



Meeting Environmental Health Regulations While Racing Against the Spring Freshette

THE CHALLENGE

In light of new environmental health regulations instituted by British Columbia, the province's Village of Clinton was faced with upgrading its surface water treatment plant. Located 350 km northeast of Vancouver, the plant's previous treatment consisted solely of disinfection by chlorination. Given the new regulations from the Interior Health Authority, surface water plants experiencing turbidity events above 1 NTU, were required to implement a more robust filtration treatment process to remain compliant. As is typical of many small communities like Clinton (the village has roughly 650 residents), the plant upgrade had limited funds for construction of the overall system and relied upon grant funding. As such, the Village of Clinton, along with their Consulting Engineers, TRUE Consulting Ltd., began evaluating a variety of technologies and filtration systems capable of treating for pathogens such as cryptosporidium and giardia, all while racing against the upcoming freshette which occurs when snow and ice melt in rivers.

THE SOLUTION

In the Village of Clinton's search to implement a filtration system, both conventional and membrane treatment methods were considered. The plant ultimately selected Pall Water's Aria™ FIT filtration membrane system for its ability to enable the plant to meet the Interior Health Authority's "4-3-2-1-0" Guideline for drinking water treatment and the consistency of treatment.

To minimize the overall treatment costs, both from an initial capital and an overall life cycle basis, Clinton needed a treatment solution that enabled them to meet their ultimate treatment requirements from the outset, without the need for subsequent upgrades. Selection of the Pall filtration system gave the village the ability to utilize a Direct Feed Coagulation process to remove the contaminants from the source water, along with providing a physical

“ In the two years that Pall's Aria FIT filtration system has been running, we have not had a single instance where we were unable to meet treatment levels. The quality of the water is great, but most importantly, this system has provided peace of mind that we can check in on the plant in the morning then set the system alarms and leave it alone for the rest of the day as we fulfill our other responsibilities. The low operational demands have been crucial for us as a Public Works department of three.”

Karl Hansen, Public Works Foreman at the Village of Clinton

barrier for pathogen reduction. In this process, the main contaminants of turbidity, colour, and organics are able to be precipitated so that they can then be filtered directly by Pall's filtration system. This eliminates the need for a clarification step, which is a significant piece of equipment. By selecting the Aria FIT system, the overall project costs were kept within Clinton's available grant allocation, and even reduced long term operating costs.

THE RESULTS

The speed at which the Pall team was able to complete the installation process was critical as the water treatment plant needed to be operational prior to the upcoming spring freshette. Pall was successfully able to have the Aria FIT system running within five months and made its deadline ahead of the freshette in order to treat the year's harshest water quality which is caused by melting snow and thawing forest matter that enters the village feedwater from a local creek. In previous years during the freshette, the Village of Clinton was required to issue boil water alerts and advisories as the chlorination treatment process wasn't adequately removing all of the organics in the water. Following the implementation of Pall's system, the Village of Clinton has been able to reduce its chlorine consumption by 50%.

With a focus on simplicity and cost-effectiveness, Pall's system was able to meet all treatment needs from the initial installation by delivering an entire process for solids and bacteria removal, while other solutions included a costly and disruptive two-stage implementation plan requiring a plant upgrade 5-10 years later. At a capacity of 1.8 mega liters per day, the system exceeds the Village of Clinton's current needs projected for the next ten years, though the Aria FIT system is expandable and can easily incorporate additional modules and trains for future expansion should it need to add

capacity. When putting this plant online, the Village of Clinton also built a 500,000 gallon reservoir to replace its 25,000 gallon contact tank. Between the additional capacity of the Pall system and the reservoir, the village is afforded flexibility and time before running out of water should it need to take trains down for maintenance or experience an emergency that impacts water supply.

Additionally, Pall technicians were able to seamlessly integrate the entire system together so that operators can control chlorination and filtrations systems, downstream meters and reservoir levels all from a single computer system. Having one central platform where operators can control the entire plant increases efficiency and ease of use. As such, Pall Water was able to provide safe and reliable water using smart solutions to simplify the Village of Clinton's water challenges.

THE BENEFITS

The high performing, robust membrane system successfully removes both solids and bacteria, allowing the Village of Clinton to meet updated Interior Health Authority regulations. Overall, the benefits of the Aria FIT system to the Village of Clinton's water treatment plant included:

- Reliable water that meets environmental health regulations
- Easy to use, comprehensive system that incorporates pre-treatment needs
- Smart solutions for water treatment challenges
- Speed of deployment
- No longer needs to issue boil water notice during the freshette



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