
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

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

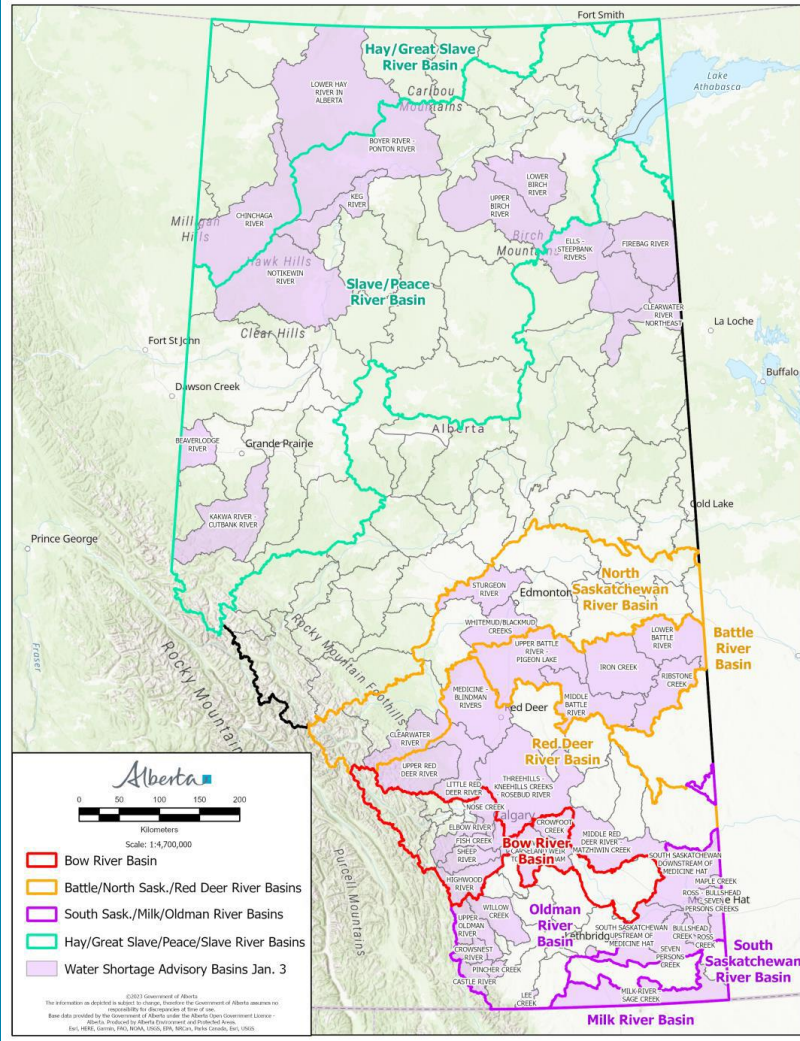
Oil and gas, power plants, factories and plants, small businesses that use water, etc...



Meeting inter-provincial water apportionment obligations

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.

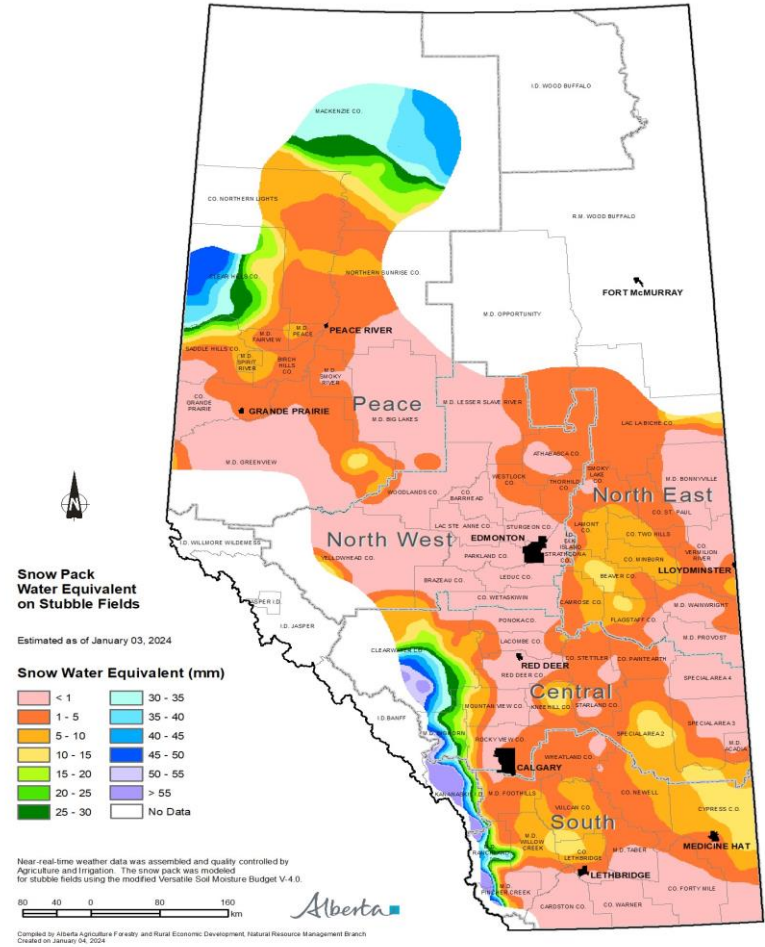


<https://rivers.alberta.ca/>

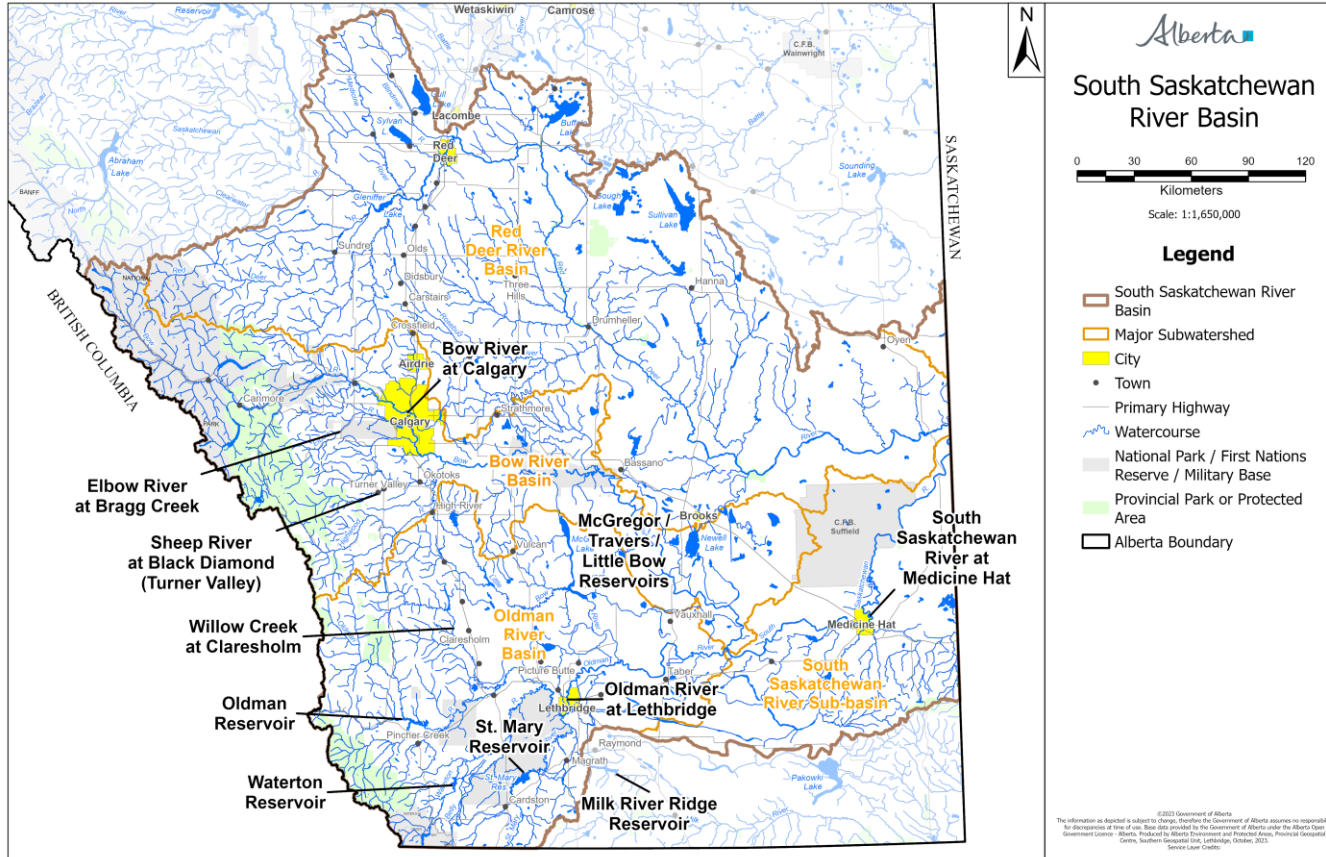
Alberta

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



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

Bow River in SE Alberta

July 2022



July 2023



Highwood River near Bow River Confluence

July 2022



July 2023



Pincher Creek at Hwy 3

July 2022



July 2023



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%

Oldman Reservoir

Cowley drinking water intakes



Boat launch at provincial recreation area



Oldman Reservoir



Boat launch dock

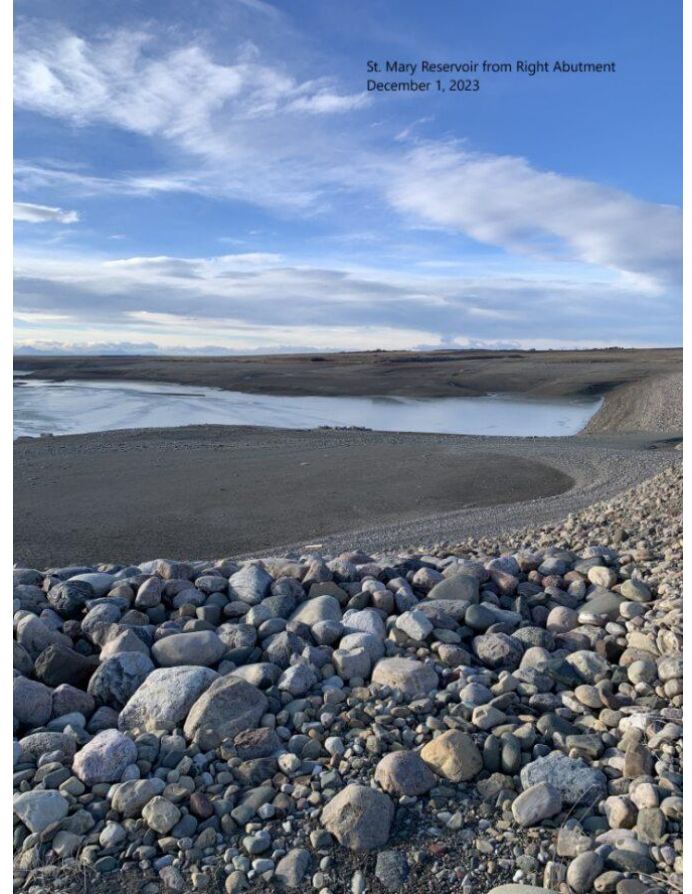


St Mary's Reservoir

View from the top of the dam



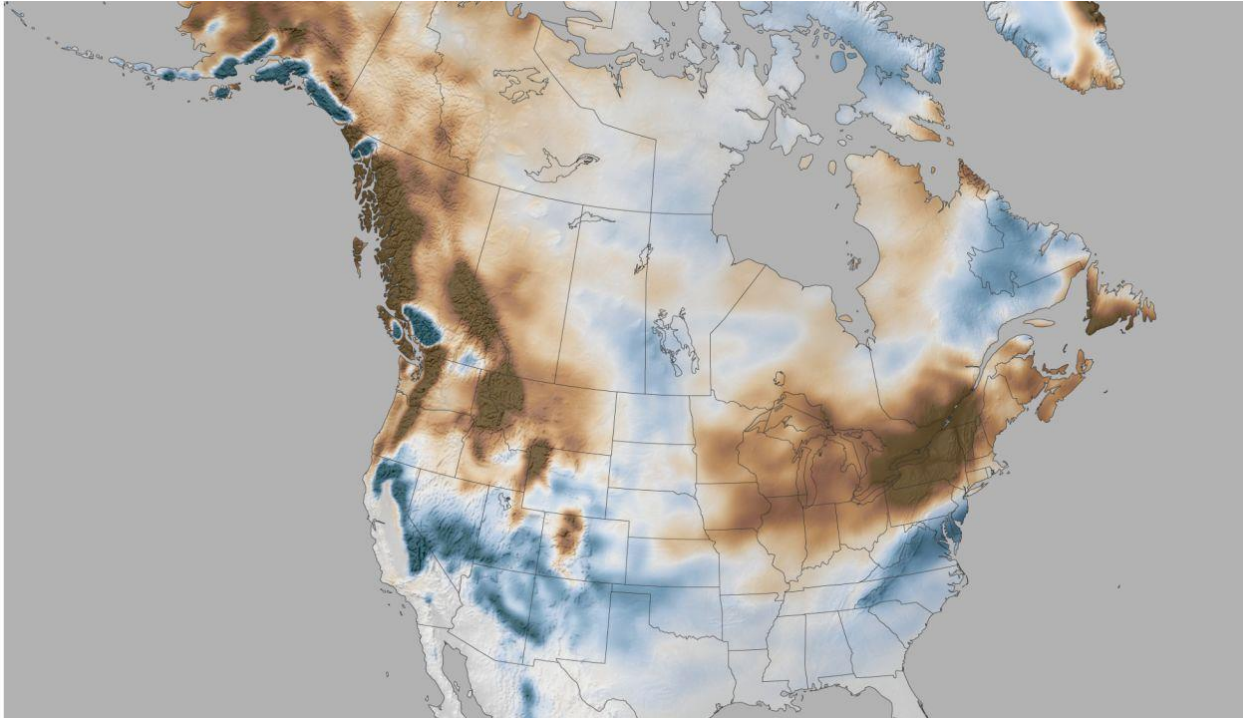
St Mary's Reservoir



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**

Drought Risk: Predicted El Niño Effects



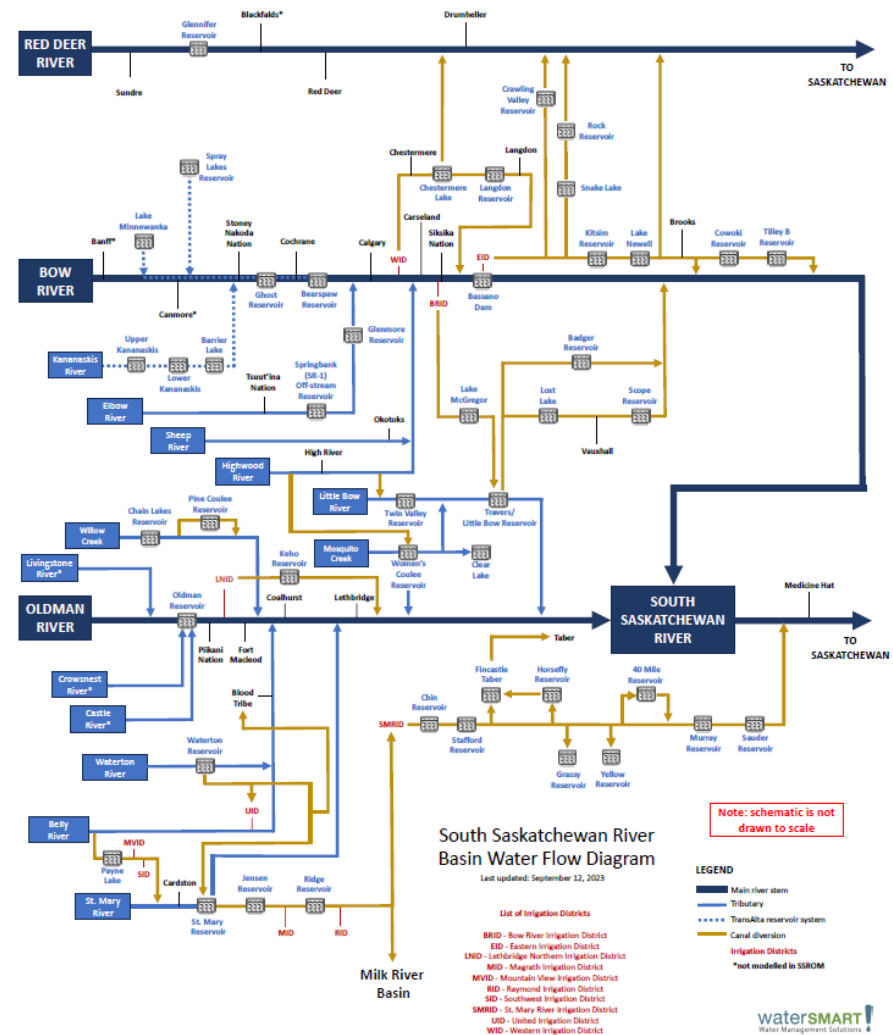
Snowfall during all stronger El Niño winters (January-March) compared to the 1991-2020 average.

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

Source: US National Oceanic and Atmospheric Administration

Drought Management is Complicated

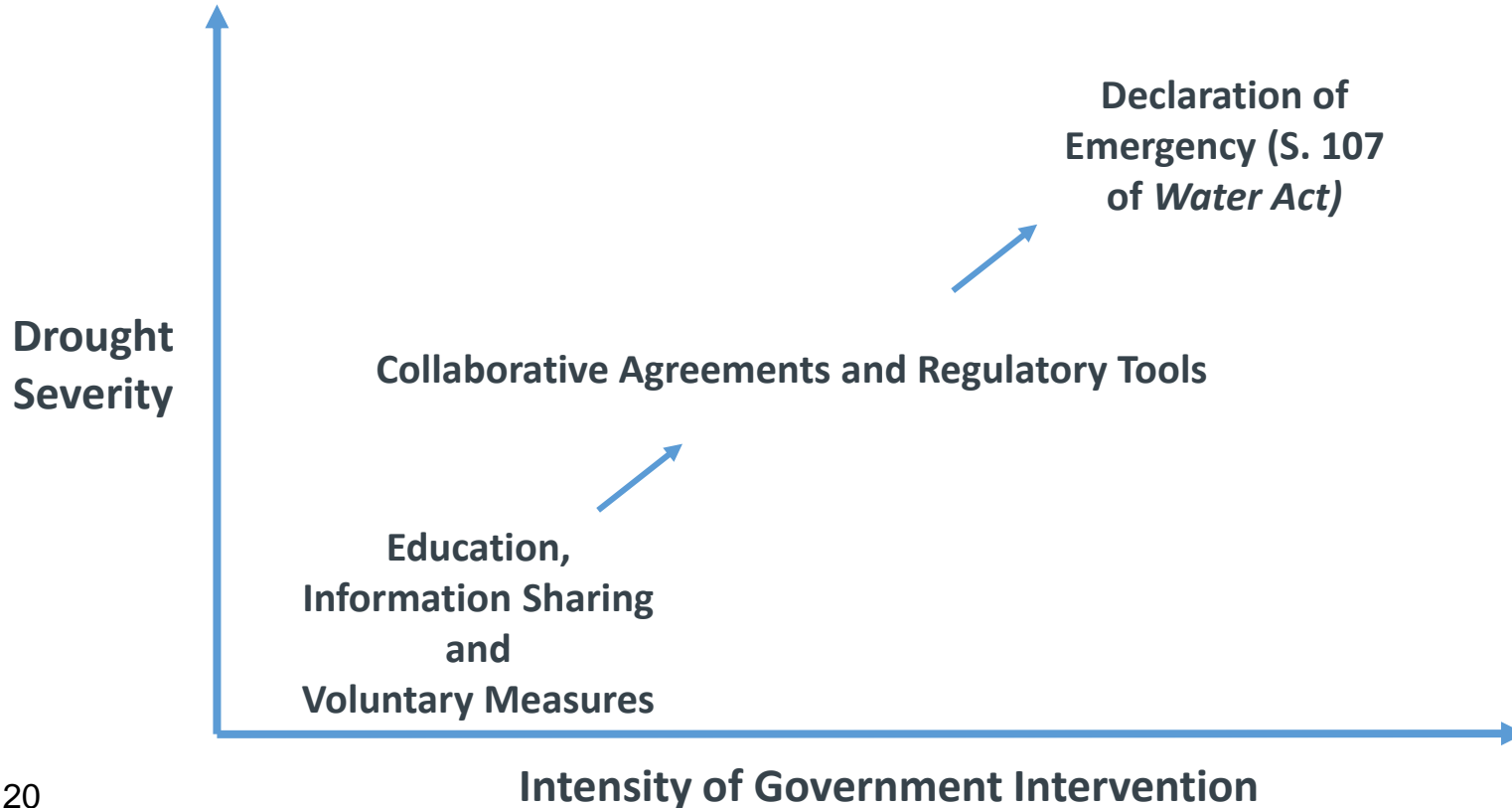
- Network of interconnected rivers, water reservoirs and canals, intakes and outflows.
- Currently uses a priority system set by licence seniority (First in Time, First in Right).
- FITFIR will not effectively prioritize water based on need in a wide scale drought.



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.**

Drought Management Tools



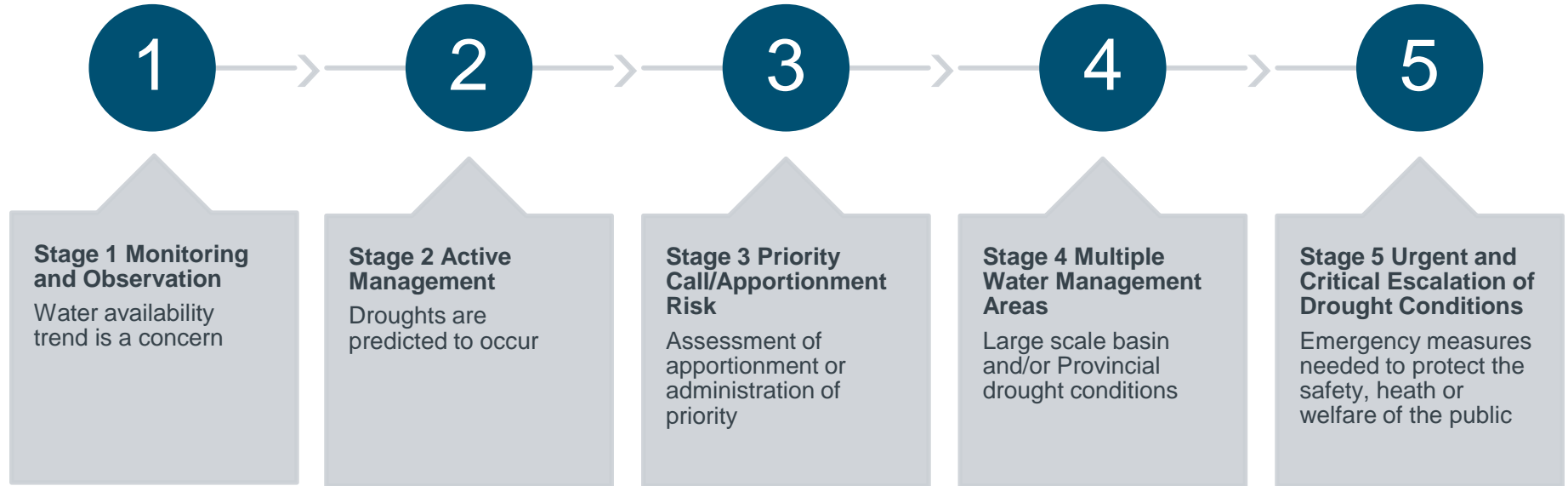
Collaborative Agreements

- 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

Drought – Key Elements and Timeline



EPA Drought Management Stages



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

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

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?

QUESTIONS

Oldman Reservoir Bed



Oldman Reservoir – Silt Plain with the river running through

