



# *Salt Spring Island Water Preservation Society*

## **APRIL 2018 NEWSLETTER**

### **Our New Project: A Water Resource Catalogue Volunteers Invited!**

by John Millson

The Water Preservation Society is excited to announce a new project to develop a Salt Spring Island "Water Catalogue" comprising map based-GIS elements and an associated document or "Library." This catalogue will be a Geographic Information Systems (GIS) online map documenting the island's key water features. The map will enable users to select which information they see, separately or in various combinations. The SSI Water Library will contain local features based on volunteer input described in the task list below.

New information will be gathered on creeks, ponds, and lakes and will include location, changes with the seasons, surrounding vegetation, and local terrain, although other components may be added.

#### **Volunteers Invited!**



The water catalogue will raise community awareness about the island's water diversity and benefits of protecting our water resources. It will be available to the public, other organizations, and government agencies. It will support expert analysis into better protection and management of the island's surface and subsurface water supply, water quality, and wildlife habitat conservation and protection.

Be a part of this groundbreaking project! Gather information about water features near your home or in areas that interest you. Are you an experienced scientist? We welcome your help to plan and oversee the project as well as gather data. No experience? No problem. Training and materials provided. Volunteer tasks are listed on page 2.

The project was conceived and will be managed by WPS Board Member and geologist, John Millson. John is also participating in the Salt Spring Island Watershed Protection Alliance technical working group, which will facilitate coordinating this project with other agencies and organizations that may contribute and/or benefit from the catalogue. **To volunteer or for more information, contact John: [JAMSSIWater@gmail.com](mailto:JAMSSIWater@gmail.com)**

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**SSI Water Preservation Society**  
**Tuesday, April 24**  
**3:30pm**  
**SSI Conservancy Meeting Room**  
**265 Blackburn Rd.**

**Annual**  
**General**  
**Meeting**



## The Interconnectedness of Things

### *Part I: An Introduction to Our Island's Freshwater (Re)sources*

by John Millson

This article is the first in a series of “Do You Know” articles on geological aspects of Salt Spring Island’s freshwater resources.

#### **Do You Know Where Salt Spring Island’s Water Comes From?**

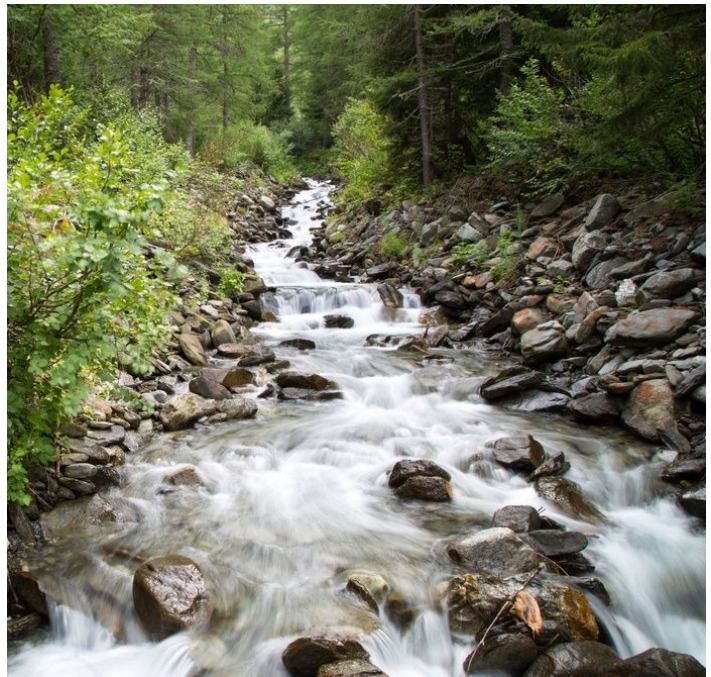
A number of ideas are circulating about the origins of the island’s water. Many of these have an element of truth in them. A selection of the ideas (and some comments on these) are shared below:

**“Our water comes from Mount Baker”:** Well . . . if the water that falls on Mount Baker evaporates and then falls on Salt Spring Island, this story has some truth to it. However, Salt Spring’s true water circulation system, or “plumbing,” means that Salt Spring is literally an island of freshwater surrounded by the Salish Sea.

**“All of the island’s water comes from fractures”:** Well ... this statement has a larger element of truth, though uncertainties as to what constitutes “all” remain. Fractures (joints, cracks, etc.) occur naturally in many consolidated sediment type rocks and can be significant conduits for water recharge and circulation below ground (in the subsurface). However, fractures do not typically provide significant water storage capability. More on this in *Part III* in a future newsletter.

**“We don't know how much we have”:** Well ... again, this comment has a large element of truth, particularly for the *subsurface* water resources available. The subsurface groundwater storage systems—or aquifers—are broadly described as two “buckets”: deep and shallow. These two terms are often used in conversations about groundwater wells, groundwater storage, recharge, and contamination. See more in the next section.

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## Water Resource Catalogue: Volunteer Tasks

- capture key water-body data on a regular basis, ideally weekly, through regular observation
- gather historical and personal insights and information for water features and areas from your own experience, talking to others, or conducting historical research
- create descriptions of the identified water resources for entry into the “library” accompanying the catalogue
- photograph the identified water bodies
- input data to the GIS program
- create a user-friendly GIS interface for the public
- provide feedback and input and gather data via casual observations
- liaise with agencies and organizations to determine their level of interest and gain their input on data collection requirements and methods



## The Interconnectedness of Things

### The Journey of Our Island's Water

The science of water movement is well known. Water in its liquid form naturally flows downhill to the lowest point, temporarily collecting in streams, lakes, and wetlands before flowing eventually to the ocean. It is a different story for the surface water that goes below ground in a process known as recharge, where it is ultimately stored as groundwater.

The terms deep and shallow aquifers give an idea of where subsurface water storage occurs. Deep aquifers are usually consolidated sediments, volcanic or other, where water is stored in fractures and/or tiny pore spaces (porosity) between grains within the rock—think bathroom pumice stone. Shallow aquifers are usually unconsolidated or poorly consolidated sediments where water storage is entirely dependent upon porosity between grains of sediment—think soggy bathroom sponge.

Natural groundwater recharge takes the form of surface water in the form of runoff (rain, creeks) and seepages (wetlands, springs) that enter rocks or sediments in the subsurface by “downhill” flow through fractures or porosity. In areas where the ability to store water is known, recharge of subsurface aquifers is sometimes facilitated by engineering intervention. Examples include directing surface water into depleted aquifers by actively pumping the water into the ground or by holding water on the surface behind a dam and allowing it to naturally percolate into the aquifer below ground.

Once in the subsurface, groundwater moves through the rocks or sediments, sometimes slowly: years, tens of years, or even longer! Water movement within the rock or sediment may lead to a defined subsurface water table below which the rock or sediment becomes saturated. The water-saturated zone that sits below a water table is the aquifer. The water table can be considered as something akin to the water level in a lake; however, a water table does not have to be flat.

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*“A river, creek, spring, or wetland may develop where water from a subsurface aquifer meets the surface.”*

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Water movement below the water table, *within* an aquifer, is driven primarily by pressure differences, with water flowing from areas of high pressure to low pressure. The lateral variations in the water pressure in an aquifer are influenced by a number of factors, two of these being the volume of recharge water (rainfall) and the vertical height (terrain) of the water catchment. A third component is the ability of the rock or sediment to allow water to flow, via fractures or porosity (flow rate = permeability). Areas where the surface terrain has significant elevation and recharge such as areas with hills or mountains with higher rainfall can be considered as “water towers” and may locally provide significant additional subsurface water resources. But water from these sources may be seasonal.

A river, creek, spring, or wetland may develop where water from a subsurface aquifer meets the surface, hinting at the state of the subsurface water resource and at the seasonal water table levels. These improve our understanding of the island's variable and complex water ecosystems.

Where the subsurface groundwater table and aquifer are close to or adjacent to the coast, fresh groundwater movement is influenced by an additional parameter—water density. Fresh groundwater has a lower density than salt water, and depending on the level of seaward subsurface fresh groundwater flow, fresh groundwater may displace salt water as a layer on top of the saltwater over some distance. Under favourable conditions, fresh groundwater movement may “force” salt water away from the coast.

More on the differences between these deep and shallow aquifer buckets and the important role of fractures will be explored in upcoming WPS newsletters: *The Interconnectedness of Things, Part II* (shallow) and *Part III* (deep).

This *Part I* article may be modified for later publication in the *Driftwood* at a future date. Your comment on improvements would be invaluable!

*“Life in us is like the water in a river.”*

*— Henry David Thoreau*





## OUR EXECUTIVE

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## CONTACT US

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**Online:** [ssiwatpreservationsociety.ca](http://ssiwatpreservationsociety.ca)

## COUNTRY GROCER TAPES

Please put your tapes in box #73

## THRIFTY FOODS

Request a Smile Card to donate when making purchases

## MEMBERSHIP

\$15 for individuals or \$30 for a family/couple.

Additional donations are very gratefully received and help to keep WPS active, effective, and working hard to protect our island waters. Tax Receipts are issued.

Current Members: Mail membership fee to:  
Ganges PO Box 555  
SSI, BC V8K 2W3

New members: Request an application form to fill out and return.

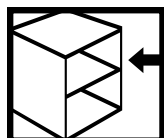
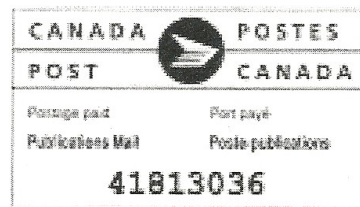
When you become a member, you become part of a supportive group of people who collectively care for and about Salt Spring's freshwater and groundwater sources.

We'll keep you updated on local water-related programs, projects and events.

**Thank you to those who have sent us your membership dues and donations.  
If you have not yet renewed your membership, your name is highlighted on the label.  
Please consider renewing.**



**SSI Water Preservation Society**  
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