



Hagensborg Waterworks District

Summary Update on Pilot Project

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Update to the Community Regarding Point-Of-Entry Pilot Project

It is my pleasure to provide you with an update on the Hagensborg Point-of-Entry Water Treatment Pilot Project.

As you are very likely aware, the Hagensborg Water District has been working on a comprehensive plan to meet the requirements imposed on it by the B.C. Drinking Water Protection Act and Regulations. At the District's Annual General Meeting in 2010, the District asked for and received the community's support to pursue point-of-entry water treatment as its preferred method of meeting these requirements due to the considerable cost savings that this option would provide, and the fact that this option would enable the District to avoid having to chlorinate its water supply – this desire was very strongly expressed by the majority of community members.

Given the magnitude of the required investment in water treatment infrastructure to meet the requirements of the Drinking Water Protection Act and Regulations, the District embarked on a multi-year pilot project with the support of the Vancouver Coastal Health Authority and proposed equipment supplier, HomePlus Products Inc., of Kamloops. The pilot project consists of installations at a total of 10 sites in the valley including 7 residential and 3 commercial. The purpose of the pilot project was to assess the logistics and costs associated with installing and maintaining the proposed point-of-entry treatment equipment, and most importantly, assessing the impacts of extreme turbidity events on the equipment. From the time to time, the turbidity (sediment) levels in Snootli Creek, the District's water source, can rise dramatically. These "turbidity events" are generally associated with heavy rainfall.

Extensive data has been collected during the residential phase of the pilot project including information on installation costs, maintenance requirements, filter life, UV dosage, and water pressures. Literally hundreds of water samples to assess the impacts of turbidity events were also collected. After the first year of the pilot project, it was confirmed (as expected) that the extreme turbidity events could pose a problem for the point-of-entry treatment units. The ultraviolet light (UV) disinfection systems in the point-of-entry treatment system have a sensor that is designed to detect if the water becomes too dirty to treat the water to its validated UV dosage. When the UV dose cannot be assured based on the capacity of the system, the UV unit is designed to go into alarm. This occurred during some of the turbidity events.

The District and HomePlus considered various means to mitigate the impact of these turbidity events and expanded the scope of the pilot project to evaluate and directly test possible mitigation measures. With the co-operation of DFO, and at no cost to the District, real-time turbidity monitoring equipment was installed in Snootli Creek upstream of the District's water intake. This equipment provides live monitoring of turbidity levels as well as immediate alerts if certain turbidity thresholds are exceeded. The data gathered by this equipment not only provides real-time alerts of impending turbidity events but it has also increased the District's understanding of the extent and duration of turbidity events.

During the pilot project, new technology was introduced to the market that expanded the dose monitoring capabilities of the UV sterilizers. This new technology takes into account information from both the UV intensity sensor as well as information for a flow sensor to calculate a true UV dose rather than assuming that the full rated capacity of the system is always being used (it almost never is). This technology reduces the alarm sensitivity when the water is being used at a flow rate that is less than the full capacity of the UV sterilizer while at the same time ensuring that a safe UV dosage is maintained at all times. This technology was tested over the past year and it has proven very successful.

Keeping the sediment out of the distribution system during a turbidity event is desirable not only to protect the pre-filters of the point-of-entry treatment units and to help maintain the highest possible UV dose, but it also reduces the costs associated with maintaining the distribution system itself. Accordingly, the District has drilled and is in the final process of receiving a permit from Vancouver Coastal Health Authority to switch its water source to the well during turbidity events. It is expected that the well will be online this week, at which time the three commercial pilot project sites will be turned on and tested. The data from the

commercial applications is not expected to be materially different than the data already obtained from the residential locations and that portion of the pilot will not need to be as extensive.

By preventing sediment from entering the distribution during a turbidity event, the effects of the turbidity on UV dose will be mitigated. Combined with the effective results of the new UV flow meter technology, the District and HomePlus are confident that a dual barrier solution (well and new UV dose monitoring technology), will fully mitigate the effects of turbidity on the point-of-entry treatment equipment.

A preliminary review of the data from the pilot project appears very favorable, suggesting that point-of-entry treatment, with the turbidity management / mitigation strategies in place, can be a cost-effective means of meeting the District's responsibilities under the Drinking Water Protection Act and Regulations while respecting the expressed wishes of the community to have a chlorine-free system. The mountain of data collected during the pilot project will be the subject of a review by a Professional Engineer as the final step of the pilot project. The review will consider and provide full information regarding project costs, maintenance requirements, life cycle costs, and a comparison to other treatment alternatives including central. The engineer will be getting a date to us in the next few months after he has had a chance to scan the data, confirm the commercial unit's performance, and provide a time to compile the information into a report.

I understand the Engineer's report will be posted to the District's website and then host a community meeting specifically to review the results and discuss next steps and prioritizing for moving forward, including all infrastructure needs.

Regards,

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HomePlus Products Inc.

Member: Canadian Water Quality Association

Associate Member: Small Water Users Association of BC