

Cohort 2 National Project Summary Report

Village of Riverside-Albert, New Brunswick

February 2020



Full technical report available at [MNAI.ca](https://www.mnai.ca)

Municipal Natural Assets Initiative



INVEST IN NATURE

The Municipal Natural Assets Initiative (MNAI) is changing the way municipalities deliver everyday services, increasing the quality and resilience of infrastructure at lower costs and reduced risk. The MNAI team provides scientific, economic and municipal expertise to support and guide local governments in identifying, valuing and accounting for natural assets in their financial planning and asset management programs and developing leading-edge, sustainable and climate resilient infrastructure.

Acknowledgements

This report is a summary of MNAI Technical Reports prepared by the MNAI Technical Team and Project communities.

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Convening Organizations



Convening organizations: Smart Prosperity Institute, David Suzuki Foundation, Town of Gibsons, BC, and Roy Brooke and Associates were the original convening partners for the Municipal Natural Assets Initiative and the Cohort 2 project leading to this report was initiated by them.

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Summary

Communities like Riverside-Albert recognize it is as important to understand, measure, manage, and account for natural assets as it is for engineered ones.

The Southeast Regional Service Commission (SERSC) in partnership with the Village of Riverside-Albert initiated this project with the Municipal Natural Assets Initiative (MNAI) to increase their understanding of natural assets in their community – specifically the Arabian Vault watershed area - and how they can manage it to maintain and improve the long-term water supply for the community.

Importantly, the Village plans to boost tourism to the region, which could provide them with a vital source of sustainable income. However, the project results indicate that while there's enough water flow to meet the community's current water demands, climate change could increase the number of boil water advisories and, with the increased tourism, they would run out of water after only 133 tourist visits during a dry period such as the summer.

Project results indicate that if the watershed could no longer provide a clean and abundant water supply to the Village, it would cost between \$0.8 and \$1.2 million to build a groundwater supply to replace it, or between \$26.9 and \$36.8 million dollars to purchase water and truck it to the Village.

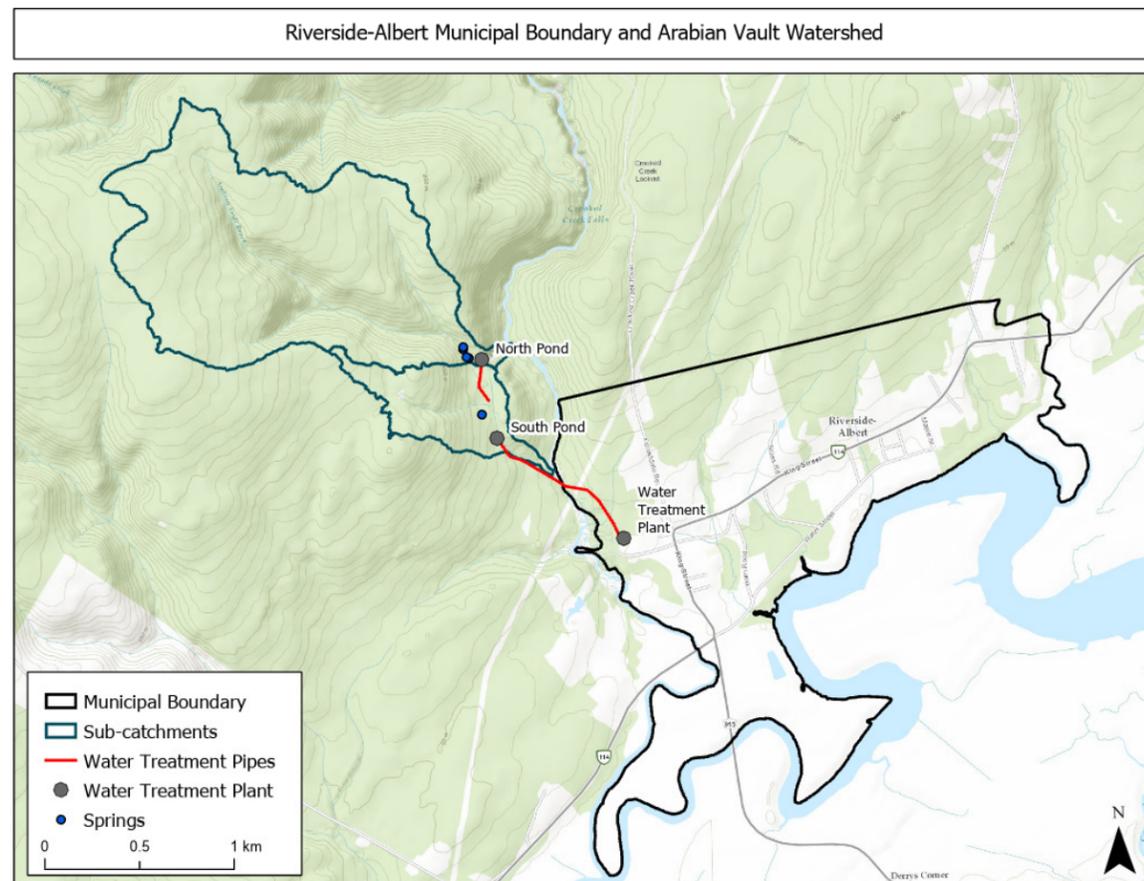
Implement additional preventative measures.

Introduction

The term municipal natural assets refers to the stock of natural resources or ecosystems that is relied upon, managed, or could be managed by a municipality, regional district, or other form of local government for the sustainable provision of one or more local government services.

The Village of Riverside-Albert is a small community with a population of approximately 350 people. The community has limited human resources so natural approaches could help them reduce infrastructure costs as they address the challenges of:

- reducing operating and maintenance costs of water filtration,
- maintaining a supply of clean drinking water as the climate changes, and
- meeting increased demand for water that may result from tourism.



Surface water from the forested Arabian Vault Brooke watershed provides drinking water for the Village's residents

Although the watershed is predominantly undisturbed forest, turbidity is the main water quality concern as the Village has had to issue 10 boil water advisories that totalled 79 days between November 2014 and September 2018.

The Arabian Vault Brook watershed area is comprised of 48.6% private land, 29.2% Crown land, 18.9% conserved land, and 3.4% municipal land. The watershed comprises 2 reservoirs and a water tower storage tank.

Project

The Riverside-Albert MNAI project team found that, overall, the watershed is in excellent condition. Most of the watershed is in a natural state with limited disturbance and portions of the watershed are protected. However, there are risks to future water supplies.

The project determined the following:

1. The value of the watershed in providing drinking water to the Village of Riverside-Albert. The project used two different methods to calculate the value of the watershed's water supply:
 - ii. One approach considered the cost of replacing the current surface water source system with a groundwater system of wells.
 - iii. The other approach considered the cost of buying, then pumping or trucking drinking water to the community from somewhere else.

The results showed it would cost \$0.8 million per year based on current average water demand, or \$1.1 million per year assuming the maximum daily demand occurred, to build the groundwater system. To buy and then truck water in, it would cost \$27 to \$37 million.

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SUMMARY OF WATER SUPPLY BENEFIT VALUATION		
Valuation Assumption	Calculation	Water Supply Value of the Watershed
Replacement capital costs associated with establishing a groundwater supply system	\$400,000 per well * 2 to 3 wells	\$800,000 to \$1,200,000 total
Avoided costs associated with trucking in water at average water usage rates	\$12 per m ³ * 65,000 m ³ per year	\$810,000 per year \$26.9 million total (present value) ¹
Avoided costs associated with trucking in water at maximum water usage rates	\$12 per m ³ * 92,000 m ³ per year	\$1,104,000 per year \$36.8 million total (present value) ²

Determining the value of the watershed

¹ Present value of \$810,000 perpetuity cost assuming a discount rate of 3%.

² Present value of \$1,104,000 perpetuity cost assuming a discount rate of 3%.

These costs represent the value the natural assets are providing for drinking water supply and not the other benefits such as improvements to water quality, wildlife and aquatic habitat, health and recreational benefits, transportation benefits, safety and social benefits, educational benefits, promotion of environmental sustainability, and economic benefits. The full technical report details what all the benefits are, along with specific recommendations on how to include co-benefits in an asset management plan.

2. Potential implications of climate change, land cover change, and water shortages on the quantity and quality of drinking water.

The MNAI project team developed a continuous simulation model to estimate the impact on water supply between the years 1999 and 2018 based on:

- » current climate conditions with current land cover
- » current climate conditions with worst-case land cover
- » future climate change conditions with full watershed protection
- » future climate change conditions with worst-case land cover

The modelling results indicate there is generally enough water flow to meet the community's current water demands, and that climate change might even increase the annual water supply by 7 per cent by 2050. However, the timing of the flows will not be distributed equally throughout the year. Increased tourism in the summer combined with earlier snow melt due to climate change could also lead to annual low-flow periods and future water supply shortages.

Next steps and recommendations

To mitigate future risks to the watershed, the Riverside-Albert MNAI project team recommends:

1. The Village and SERSC engages the province to discuss conserving Crown land or, at a minimum, participate in a watershed management planning process to ensure any forest activity on the land protects water supply quality.
2. Improve and increase water storage capacity to supplement supply during periods of drought, increased water demand in the summer, or during boil water advisories. This could be done by creating a new storage area or increasing the storage capacity of the two existing ponds.

About Municipal Natural Assets Initiative

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