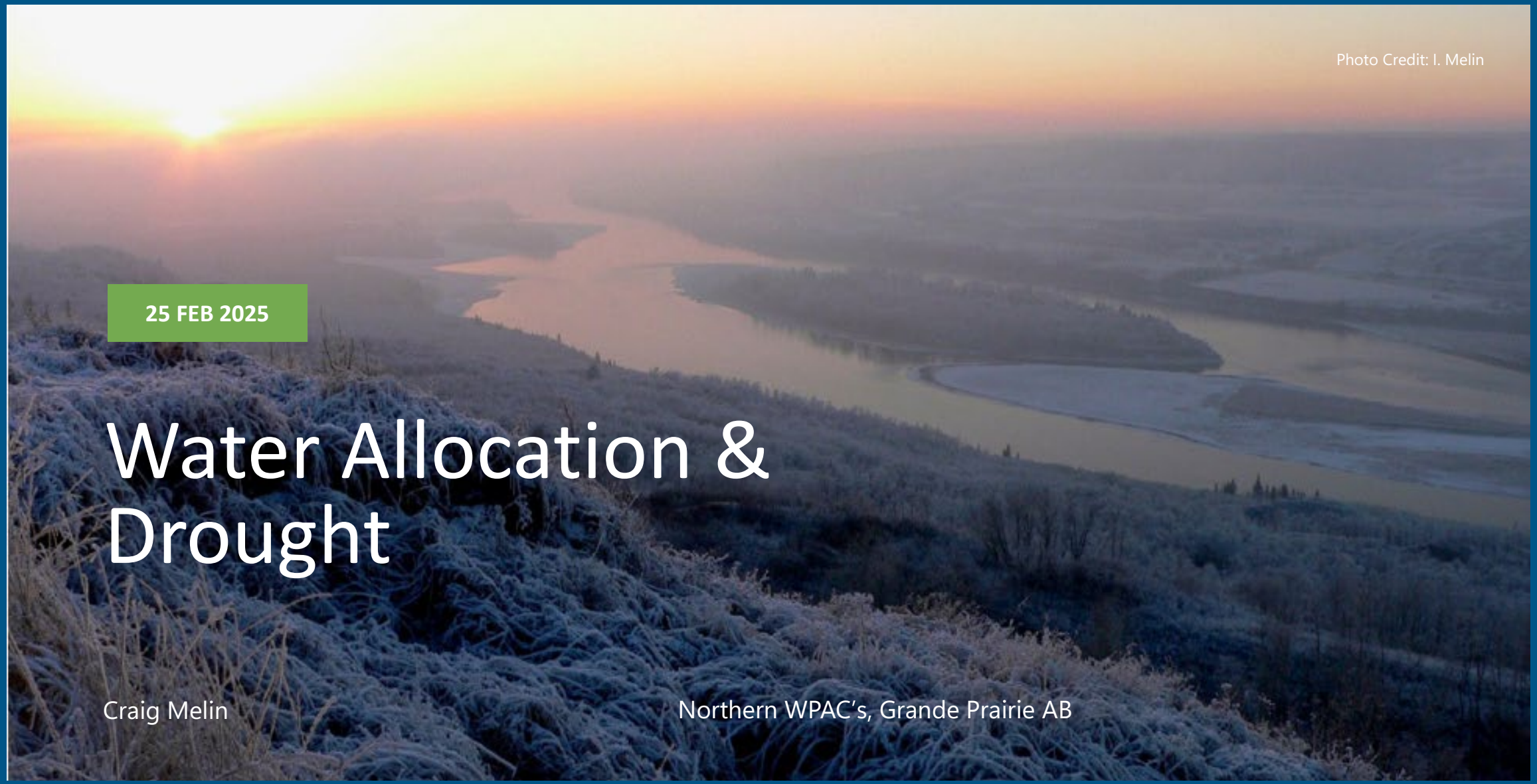


25 FEB 2025

Water Allocation & Drought

Craig Melin

Northern WPAC's, Grande Prairie AB

CONSERVATION AND MANAGEMENT OF WATER

Province of Alberta

RESPONSIBLE ENERGY DEVELOPMENT ACT

Statutes of Alberta, 2012
Chapter R-17.3

Current as of March 1, 2023

Mandate of Regulator

2(1) The mandate of the Regulator is

(a) to provide for the efficient, safe, orderly and environmentally responsible development of energy resources and mineral resources in Alberta through the Regulator's regulatory activities, and

(b) in respect of energy resource activities, to regulate

(i) the disposition and management of public lands,

(ii) the protection of the environment, and

(iii) the conservation and management of water, including the wise allocation and use of water,

in accordance with energy resource enactments and, pursuant to this Act and the regulations, in accordance with specified enactments.

WATER ACT HISTORY & PURPOSE OF WATER ACT

Province of Alberta

WATER ACT

Revised Statutes of Alberta 2000
Chapter W-3

Current as of December 15, 2022

- North West Irrigation Act – 1894
- Water Resources Act – 1931
- Water Act – 1999

- **To support and promote the conservation and management of water including the wise allocation and use of water while recognizing**
  - the need to manage and conserve water resources to sustain our environment and to ensure a healthy environment and high quality of life in the present and the future, and
  - the need for Alberta's economic growth and prosperity.

AER and AEPA JURISDICTION

Province of Alberta

WATER ACT

Revised Statutes of Alberta 2000
Chapter W-3

Current as of December 15, 2022

Issuance of licences, preliminary certificates

51(1) On application for a licence by a person in accordance with this Act, the Director may, subject to subsection (2) and sections 34, 46 and 47, issue or refuse to issue

(a) a preliminary certificate to that person, or

(b) a licence to that person for

(i) the diversion of water, or

(ii) the operation of a works,

for any purpose specified in the regulations.

(4) In making a decision under this section, the Director

(a) must consider, with respect to the applicable area of the Province, the matters and factors that must be considered in issuing a licence, as specified in an applicable approved water management plan,

(b) may consider any existing, potential or cumulative

(i) effects on the aquatic environment,

(ii) hydraulic, hydrological and hydrogeological effects, and

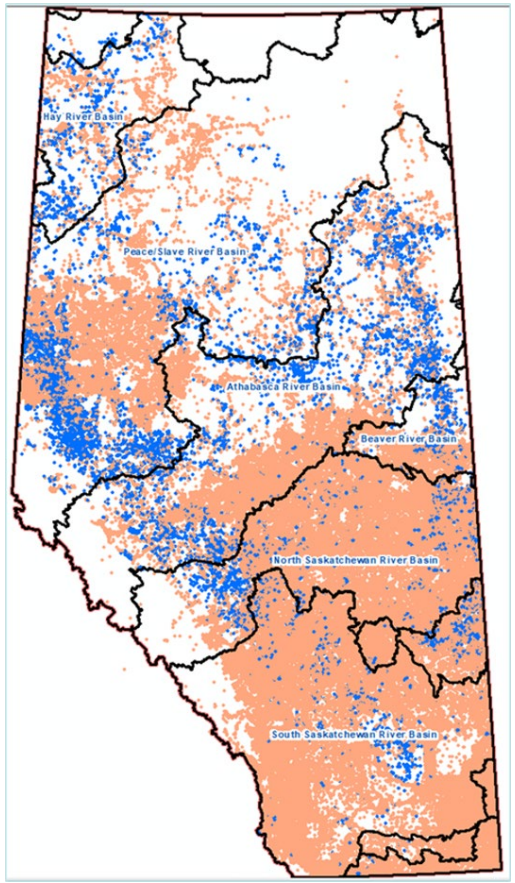
(iii) effects on household users, other licensees and traditional agriculture users,

that result or may result from the diversion of water, operation of a works or provision or maintenance of a rate of flow of water or water level requirements, and

- The AER issues authorizations under the *Water Act* for the energy sectors withdrawal and use of water from natural sources.
- Other sectors – Alberta Environment and Protected Areas (AEPA) responsibility.
- AEPA is also responsible for
  - creating policy,
  - water management planning,
  - establishing instream objectives, and
  - administering priority during a priority call.

Surface Water Allocation

WATER ACT LICENCE OVERVIEW



- AER
- AEPA

- AEPA licences: 174,529 as of April 30, 2024. AEPA is using the new Digital Regulatory Assurance System (DRAS)
- AER licences: 50,931 as of April 30, 2024
  - 48,851 TDLs and 2,080 Term Licences
  - Annually issued: approximately 5,000 TDLs and approximately 50 Term Licences
  - TDLs come in via the Water Act Temporary Diversion Licence Electronic Review System (WATERS)
  - Term Licences are submitted via email

DIFFERENCES BETWEEN TERM AND TDL LICENCES

Term Licence:

- Purpose of use, details on volume needed, details on proposed rate of diversion
- Have conditions including flow restrictions to protect the aquatic environmental
- Can only be suspended or cancelled if section 55 of the *Water Act* is satisfied
- Determination of water availability based on median year
- Has a priority and can call priority
- *Water Act* requires public notice
- Term - 5 to 10 years
- Needs hydrological reports, plans to identify works, location of use
- First Nations Consultation required

Temporary Diversion Licence:

- Purpose of use, details on volume needed, details on proposed rate of diversion
- Have conditions including flow restrictions to protect the aquatic environmental
- The Director can cancel or suspend TDLs for any reason deemed appropriate
- Determination of water availability based on current flows, flow trends, and cumulative withdrawal rates
- Can not call priority
- *Water Act* does not require public notice, but *Responsible Energy Development Act* (REDA) does
- Term - 1 year or less
- Hydrological report may be requested, usually no works, identify location of use

REGULATORY CONTROLS

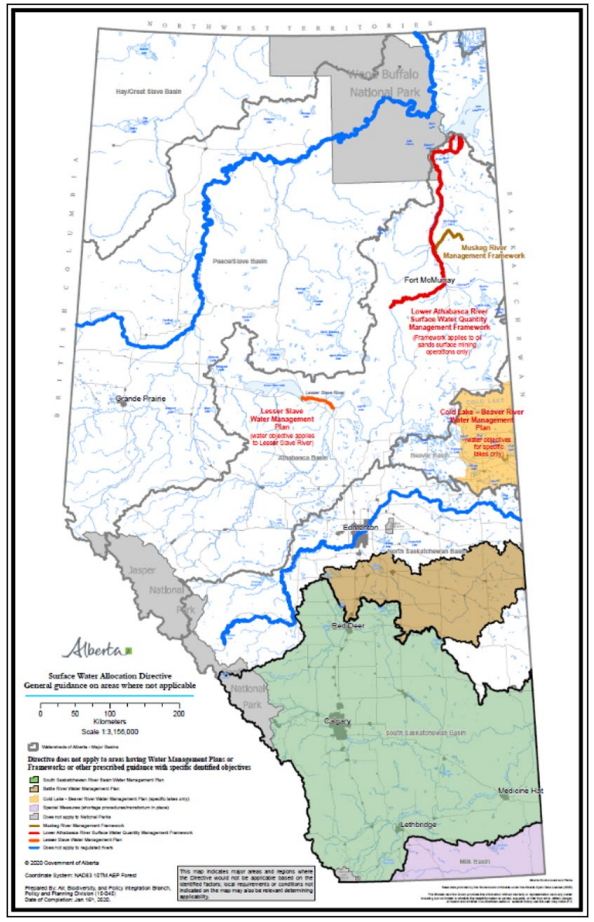
Surface Water Allocation Directive

https://open.alberta.ca/publications/9781460143339

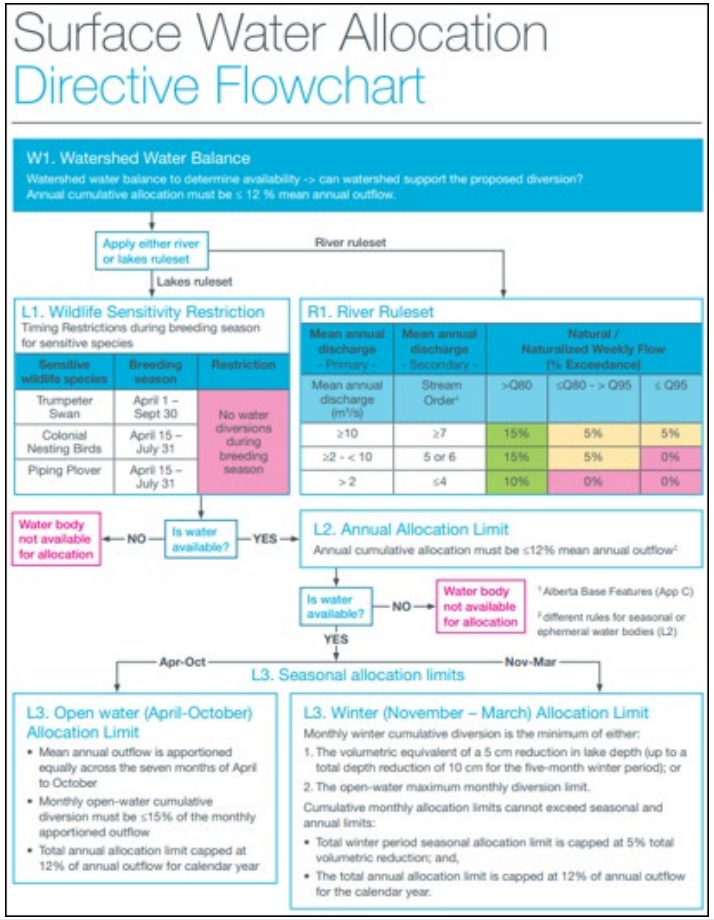
Directive does not apply to areas having Water Management Plans or Frameworks or other prescribed guidance with specific dentified objectives

- South Saskatchewan River Basin Water Management Plan
- Battle River Water Management Plan
- Cold Lake - Beaver River Water Management Plan (specific lakes only)
- Special Measures (shortage procedures/moratorium in place)
- Does not apply to National Parks
- Muskeg River Management Framework
- Lower Athabasca River Surface Water Quantity Management Framework
- Lesser Slave Water Management Plan
- Does not apply to regulated rivers

Wapiti River Water Management Plan



REGULATORY CONTROLS & TOOLS – NORTH



- **The Surface Water Allocation Directive (SWAD) is used in the absence of a Water Management Plan or Framework.**
  - Watershed scale assessment – annual cumulative allocation limited to 12% mean annual outflow
  - Local scale assessment – River and Lakes Ruleset
- **SWAD implementation through**
  - Diversion limits – weekly cutback and cutoff flow schedules
  - Monitoring – WSC real time flow data (Alberta Rivers website) or measuring flow at the Point of Diversion, water level for lake sources
- **Water Shortage Situation**
  - Self regulating through diversion schedules

REGULATORY CONTROLS – SWAD FOR FLOWING STREAMS

Table 3. River and stream cumulative percent allocation limits based on natural instantaneous discharge for weekly exceedance data as determined by mean annual discharge and/or stream order. Mean annual discharge is the primary criteria; stream order is to be used only as a secondary option.

Mean Annual Discharge [4] (m^3/s)	Stream Order [5]	Natural/Naturalized Weekly Flow (% exceedance)*		
primary criteria	secondary	$>Q_{80}$	$\leq Q_{80}$ - $>Q_{95}$	$\leq Q_{95}$
≥10	≥7	15%	5%	5%
≥2 - <10	5 or 6	15%	5%	0%
< 2	≤4	10%	0%	0%

* Measured (recorded) flows may not provide the natural flow of a river or stream and further analysis is done to naturalize the flow data by removing significant human impacts on observed flow.

In areas where there are no Water Management Plans or Frameworks, the AER uses the SWAD to allocate water. This criteria is used to establish diversion schedules that guide the licensee on if and how much water can be diverted.

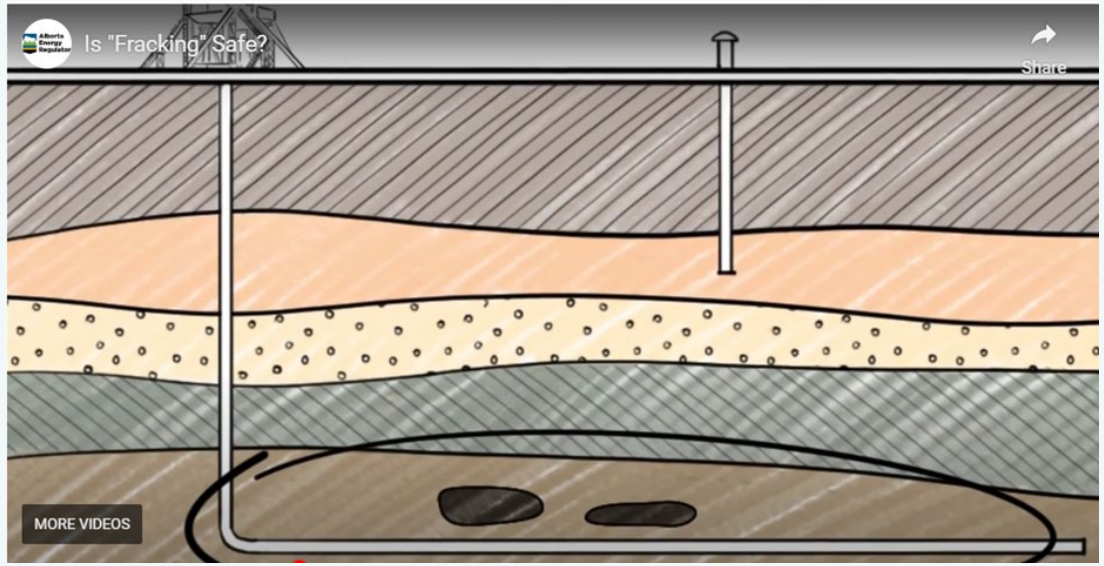
1) In areas where there are no Water Management Plans or Frameworks the AER uses the SWAD to allocate water. This criteria is used to establish diversion Schedules that guide the Licensee, if and how much water can be diverted.

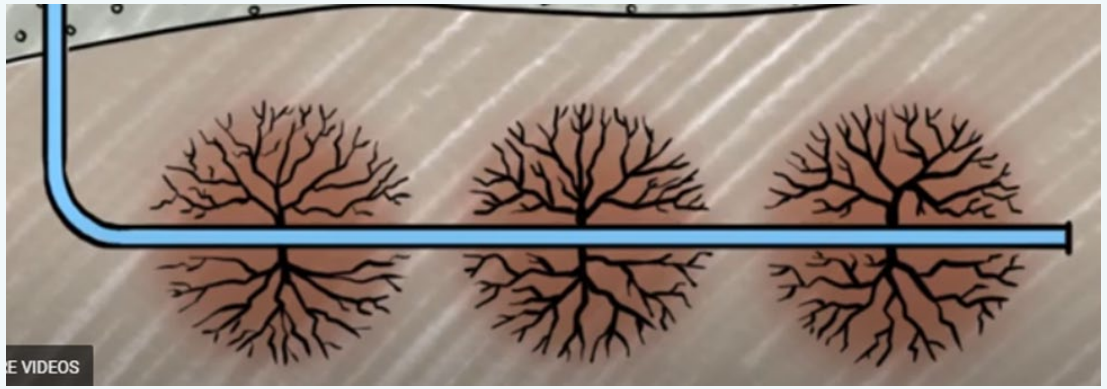
REGULATORY CONTROLS – SWAD SCHEDULE EXAMPLE (TDL 501980)

SCHEDULE 1: Kakwa River Diversion Table
from Prairie Creek (NW 24 61 6W6) to the mouth
Maximum Diversion Rate 0.25 cubic metres per second or less
Water Survey of Canada Key Station #07GB003 (KAKWA RIVER AT HIGHWAY NO. 40)

Column [#]	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]
Description	Cutback Threshold 1 at 07GB003	Diversion Limit when 07GB003 < [A]		Cutback Threshold 2 at 07GB003	Diversion Limit when 07GB003 < [D]		Cutback Threshold 3 at 07GB003	Diversion Limit when 07GB003 < [G]		Cutoff Threshold at 07GB003
Week Starting	(m3/s)	(m3/day)	(m3/s)	(m3/s)	(m3/day)	(m3/s)	(m3/s)	(m3/day)	(m3/s)	(m3/s)
01-Jan	8.24	18000	0.250	6.38	13600	0.230	4.93	10000	0.170	3.82
08-Jan	8.24	18000	0.250	6.28	13600	0.230	4.78	10000	0.170	3.64
15-Jan	8.24	18000	0.250	6.20	13600	0.230	4.66	10000	0.170	3.50
22-Jan	8.24	18000	0.250	6.05	13600	0.230	4.44	10000	0.170	3.26
29-Jan	8.24	18000	0.250	5.96	13600	0.230	4.31	10000	0.170	3.11
05-Feb	8.24	18000	0.250	5.94	13600	0.230	4.29	10000	0.170	3.09
12-Feb	8.24	18000	0.250	5.87	13600	0.230	4.17	10000	0.170	2.97
19-Feb	8.24	18000	0.250	5.78	13600	0.230	4.05	10000	0.170	2.84
26-Feb	8.24	18000	0.250	5.78	13600	0.230	4.05	10000	0.170	2.84
05-Mar	8.24	18000	0.250	5.61	13600	0.230	3.82	10000	0.170	2.60
12-Mar	8.24	18000	0.250	5.73	13600	0.230	3.98	10000	0.170	2.77
19-Mar	8.24	18000	0.250	5.78	13600	0.230	4.05	10000	0.170	2.84
26-Mar	8.24	18000	0.250	6.04	13600	0.230	4.42	10000	0.170	3.24
02-Apr	8.24	18000	0.250	6.15	13600	0.230	4.59	10000	0.170	3.43
09-Apr	8.24	18000	0.250	6.50	13600	0.230	5.12	10000	0.170	4.04
16-Apr	8.24	18000	0.250	6.98	13600	0.230	5.91	10000	0.170	5.00
23-Apr	13.30	10100	0.175	10.01	7600	0.130	7.54	6400	0.110	5.68
30-Apr	25.14	17100	0.250	15.31	10400	0.180	9.32	6400	0.110	5.68

- Above (A) the licensee can divert at maximum diversion rate. This is considering existing licences, and other potential licences based on past allocations.
- Below (A, but above D or G) the licensee has to cut back potentially both the maximum diversion rate and/or the daily volume. This is to help maintain the 5% allocation below Q80.
- At or below (J) no diversion is allowed, while this stream support diversion of 5% at all time, it is cut off due to senior licences.



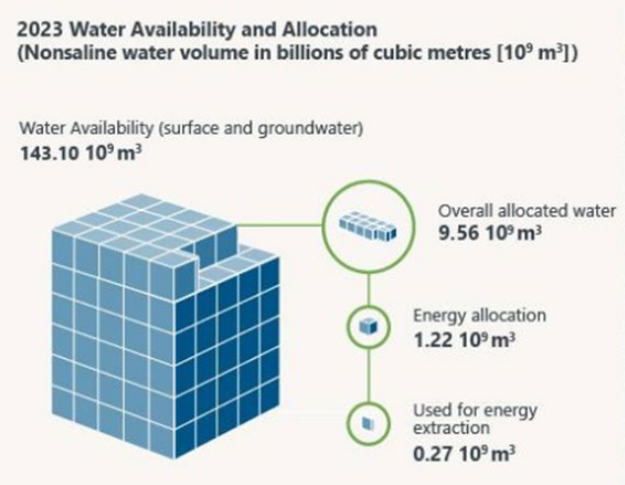


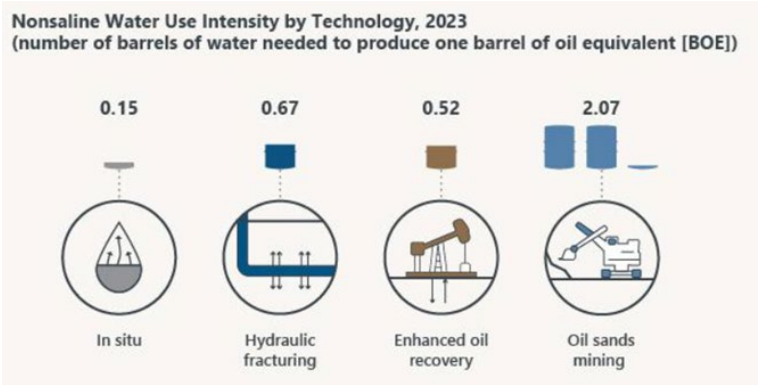
Peace Watershed

Highest Water Usage (AER Regulated Activities)

- Hydraulic fracturing operations
- Amount of water required depends on geological formation
- Horizontal legs, in some formations, can reach 4,000 metres
- Produced fluids, such as hydraulic fracturing fluid or salt water must be handled, stored, and disposed of under strict regulations and requirements
- Frac flowback volumes can vary by formation but the Duvernay Formation is about 5%

TRENDS





- 13% of nonsaline water allocated to all industries in the province was allocated for the energy industry.
- Nonsaline water use intensity across the energy industry has decreased 19% since 2013.
- Hydraulic fracturing 0.67 barrels of water per Barrel of Oil Equivalent (bbl/BOE) – highest the first 12 months of production falling to 0.07 bbl/BOE after ten years of production for average fractured well.
- Oil sands mining accounts for 82% of nonsaline water use in 2023 by the energy industry.
- Companies using larger well site pads to drill multiple wells. Moving toward Term Licences and reservoirs for off stream storage.
- Water use company performance can be found at https://www.aer.ca/data-and-performance-reports/industry-performance/water-use-performance.

Must meet DFO Fish Intake Standards

TYPICAL FISH SCREENS

Lakes

Flowing Water Bodies

- Water moved by Temporary Surface Pipeline for water conveyance (TSPWs)
- Notification under *Directive 077: Pipelines - Requirements and Reference Tools*

Water Act Approval required for reservoir & dam construction

WATER STORAGE OPTIONS

- Photo above is lined reservoir, other types may use a clay liner.
- Some reservoirs are dam safety structures which may require annual reporting.

WATER SHORTAGE (DROUGHT)

WATER SHORTAGE AND DROUGHT

St. Mary Reservoir

DROUGHT – CURRENT CONDITIONS

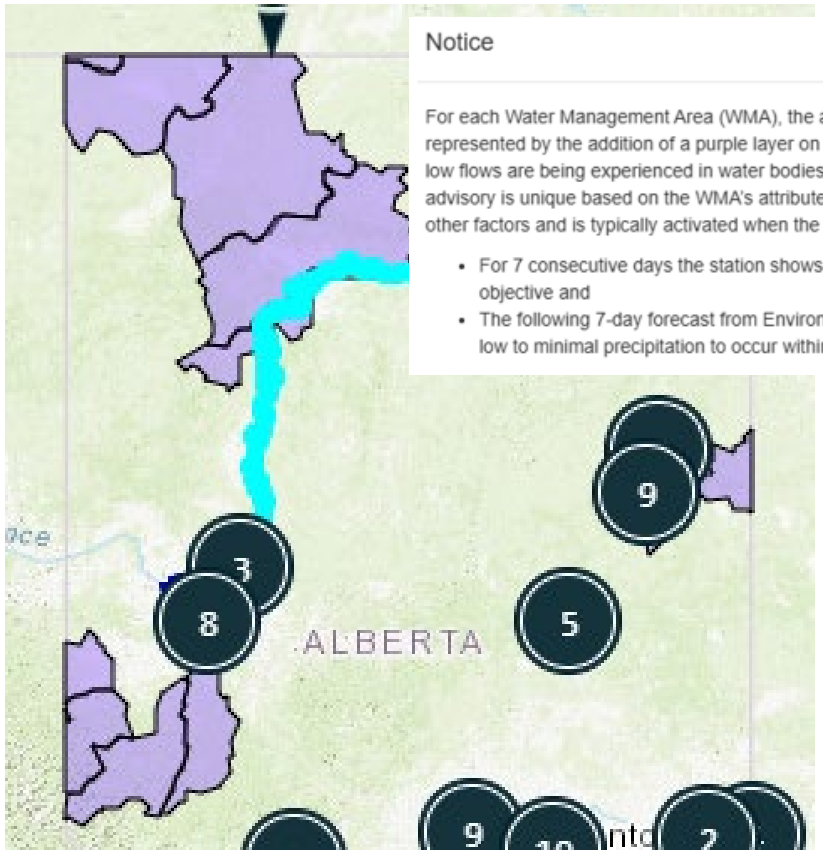
Conditions as of February 2025

Drought Stage Legend

- **Stage 0** - Drought conditions not occuring
- **Stage 1** - Monitoring and observation
- **Stage 2** - Active management
- **Stage 3** - Priority call management
- **Stage 4** - Significant drought conditions in multiple water manageme
- **Stage 5** - Severe drought conditions

https://www.alberta.ca/drought-current-conditions

WATER SHORT ADVISORIES – CURRENT CONDITIONS



Notice

For each Water Management Area (WMA), the activation of a water shortage advisory is represented by the addition of a purple layer on the website and is a visual indication that low flows are being experienced in water bodies within a WMA. Each water shortage advisory is unique based on the WMA's attributes related to water supply, flow, risk, and other factors and is typically activated when the following criteria are met:

- For 7 consecutive days the station shows flow under the corresponding instream objective and
- The following 7-day forecast from Environment and Climate Change Canada calls for low to minimal precipitation to occur within the WMA

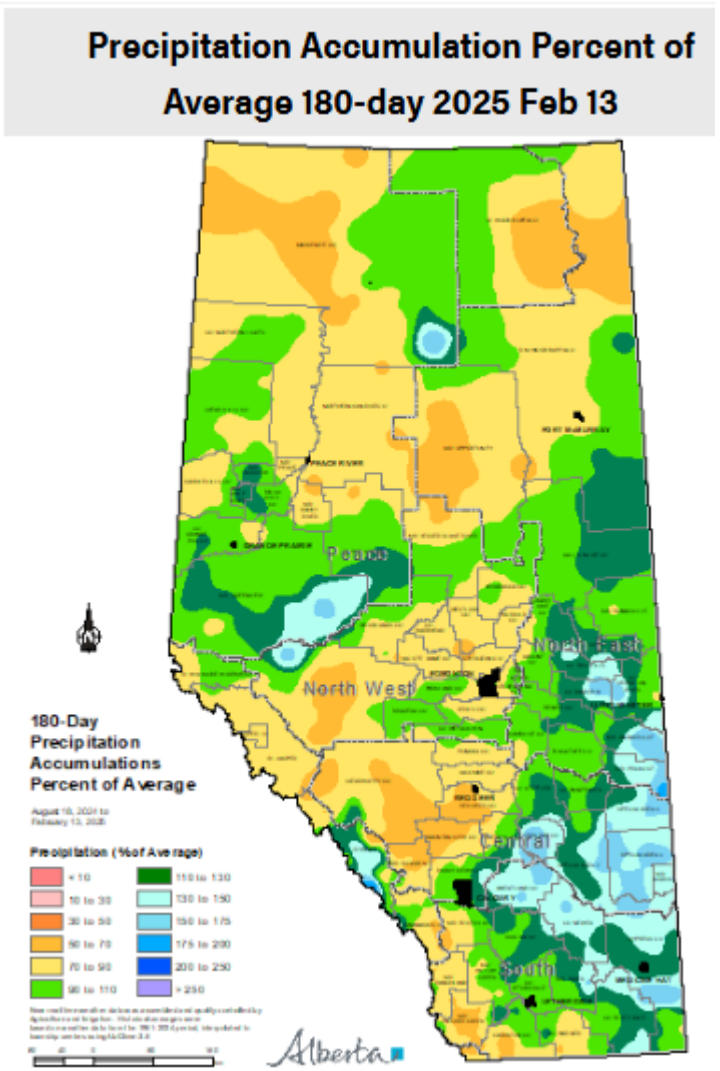
Water Shortage Advisory: Kakwa River - Cutbank River

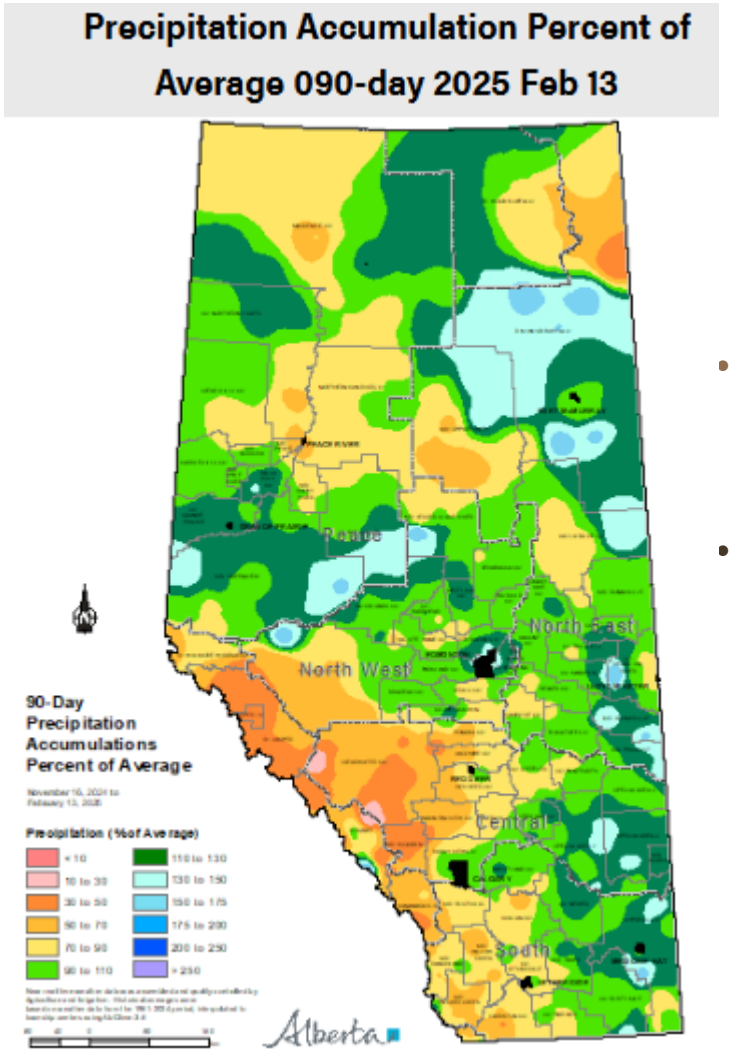
Advisory Created	Advisory Updated
2023-06-06 2:34 PM	2024-07-09 9:00 AM

TDL LICENCE

Low Flow Condition
Surface water TDL applications will be considered on a case by case basis based on the flow condition.

- The Government of Alberta is responsible to coordinate the drought response.
- Four teams are set up across the province and met weekly during summer/fall of 2024.
- Decisions from each meeting from each team are reflected in the Alberta River Basins website: https://www.rivers.alberta.ca





PRECIPITATION ACCUMULATION

- 180-day and 90-day precipitation accumulations relative to long term average
- https://acis.alberta.ca/acis/climate-maps.jsp

ALTERNATIVES TO FRESH WATER

- Municipal wastewater re-use
- Industrial runoff (in non-short water areas)
- Produced water or flow back water
- Saline groundwater
- Oil sands tailings water

Northwest Area

WATER ACT 2024 AER INSPECTIONS

- **Since January 30, 2024 - 138 Term Licence and TDL inspections were undertaken in the Northwest Area.**
  - Compliance rate of 76%
  - Provincial average is 80% across all inspections, e.g., licensing, drilling and completion operations
  - Common noncompliance: not having Licence on site, no signage, and not reporting water usage into the Water Usage Reporting System

FUTURE AER LICENSING

- AER moving licensing (Term Licences and TDL's) into OneStop 2.0 with a tentative date of mid-2025.
- TDL blackout period prior to release (approximately three weeks).
- Term Licence applications that can't be processed prior to the blackout date will need to be re-entered into the OneStop system.
- **All other water licence applications will automatically move into OneStop.**
- The AER will work directly with applicants to help transition term licence applications into OneStop when water licensing functionality is launched.
- Term Licence renewals – AER staff will reach out to specific Licensees to help them through the process/explain what to do. This may include granting an extension.
- Watch for further communications at www.aer.ca.

OTHER FACTS

- All TDLs have cutoff conditions related to flows that would be active during any flow situation including drought.
- During extreme low flows, the AER is likely to reject TDL applications from flowing sources.
- All TDLs have water use reporting.
- All TDLs diverting from fish bearing water bodies must notify the AER 48 hours prior to diverting. This is to allow compliance teams to schedule audits and inspections.
- The AER often conducts desktop audits to check compliance of diversions with respect to stream objectives and/or schedules contained within the licence.

RESOURCES

- Surface Water Allocation Directive: https://open.alberta.ca/publications/9781460143339
- Water conservation policy for upstream oil and gas operations https://open.alberta.ca/publications/water-conservation-policy-for-upstream-oil-and-gas-operations
- Directive for water licensing of hydraulic fracturing projects – area of use approach: https://open.alberta.ca/publications/directive-for-water-licensing-of-hydraulic-fracturing-projects-area-of-use-approach
- AER *Manual 025: Applications Under the Water Conservation Policy for Upstream Oil and Gas Operations*: https://static.aer.ca/prd/documents/manuals/Manual025.pdf
- OneStop Public Map Viewer: https://www1.aer.ca/productcatalogue/653.html
- Sentinel Satellite Images: https://apps.sentinel-hub.com/eo-browser/?zoom=6&lat=54.65477&lng=-115.77393&themeId=DEFAULT-THEME&toTime=2023-06-12T22%3A18%3A19.445Z

RESOURCES

- DFO Interim code of practice: End-of-pipe fish protection screens for small water intakes in freshwater https://www.dfo-mpo.gc.ca/pnw-ppe/codes/screen-ecran-eng.html
- GoA Authorization Viewer to view licences, TDL's and GoA issued approvals: https://www.alberta.ca/authorizations-issued-under-the-wateract-or-epea
- *Water Act* Approvals, amendments and Code of Practice notifications issued by the AER after 2018 use the OneStop Application Query Tool: https://www1.aer.ca/PubDocs/#/application-query
- Emergencies and Operational Complaints: 1-800-222-6514
- Other AER General Inquiries: inquiries@aer.ca

QUESTIONS

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