced planning for 2024
- Assessing Alberta's apportionment commitments
- Developing process to enable regulatory drought tools
- Prioritizing monitoring needs to enhance predictive modeling
- Determining the impact that low flows in rivers combined with effluent discharges have on water quality
- Reviewing the provinces Instream Objectives and Water Conservation Objectives

Classification: Public

Resources

- More information is available on the updated Drought page: Drought | Alberta.ca
- Fact sheets
  - On using the Rivers.Alberta website to monitor water conditions is available here: Get to know your water flow : helping water users predict and prepare for water shortages - Open Government (alberta.ca)
  - Water Shortage Management Stages: https://open.alberta.ca/publications/water-shortage-management-stages
  - Drought support: temporary livestock water assistance: https://open.alberta.ca/publications/drought-support-temporary-livestock-water-assistance
- Videos
  - Learn to use Rivers.Alberta on @ABEnvironment Youtube
- Contact us at: epa.drought@gov.ab.ca

Classification: Public

How Can You Help?

- What are the opportunities to work through this together?
- What information, activities, plans do you have underway to manage drought?
- How can we leverage this information?

Classification: Public

QUESTIONS

Classification: Public