

“It looks like it’s seen better days...”:

Exploring the drinking water system in Woody Point, NL

Introduction

Woody Point is a community located on the northwest coast of the island of Newfoundland. With a total population of approximately 300 residents, the town encompasses three areas: Curzon Village, Woody Point, and Winterhouse Brook. Initially settled by Aboriginal peoples thousands of years ago, the English finally settled in Woody Point around 1900 (Town of Woody Point, 2013). Today, the town is still home to a fish plant, but primarily capitalizes on tourism for its economy. As a Registered Heritage District and enclave community within Gros Morne National Park (GMNP), the community is home to a number of local businesses and services and hosts various local festivals.



Town of Woody Point

Woody Point’s drinking water source is Winterhouse Brook (also known as Payne’s Brook), which is a surface water supply. This brook originates from the Tablelands Mountains inside GMNP. This has provided a gravity-fed water source to the municipality since 1975.

Although the source water for Woody Point originates inside GMNP, all water supply infrastructure is within municipal boundaries but outside the boundaries of GMNP. The infrastructure consists of a dam, pump house, water tank, as well as pipes, valves, service lines, and fire hydrants. All of these pieces of equipment are significant for ensuring the water system operates appropriately in Woody Point.

Source Water

Although Winterhouse Brook runs through GMNP and the water supply is close to the national park boundary, the water supply is not officially designated as a *Protected Public Water Supply Area* by the Department of Environment and Conservation (DOEC). There has been very little development or human activity near the water supply, however, there is a local skidoo trail bridge that crosses Winterhouse Brook upriver from the dam. Like many other communities, changes in weather have a big impact on the source water, with heavy rains resulting in increased runoff, high turbidity, and pieces of debris damaging infrastructure.

In the past two years, there have been boil water advisories (BWAs) issued. These BWAs were largely due to difficulties in maintaining adequate chlorine residual after extensive rainfall. The BWAs occasionally last longer than needed, as Woody Point has to wait for the provincial government to lift them.

Our boil orders would normally be a lot shorter if the provincial government had the resources to get people down when we needed them down here. They only come down when they’re available to come down. So we could be working on a plan to get the boil order removed

and we'd lose that opportunity because the provincial health staff doesn't come down to check, because ultimately they're the ones who can take it off. We can put it on – but they have to take it off. So there's a capacity issue there with the [provincial] government.

- Municipal government respondent

Woody Point generally ranks well when it comes to provincial and federal standards for water quality. According to the Drinking Water Quality Index (DWQI), from 2009 to 2013, they received a ranking of “excellent.” Similarly, Woody Point has chlorination disinfection by-products (DBPs) within the levels considered safe under the *Guidelines for Canadian Drinking Water Quality* in the past 22 respective seasonal collections, dating back to summer 2008.

Although Woody Point has had several successful reports, the Langelier Index provides different readings. This index refers to the approximate degree of saturation of calcium carbonate in water. It is calculated using pH, alkalinity, calcium concentration, total dissolved solids, and tap water temperature. A negative reading indicates that water will have a tendency to be corrosive in the distribution system; a positive reading means water will tend to deposit calcium carbonate in the distribution system; and a Langelier Index of around zero means that the water will be neither corrosive nor calcium forming. All of the Langelier Index samples displayed on the DOEC Water Resources Portal for Woody Point have been between -1.55 and -3.76; indicating that the water is somewhat corrosive to the metallic components of the water distribution system (DOEC, 2014).

Infrastructure and Operations

Drinking water infrastructure is made up of fixed capital assets for public use and includes water treatment, storage, and distribution

systems. The town operates from a surface water supply, which was installed in 1975. Since then, there have been some minor repairs, but no system upgrades. There are also no documents or maps available that describe the water system infrastructure.

Water from Winterhouse Brook is collected in a dam and is subsequently gravity-fed through a filter to a nearby pump house where disinfection takes place. Similar to other communities in NL, Woody Point uses chlorination for disinfection purposes. Water is treated in the pump house, where it is then pumped out to a holding tank and distributed to various locations across the community.



Winterhouse Brook dam, Woody Point

There have been several challenges identified regarding the drinking water in Woody Point. One of the biggest challenges is aging infrastructure. The dam is approximately 39 years old and, though it functions properly, it has sustained significant damage from boulders and other debris carried by the brook over the years. Similarly, due to age the water tank as well as the pipes, valves, and service lines have become susceptible to rust and corrosion over the years. Additionally, at the pump house the riverbank nearby is eroding away – drawing the river precariously closer to the structure and the automatic pumping system inside is broken, necessitating that it be manually operated daily.

Human resources also continue to be an issue. There is one full-time maintenance employee who also serves as the water operator and carries out most of the duties when it comes to the day-to-day operations of drinking water. This has been the case for 29 years and, while he has gained much experience in the water system, there is no succession plan in place for future employees.

Based on my work for the town for everything, it's 40 hours a week, but I'm getting extra hours now with the water because our system's not working like it should so we got to keep a closer check on it. So that means I got to go up every night and on the weekends. So I'm running into 49 hours a week on average now. That's not all to do with water; that's to do with the whole job. But water itself [is] 9 or 10 hours a week plus the maintenance side... Putting chlorine in could run into 20 hours a week on average.

– Municipal government respondent

Woody Point has attempted to create solutions to its drinking water infrastructure challenges. For the past three years, it has applied to the Department of Municipal and Intergovernmental Affairs (MIGA) for funding related to upgrading water system infrastructure. Unfortunately, the applications have not been successful. The town agrees that a new gravity feed system would be viable for the town; however, installation costs would be up to \$6.8 million. Under current provincial standards, if Woody Point is successful with the application, they would still be required to pay 10% of overall funding, or \$680,000. Because the town has approximately 300 residents, the new system was deemed too expensive for the town and the Council has decided to concentrate funding on repairing the current water system as funding becomes available.

Policy/Governance

Ensuring the safety of drinking water in Canada is a responsibility shared between federal, provincial, territorial, and municipal governments. In Canada, the responsibility for ensuring the safety of drinking water supplies is shared by the various levels of government. The principal responsibility of ensuring the safety of drinking water generally rests with the provinces and territories, while municipalities usually ensure the day-to-day operations of treatment facilities and distribution systems. Federally, Health Canada works in collaboration with the provinces and territories, through the Federal-Provincial-Territorial Committee on Drinking Water, to develop the Guidelines for Canadian Drinking Water Quality (GCDWQ). The GCDWQ are published by Health Canada and used by all Canadian jurisdictions (provinces, territories and the federal government) as a basis to establish their own enforceable requirements for drinking water quality.



Town of Woody Point

In Newfoundland and Labrador the provincial government is the main body responsible for the delivery of safe drinking water to the public. In order to meet its own guidelines these operations must follow four acts: the Municipalities Act, the Municipal Affairs Act, the Environmental Protection Act, and the Water Resources Act, while abiding by the Canadian

drinking water guidelines. Four provincial departments oversee the public water system through the Multi-Barrier Strategic Action Plan: DOEC, Department of Health and Community Services (DHCS), MIGA, and Service NL. Each department has specific roles in maintaining the drinking water systems in the province, such as providing chemical testing, workshops, financial support, or water quality reports.

The Municipalities Act governs the town of Woody Point. Therefore it is the responsibility of the municipality to operate the public water supply for its residents. Those who own property in the community pay taxes in order to contribute to the water services of Woody Point. The residential water tax is \$175 annually, the commercial water tax is \$200 annually, and the industrial water tax is a flat rate of \$500 annually. There is no current town plan available that addresses water issues.



Fish plant, Woody Point

Public Perception, Awareness, and Demand

There is an overall positive perception of drinking water in Woody Point and the attention to detail that the water system receives from the maintenance staff and the Council on a daily basis. Despite turbidity that occurs from heavy rainfall, some residents stated that their water supply is cleaner than other water supplies due to its rural location away from possible pollutants. Other residents prefer to drink water from private wells so they

do not taste the chlorination. In regards to chlorination disinfectant by-products (DBPs), some respondents see them as hazardous but the “lesser of evils” in a public drinking water system. The water must be treated to mitigate immediate health problems, such as *E-Coli*, and chlorination is an economical means of protecting humans from illnesses caused by such bacteria.

(Before) I was kind of like everyone else (thinking) that (the) water is brown so therefore it is disgusting. But now knowing the readings and getting the reports back and seeing the annual drinking water reports -- there's nothing wrong with the water other than the naturally occurring discolouration. (...) The water's running off the Tablelands and look - the Tablelands are rust coloured therefore water is going to be rust coloured. (...) It's picking up the minerals. But everybody needs a few extra minerals. It's not going to hurt you.

– Municipal government respondent

I think it (has) got a lot to do with the amount of chlorine in it. (Some residents) just don't like the taste.

– Resident respondent

Respondents believe that compared to other rural regions, Woody Point is one of the few rural NL towns that will thrive due to its proximity to a UNESCO World Heritage Site and the tourism benefits that result from that. Because of this, they believe that it is in the best interest of the provincial government to invest in water infrastructure throughout the area. Residents have also identified that municipal testing and provincial sampling is pivotal for increased water security.

It's like a lot of government programs. They do what they think is best. They don't consult with the town. We'll tell

them this is what we need and this is why we need it. And they'll come back and say "well based on our engineering study, you don't really need that and we're going to apply the broad spectrum; the general way to do things". But what works in one town may not work in another town

– Municipal government official

The monitoring program (...) is critical to the water. (...) We test our water ourselves. But then the provincial government sends their inspectors down and (they) test the water quality as well. (...) They catch what we don't catch.

– Municipal government official

Municipal officials have an understanding of the problems within their water system – namely infrastructure and funding problems. Other local residents were aware of some infrastructure issues such as the rusty water tank and the look and taste of water itself. In terms of levels of protection, however, only one local key informant was aware that the Woody Point water source is not officially designated as protected.

Similar to other communities, the fish plant provides the biggest demand on the water system. However, Woody Point's fish plant only operates during the summer months and thus only provides a temporary demand on the water supply.

Conclusions and Future Directions

The water source in Woody Point, Winterhouse Brook, is not a designated *Protected Public Water Supply Area*, however a municipal respondent indicated that the designation might be pursued in the future. In recent years Woody Point has had few exceedances of the *Guidelines for Canadian Drinking Water* and according to the DOEC Drinking Water Quality Index, Woody Point's drinking water ranks "excellent".

Aging drinking water infrastructure appears to be the biggest challenge for Woody Point. There are several problems that exist within the infrastructure, such as issues with the dam, pump house, and water tank. The Council has considered incorporating new water systems, but decided that it would be too costly, even with the funding opportunities.

The relationship between the municipality and the provincial government could be improved. Suggestions by key informants include the possibility of the DOEC offering short annual refresher courses in water quality management for water operators as well as the future completion of a risk analysis on the local water supply. Furthermore, the provincial government could also provide aid to communities applying for funding by breaking down bureaucratic mechanisms, which ultimately drain their limited resources. The provincial government could also work to be more prompt at times when lifting a BWA ban so the community can resume their normal activities. With this additional support, Woody Point's drinking water system could be considered sustainable in the coming years.



Downtown Woody Point

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To see the full case study report please visit the *Exploring Solutions for Sustainable Rural*

Drinking Water Systems website:
http://nlwater.ruralresilience.ca/?page_id=17.

References

DOEC (2013). Drinking Water Quality Index for Public Water Supplies in NL. Retrieved May 8 2014 from NL Water Resources Portal: http://maps.gov.nl.ca/water/reports/viewreport.aspx?COMMUNITY_NAME=Woody+Point

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