

Contribution to the conversations on planning for The 707 Community Park, April 30, 2009:

## WATER

Having worked in various research labs for most of my professional life, I am very much aware that saying “that won’t work” is a strict no-no when it comes to thinking creatively; however, I can’t resist sometimes pointing out that there are “difficulties” with some ideas. Specifically, when it comes to water retention, one has to be aware that a major component of water “loss” on the Gulf Islands is evaporation, or “evapotranspiration” as it is called by hydrologists to include evaporation from the leaves of plants and trees.

A few years ago, I drew up a budget for the hydrological cycle on Gabriola. This was based on numerous measurements I made myself, previous studies, and consultation with researchers at UBC. The conclusion was that of the 900 mm of rain that falls on Gabriola each year:

- 399 mm was “lost” to evapotranspiration
- 225 mm soaked into the ground but re-emerged as springs that ran off into the sea
- 168 mm became groundwater that eventually returned to the sea beneath the island
- 108 mm ran off into the sea over the surface
- 900 mm

Included in this study were estimates of the evapotranspiration from different surfaces. These were:

- 441 mm from forested uplands
- 360 mm from lowlands (farm and developed)
- 297 mm from clear-cut uplands

The relatively low figure for clear-cuts is because we have very little soil to retain moisture in the summer, and once the surface dries out in the uplands, there is little moisture to evaporate in summer even though it is hot. What was not included in the study was evaporation from lakes and other exposed water surface. This was because on an island-wide basis, these surfaces are small. Had they been included however, the figure that would have been used, based on the above mentioned research would have been 730 mm. This loss is dependent on temperature, but even more on air movement. It doesn’t take much to wind to significantly increase evaporation.

The bottom lines? Storing water with a surface exposed to the atmosphere is not effective. Losses due to evaporation are very high—around 80%. You are better off in theory letting the water soak into the ground, tho’ to be realistic, you can’t expect one or two ponds to make any significant difference to the amount of water in Gabriola’s aquifers. If you are hoping to retain water in a period of drought, expect large losses and drying out. Depending on such a source for use in fighting fires is not wise.