Water Licensing in Alberta

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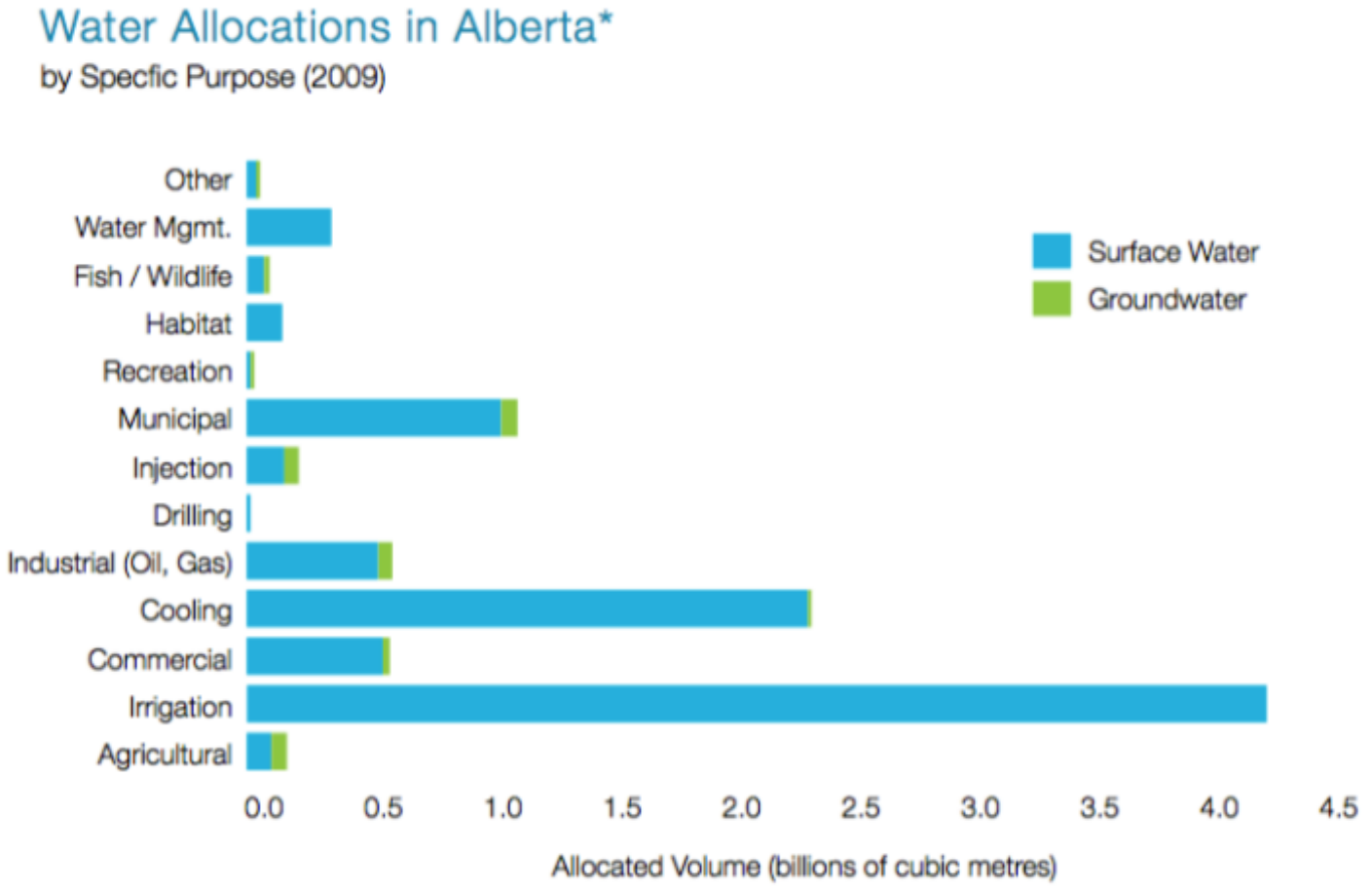
Why is licensing and diversion compliance important?

- Alberta's water resources are geographically inconvenient:
  - Majority of Alberta's water lies in the north, whereas the majority of water need lies in the South.
- Master Agreement on Apportionment
  - Alberta must pass 50% of its annual flow, from each stream, onto Saskatchewan .
- Dry continental climate.

What is water diversion compliance?

- Regulation of diverted water in order to ensure diversion license guidelines are being followed.
- Water users need to report how much water they have diverted, consumed and returned each year.
- Guidelines:
  - Allocation – amount of water that a license holder is permitted to divert
  - Consumption – actual amount of diverted water and any water lost in processes.
  - Return flow – water that is returned to the source after.

Who are licenses issued to?



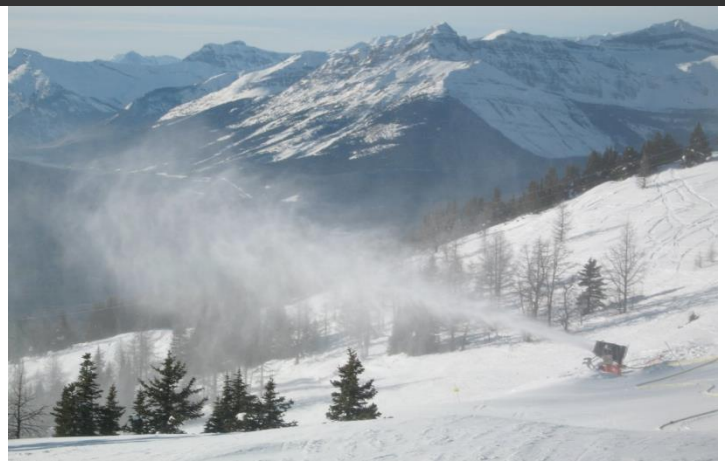
Who are licenses issued to?

- In Alberta, the majority of surface water diversion licenses (42.5%) are used for irrigation purposes – Dry continental climate.
- Sectors with the largest allocation of groundwater:
  - Oil and Gas
  - Municipal water supply
  - Agricultural (non-irrigation)

St. Mary River Irrigation District

Who are licenses issued to?

- Municipalities
- Commercial
- Oil and Gas
- Cooling



Snow Making – Lake Louise Ski Resort

Edmonton, Alberta

Fort McMurray, Alberta – Oil Sands

How are licenses and compliance managed?

- In Alberta diversion licenses are managed by the provincial government under the Water Act.
- Monitored by government, industry and stakeholders.

Before water can be diverted

- Must consider:
  - the source of water
  - the diversion point
  - volume, rate and timing of the diverted water
  - priority of water right established by license
  - purpose of diverted water
  - conditions the diversion must meet
  - natural water supply
  - existing licenses

Before water can be diverted

- Diversion needs to be monitored to ensure that Instream Flow Need's (IFN) are met.
- IFN is the "the science based quantities and qualities of water that sustain the ecological integrity of riverine environments."

Red Deer River

How is a diversion monitored?

- Staff gauging is done at the point of diversion and again at the point in which the water is returned to the source.
- Diverted water and return flow needs to be monitored to ensure its INF.

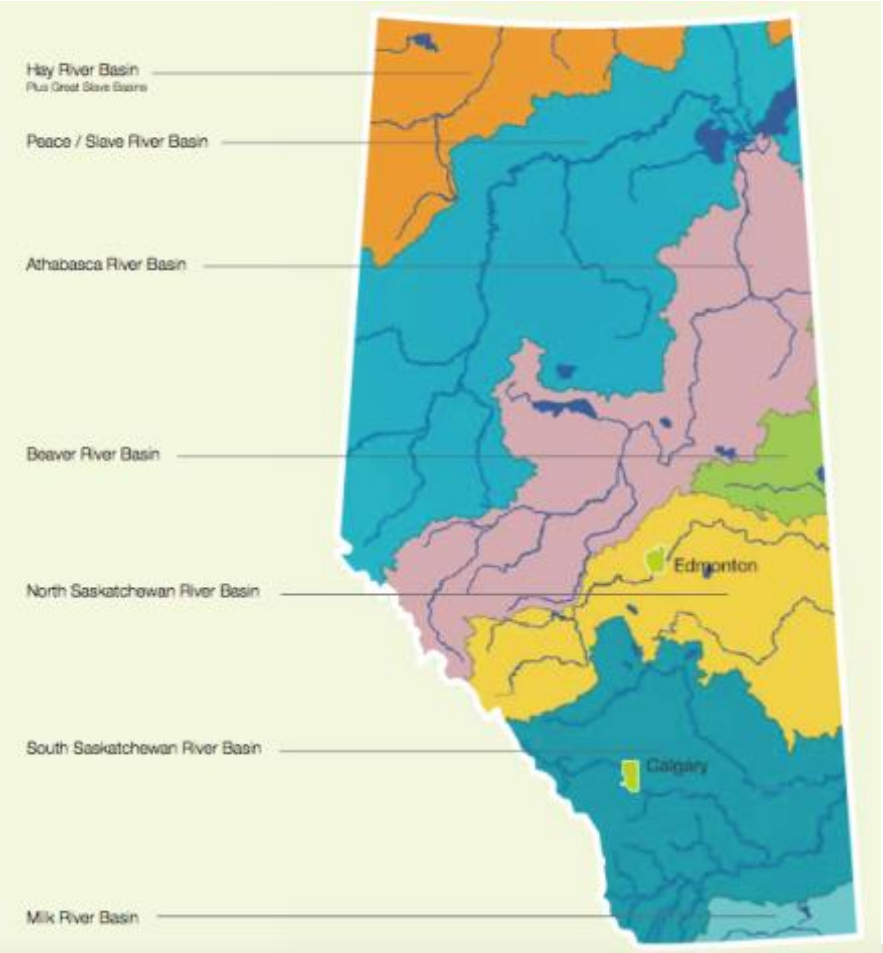
Forty Mile Creek at Mt. Norquay

Temporary Diversion License

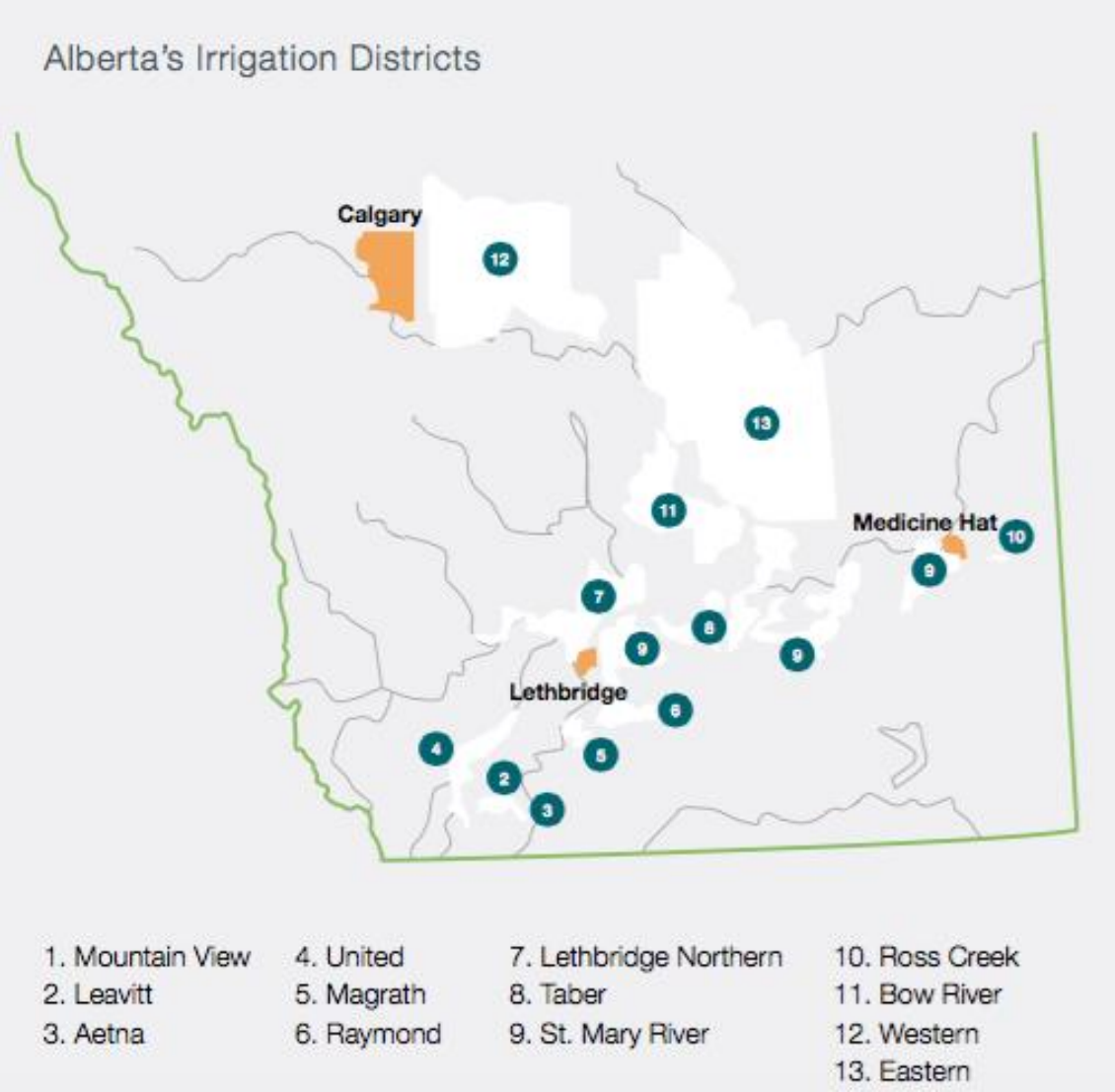
- Diverted water is the total amount of water that a license holder is permitted to withdraw over a period of time
- A temporary diversion licenses (TDL) is issued when there is a need for short-term diversion and also for water use in emergency situations, over a maximum period of one year.
- A license is required to divert and use water for non-household purposes.

Water Licensing and Irrigation in Alberta

- Alberta's 13 irrigation districts located in the SSRB.
- Annual discharge into Saskatchewan: 9,280,000,000 m^3
- Sub-Basins: Bow, Old Man, Red Deer, South Saskatchewan River basins.



SSRB – Irrigation Districts



Case Study: "Proportional water sharing vs. seniority based allocation"

- Current Strategy: "First-in-time-first-in-right"
  - Seniority based allocation
- Joint study by University of Tennessee, University of Calgary and University of Lethbridge.
- Focused on three irrigation districts in Bow River Sub-basin:
  - Bow River Irrigation District (BRID)
  - Western Irrigation District (WID)
  - Easter Irrigation District (EID)

Results

- Proportionally based water allocation achieves higher efficiency rates in water surplus, than seniority-based allocation.
- Works best if proportion of allocation is calculated by the average diversion over the past 5 years.
- Could lead to landowners choosing to divert more water than needed.

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