

Case Study: Water Retention on the Canadian Prairies



Josée Méthot/Dimple Roy
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Natural Infrastructure
for Water Solutions

Grand Challenges on the Prairies: Water Management

The Canadian prairies face a daunting array of challenges in the 21st century, spanning multiple themes.

2 key themes for this presentation:



Infrastructure Gap: 30% of Canada's water infrastructure is in fair to very poor condition (Canadian Infrastructure Report Card, 2019), and in the prairies, investments are not keeping pace with depreciation (Statistics Canada, 2022a).



Climate Change: Weather-related disasters, such as floods, droughts, and wildfires, are expected to increase in both frequency and magnitude (Bonsal et al., 2021; Sauchyn et al., 2020).

Viewed another way, challenges like these inspire innovation...

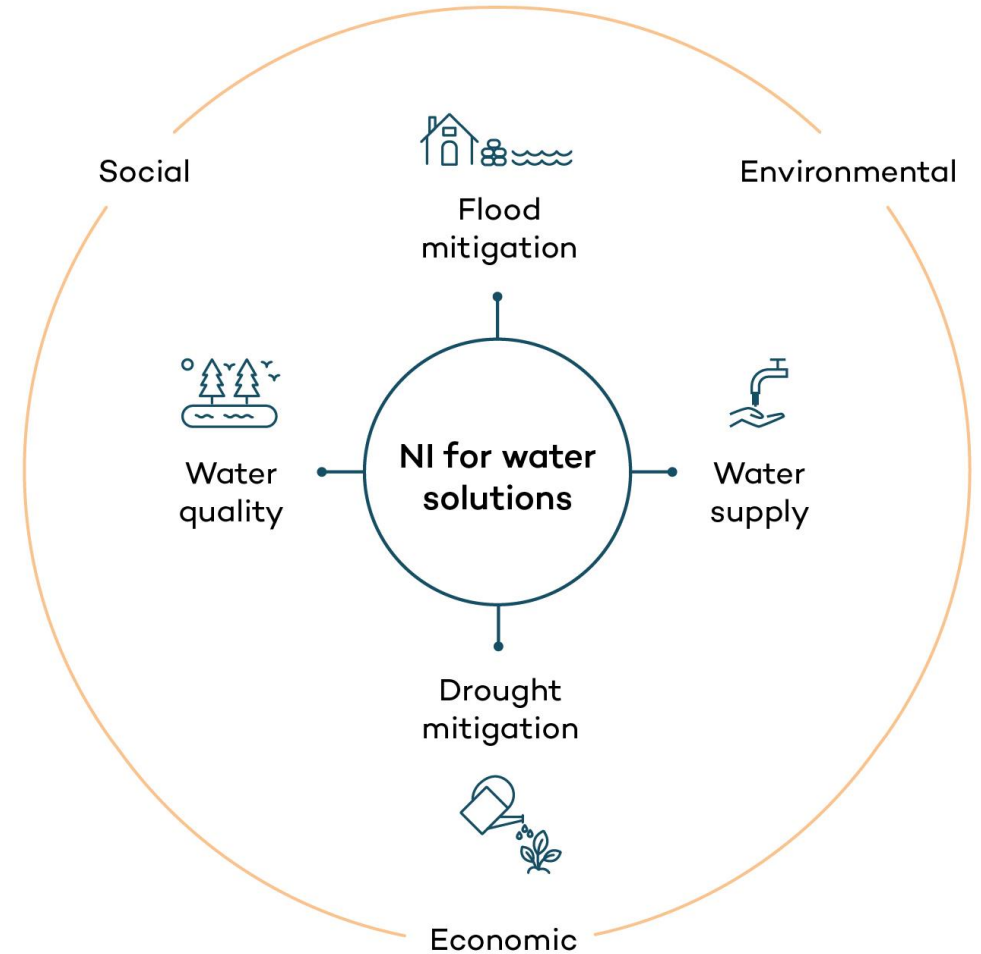
→ Recognition of Natural Infrastructure



Natural Infrastructure for Water Solutions (NIWS)

What is Natural Infrastructure?

- A way to plan and build with nature to meet infrastructure needs
- Conserved, restored, or engineered systems that provide specific infrastructure outcomes
- Also provide a variety of co-benefits that support the environment, the economy, and community well-being.



Water retention projects

- Nature-based retention projects manage water for flood and drought protection – AND also provide many co-benefits: climate mitigation, habitat, nutrient capture, carbon storage...
- Over the last decade water retention projects constructed all across the Prairies
- Need to better understand how they function to improve performance and benefits
- IISD is working with RMs and Watershed districts to monitor and model these systems to make recommendations on better management
- Part of IISDs larger global work on natural infrastructure and nature-based solutions

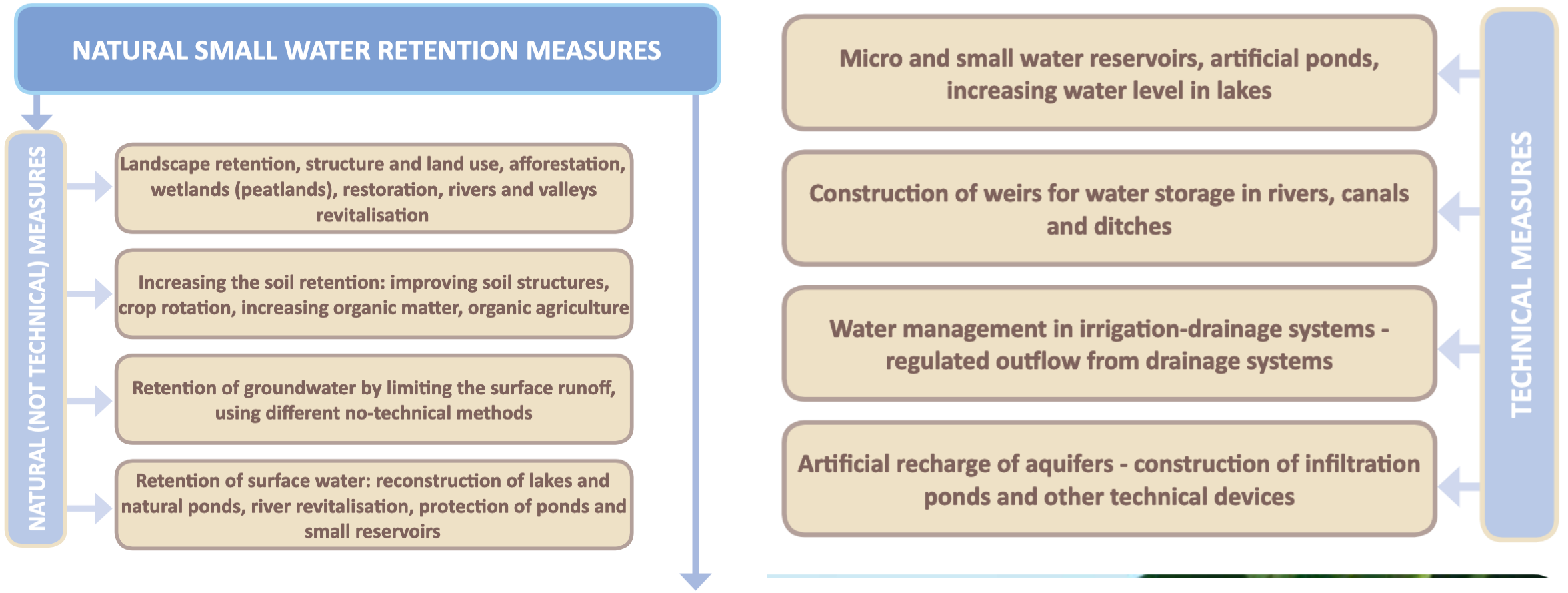


De Salaberry, MB



Ste. Geneviève, MB

Water retention projects



Source: [Global Water Partnership](#)

Monitoring systems

- Utilize standard equipment and techniques for water monitoring
- Developed protocols and practices for water retention monitoring and modelling to assist partners on “how to” do proper monitoring of water management projects
- Published “Water Retention Monitoring” technical guide – on our website



Velocity/Flow
/Elevation

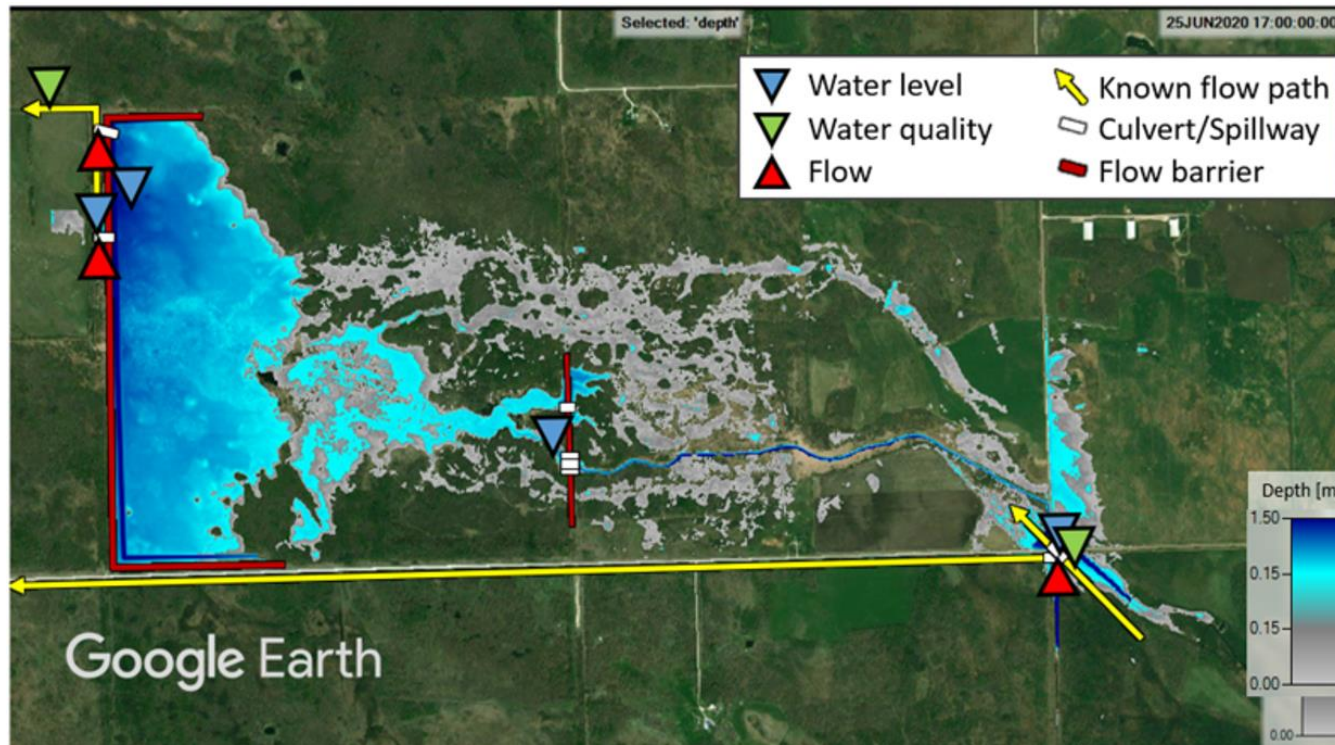


Nutrients

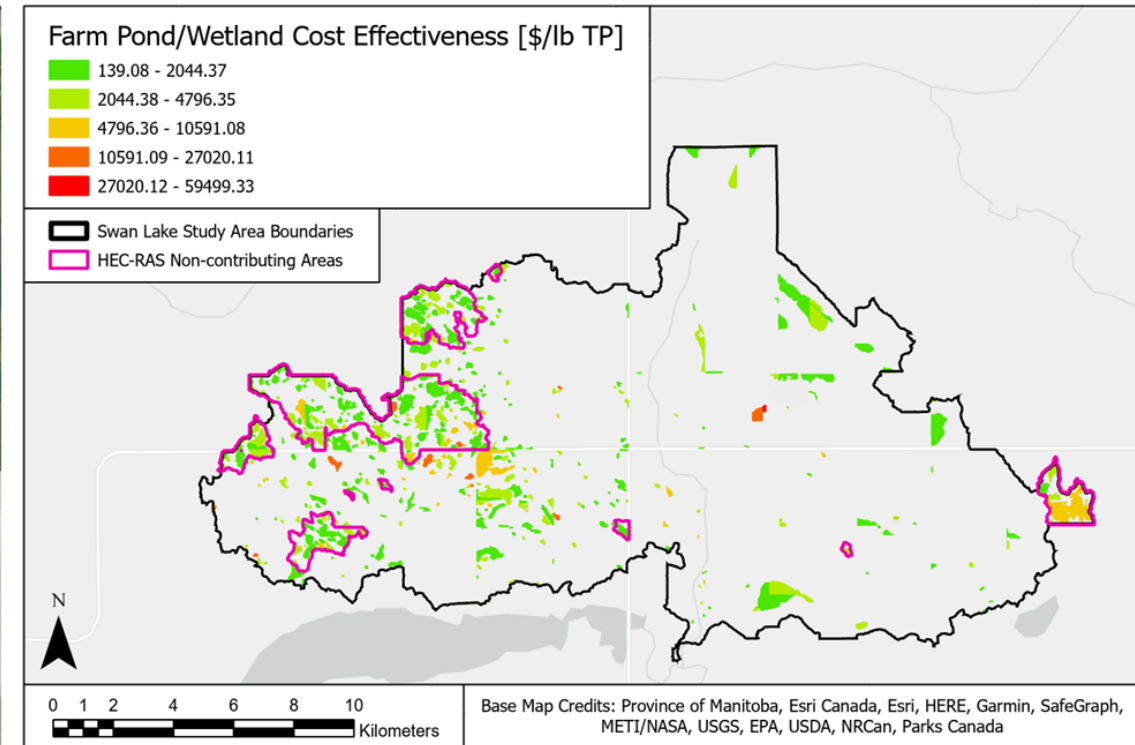


Strategic vision for water retention in MB

- Developed models to help predict changes under extreme events, phosphorus removal within sites, and to target new projects in phosphorus hotspot watersheds
- Water retention performance and benefits can be maximized if naturalized and is located, designed, and maintained strategically.



Performance Models



Targeting Models

Moving Forward: Provincial and Federal Water Priorities

- In Manitoba, water retention has already been highlighted in the new Manitoba Initial Water Strategy Action Plan, commonly included in policy discussions around water management.
- NGOs like the Manitoba Habitat Conservancy are also investing more in water retention projects
 - IISD estimates that farmers and watersheds get back \$3.16 dollars in benefits for every \$1 invested
- It's clear, more water retention projects are coming, so we must ensure they are the best that they can be



Stay up to date with our NIWSletter!



Celebrating innovative approaches to Canadian municipal infrastructure

In our newly released report: *A Scan of Natural Infrastructure Approaches*, co-authors Ashley Rawluk and Josée Méthot recognize the ways the City of Nelson, British Columbia; the Halifax Regional Municipality, and EPCOR in the City of Edmonton are leading the way forward by complementing existing grey infrastructure with natural infrastructure, such as wetlands, trees, grasslands, and rain gardens, to enhance service delivery.



The paths to solutions may vary, but these jurisdictions provide multiple examples of models for other cities, showcasing effective policy changes in different administrative, jurisdictional, and geographic settings.

Give it a read and share the inspiration with your network—[on LinkedIn](#) or elsewhere.



IISD.org/NIWS

“The Benefits and Performance of Natural Infrastructure for Water Management on the Canadian Prairies” - should be available Fall 2024!

An aerial photograph of a winding river flowing through a lush green landscape. The river meanders through the fields, creating several large loops. The surrounding land is a mix of vibrant green grass and some brownish-yellow agricultural fields. The sky is not visible, focusing the viewer's attention on the natural beauty of the river and its surroundings.

Thank You!

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Webinars OPTIONAL

Municipal Cost Benefits of Natural
Infrastructure; November 26th at 10:30 am



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