



Our Watersheds

Chemainus Benchlands

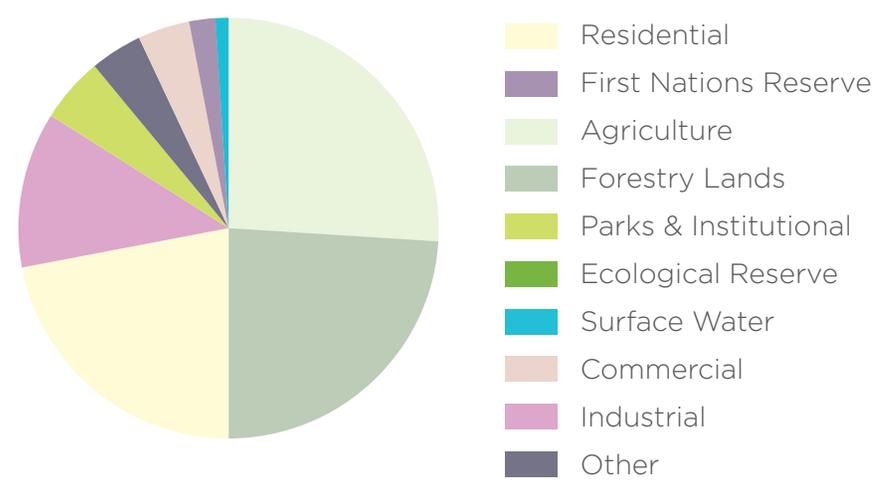
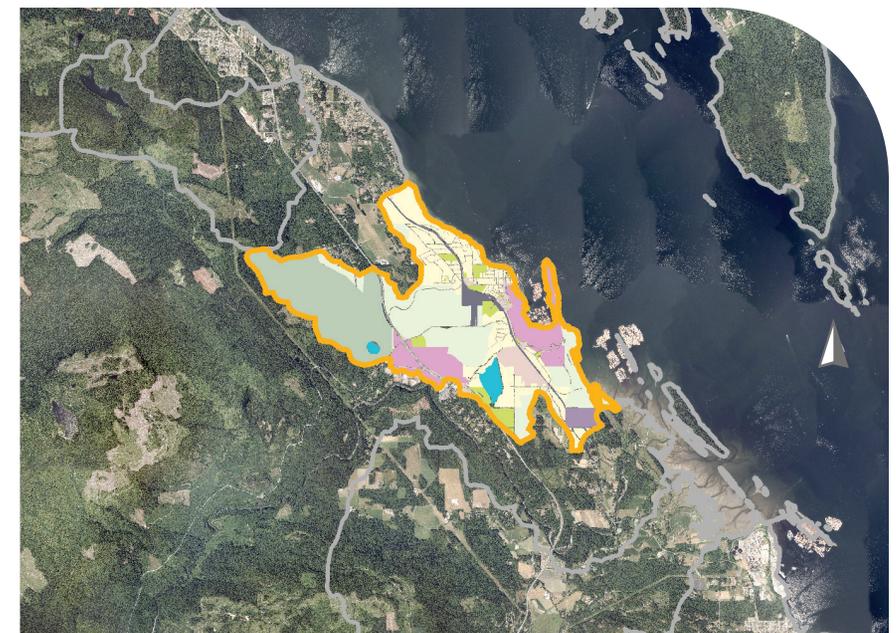
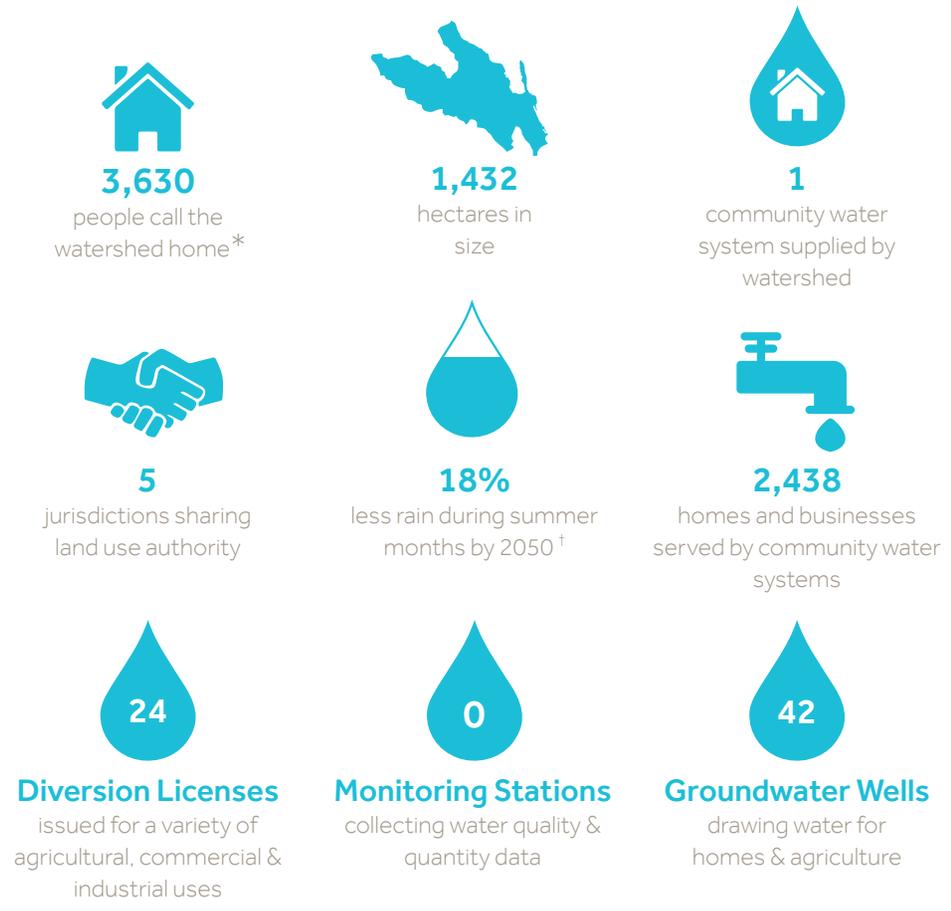
At 1,432 hectares, the Chemainus Benchlands has a relatively small catchment area compared to others in the region. Seasonal watercourses wind through agricultural and residential lands before draining into the waters of the Salish Sea. The watershed contains a diversity of ecosystems, including: rare wetlands, Douglas-fir and arbutus forests. **23% of the watershed is designated as Forestry Lands.** With limited natural surface water storage, these Benchlands, are more **susceptible to periods of drought and flood** than many of the other watersheds in the region. Life in the Benchlands depends heavily on groundwater. However, **expanding human populations** in the area place increasing stress on these **critical water sources** for the community of **Chemainus**.



 CVRD Watersheds

 Chemainus Benchlands

Chemainus Benchlands at a glance:



*Estimate based on 2016 Population Census, Statistics Canada
 †CVRD, (2017). Climate Projections for the Cowichan Valley Regional District

Land

Gently rolling terrain shape most of the Chemainus Benchlands. A few exceptions include the steep slopes near Panorama Ridge and the shoreline near Chemainus. The layers of sandstone and mud exposed throughout the Benchlands area are features of the “Nanaimo Group”—a geologic formation spanning the southeast coast of Vancouver Island.

In general, soils in the watershed are mostly well draining glacial deposits made up of gravelly, loamy sand or material derived from underlying rock formations.

Habitat

As a small part of the Coastal Douglas-fir biogeoclimatic zone, the Chemainus Benchlands is home to unique habitats where Douglas-fir, Garry oak and Arbutus trees grow amongst rock outcrops and diverse wetland ecosystems.

The watershed supports three at risk plant communities—Douglas-fir/Dull Oregon-grape, Grand Fir/Dull Oregon-grape and Western Redcedar/Common Snowberry—which include some of the most rare and biologically diverse natural areas in BC. The watershed is home to various plants and animals of concern, all of which are vulnerable to climate change and a growing population. Beyond such impressive habitat value, natural spaces in the area provide a number of essential ecosystem services such as absorbing carbon and filtering pollutants from our water systems.

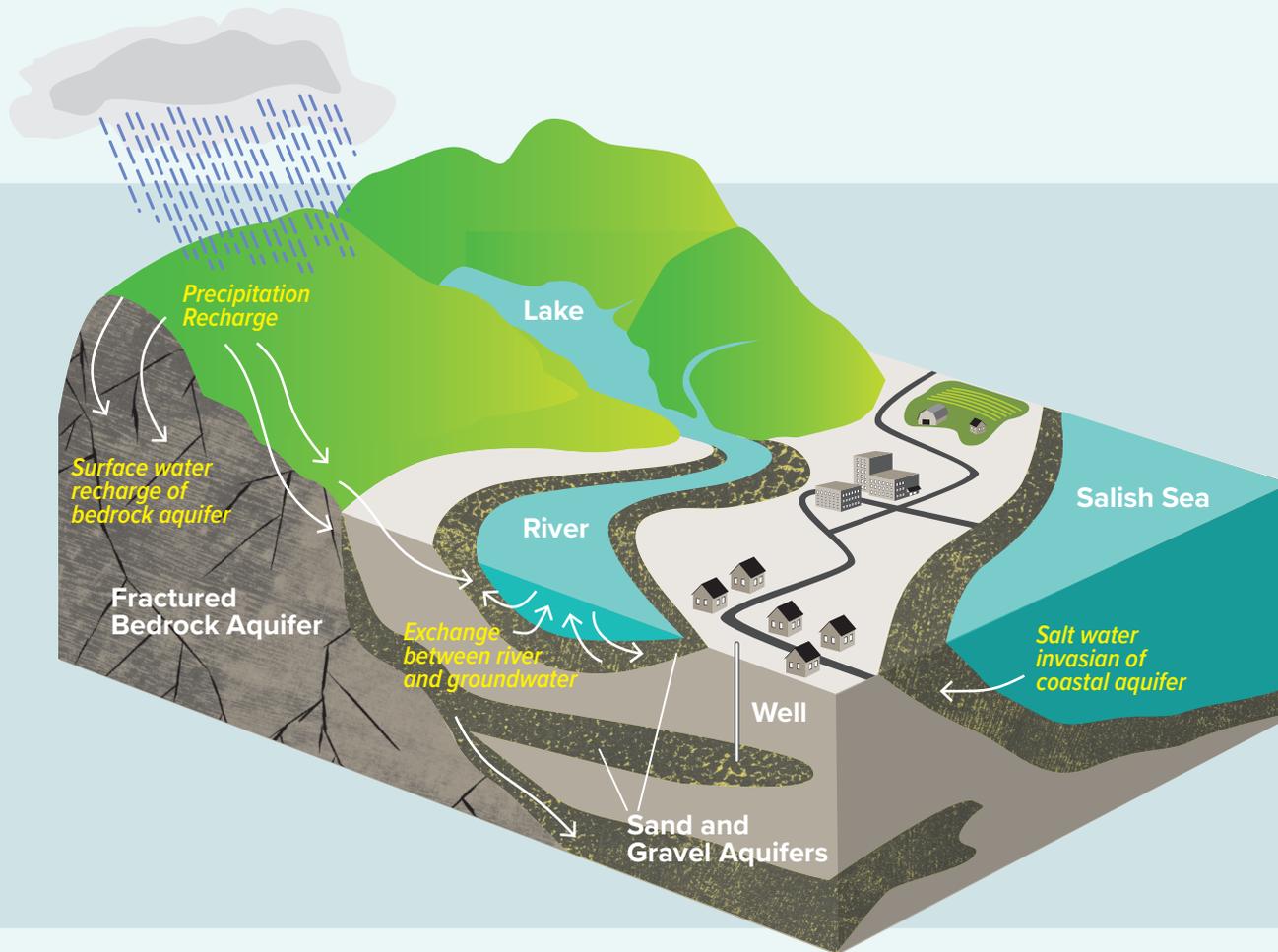


Coastal Douglas-fir Biogeoclimatic Zone

A “biogeoclimatic zone” is an area with similar patterns of vegetation and soils as a result of specific climate conditions. The Coastal Douglas-fir zone is at significant risk, with less than 1% of the original old forest remaining. Limited strategies are underway to protect older forest on the Crown portion of this zone, but much of the zone is private land.

Water

Life in the Chemainus Benchlands relies on water in the creeks, small lakes, wetlands and aquifers. Crofton Lake and a number of small wetlands support surface water storage in the watershed. There are [24 surface water diversion licenses](#) in the watershed. The dominant use of the diversions is for [industry](#). There are 4 mapped aquifers in the watershed. Shallow aquifers such as these ones near the coastal environment can be quick to recharge. However, they tend to have areas which are unconfined, meaning they have [limited protection from surface contaminants](#). There are [42 wells](#) in the watershed which draw from underlying aquifers [primarily for residential use](#).



What is an aquifer?

Aquifers are rock or soil that can contain groundwater. Sources of water that can become groundwater include:

1. recharge from rain or snow that soaks through an unsaturated zone
2. surface water bodies such as streams, lake and wetlands

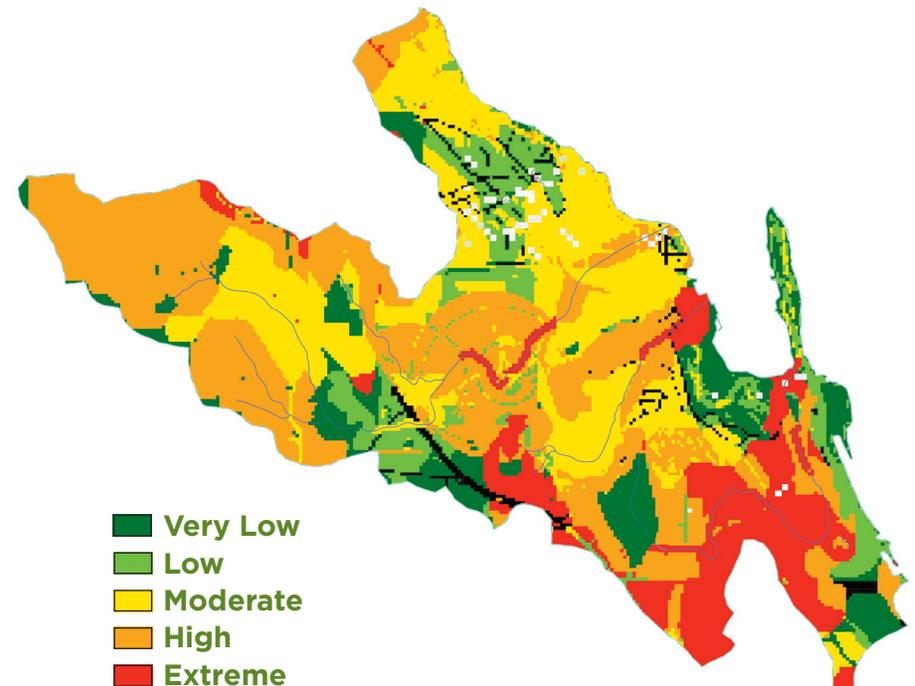
The characteristics of the rock and soil determine the speed at which water passes into an aquifer, how much water can be stored within it and how vulnerable it is to contamination.



Chemainus Benchlands: Combined Risk Assessment

Understanding Risk

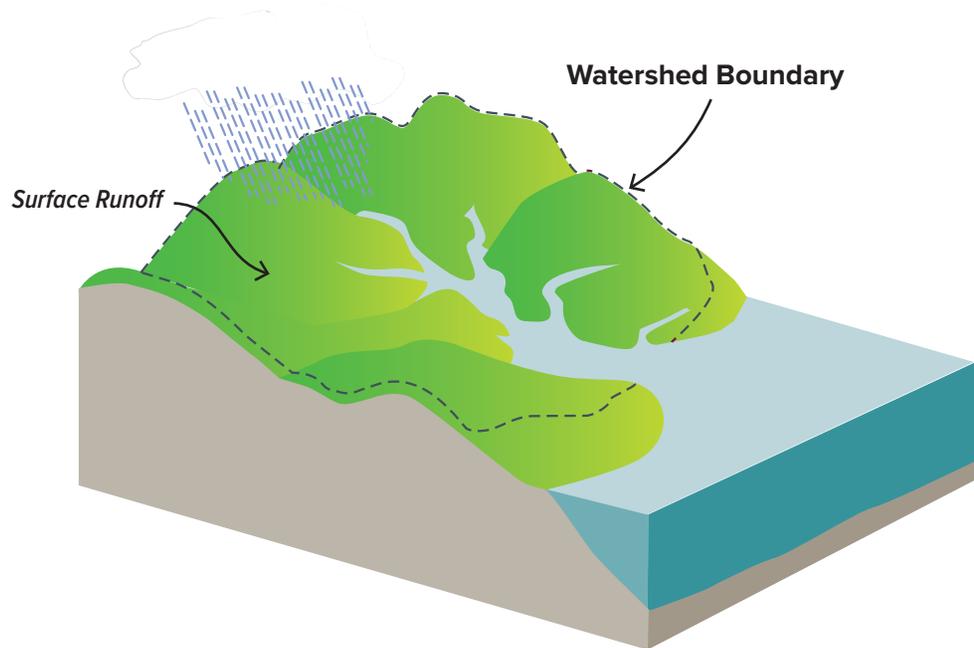
Making good decisions around development and resource use requires an understanding of risk. Risk is a product of the likelihood of a hazard occurring and its consequences. The map at right is based on 5 factors: groundwater contamination, surface water supply, stream water quality, slope failure and flood. Risk in the Chemainus Benchlands watershed is largely driven by surface water contamination and riverine/coastal flooding. Risk-mapping can inform land-use planning and stewardship.



Watershed Management Q&A

What is a watershed?

A watershed is an area of land that catches rain and snow and where water flows downward into a common river, stream, lake, or aquifer. All land is part of a watershed and we all live in a watershed.



What is watershed management?

Watershed management aims to preserve watershed health as a whole. This means connecting land-use planning with resource management in order to make decisions that meet community needs today and in the future. Inter-agency collaboration and community involvement are essential to this process.

What does this have to do with the CVRD?

Our engagement with residents of the Cowichan Region provided a clear message: the sustainability of our drinking water is a top priority when it comes to managing growth and change in the region. This message became official in the fall of 2018, when residents voted in favour of a new Drinking Water and Watershed Protection Service. This service will allow the CVRD to focus on protecting drinking water at its source in a number of ways, including developing watershed management plans, monitoring water quality and supply, and working closely with the community and other agencies to protect this precious resource and inform land use planning.

How is the region expected to change?

A temperate climate and an abundance of natural beauty make the Cowichan Region a highly desirable place to live; our population is growing steadily throughout the region, up 4% from 2011 to 2016. This growth is occurring in tandem with a changing climate where summertime drought and wintertime flooding are the new normal. Preparing for the changes ahead will require all levels of government, local authorities, and community members to work together in developing an integrated and cooperative approach to decision-making.

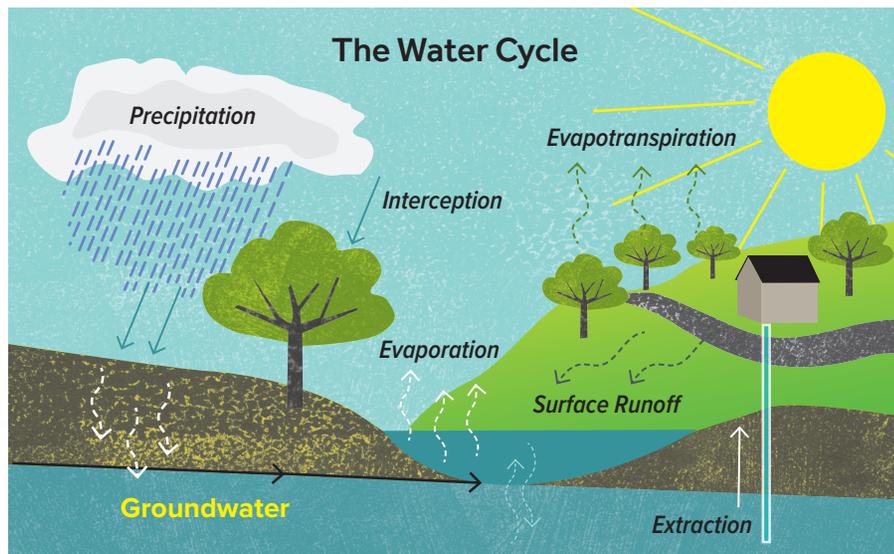
Watershed Management in action

Water Balance

To understand how our watersheds can sustain development, we need to first understand how much water is entering the watershed as rain and snow and how much water is needed to support natural processes. Then we can begin to understand how much there is for human uses. Water balance is about understanding how much water is entering the watershed (water in) and how much water is being used or leaving the watershed (water out).

Maintaining natural water balance is important because:

- **Too much water** can lead to erosion, slope destabilization and flood.
- **Without enough water** fish can't survive, vegetation dies, groundwater does not recharge and drinking water supplies diminish.



When natural areas are altered, we often lose the slow-release function of vegetation and soil. We disturb the natural balance of water when we pave surfaces, cut down trees, and divert watercourses. In the Chemainus Benchlands, changes to the water balance have been driven by a wide range of activities including **residential commercial, industrial and agricultural development and water extractions**. Climate Change impacts on precipitation will only increase the stress.

Community-informed Planning

The CVRD will be engaging with community members in the Chemainus Benchlands to prioritize concerns related to watershed health and livability.



Water Quality & Availability



Integrated Development



Stream & Groundwater Protection



Flood Protection



Habitat Restoration & Enhancement

A Shared Resource

We can all help!

- Everyone can do their part to conserve water.
- Residents can construct rainwater catchment systems.
- Builders can choose low impact development options.
- Homeowners should ensure septic systems are functioning.
- Farmers & foresters can manage fertilizers & pesticides.



Our approach to watershed management will focus on:

- » Protecting water resources
- » Understanding the unique pressures and risk for each watershed
- » Protecting the ability of watersheds to supply sustainable water to meet ecological and community needs
- » Making land use decisions informed by watershed planning
- » Rainwater management to mimic natural hydrology
- » Integration of development with stormwater management

What does this process look like?

The CVRDs approach will be ongoing and adaptive:

