

**An Important Message to Saturna Residents About Islands Trust Groundwater Availability  
Assessment Report(s) & Conclusions:  
Five Page Executive Summary**

In keeping with its 'preserve & protect' mandate, the Islands Trust (IT) recently commissioned three reports from the consulting company, Groundwater Solutions, (GWS), on the state of fresh water supplies in various Southern Gulf Islands within its boundaries.

July 2021: IT Area Aquifer Conceptualization Models (24 pages)

October 2021: IT Area Groundwater Recharge Potential Mapping (133 pgs.)

October 2021: IT Area Groundwater Availability Assessment (231 pgs.)

This summer, SIRRA has spent considerable time doing a "deep dive" into these three reports, and the supporting data, since these reports are allegedly the scientific basis which will justify any subsequent changes to building by-laws to ensure the sustainability of fresh water supplies.

*SIRRA believes that the conclusions of the GWS water studies contain a sufficient number of material data inaccuracies to the point where their conclusions cannot be relied on.*

Based on what we have observed on other islands, it would seem that IT is contemplating additional restriction to development and that they will do this via a mechanism known "Development Permit Areas" (DPAs). Essentially once a DPA is established, IT will override existing by-laws and impose pretty much any additional constraints on the DPA using resource conservation as its justification. For an example of such a possibility, the SIRRA website includes a copy of a 2010 draft by-law for the East Point area of our island that was prepared for discussion, but never passed. The three GWS reports form an integral part of IT's strategy. It intends to use the results of the above three studies as their basis to move forward.

Details of the plan and other reports may be found at:

<https://islandstrust.bc.ca/programs/freshwater-sustainability/>

*They are also available at the SIRRA website along with 21 other source documents collected by SIRRA in its review. See the tab marked "Documents".*

It may come as a surprise to residents, but Saturna already has two substantial restrictions within the current bylaw 119, passed in the fall of 2018. One requires the installation of some 21.8m<sup>3</sup> of catchment for any new building, or any addition over 125 sq. ft., within the East Point Area. See section 2.17 and Schedule C. The second prohibits the building of secondary suites in a wide swath of our island – see section 2.18.5 & Schedule E of the bylaw for a map. They are part of the documents on our web-site. Both of these regulations have used "water protection" as their justification.

All three reports commissioned from GWS were generated with sophisticated modelling software, and necessarily using a series of assumptions and approximations – the veracity of which is the subject of our challenge, rather than the model. In fact, GWS readily admits to the limitations of the data available to them and recommended that IT endeavors to refine the data. ***SIRRA's involvement is in response to this request.***

The (three) reports, taken together, describe the fresh water cycle from rainfall, through aquifer recharge to end user abstraction. GWS was tasked with identifying areas of potential water abstraction stress. The normal criterion, used widely throughout the province in similar studies, would be any areas where abstractions exceeded 50% use of aquifer annual recharge. Unusually, the IT and GWS choose two bands namely above 5% and 10% as the thresholds – the end result is extremely conservative. We've challenged these criteria with the IT freshwater specialist but have yet to get a response. Despite this, GWS failed to identify ANY areas of water stress in a normal precipitation year for Saturna.

## **SIGNIFICANT ANOMALIES IN GWS ESTIMATES AND METHODOLOGY:**

### **ESTIMATES:**

For Saturna, total water usage is estimated at 262 dam<sup>3</sup> per year (one dam<sup>3</sup> equals one million liters of water).

By GWS' own admission, many of the data inputs they used, were simply best estimates, or proxy data taken from other regions of BC. Island Water Consumption is estimated based on how land parcels are classified by BC Assessment: Our more detailed local knowledge raises the following anomalies in the report's water usage assumptions:

- a) GWS estimated Annual Usage for Domestic Water Consumption in the Lyall Harbour Watershed to be 101 dam<sup>3</sup>/year.  
In reality, the five-year average usage of the Lyall Harbour Boot Cove Water System (LHBC) that supplies this area (from Money Lake and a seepage well associated with the lake), is 18 dam<sup>3</sup> per year. (From their 2021 Annual Report). *The LHBC Water System supplies about 165 customers, including most of our island's commercial establishments. On a per customer (dwelling) basis, this indicates an average daily consumption of about 300 liters/day versus the 625 liters/day used by GWS. The distortion is even greater when one considers that a number of the connections would attract a greater commercial consumption.*

SIRRA compared LHBC Water System usage against a study done on Mayne Island in 2006 that estimated average household usage to range between 194 and 408 L/day, depending on how households were categorized. Data for a water improvement

district on North Pender (2022) gave an average daily consumption per household of 334 L/d. Our Saturna information would seem reasonable against these benchmarks.

- b) GWS estimated Annual Usage for Irrigation of all types to be 82 dam<sup>3</sup> - or about 30% of our total island water consumption. GWS has assumed that 50% of our total parkland is irrigated. They admit that they have overestimated usage. But none of Saturna's parklands (roughly half the island's 36km<sup>2</sup>) are irrigated. Furthermore, most of our agricultural irrigation uses dug ponds so has no effect on aquifer drawdown. SIRRA suggests that this entire consumption category could be safely taken out of the GWS findings to conform to the reality of our Island.

***These two items alone, would reduce our island wide annual consumption from 262 dam<sup>3</sup> to a little over 100 dam<sup>3</sup> – a 60% reduction within the GWS results. Such large anomalies require debate, correction, or at the very least justification.***

- c) The report classifies the eastern side of Boot Cove as getting its supply from an aquifer via wells – in reality almost all of these properties are on the Boot Cove/Lyall Harbour water system fed by surface water. Additionally, GWS usage assumptions in this region include 8.3 dams<sup>3</sup> for irrigation, and 6.0 dams<sup>3</sup> for commercial/industrial activities. These numbers are not supported by observed usages within this area.

## METHODOLOY

- a) **SIRRA questions the scientific legitimacy of allowing only 5% of annual recharge as the safety threshold for aquifer integrity, when other similar studies within the Province set the safety threshold at 50% or greater.** To put this in context: Out of the some 27,000 dam<sup>3</sup> of rain that falls on our island, GWS estimates that rainfall recharge to our aquifers is about 6,000 dam<sup>3</sup> of water. The IT science would have us believe therefore, that only about 300 dam<sup>3</sup> out of the original 6,000 dam<sup>3</sup> recharge in the aquifer, can be safely used, and that drawdown above this limit poses a serious threat to the health of our aquifers. Even if a reader does not fully understand the whole “rain/recharge” process, one can easily see that the gap between the threshold used by GWS versus its provincial peers requires more explanation. We also note that the 50% safety threshold is specifically referenced in the summary findings of the peer review, (which included provincial staff hydrogeologists) who were asked by IT to review GWS reports.

The report recommends .....

*“Narrowing in on the areas where groundwater use is more than 50% of recharge and reviewing the water use estimates to determine if they are realistic for the specific parcel/use. The Province stated that it is likely in greater stress it would be good to refine these estimates so they are more site specific and that this could be done in partnership with Islands Trust and the Province.”*

At a 50% safe recharge threshold, Saturna could use 3,000 dam<sup>3</sup> before indicating water stress for the aquifers. But even using GWS low thresholds together with overstated consumption, *Saturna as a whole, falls within the “safety” margin.* The relevant data is: 300 dam<sup>3</sup> safely allowed for drawdown, versus 262 dam<sup>3</sup> of total use, (ignoring the usage errors pointed out above).

We also observe that even using rainfall data from the worst drought in the past 30 years, *we have only one* aquifer that exceeds their 5% threshold.

- b) **Return flow from septic fields is absent** in the methodology. This omission was noted in a peer review of GWS findings, commissioned by IT and reported back to them in October 2020.
- c) **There is no allowance or even acknowledgement of the significant number of dwellings that use rainwater catchment as an integral part of their water systems.** The investment in storage tanks on our island – all paid for privately – is huge. Most systems consist of between 2 and 4 tanks. *To totally ignore the efforts at water conservation already initiated by islanders is disrespectful of those efforts.*

SIRRA’s anecdotal ‘guess’ is that about a third of all islanders **already** rely on rainwater catchment to some degree, for freshwater. This is an important bit of data that SIRRA would like to collect and report on, as a service to islanders. *If Islands Trust is going to engage in conversation about freshwater sustainability, then that discussion is best served by having the best available data at hand.* Accordingly, we have developed a two-question Google Survey readers can fill out at <https://forms.gle/Rh4cLwU72vwsfa6g9> *No personal information will be collected.* All we want to know is whether rainwater catchment is something you use for any purpose, and if so, how many liters (or gallons) of water you are already collecting. We will also ask you to estimate for how many days your home is occupied in the year.

***SIRRA anticipates that the results of this survey will demonstrate that Saturna Islanders are already hugely responsible when it comes to freshwater management and conservation. We hope that the Survey results can be used by GWS to make revisions to their report. We respectfully seek your help to collect this information. Please forward this letter & link to anyone else you think might be interested.***

Based on our findings, SIRA is requesting that Islands Trust give serious consideration to revising the data inputs used by GWS in their reports, ask them to re-run the computer model, and report again on their updated results.

In writing this summary, SIRRA has reviewed a considerable number of reports, maps, by-laws, and other data. There are additional technical questions we intend to take forward to IT. A list of those questions is available. Accordingly, we have built a library of all the relevant documents used to write this summary, all of which you can access on our website under the tab “Documents”. There are 22 documents in total. Our website is available to all islanders. (SIRRA.CA)

SIRRA applauds the need for the continuing wise use of this precious natural resource. But meaningful policies need to be based on the actual facts at hand.

Respectfully,  
Your SIRRA Board  
(Rob Alloway, Jeanne Crerar, Helen Wales, Ron Hall, Serban Craioveanu, Mairead Boland)