

Resilient Rainwater Management: Across Canada Workshop Series on Adapting to a Changing Climate

*Solutions & Tools / Affordable & Effective: An Opportunity to Learn About
BC's Collaborative & Adaptive Approach to Protecting and Restoring Watershed Health*

WORKSHOP CONTEXT

The Partnership for Water Sustainability in British Columbia is responsible for delivering the *Water Sustainability Action Plan for British Columbia*, and is the hub for a “convening for action” network in BC’s local government setting. This fall, the Partnership is leading an Across Canada Workshop Series.

By 2002, looking at rainfall differently led the Province of British Columbia to adopt the Water Balance Methodology, initiate a performance target approach to capturing rain where it falls, and initiate changes in the ways rainwater runoff is returned to streams.

The workshop series showcases the case study experience of those local governments leading change in BC. Also featured are various web-based tools, in particular the *Water Balance Model Express for Landowners*, which support implementation of BC’s new Water Sustainability Act.

The series is funded by the Climate Change Adaptation Project.



Resilient Rainwater Management:

Across Canada Workshop Series on Adapting to a Changing Climate

ABSTRACT – WHY YOU WOULD BENEFIT FROM ATTENDING....

The workshop is your opportunity to learn from those who are leading change in British Columbia. Learn about BC's *collaborative* approach to "rainwater management and watershed sustainability". Then you can reflect on how BC's local government emphasis and focus on outcomes compare with the approach in your province.

You will learn that BC local government is among the most autonomous in Canada, and BC is perhaps the least prescriptive province. BC's Community Charter Act recognizes that communities are in the best position to develop solutions which meet their own unique needs and local conditions.

This provides local government champions with flexibility to apply science-based understanding to 1) develop tools, 2) establish precedents and 3) gain the experience necessary to implement an adaptive approach to community design. Adaptive means "learn by doing" – and, change direction when the science or experience leads to a better way. BC local governments are sharing and learning from each other. This is accelerating replication and implementation of new standards of practice that can restore watershed health over time.

The workshop will showcase BC case study experience: *develop tools; develop talent; focus on outcomes.*

0830 Registration // Meet & Greet

0900 **MODULE 1 – Slow, Sink and Spread Rainwater**

SCOPE: Communities across Canada are grappling with the issue of how best to resolve Watershed Health issues in light of a changing climate and financial drivers to provide higher levels-of-service at reduced levels-of-cost.

- Welcome -
- Context for "Convening for Action" in British Columbia – *Kim Stephens*
- Local Context –

1000 Refreshment Break

1030 **MODULE 2 – Develop Solutions & Tools: Mimic Natural Water Balance & Build Resilience**

An integrated team presentation by Kim Stephens, Ted van der Gulik, Jim Dumont & Richard Boase (Alberta only)

SCOPE: BC was the first province to adopt the Water Balance Methodology. The vision is that community development activities and alteration of the Built Environment will result in *cumulative benefits*, not impacts.

CONTENT: Guiding Premise - *land development and watershed protection can be compatible*. Water Balance Methodology – *was key to overcoming initial fear & doubt*. BC'S Water Sustainability Act – *enables collaboration*. Watershed Health Goal – *synthesizes hydrology, aquatic ecology, geomorphology & hydrogeology principles*.

1200 Lunch Break

1300 **MODULE 3 – Implement Solutions & Tools: Embrace Regional Team Approach**

An integrated team presentation by Kim Stephens, Ted van der Gulik, Jim Dumont & Richard Boase (Alberta only)

SCOPE: A collaborative approach is enabling watershed sustainability champions in BC to align efforts at three scales (provincial, regional and local) and demonstrate the cumulative benefits of 'designing with nature'.

CONTENT: Working at an inter-regional scale in the Georgia Basin through education, demonstration & sharing. Case studies include: North Vancouver - *Hastings Creek Blueprint*; Capital Region - *Bowker Creek Blueprint*; Surrey - *leadership history*; Coquitlam - *integrated watershed & community planning*; Comox Valley - *Water-Wise Guide*.

DEMO WEB-BASED TOOLS: 1) Water Balance Model (WBM) Express - *helps landowners meet performance targets on private property*; 2) Drainage Infrastructure Screening Tool (DIST) – *a single tool assesses impacts of land use densification & climate change on piped systems*; 3) Irrigation Scheduling Calculator – *improve water use*

1445 Refreshment Break

1500 **MODULE 4 – Open Forum** – *facilitated by Kim Stephens*

SCOPE: Conduct as a town-hall session. Engage and interact with the audience: ask what have they learned from the BC story; how might they apply what they have learned; and what do they still wonder?

1545 Closing remarks

Exhibit A - About the Watershed Health Goal

A. Since the late 1990s, and largely due to heightened awareness as an outcome of the impact of the “salmon crisis” in BC, governments have recognized the need to restore and protect watershed health.

- ▶ By 2002, looking at rainfall differently led the Province of BC to adopt the Water Balance Methodology, initiate a performance target approach to capturing rain where it falls, and initiate changes in the ways rainwater runoff is returned to streams.
- ▶ Released in 2002 to support / facilitate the “rainwater component” of Liquid Waste Management Plans, the underlying premise for “**Stormwater Planning: A Guidebook for BC**” was expressed as:

Land development and watershed protection can be compatible. Science-based understanding bridges the gap between policy and site design.

- ▶ The Guidebook presents a framework for implementing an ‘adaptive approach’ to watershed-based actions (i.e. learn by doing; change direction when science-based understanding leads to a better way).

B. Watershed health is a priority for local governments in Metro Vancouver and along the east coast of Vancouver Island.

- ▶ In 2012, the Regional Boards for the Comox Valley, Nanaimo Region, Cowichan Valley, Capital Region and Metro Vancouver Region agreed to collaborate under the umbrella of the *Inter-Regional Education Initiative*.
- ▶ All five regions have over-arching plans that are watershed-based and establish a vision.
- ▶ Everyone is primed to move from talk to “implementation and integration”.
- ▶ Collaboration will accelerate affordable and effective outcomes within each region.

C. A core group of local government champions representing the five geographic regions is functioning as an inter-regional leadership team:

- ▶ The vision for collaboration in 2014 is that a series of inter-regional working sessions will inform and educate the leadership team and others about watershed health:

- a. *All regions are dealing with challenges associated with watershed monitoring*
- b. *Each region is at a different point along the Watershed Health continuum*
- c. *Each region has something unique to contribute to the mix*

- ▶ The vision for collaboration boils down to three objectives:

1. *Share experience on how to measure watershed health, and how to monitor progress*
2. *Understand what each regional district is doing, what works and what does not*
3. *Understand the elements of a performance monitoring framework that can be used to adjust actions **and inform community planning** that maintains healthy streams*

- ▶ The deliverable will be a guidance document that is a compilation of session and series outcomes.

D. Over the past 15 years, local government leaders have been applying science-based understanding to develop tools, establish precedents and gain the experience necessary to achieve the Watershed Health Goal.

- ▶ Going forward, a guiding principle for collaboration is to leverage “science-based understanding” of the relationship between land use changes and resulting stream health (and also financial liability) consequences in order to influence community planning.
- ▶ The mantra for the ultimate outcome of the Inter-Regional Collaboration Series is framed this way: *“through sharing and learning, ensure that where we are going is indeed the right way”*

E. Because affordability ultimately drive standards of practice, “Sustainable Service Delivery” is a way to view watersheds through an asset management lens and provide a higher level-of-service at a reduced level-of-cost.

F. Looking ahead, one of the desired outcomes of collaboration is to galvanize additional champions who will both implement needed changes in practice and maintain the watershed health legacy over time.

Exhibit B - About the Water Balance Presentation Team

Ted van der Gulik, P.Eng

President
Partnership for Water Sustainability in BC

Until his retirement in 2014, Ted van der Gulik was the Senior Engineer in the Ministry of Agriculture. Over the course of his 35-year career with the Ministry, Ted built an international reputation for his leading-edge work in agricultural water resource management. This was highlighted in 2000 when he received the Irrigation Association's prestigious Crawford Reid Memorial Award, recognizing his work in promoting proper irrigation techniques.



Ted has led numerous water projects over the years that have had a large impact not only on individual farms but also on entire communities and watersheds in the province of BC. The many guides and manuals he has written are used locally and around the world.

Ted's accomplishments include two Premier's Awards of Excellence: in 2009, for the Water Balance Model; and in 2010, for the Agriculture Water Demand Model. His contributions go beyond agriculture and encompass integrated watershed planning initiatives. His provincial leadership in water conservation and innovative water sustainability practices demonstrates his ability to see the bigger picture and encourage different disciplines to work towards a shared goal.

Kim A Stephens, M.Eng. P.Eng

Executive Director
Partnership for Water Sustainability in BC

Kim Stephens is an engineer-planner. His four decades of experience cover the spectrum of water resource and infrastructure engineering issues and applications, from master planning and modelling to implementation of capital projects. He specializes in public policy and has played a leadership role in a series of initiatives in British Columbia related to water sustainability, rainwater management and green infrastructure.



More than a decade ago, Kim looked at rainfall differently and developed the Water Balance Methodology that the Province incorporated in *Stormwater Planning: A Guidebook for British Columbia*. Since 2003, Kim has been responsible for developing and delivering the *Water Sustainability Action Plan for British Columbia*, the partnership umbrella for a water-centric approach to community planning and development.

He has been invited to speak on "the BC experience" at forums in Australia and throughout North America. His work related to UniverCity at Simon Fraser University is featured in the book *Dancing with the Tiger: Learning Sustainability Step by Natural Step* (2002).

Jim Dumont, P.Ag., P.Eng

Engineering Applications Authority
Partnership for Water Sustainability in BC

Jim Dumont is a recognized specialist in hydrologic modeling and infrastructure engineering. For many years, he has been teaching water resource and modelling seminars organized by APEGBC.



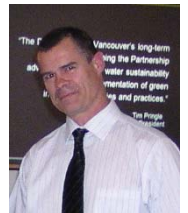
Jim evolved the Water Balance Methodology to address the relationship between rainfall volume control and resulting flow rates in streams; and developed the Stream Health Methodology as the technical foundation for the provincial 'Beyond the Guidebook' initiative in 2007. This methodology correlated stream erosion as a measure of stream health.

Jim's innovation and many accomplishments as Engineering Applications Authority encompass creation of the technical foundation for both the *Water Balance Model Express for Landowners* and *Drainage Infrastructure Screening Tool*. The latter is web-based and embeds a common-sense engineering methodology that allows local governments to quickly and efficiently assess the hydraulic performance of storm sewer systems, carry out redevelopment and climate change scenario comparisons, generate immediate answers and establish priorities for detailed analysis and capital planning purposes.

Richard Boase, P.Geo.

Environmental Protection Officer
District of North Vancouver

A geoscientist and Co-Chair of the Water Balance Model Partnership, Richard Boase is an innovator and is North Vancouver's project manager for case study demonstration applications that have been driving the evolution of the Water Balance Model for the past decade.



Land redevelopment and densification to create the Lynn Valley Town Centre resulted in an applied research and implementation opportunity. North Vancouver is pioneering the integrated application of performance targets for runoff management, at the neighbourhood scale, to protect stream health. Under Richard's leadership, the District has also demonstrated the cost-effectiveness and power of imagery analysis as a rainwater management tool.

Richard Boase is the Water Balance Model Partnership's lead for development of the web-based *Water Balance Model Express for Landowners*, and the District of North Vancouver's Hastings Creek Watershed Blueprint is the demonstration application for this web-based tool. The Express has pre-set performance targets that are watershed-specific. This means that landowners will then be able to focus on the choices and the geometrics of fitting appropriate rainfall capture measures onto their properties.