

Agenda

- ❑ **Why a Water Balance Forum** – *introduce framework for water-resilient communities*
- ❑ **Water Balance Express for Landowners** –
 - *unveil the first three to be implemented in this region:*
 - ✓ North Van District
 - ✓ Surrey
 - ✓ Coquitlam
 - *process to operationalize the Express for more partners in BC and beyond*
- ❑ **Water Balance Methodology** –
explain how to implement lessons learned over past 15 years and establish watershed targets to mimic water balance
- ❑ **Sustainable Watershed Systems, through Asset Management** – *previews IREI work plan thru 2017*

So, what is the Water Balance Model?

Launched by an inter-governmental partnership in 2003, the WBM is a web-based, scenario comparison tool. Users can quantify the impacts of land use changes on the Water Footprint and hence Stream Health

THREE SCALES

- watershed
- development
- site

Now, three

USER LEVELS:

- planning
- engineering
- **landowner**



KEY MESSAGE: *Integrate the site with the watershed, stream and groundwater aquifer to protect stream health*

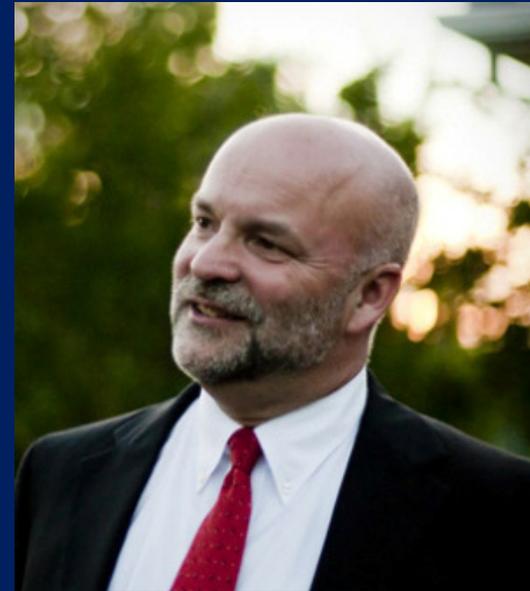
*As we move into the technical heart of this forum,
please do keep in mind this frame of reference....*

- What is the **Context**
- What is the **Intent**
- What do the **Results** mean

CONTEXT - Quotable Quote #1

*Andy Reese coined the term **Voodoo Hydrology** in 2006 to describe the pseudo-science that characterizes stormwater management practice*

“We must understand that urban hydrology is an inexact science where we are simply trying to get close to the right answer....In the absence of flow data, we make the Big Assumption.”

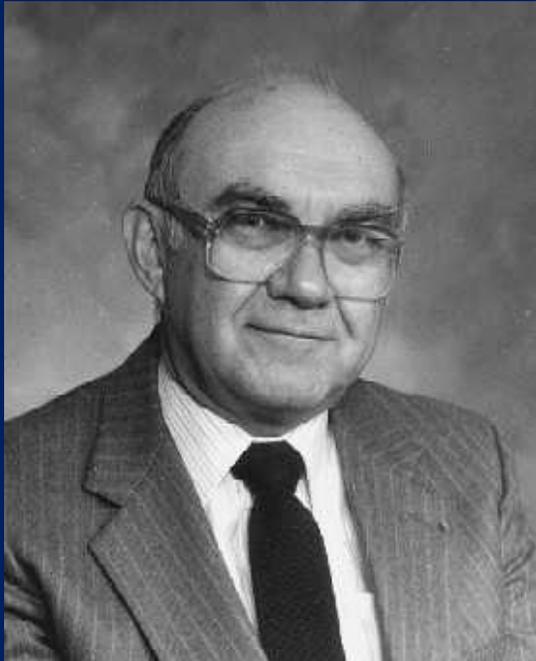


Andy Reese

Water Resource Engineer, Writer, Speaker
Co-author of “Municipal Stormwater Management”

CONTEXT - Quotable Quote #2

“Hydrology remains a hybrid between the art and the science,” wrote Robert L Smith in 1990



“Hydrology remains one of the few opportunities in technology where one's **diagnostic capability** is put to the test of both theory and experience.”

Robert L Smith (1923 – 1995)
Professor, University of Kansas
Presidential Science Advisor for Water Resources
1990 Ray Linsley Award

CONTEXT - Quotable Quote #3

Ray Linsley, a giant in hydrology, pioneered the development of continuous hydrologic simulation as the foundation for water balance management



Ray Linsley (1917 – 1990)
Professor, Stanford University
Author of Applied Hydrology, 1949

“To be useful... the simulation model must be physically based and deterministic, and it must be designed to simulate the entire hydrological cycle...hence, it must be a water balance model”

From “Representative & Experimental Basins – Where Next?” (1976)

CONTEXT - Quotable Quote #4

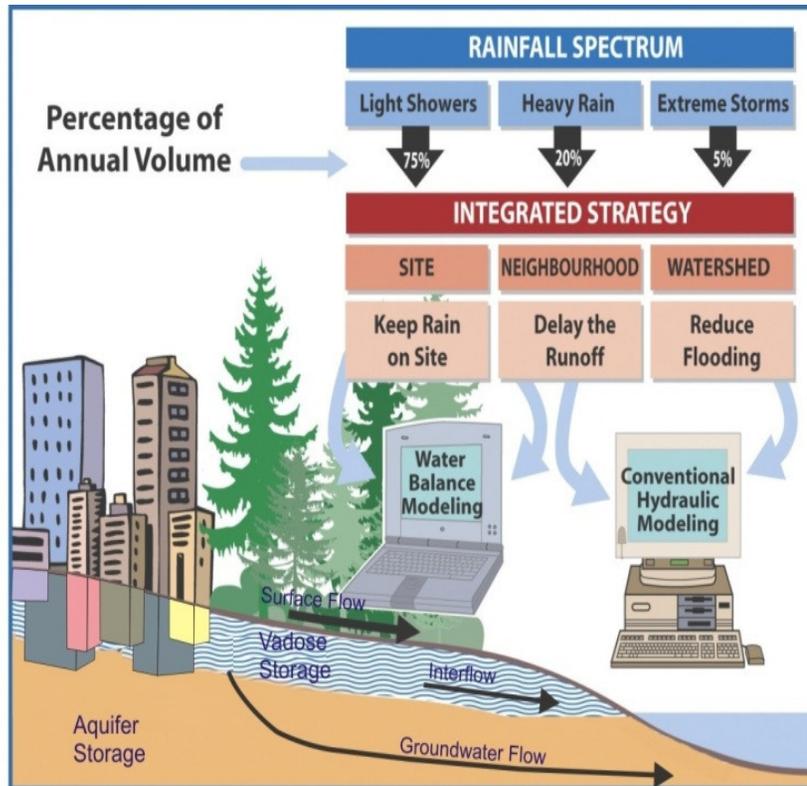
Thomas Debo, co-author of the best-selling textbook Municipal Stormwater Management, was a colleague & friend of the late Ray Linsley



“The volume-based approach being implemented in British Columbia picks up the baton that Dr. Ray Linsley started more than a generation ago.”

Thomas Debo
Professor Emeritus
City Planning Program
Georgia Institute of Technology

Watershed protection starts with an understanding of how water gets to a stream, and how long it takes...



Surface runoff
from minutes to hours

Interflow
from days to seasons

Deep Groundwater
from years to decades or more

Maintain the proportion of rainwater entering the stream via each pathway!

INTENT -

Now what do you wonder?

Next, we address three topics:

1. Why the Province made the *Water Balance Methodology* the centrepiece of the Stormwater Guidebook
2. Why an Inter-Governmental Partnership developed the *Water Balance Model* as an extension of the Guidebook
3. Why we will have a family of three Water Balance tools in the near future

INTENT

1. The Province embraced the Water Balance Methodology because:

- There was a clear need to ‘re-invent urban hydrology’
 - *The primary catalyst for a fresh approach was the ‘salmon crisis’ in the 1990s*
 - *Also, what we do in the urban uplands affects the agricultural lowlands*
- Traditional approaches, methodologies and tools were not providing solutions that worked
- An ‘Aha Moment’ was first recognizing the need & then understanding how to manage ALL the rainfall-days in a year (*Rainfall Spectrum*)

INTENT -

2. An Inter-Governmental Partnership developed the Water Balance Model as an extension of the Guidebook because of the paramount need to:

- Move beyond *drainage conveyance function* to look at whole systems for *green infrastructure implementation*
- Move beyond concepts and generate numbers that practitioners could wrap their minds around
- Move beyond the engineering domain to both bridge and encourage integration of perspectives
- Move beyond a fixation with the 'rightness of a single number' and create a full understanding through scenario comparisons
- **SAVE LOCAL GOVERNMENTS MONEY** by generating scenario comparisons immediately, efficiently and inexpensively

INTENT -

3. The Partnership will have a family of three Water Balance tools that meet the needs of different user groups at different scales and for different purposes:

- **Water Balance Model (2003):** *planning function at neighbourhood and individual property scales*
- **Water Balance Express for Landowners (2014):** *landowner application at individual property scale*
- **Water Balance Expert System (Advanced User Interface):** *engineering function at watershed and neighbourhood scales*