

# Preparing for the 100 year storm... Every 4 years

A story of water, work, and waking up!  
By John Greathead



- Fairbanks

Norman Wells Diversion Ditch Norman Wells Raw Water Intake Vault  
YUKON Norman Wells WTP

## Northwestern Passages

Labrador Sea

NUNAVUT

NORTHWEST  
TERRITORY

Wha-Ti WTP

Hudson Bay

NEWFOUNDLAND

## Canada

**MANITOBA**

QUEBEC

NE

NOVA SCOTIA

MAINE

Montreal

Ottawa

- Bos

RI

CT

## Case One

## Wage Over New York

## Sarnia - Bedford Dewage Lift Station

Toronto

A map showing the location of Sarnia, Ontario, Canada, relative to Toronto and New York. The map highlights the Sarnia Compost and Biosolids Treatment facility, the Sarnia WWTP (Wastewater Treatment Plant), and the Sarnia Combined Sewage Overflow Chamber. The Great Lakes are visible, and the map shows the proximity of Sarnia to both Toronto and New York.

Sarnia WWTP

Chicago

Washington

OHIO

WEST

VIRGINIA

600 km

Item(s) deleted.

Undo



3D

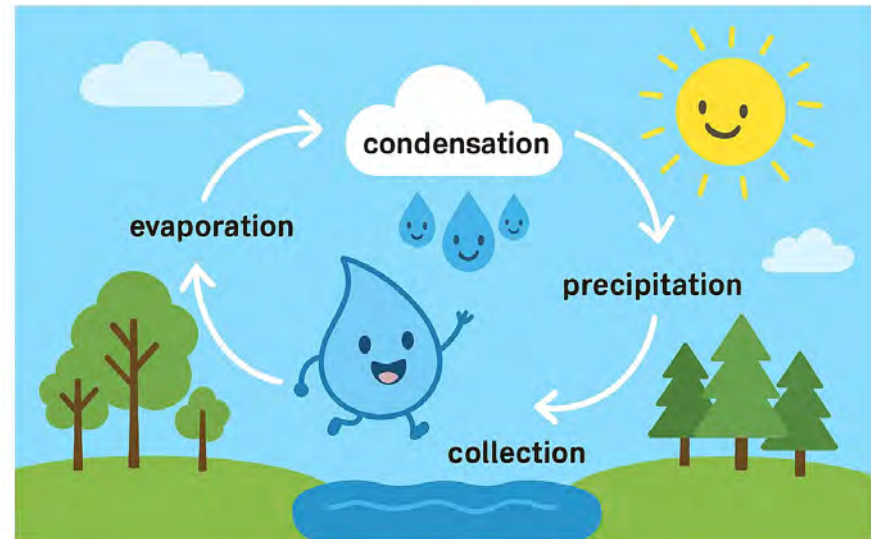




What  
We  
Were  
Taught

---

**The Classic Water Cycle (Grade 3 Style)**







Fox Creek Sanitary Lift Station

Fox Creek Lagoons

Fox Creek Industrial Subdivision

Fox Creek Residential Lots

Fox Creek Skatepark

Fox Creek

Fox Creek ESB

Fox Creek WTP

Fox Creek Sewage Receiving Station

Fox Creek Waste Transfer Station

Fox Creek Groundwater Wellfield

Item(s) deleted.

Undo

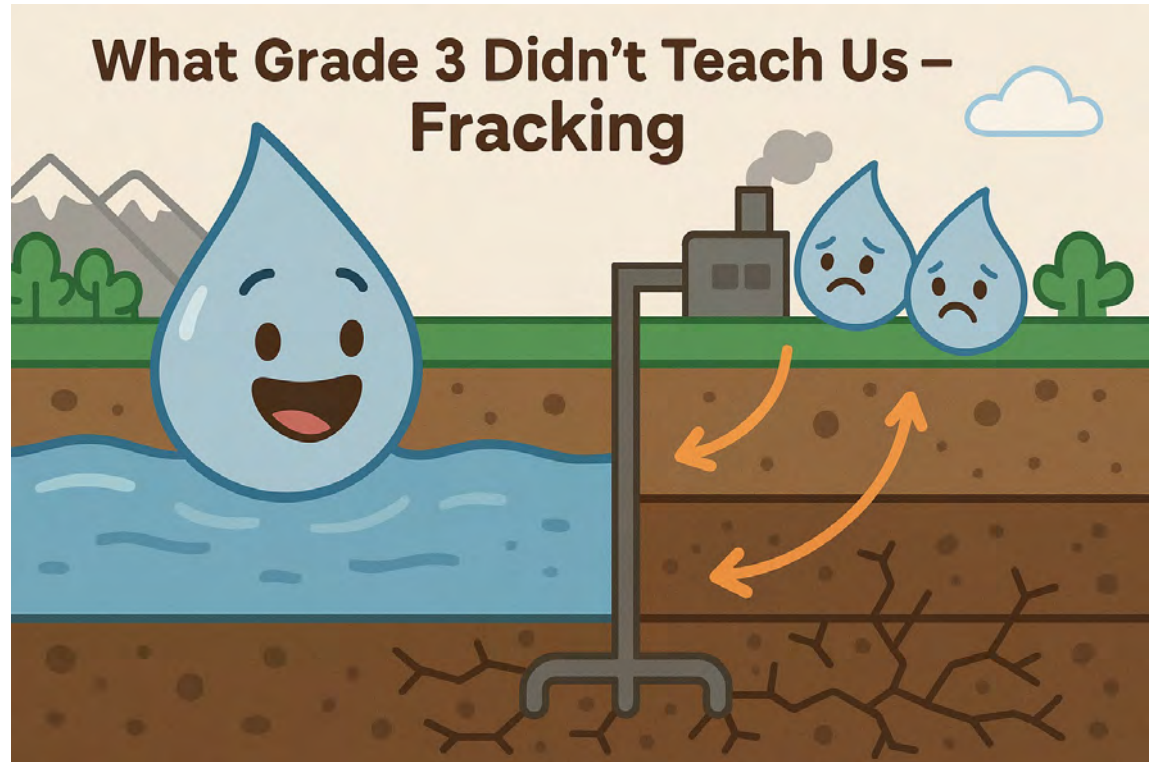


1,000 m



What  
I've  
Seen

---







200 m



# What We've Lost

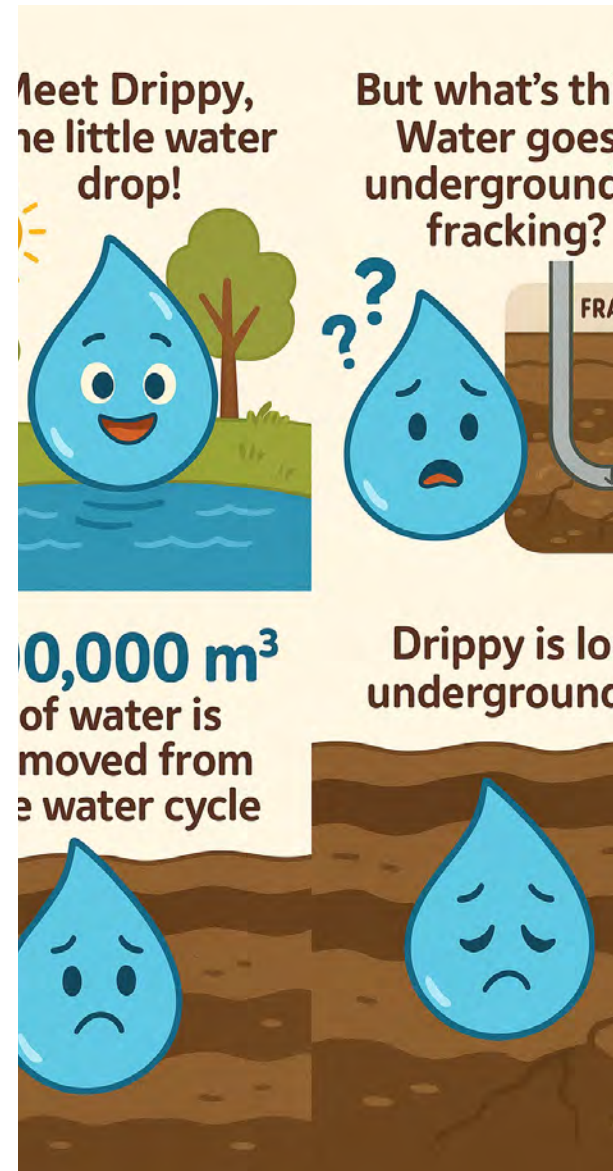
---

- Fracking operations often use surface water in massive volumes (often exceeding 400,000 M3) every time.

- Water used is then treated by adding chemicals including:

- Dilute acids
- Biocides
- Breakers
- Corrosion inhibitors
- Crosslinkers
- Friction reducers
- Gels
- Potassium chloride
- Oxygen scavengers
- Surfactants
- pH adjusting agents
- Scale inhibitors

- These chemical additives typically make up just 1/2 to 2 percent of the fluid.



# The Forecast

---







Jasper WTP

Jasper Welcome Sign

Jasper WWTW

Jasper Activity Centre

Jasper Skatepark

Jasper CN Stage

Jasper Bike Skills Park

Jasper Connaught Developments

Jasper - Sleepy Hollow Lift Station

Jasper Bulk Water/Sani Dump

Jasper National Park

Athabasca River

Henry House

Item(s) deleted.

Undo

X

700 m

3D





Jasper 2022





Office of the Superintendent  
Jasper Field Unit  
P.O. Box 10  
Jasper, Alberta  
T0E 1E0

October 18, 2022

John Greathead  
[JGreathead@jasper-alberta.ca](mailto:JGreathead@jasper-alberta.ca)

**Subject: Chetamon Wildfire Letter of Appreciation**

Dear John:

I would like to thank you for your recent collaboration in managing the impacts of the Chetamon wildfire and the power outage event of September 2022 that affected the Municipality of Jasper.

Your integration with the Parks Canada's Incident Management Team was smooth, timely and responsive; especially for such a dynamic situation. I know that you, along with many other stakeholders, did incredible work ensuring that critical and essential services were restored in a timely way, and that the key infrastructure that is important to Canadians was protected. Your work kept the community safe.

Bravo for doing the challenging and critical work of looking after the Jasper community. Thank you for your continued support of our mutual goals of protecting people and this special place.

Yours truly,

Alan Fehr  
Field Unit Superintendent

Canada



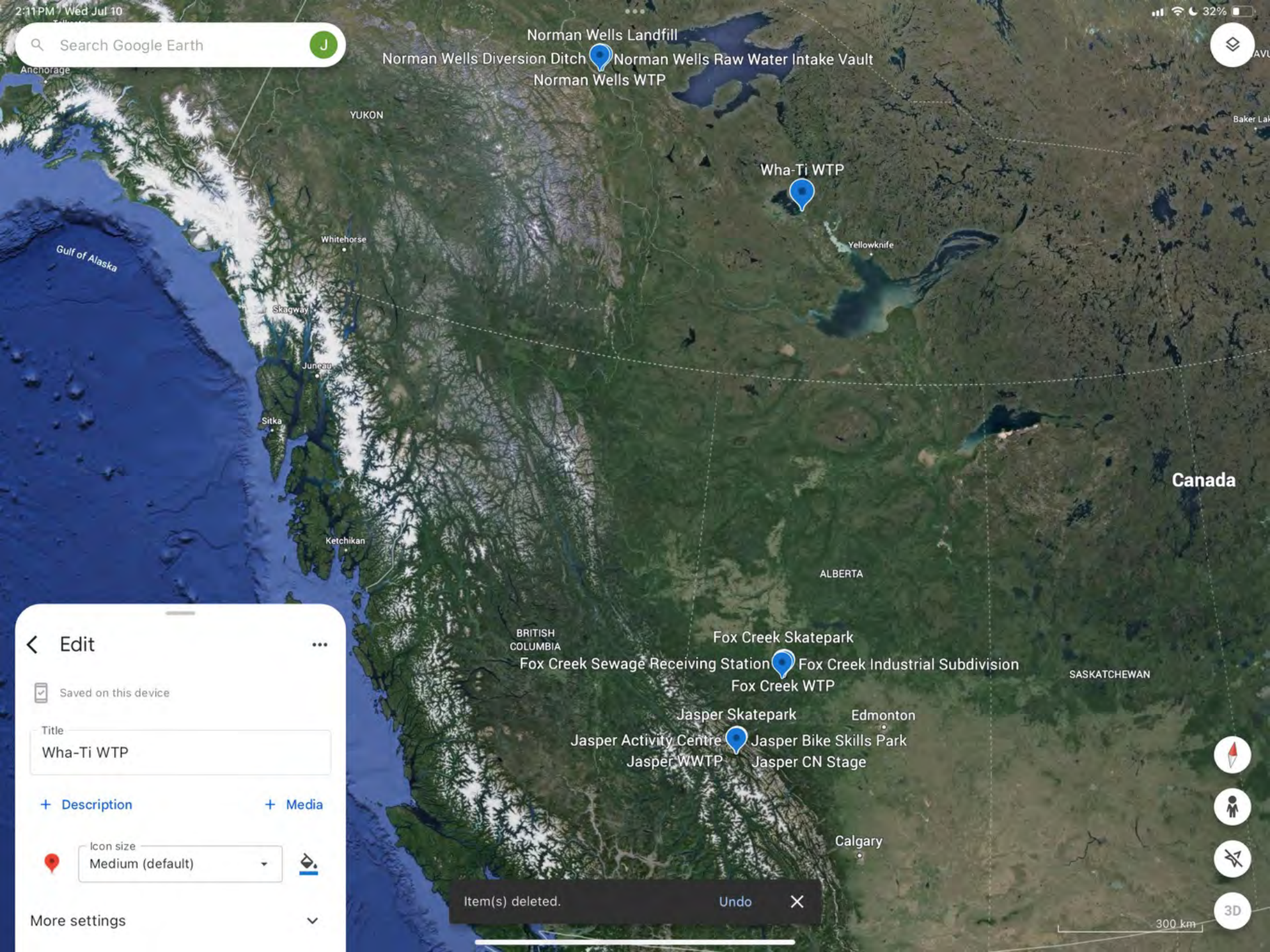
June-uary 19 2023











< Edit

✓ Saved on this device

Title

Wha-Ti WTP

+ Description + Media

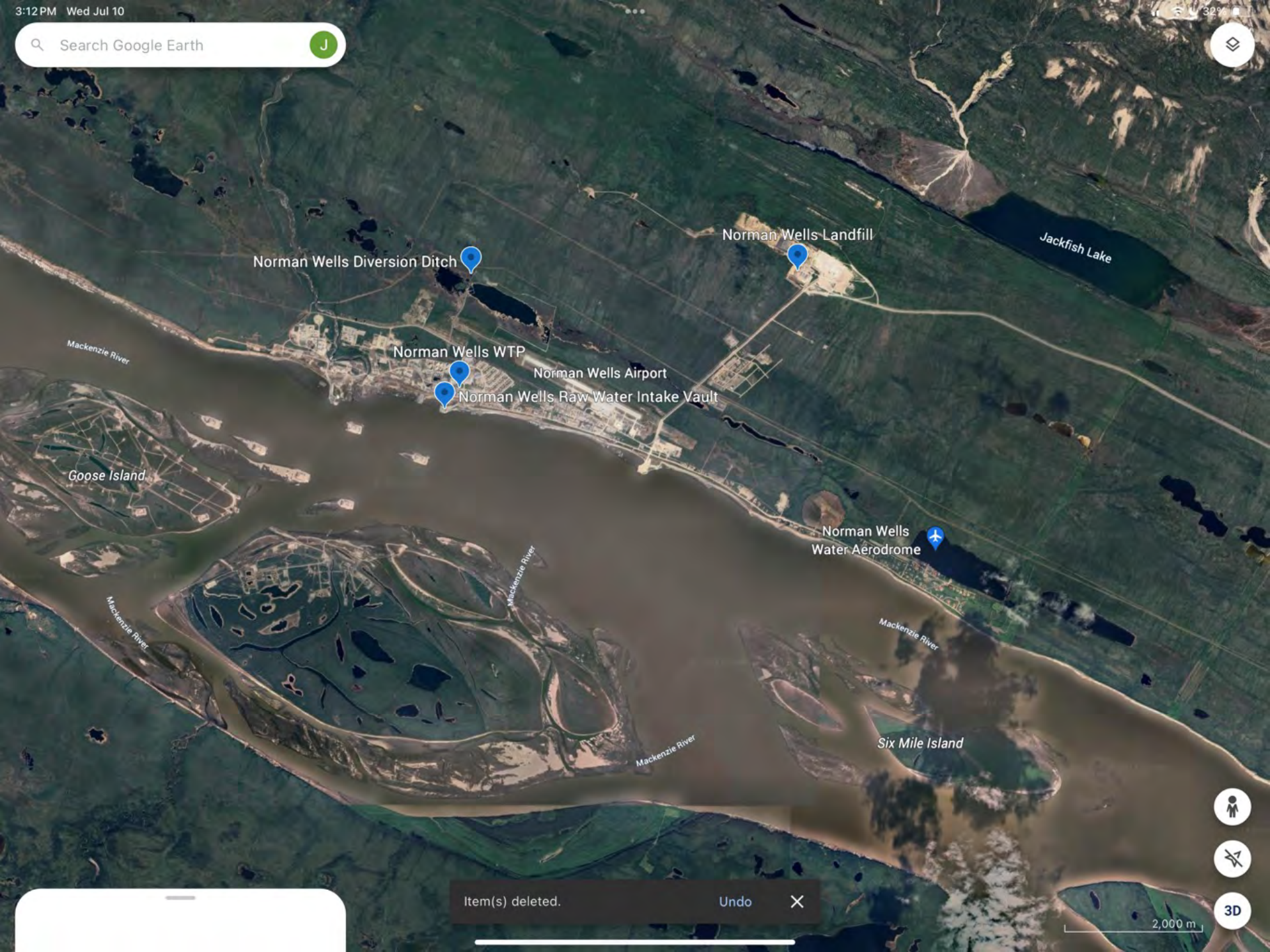
Icon size

Medium (default)

More settings

Item(s) deleted. Undo X





Norman Wells Diversion Ditch

Norman Wells Landfill

Jackfish Lake

Norman Wells WTP

Norman Wells Airport

Norman Wells Raw Water Intake Vault

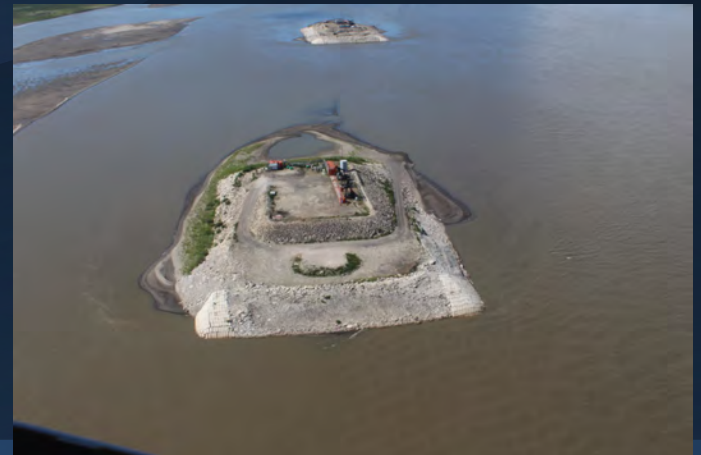
Goose Island

Norman Wells Water Aerodrome

Six Mile Island



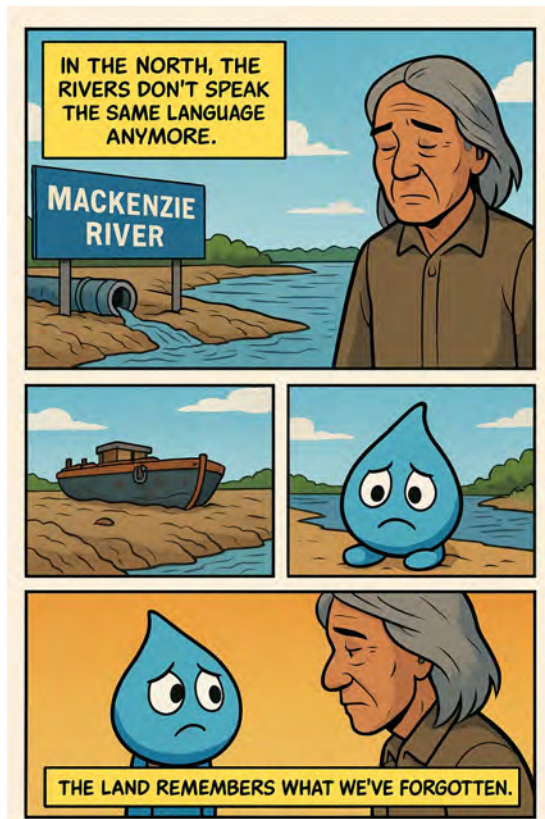
# The Mighty Mackenzie River











Canada's longest river, the Mackenzie, is experiencing historically low water levels. This has left communities that rely on it for essential goods stranded. Furthermore, First Nations along its banks are also alarmed. Such a low is unprecedented, with the river now **two meters below average**.

**Mackenzie River in Canada Reaches Historic Low Levels, Strandin...**  
[www.timesnownews.com/world/canada/mackenzie-river-in-canada-reaches-his...](https://www.timesnownews.com/world/canada/mackenzie-river-in-canada-reaches-his...)

Global News  
<https://globalnews.ca> ... mackenzi...

**Canada's longest river seeing historically low levels**

Jul 8, 2024 Canada's longest river is at historically low levels, stranding communities that rely on it for essential goods and alarming First Nations along its banks who have never known the...

The Weather Network  
<https://www.theweathernetwork.com> ...

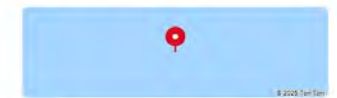
**The Mackenzie River is a lot lower than normal, ...**

Sep 16, 2023 Historically low levels. The Mackenzie, one of the longest rivers in Canada, runs from Great Slave Lake through the Northwest Territories before eventually emptying out into the Arctic.

**Images of Mackenzie River historically low water levels >**



The Mackenzie River is a river in the Canadian boreal forest and tundra. It forms, along with the Slave, Peace, and Finlay, the longest river system in Canada, and includes the second largest drainage. [Wikipedia](#)



**Etymology** Alexander Mackenzie, explorer

**Country** Canada

**Territories** Northwest Territories - Yukon

**Cities** Fort Providence - Fort Simpson - Wrigley - Tulita - Norman Well... [+](#)

# Lessons from the North



**This is what  
we were taught.**

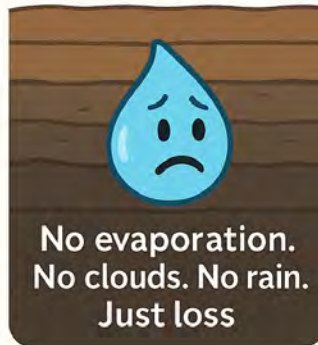


**This is what  
I've seen.**



**100,000 m<sup>3</sup> injected.  
Per frack. Per site.  
Thousands of times.  
That water's not coming back.**

**And this what  
we've lost.**



**And this is  
where it shows.**



**"We're watching the  
cycle break in real time."**



**This isn't someone else's problem.  
We know how to fix this.**



**Measure. Protect. Regulate. Restore.**

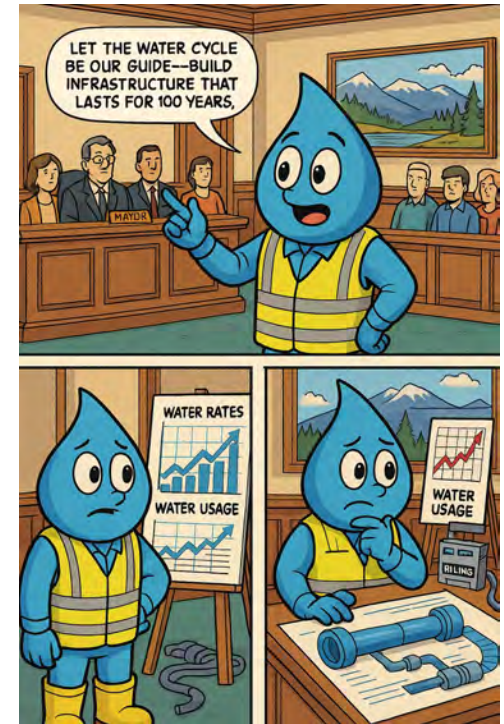
**# Let's put Drippy back in the cycle.**



# Let the Cycle Guide Us

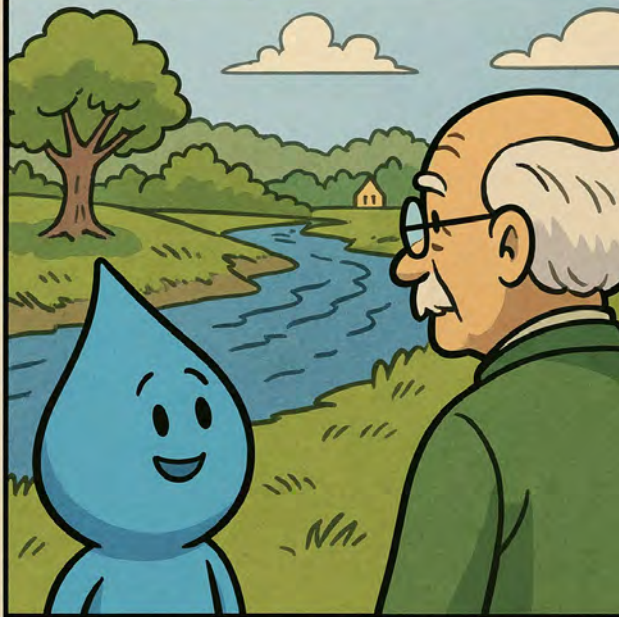
---

- Environmental Stewardship and Resilience must guide our Laws, Regulations and our Engineering Standards.
- We must realize the interconnectivity of our climate and environment.
- Preventative maintenance on already built infrastructure has never been more necessary.





# LEGACY



This isn't just about us.  
It's about those who  
came before... And those  
who will lead after us.