



Freshwater Atlas

Executive Summary



386,049

What is the total area of lakes in the province?

22,434 km²

What is the length of the province's coastline?

37,902 km

What is the total length of streams and rivers in the province?

1,955,540 km

How many wetlands are there in the province?

378,426

What is the total area of wetlands in the province?

41,143 km²

The quality of B.C.'s water is a barometer that reflects the environmental, economic and social well-being of our province. B.C.'s burgeoning population, industrial and agricultural growth, and the potential impacts of climate change are only increasing the value of our water resources. The Freshwater Atlas has been developed as a management tool to ensure freshwater resources in B.C. are sustained for future generations.

What is the Freshwater Atlas?

The Freshwater Atlas is a standardized dataset for mapping the province's hydrological features. It represents a significant improvement over the previous 1:50,000 scale Watershed Atlas because it is derived from the province's more detailed 1:20,000 scale topographic base maps (TRIM). The atlas defines watershed boundaries by height of land and provides a connected network of streams, lakes and wetlands.

Each stream in the province has its own watershed (the land drained by that stream), but it is also linked to the other streams and watersheds that it flows from and to. The Freshwater Atlas allows you to connect a stream to both its tributaries and the watersheds associated with them. Simply put, you could, conceptually, launch a paper boat in the headwaters of a small creek in the interior and trace its route to the sea. You could also identify all the wetlands, lakes and watersheds your boat passed through.



Stream network



Watershed boundary

How many lakes are there in the province?

You can look at the whole province, a drainage basin, river, or an individual stream:



Adams River



the Adams River Basin

Why was it developed?

The atlas was designed to be the definitive source for mapping freshwater features in B.C. It provides a consistent base and coding system ensuring the province's various freshwater-related inventories are tied to a common base.

Watersheds are bounded by heights of land and these heights of land provide the definitive reference for many administrative boundaries and land tenures.

The Freshwater Atlas provides a connected network that serves as the foundation for sophisticated analysis and modelling.

What information does it contain?

streams, tributaries and major rivers obstructions - dams, falls and rapids waterbodies - lakes, wetlands and glaciers coastal bays and inlets watersheds - individual watersheds to larger drainage basins

Names of many water features are accessible and coding within the data allows you to identify connected features and map upstream and downstream relationships.

The Freshwater Atlas also allows you to:

map water features and their associated watersheds; conduct analyses at a province-wide level; identify connected watersheds, streams, rivers and lakes at regional levels; or examine an individual stream's watershed for local planning.

What types of questions can be answered?

The Freshwater Atlas can be used to answer questions like:

- How many lakes, wetlands, glaciers and reservoirs are in my study area, and what size are they?
- Which streams, lakes and wetlands are either downstream or upstream of a development that is planned for my local area?
- How many watersheds occur in my regional planning unit, what are their areas, and what is the total area of the land base they occupy?

These types of questions can be answered for the whole province, a region, or a single watershed.

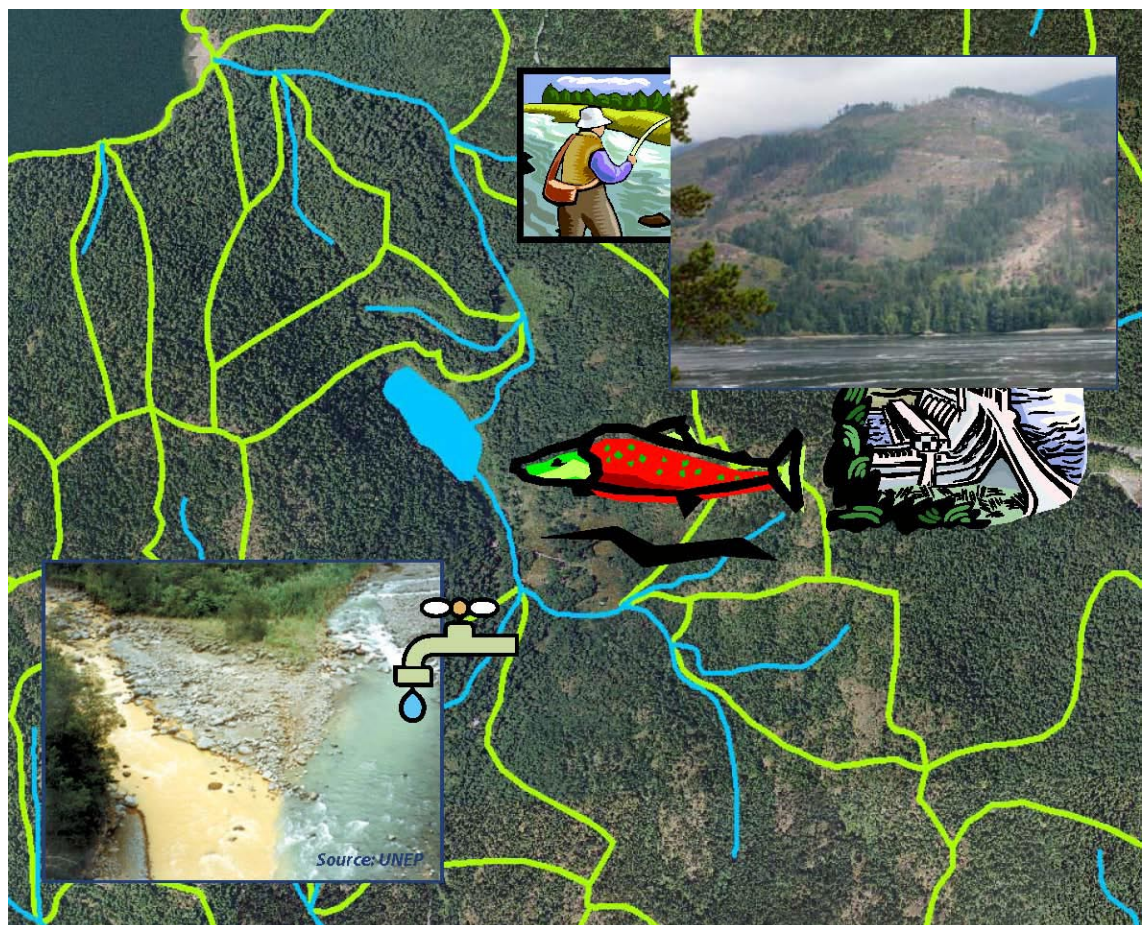
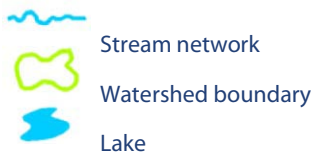
How can the Freshwater Atlas's stream network be used?

The atlas lets you link environmental information to the province's network of streams, lakes and rivers by location (i.e., GPS coordinates). Applications include:

-  Water management and water use planning
-  Display of fisheries data
-  Hydrological modelling
-  Locating water features by name
-  Emergency preparedness – identify communities downstream of a dam or resources in the path of a chemical spill

The Freshwater Atlas could provide the foundation for studying factors that influence salmon habitat in B.C. It facilitates the integration of the following types of information:

-  spawning habitat maps
-  locations of salmon-bearing streams and lakes
-  water quality monitoring stations and stream flow data
-  upstream and downstream land uses
-  obstructions blocking fish passage
-  recreational and commercial harvest statistics
-  salmon escapement statistics



How can the Freshwater Atlas help our understanding of the land base?

Information from a variety of disciplines can also be linked or summarised by the watersheds within the atlas. This lets us examine the potential impacts of both human activities and natural phenomena on the landscape.

Statistics for each watershed can be generated to quantify land use types or density values. These can provide useful indicators - helping us monitor the conditions within either an individual watershed or permitting the comparison of watersheds within either a region or throughout the entire province.

For example, the Freshwater Atlas is being used to monitor the extent and hydrological impacts of Mountain Pine Beetle infestation. The impact on stream flow can be summarized by major drainage basins as in the example below.

Forest attacked by
mountain pine beetle



Photo by Lorraine MacLauchlan



How do I find out more information?

To find out more information about the Freshwater Atlas or to download the dataset go on-line at:

<http://ilmbwww.aov.bc.ca/bmas/pba/cwb/>