Water Balance Methodology:

Using Continuous Simulation to Protect Urban Watersheds & Stream Health

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FLOODS & DROUGHTS –
the "New Normal" in British Columbia

What Happens on the Land Does Matter!

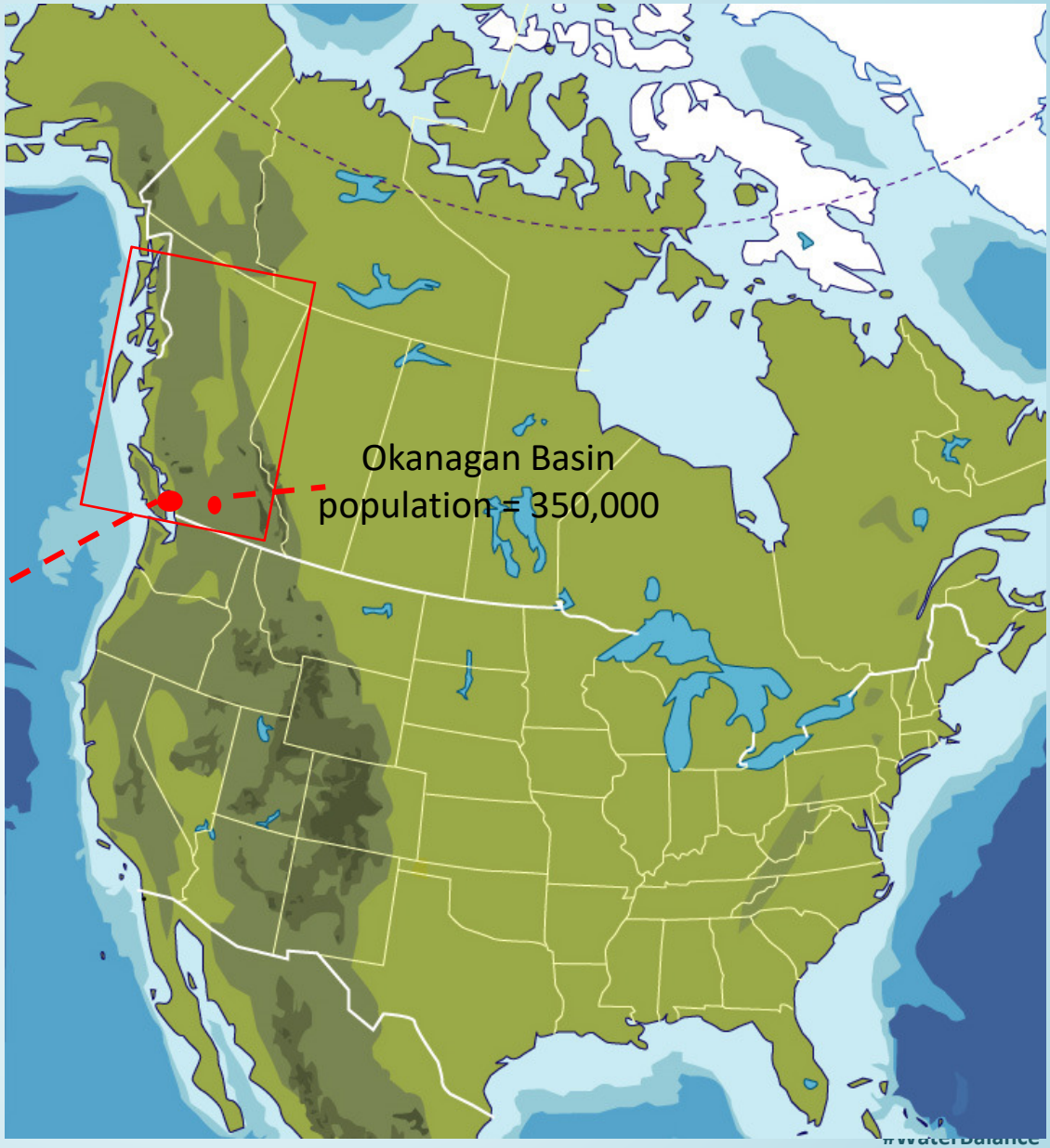
In British Columbia, we are looking at the water cycle with fresh eyes to develop new approaches, methodologies and tools that would enable communities to achieve what we define as ***"Sustainable Watershed Systems, through Asset Management"***

British Columbia
Population = 4.6 million

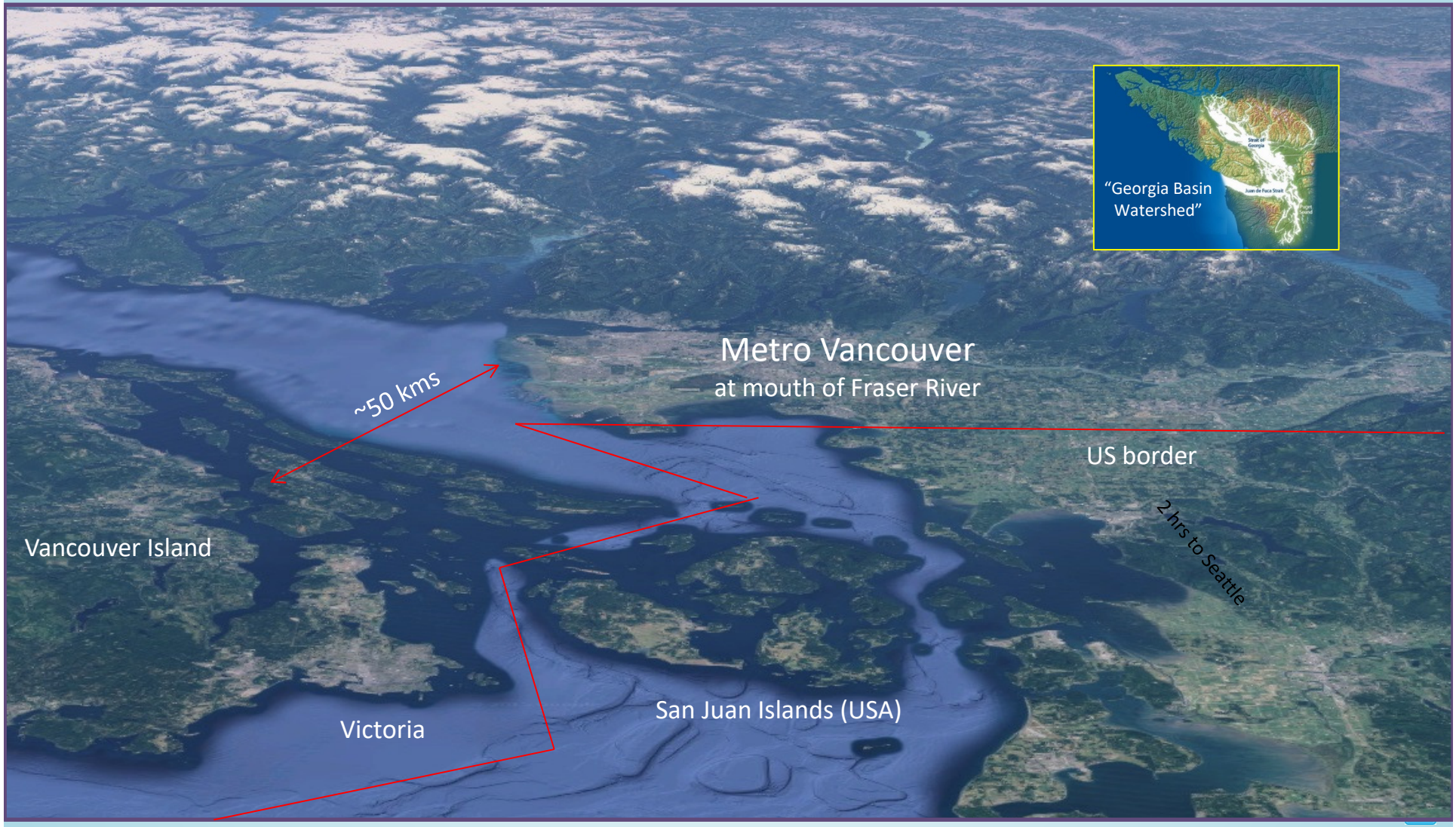
75% live in the southwest corner in the Georgia Basin, including Vancouver Island.

Another ~8% reside in the Okanagan Basin in the southern interior

Georgia Basin
population = 3.5M

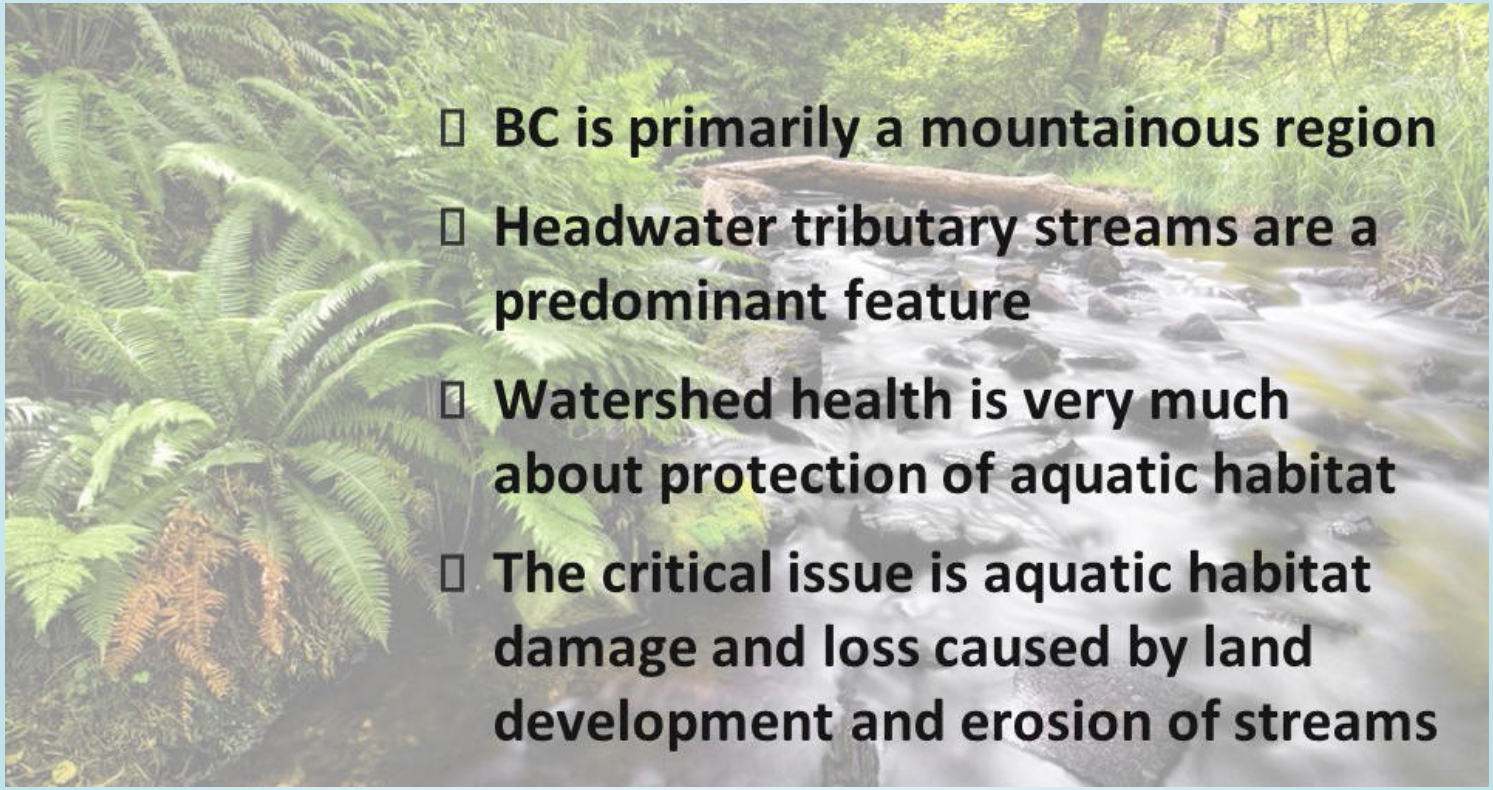


Home to 3½ million people, the Georgia Basin encompasses the east coast of Vancouver Island and the Lower Mainland Region (including Metro Vancouver)



Key Message:

*British Columbia's **Watershed Health Goal** differs from other regions because…..*



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Linking Rainfall, the Landscape, Streamflow, Groundwater and **Sustainable Service Delivery** has been a building blocks process

2002 – How to reduce runoff volume

2007 – How to mimic flow-duration

2012 – How to sustain deep infiltration

2013 – How to integrate performance targets

2014 – How to downscale targets to a site level

2015 – How to view water balance pathways as infrastructure assets providing services

Science-based understanding becomes clearer over time

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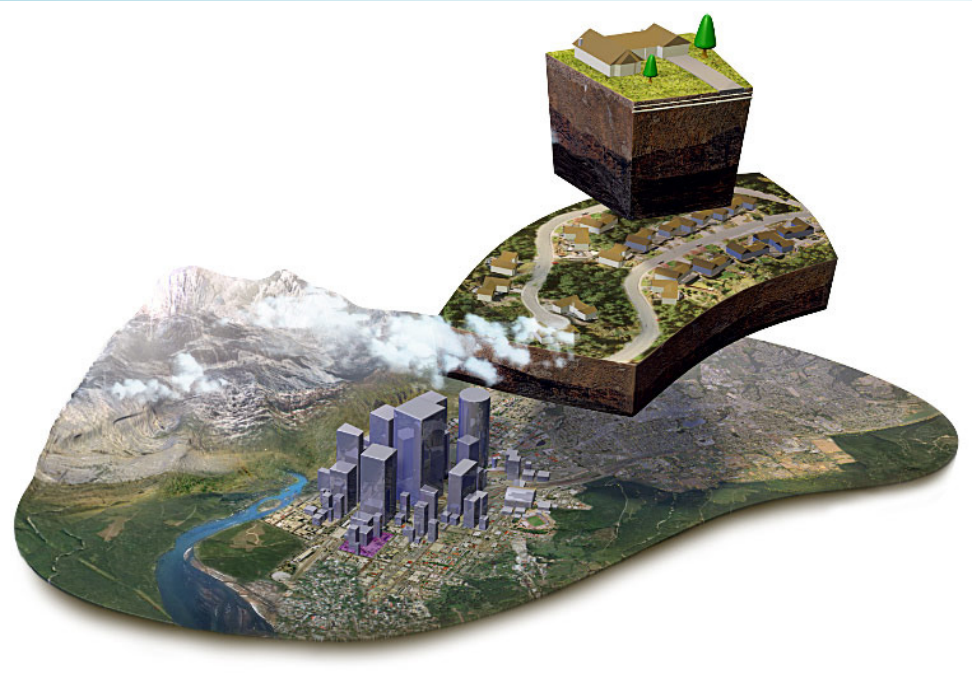
INTRODUCING THE NEW PARADIGM – *"Watersheds as Infrastructure Assets"*



A watershed is an **integrated system**.

The **three pathways** by which rainfall reaches streams are 'infrastructure assets'.

The three pathways provide **'water balance services'**.

The 3 pathways are:

- *over the land surface*
- *shallow horizontal (interflow)*
- *deep vertical to groundwater*

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