



# **Harvesting Rainwater on Salt Spring Island for total household use**

**Enough water to supply 2 households for the whole year.  
A system that has proven itself over the past 12 years.**

**Bruce Eggertson - (250) 538-8936**

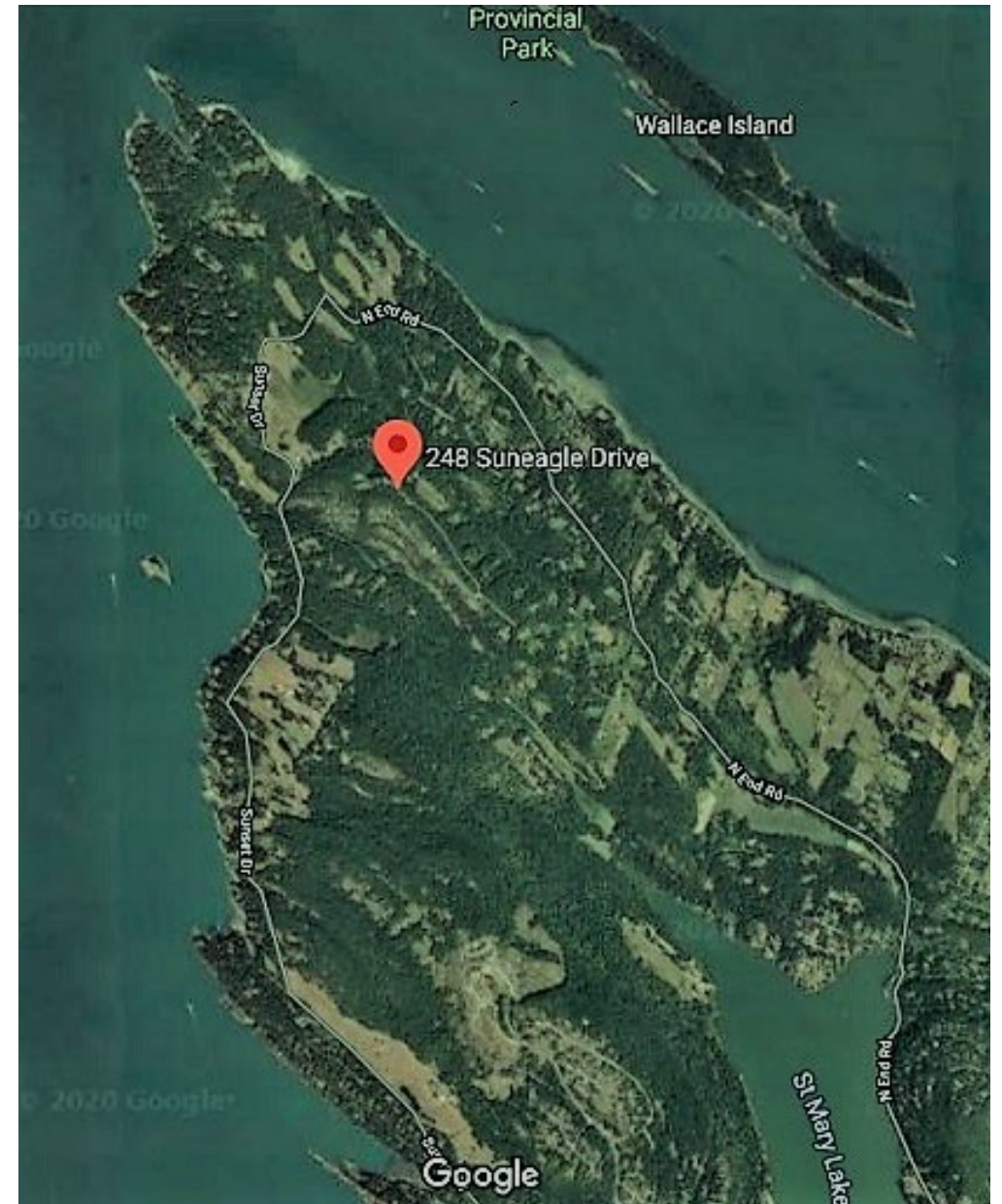
**Feel free to call me if you have questions or would like a tour.**

# COLLECTING FOR HOUSEHOLD USE

Welcome to Eagle Hill on the north end of the island. It is a small hilltop community situated between Channel Ridge and Southey Point. Unlike these neighboring communities however, ours does not have water provided by NSSWD, and homes on the crest of the hill (Suneagle Drive) also suffer from water wells with extremely low production (0.5 gpm) that tend to dry out in the summer.

This tour shows a customized rainwater collection system that has been working for 12 years now, and provides us with dependable, renewable, "free" water which is far superior to that provided by NSSWD, and eliminates the need for water delivery. The water is used for ALL household purposes, including drinking, cooking, showers, laundry and flushing toilets. In our garden, we use "drip irrigation" from the low-volume well water which suffers from a sulfur smell.

Using a (conservative) 24" annual rainfall, our 2800 sq.ft. roof is capable of collecting up to 34,880 IMP gallons of water a year. We collect all of this; almost one half is consumed during the winter, and the rest is stored in 5 of our 2500 US gal. cisterns for use throughout the summer. There is no reason why ALL new houses on the island could not be built to be water self-sufficient, and all it requires is a bit of annual maintenance and enough space to store cisterns.



# THE ROOF

Rain water is collected on our roof. For the purest water the roof should be non-porous, so we selected metal. Especially stay away from cedar shakes. Make sure that your roof is well cleaned at the beginning of each collection cycle (late Sept / early Oct). Cleaning with a power sprayer is easiest, but I have had some bad experience with a very powerful commercial sprayer ripping the rubber washers off my roofing screws. Cleaning with warm water and soap is more work but does a great job.

As the rain falls twice as fast as you can use the water, your cisterns will eventually fill up and overflow. At this point in March or April, it is a good idea to stop collecting as the fir (and other) pollen which collects on your roof will clog your filters as well as give your water a dirty taste.



# THE GUTTERS

Gutters provide the most work of any water collection system. Commercial 3", 4" and 5" gutters are all hard to keep clean, and "gutter guards" that try to keep leaves out of the gutters are themselves even more difficult to clean.

I had the luxury of building my house from scratch, so I designed "hidden gutters" into the roof line. I made them 12-15" wide so that I can walk along them with a power sprayer to clean them once a year. Notice the lack of leaves and other debris in my gutters this summer; only a bit of pollen residue that collected in late spring. I used 4" PVC downspouts without a 'leaf trap' so that the leaves are allowed to drop down to a level at which I can easily clean them; if they are not in the gutters, I don't have to clean out the gutters!



# LEAF CATCHERS

This is where I want the leaves to fall; on the ground floor at waist height so that I can easily clean them out throughout the (winter) water collection season by just walking around the house.

I kept the downspout at 4" to allow the oak and maple leaves to fall without catching in the pipe, but I made the lower drain pipe just 3" since the leaves and other small debris (twigs, tree frogs, bird doo-doo etc.) have all been caught in the screens. These handy gadgets are readily available locally at Windsor Plywood.



# SAND FILTER

The collected water runs through 3" PVC pipes under the deck and merges into a 4" PVC pipe at the first set of "collection" cisterns under the deck. It trickles down into the sand filter, consisting of a "U-shaped" trap at the base of the down-pipe filled with pure silica sand; this is the most important filter for the whole collection system, as it removes all of the medium to small debris from the water (down to about 30-35 microns) and makes the water quite potable. The "U-shape" receptacle ensures that the sand remains under water and kept wet throughout the collection season, which is important. Silica sand is sold at Windsor Plywood as "Lane Mountain" sand.

After the water passes through the sand filter, it flows up the 3" pipe (left) into the first cistern. There, as it suddenly stops flowing, all the fine silts which it has accompanied through the sand filter (especially toward the end of the collection season) settle into the tank. After this cistern (the one on the left) is almost full, the water overflows into the cistern on the right, which feeds the water, again by gravity) into the house.

Since the sand is so important, I replace it every year at the same time as I clean out these first two collection tanks.



# FINAL FILTRATION AND PURIFICATION

Once inside the basement of our house, the water fills my “control cistern” which has a submersible pump. The pump pressure pushes the water through a 10 micron filter and into a pressure tank for the household. A floating switch inside the cistern activates a solenoid when it detects a high water level during collection, and sends water up to the storage cisterns at the top of our property.

Another floating switch, which detects a low water level during the dry summer season, will activate another solenoid to allow stored water to flow back down (again using gravity) to this control tank for household use.

Before household distribution, the water passes through a final 5 micron filter and then an U/V sterilizer (right side of picture) that is guaranteed to kill all the tiny bugs that may be hiding in the water.



# TANK FARM

At the high end of our property, we have 6 large 2500 US gallon storage cisterns (about 8'x 8' each) which together store 15,000 gallons. This is enough water to supply our house and our summer cottage, provided that we are very conscious of our water consumption and waste. Only once in 12 years have we had water delivered from SS Water Co.

Each winter, the tanks are filled up by late January, so that the 5-10,000 gallons of rain water that we do not use we have to let run off down the hill. We are looking at purchasing a few extra cisterns to store water for the garden, which has overgrown the ability for our deep water well to keep up with it.

This whole system has been built and modified over the past 12 years, and has probably cost about \$12-15,000 total (not including my own labour).

