

BCID REPORT: WATER SOURCE OPTIONS & TREATMENT STUDY FOLLOW UP TO ANNUAL GENERAL MEETING

February, 2010



Beaver Creek Improvement District
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Letter from the Board

Beaver Creek Improvement District reached a milestone year with its 50th Annual General Meeting on April 27, 2009. Under new business and business from the floor, the Board was asked to report back to the people on matters of immediate interest.

One motion was to gather information regarding governance issues and hold a special meeting to present the pros and cons of converting into a service area under the Alberni Clayoquot Regional District. That meeting was held at the Italian Cultural Centre on October 5, 2009 and our Report on Governance Options was prepared and circulated in mid November.

Until further water studies were completed, no decision on governance could be taken at that time. However, the improvement district still must meet its obligation to provide safe drinking water to its residents. Because the existing Stamp River infiltration gallery and pump station is reaching the end of its life cycle, the improvement district is actively studying replacement options in the near future.

Koers & Associates Engineering Ltd. was engaged to study three possible water sources to determine

Will we have enough?

Koers & Associates were asked to look 25 years into the future and determine whether we'd have enough water for our residents if we continued using Stamp River water or an alternate source – groundwater or the city. Their study concluded that our average growth rate over the past 15 years has been less than 1% per year. By the year 2035, the number of water connections is projected to reach 1,227.

Further, the study determined that our average and maximum water demands on a per-capita basis are

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which option presents the most appropriate long-term solution. They were asked to consider the pros and cons of continuing to use Stamp River water, developing a groundwater supply or connecting to the City of Port Alberni.

We received their Water Source Options & Treatment Study on February 1, 2010. This report is a summary of their findings. Copies of their full report, and a report from GW Solutions – who carried out test well drilling to investigate groundwater as an alternate source – are available on our website:

<http://www.beavercreekwater.ca/>

We trust you will find the release of this report timely and informative.

Wayne Hasler, Board Chairman

consistent with other fully metered Vancouver Island Communities.

Withdrawal limits granted to the BCID to take water from the Stamp River are more than adequate to meet demands to 2035 and beyond. Our average and maximum day licenced withdrawal limits are approximately twice what the projected demand will be, according to Koers' conclusions.

Please see *Will we have enough?* on page 4

To your health!

Safe drinking water doesn't just happen. It's a complex and interesting set of events including capturing a good supply of it, making sure it meets safety standards, storing it safely and delivering it to the consumer in first class condition. And every aspect is governed by standards that apply to both surface and groundwater.

In the case of surface water such as the Stamp River, VIHA's 4-3-2-1 water treatment standard calls for a turbidity level below 1 NTU. Most of the time, the Stamp meets this requirement. In heavy rainfall events, turbidity rises. For this reason, continuing to draw drinking water from the Stamp River will mean building a water filtration plant in order to comply with VIHA's standard year round.

During the summer months, higher temperatures can also affect taste and odor in the water on the warmest days of the year. While these aren't health concerns,

they are still unpleasant and exceed the aesthetic objective limit of the Canadian Drinking Water Quality Guidelines.

In the case of groundwater such as from wells, water must meet the Guidelines for Canadian Drinking Water Quality. The test wells drilled in the GW Solutions project initially showed dissolved chloride and dissolved solids in concentrations above the guidelines.

After an 8-day pump test these dropped below the limit but remained high. UV and chlorine disinfection would be required.

In the case of connecting to the City system, costs would be incurred to comply with VIHA's 4-3-2-1 treatment policy, as the city sources surface water. It's assumed BCID landowners would pay a portion of those costs.

Stamp River: Koers' observations & recommendations

There is not enough land available in the existing Right-of-Way around the pump house to build a filtration plant — which is required to meet the 4-3-2-1 standard.

Koers concluded that there are two suitable designs; either a slow sand filter or a membrane treatment plant. Land requirements for these designs vary between 0.2 ha (0.6 acres) and 0.4 ha (1.0 acres), depending on rates of filtration achieved. The membrane treatment plant would require 0.12 ha (0.3 acres).

The report recommends placing the filtration plant adjacent to the pump house or up to 750 metres distant but preferably above the floodplain and in general proximity to the 300 mm diameter watermain.

A comparison of the merits of these designs is included in the study; costs are estimated between \$4.8 million and \$6.7 million for sand filtration and between \$4 million and \$5.2 million for a membrane plant.

Land purchase costs would be in addition to these estimates.

Based on these observations and conclusions reached in this report, Koers recommended necessary steps should the BCID choose to develop the Stamp River as a source.

These are:

- Testing several treatment processes over an extended period to ensure compliance in all seasons;
- Update construction costs based on test results, annual operating and maintenance costs for each suggested treatment process, and land area requirements for each process confirmed.
- Acquire necessary property
- On VIHA approval, detailed design drawings would then be prepared and construction could commence.

Groundwater: Koers' observations & recommendations

Koers noted that land acquisition would also be an issue for using groundwater as BCID's drinking water source.

We would need land for each well site and for a water treatment building. A .08 ha (0.2 acre) site would accommodate the water treatment building.

In addition to land costs, developing the local aquifer — assuming it could meet BCID water demands — would cost between \$2.4 million and \$3 million.

Koers determined that the BCID would need to sign a Memorandum of Understanding (MOU) with each owner of the property or properties where wells would be constructed.

The MOU would grant the right to establish wells there

and would form an agreement on compensation.

The next step would be to carry out additional test drilling and water quality testing. We would need to know if there would be an adequate supply and that it would comply with Guidelines for Canadian Drinking Water Quality.

Once VIHA approved the treatment system, detailed designs would be prepared and the wells could then be built.

Copies of the Koers & Associates Engineering Ltd report, "Water Source Options & Treatment Study" and the GW Solutions investigation of a potential groundwater source will be placed on our website as soon as these documents are finalized. We do not anticipate any delays.

City of Port Alberni: Koers' observations & recommendations

There is an emergency connection between BCID and the City of Port Alberni but it only serves a small area of the improvement district. This is because the City system's operating pressure is much lower than ours — 450 kPa compared to our 840 kPa.

A permanent connection to the City system could be made in the 65 m pressure zone. It would need a booster pump station and a watermain extension depending on where the pumping station would be located.

To avoid the need for a booster pump station, a connection to the City's 122 m pressure zone could be made. This would take at least 2,100 m of watermain and Kitsukis Creek would have to be crossed. Koers suggests the most likely connection point would be on Ian Avenue near Michigan and Compton Roads.

Not including land purchasing costs for the booster pump station, the cost of connecting to the City system is estimated at about \$1.2 million for the 65 m pressure zone and \$2 million for the 122 m pressure zone. In addition, there would be costs the

City would incur meeting VIHA requirements. These would likely be passed on to the BCID.

Koers also noted that annexation into the city might be a requirement since getting water from the City would require City Council approval.

Note: this would necessitate changes in governance requiring a referendum process to seek approval from BCID landowners.

Quick water facts

If all of the world's water were fit into a one gallon jug, the fresh water available for us to use would equal only about one tablespoon.

You can survive about a month without food but only 5 to 7 days without water.

Will we have enough? from page 1

We would also have ample water for our needs if the City of Port Alberni was our source.

The findings for groundwater were slightly less rosy. The aquifer tested might be able to supply BCID's water demands through a series of production wells, but additional test wells would be required before we would know for certain. There were questions about

water quality that would require UV and chlorine disinfection, as well.

So the short answer is yes, there is ample water available to meet our needs for the next 25 years. It's the cost of acquisition and treatment landowners will have to consider before committing to a future water plan.

– F.y.o. reminders –



Regular monthly meetings of the Beaver Creek Improvement District water board are held on the third Monday each month, starting at 7 pm in the Improvement District Office, B-6038 Beaver Creek Road. Public attendance and input is welcomed. Upcoming meetings are: February 15, March 15, and April 19, 2010.



Got email? Get your boil water advisory delivered instantly. Call the office at 250 723-9371 and ask to be put on the BCID Emergency Response Plan email list.



For quick access to up-to-the-minute information on weather quality and weather conditions, see BCID's web page: <http://www.beavercreekwater.ca>