

Convening for Action in British Columbia



Beyond the Guidebook 2010: Implementing a New Culture for Urban Watershed Protection and Restoration In British Columbia

June 2010



Fisheries and Oceans Canada
Pêches et Océans Canada

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Beyond the Guidebook 2010: Implementing a New Culture for Urban Watershed Protection and Restoration In British Columbia

Preface

In October 1997, a focus group workshop convened by the Union of British Columbia Municipalities set in motion a chain of outcomes that culminated in release of **Stormwater Planning: A Guidebook for British Columbia** in June 2002.

Catalyst for Change

Looking back, the Guidebook was a catalyst for change that has resulted in British Columbia achieving international recognition as a leader in implementing a green infrastructure approach to rainwater management. In 2002, the Guidebook advanced this premise: land development and watershed protection can be compatible. In 2002, this represented a radical shift in thinking.

Five years later, the evolution in our thinking was captured in **Beyond the Guidebook: Context for Rainwater Management and Green Infrastructure in British Columbia**. Released in June 2007, this succinct guidance document foreshadowed Living Water Smart, BC's Water Plan and the Green Communities Initiative, both of which were launched in 2008.

Alignment

Living Water Smart and Green Communities together establish an over-arching provincial policy framework. There is now clear guidance for aligning local actions with provincial and regional goals to 'design with nature' so that we create greener communities, live water smart and prepare for climate change.

A decade ago, we made a conscious decision to follow an educational rather than prescriptive path in BC. We realized that changing the way we develop land depends on establishing higher expectations and challenging practitioners to embrace shared responsibility.

We branded this as **The New Business As Usual**. We knew it would take time to change the culture. We now have the tools and the case study experience to 'design with nature'.

We believe that BC is now at a tipping point. Implementation of a new culture for urban watershed protection and restoration is within our grasp. **Beyond the Guidebook 2010** sets the stage for development that is in balance with ecology. **THIS IS OUR STORY.**



Glen Brown, Chair
BCWWA Water Sustainability Committee



Ted van der Gulik, Chair
Inter-Governmental Partnership



Raymond Fung, Chair
Green Infrastructure Partnership



John Finnie, Chair
Convening for Action on Vancouver Island



Mike Tanner, Chair
Water Bucket Website Partnership



Jay Bradley, Chair
Vancouver Island Coordinating Team

About the Partners

BCWWA Water Sustainability Committee (WSC)

Formed in 1992, the WSC is a roundtable of government and non-government organizations. The WSC is providing leadership, facilitation and organizational services for *Water Sustainability Action Plan* program delivery. Member organizations have a specific interest or mission in implementing the Action Plan. A criterion for membership is that representatives will feed back Action Plan outcomes into their organizations.

Inter-Governmental Partnership (IGP)*

Formed in 2002 to develop the web-based *Water Balance Model* (WBM), the IGP draws its strength from local government; and is a consortium of local, regional, provincial and federal agencies. The IGP has municipal representation from four regions: Metro Vancouver, Fraser Valley, Vancouver Island and Okanagan. In 2008, the IGP formed an Inter-Provincial Partnership with the Alberta Low Impact Development Partnership. In 2009, the WBM received a Premier's Award for Innovation & Excellence.

Green Infrastructure Partnership (GIP)*

Formed in 2003, the founding partners were the Province, Master Municipal Construction Documents Association, West Coast Environmental Law Research Foundation, and the BC Water & Waste Association. The GIP mission is to provide leadership and encourage province-wide implementation of 'design with nature' policies and practices.

Convening for Action on Vancouver Island (CAVI)

Formed in 2006, CAVI is an inclusive partnership, reaching out to audiences that share a vision of achieving water sustainability through green infrastructure practices. CAVI provides leadership, research and education for practitioners. The target audience is primarily in the local government setting. CAVI encourages and supports participation by the development, academic, First Nations and citizen communities.

Water Bucket Website Partnership

Formed in 2004, the partnership is a consortium of provincial and regional organizations and federal agencies which have provided funding for website development, including: four Ministries, BC Hydro Power Smart, Terasen /Corix, Okanagan Basin Water Board, Metro Vancouver, Capital Regional District, Environment Canada, Real Estate Foundation, Stewardship Centre for BC, and Irrigation Industry Association of BC.

Vancouver Island Coordinating Team (VICT)

Formed in 2006, VICT is the local government part of the CAVI partnership umbrella. The VICT focus is on the rainwater management component of the water cycle, with emphasis on the use of the *Water Balance Model* to make science-based decisions. The mission is to facilitate a consistent approach to green infrastructure implementation.

*** NOTE:** **Fisheries and Oceans Canada** is a Water Balance Model funder and partner; is on the steering committees for both the Inter-Governmental Partnership and Green Infrastructure Partnership; was represented on the *2002 Stormwater Guidebook* steering committee; and together with the Province co-sponsored *Beyond the Guidebook 2007* to advance a performance targets approach to protecting and/or restoring Watershed Health.

Acknowledgements

Beyond the Guidebook 2010 would not have been possible without the contributions of the many champions in local government who have provided the leadership that has resulted in the many precedents that are described herein. *Beyond the Guidebook 2010* is also “their story”. In particular, the Partners wish to recognize the following local governments for their sustaining commitment to the “convening for action” process. They have hosted and/or materially contributed to the success of “convening for action” program elements in the Okanagan, Vancouver Island and Metro Vancouver:

Association of Vancouver Island Coastal Communities

Capital Regional District

Central Okanagan Regional District

Comox Valley Regional District

Cowichan Valley Regional District

Metro Vancouver Regional District

Regional District of Nanaimo

Regional District of Okanagan-Similkameen

Okanagan Basin Water Board

City of Abbotsford

City of Campbell River

District of Central Saanich

City of Chilliwack

Town of Comox

City of Courtenay

Town of Cowichan Lake

Village of Cumberland

Municipality of Delta

City of Duncan

Town of Gibsons

District of Highlands

City of Kelowna

Town of Ladysmith

City of Langford

Township of Langley

City of Nanaimo

District of North Cowichan

City of North Vancouver

District of North Vancouver

City of Oak Bay

Town of Oliver

Town of Osoyoos

City of Parksville

District of Powell River

Town of Qualicum Beach

District of Sooke

District of Saanich

City of Surrey

District of Ucluelet

City of Vancouver

City of Victoria

Town of View Royal

District of West Vancouver

The Partners also wish to recognize the champions at the University of Victoria, University of British Columbia, and UniverCity at Simon Fraser University who made major contributions as hosts for the *Showcasing Green Infrastructure Innovation Series*.

Convening for Action to Do Business Differently:

*Visualize What We Want Our Regions of
British Columbia to Look Like in 50 years*

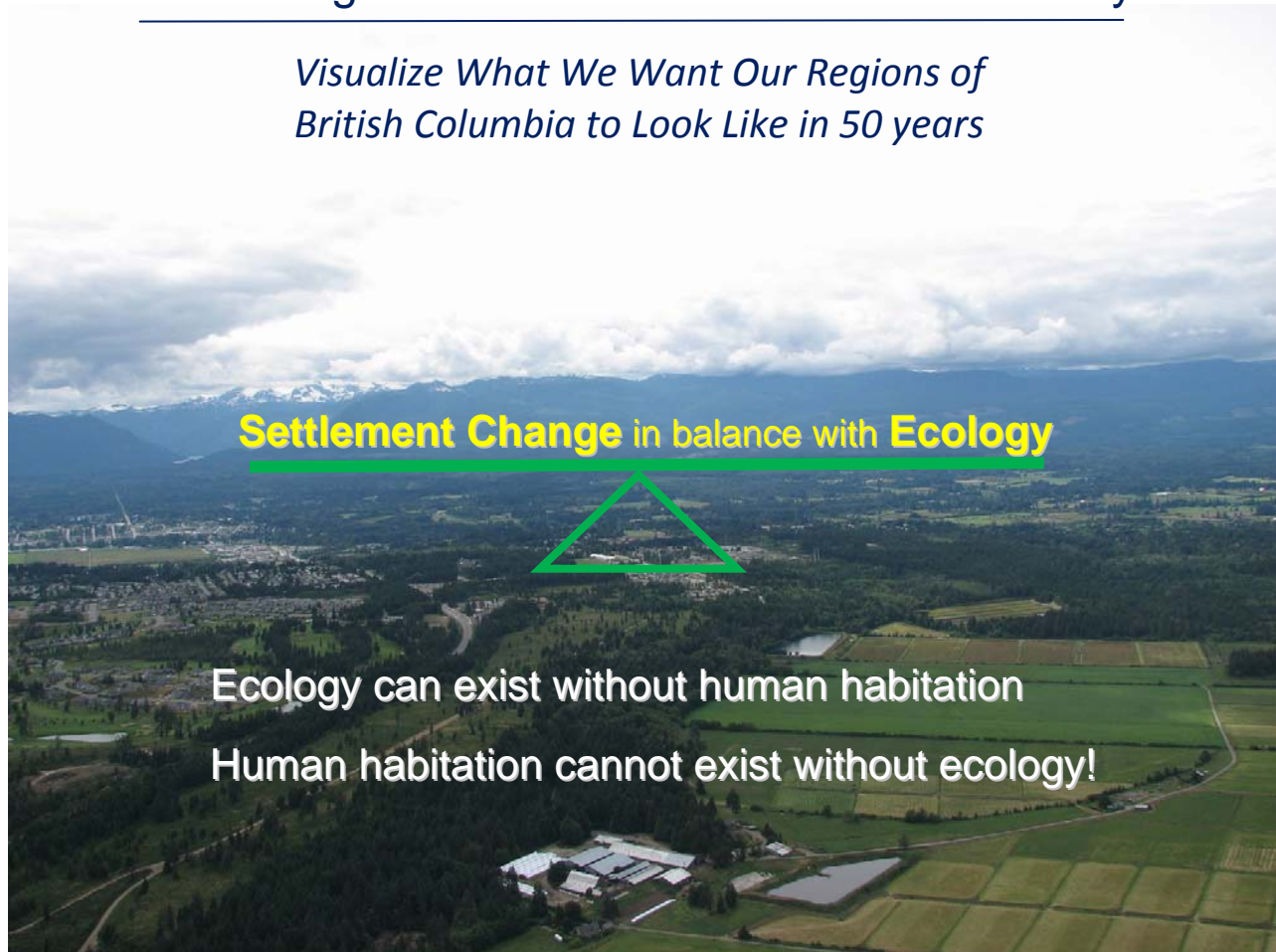


Photo Credit: City of Courtenay

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Executive Summary

Convening for Action in BC

In 2005, the Province in partnership with BCWWA (British Columbia Water and Waste Association) and the Real Estate Foundation launched a 'made in BC' process known as **Convening for Action**. The founding partners envisioned a series of pilot programs and case studies, with outcomes synthesized as chapters in [Water-Centric Planning: A Guidebook for British Columbia](#).

About Beyond the Guidebook 2010

"In 2005, we said this would be a different kind of guidebook. We said that the Guidebook would be the 'telling of the stories' of how change is being implemented on-the-ground in BC. Before the chapters could be written, however, the regional case studies had to run their course," states Glen Brown, Chair of the BCWWA Water Sustainability Committee.

"Well, it is five years later, and Beyond the Guidebook 2010 is the story of how we got to here and where we are going next. *This is the Water-Centric Guidebook.*"

Similar to the way the 2002 Guidebook is structured, Beyond the Guidebook is written in a way that provides the whole story for those that want it, or just key tidbits for others. A set of three over-arching messages are embedded in the graphic below.



The New Business As Usual

Chapter 1 is the 'call to action'. The future desired by all will be created through alignment of federal, provincial, regional and local policies and actions

Chapter 2 provides an overview of why the Guidebook was a catalyst for action to implement a 'design with nature' approach to rainwater management and green infrastructure.

Chapter 3 describes the steps in an incremental process that has been building practitioner capacity for the past decade in BC to implement the [New Business As Usual](#).

Chapter 4 introduces the stories of three regional initiatives; they demonstrate that the practitioner culture is changing as an outcome of collaboration, partnerships and alignment.

Chapter 5 describes the inter-connected elements of an [Outreach & Continuing Education Program](#) that has advanced a 'water-centric' approach to community development.

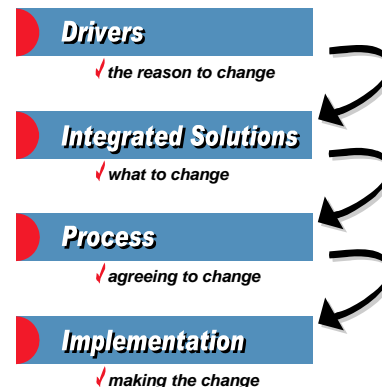
Chapter 6 describes six outcomes resulting from local governments embracing a 'top down bottom up' strategy to implementing the [New Business As Usual](#).

Chapter 7 provides local governments with 'how to' guidance for developing **outcome-oriented** urban watershed plans, with emphasis on a necessary course correction for "ISMPs" ([Integrated Stormwater Management Plans](#)).

Chapter 8 lists supporting documents that are downloadable from the Water Bucket website.

Reproduced from the 2002 Guidebook, the graphic below captures the essence of Beyond the Guidebook 2010.

Elements of Transition



Executive Summary

Changing the Culture

"If one goes back 10 years, there was a void of policy and legislation. This led us down an educational path as the logical alternative," states Glen Brown. "We took the Guidebook, which is a document, and we moved it to implementation."

"A good idea is immediate, but preparation for implementation can take 5 to 10 years. Change will then take place quickly," states the Guidebook (*in Chapter 11, Building Consensus & Implementing Change*).

It has taken patience and consistent messaging over the past decade to incrementally build consensus, facilitate a culture change, and start implementing a new way of doing business.

Develop Tools & Provide Experience

The Water Sustainability Action Plan is the partnership umbrella for an *Outreach and Continuing Education Program* (OCEP) that provides local governments and practitioners with the tools and experience to better manage land and water resources. OCEP is about building capacity in the local government setting to implement [The New Business As Usual](#) by:

- informing and educating practitioners;
- aligning expectations with desired outcomes;
- empowering a 'regional team approach'; and
- providing tools that enable 'design with nature'.

The Water Balance Model and Water Bucket Website are the twin engines driving OCEP. The Water Balance Model was developed as an extension of the Guidebook; and the Water Bucket provides consistent messaging and the complete story on integrated land and water management.

From Stormwater to RAINwater

Beyond the Guidebook 2007 initiated the paradigm-shift from the single-function view of traditional '*stormwater management*' to the holistic, integrated and landscape-based perspective that is captured by the term '*RAINwater Management*'.

"To provide practitioners with a point of departure that they understood in 2002, we opted for 'stormwater' in the Guidebook title. The time is now right to make the break from 'ISMP' and instead use '**IRMP**' – that is, Integrated Rainwater Management Plan," concludes Peter Law, Chair of the original Guidebook Steering Committee.

Achieving Watershed Outcomes

Table 2 presents a conceptual framework for setting watershed-specific performance targets and then implementing them at the development scale. Creating liveable communities while also protecting or restoring stream health depends upon a process that is founded on these ten Guiding Principles:

1. Choose to be enabled.
2. Establish high expectations.
3. Embrace a shared vision.
4. Collaborate as a 'regional team'.
5. Align and integrate efforts.
6. Celebrate innovation.
7. Connect with community advocates.
8. Develop local government talent.
9. Promote shared responsibility.
10. Change the land ethic for the better.

Example: Bowker Creek Blueprint

The [Bowker Creek Blueprint: A 100-Year Action Plan to Restore the Bowker Creek Watershed](#)....as the urban heartland of the Capital Regional District redevelops over the decades....is referenced throughout Beyond the Guidebook 2010. The Blueprint is precedent-setting and embodies all ten Guiding Principles.

Top Down Bottom Up Strategy: The Bowker Creek experience demonstrates what can be accomplished when community groups and municipal staffs coalesce around a shared vision and shared values:

What do we want this watershed to look like in 100 years, and what steps will we take to get there?

"The Bowker Blueprint is about reclaiming what was lost due to our past indifference. We are now talking about how to reverse the trend and bring settlement back into balance with ecology," states Eric Bonham, founding member of CAVI and former Director in two provincial Ministries. "Never forget that examples inform policy decisions by elected representatives. So provide them with commonsense examples that make it easy to move from awareness to action."

Need for ISMP Course Correction

The Bowker experience has drawn attention to the unintended consequences when applying the [ISMP Template](#), and has informed the 'course correction' that is presented in Chapter 7. "There came a time when we just had to let the ISMP Template go," reports Jody Watson, Chair, Bowker Creek Initiative.

Executive Summary

Table 2 (brought forward from Chapter 7)

**Developing Outcome-Oriented Watershed Plans:
Framework for Moving from Planning to Action**

Action	Level of Commitment
<p>Complete and implement integrated rainwater/stormwater management plans that are affordable and effective in protecting or restoring Watershed Health</p>	<ul style="list-style-type: none"> ▪ Local governments, in collaboration with senior governments, develop Integrated Plans that enable implementation of integrated strategies for greening the built environment; and include establishing watershed-specific runoff targets (for managing the complete rainfall spectrum) that make sense, meet multiple objectives, are affordable, and result in net environmental benefits at a watershed scale. <p><i>(Note: To date, “integrated drainage plans” have typically been called “SMPs” pursuant to the nomenclature established in Chapter 9 of the 2002 Guidebook. The time has come to describe truly integrated plans as “IRMPs” to reflect the paradigm-shift from pipe-and-convey ‘stormwater’ to landscape-based ‘RAINwater’)</i></p>
	<ul style="list-style-type: none"> ▪ Local governments, in collaboration with senior governments, establish watershed targets that are characteristic of actual conditions in watersheds, recognizing that there will be different strategies for already developed versus partially developed watersheds.
	<ul style="list-style-type: none"> ▪ Local governments, in collaboration with senior governments, evaluate the acceptability of watershed-specific runoff targets on the basis of an evaluation framed by these three questions: <ol style="list-style-type: none"> 1. What target will achieve the watershed health objective? 2. What needs to be done to make the target achievable? 3. Do the solutions meet the test of affordability and multiple objectives?
	<ul style="list-style-type: none"> ▪ Local governments, in collaboration with senior governments, implement green infrastructure solutions that result in effective rainfall management at the site, catchment and watershed scales.
<p>Embed “IRMP” landscape-based strategies in neighbourhood concept plans</p>	<ul style="list-style-type: none"> ▪ Local governments develop rainwater/stormwater and land use plans through an inter-departmental process that is collaborative and integrated. ▪ Local governments provide guidance as to how watershed-specific targets can be met at the development scale.

Source: **Commentary on Effective Municipal Rainwater/Stormwater Management and Green Infrastructure to Achieve Watershed Health**, April 2008

Released jointly by the Green Infrastructure Partnership and the Inter-Governmental Partnership in conjunction with the consultation process for Metro Vancouver’s *Integrated Liquid Waste & Resource Management Plan*

The Commentary is accompanied by a paper titled *Beyond the Guidebook: Establish Watershed-Specific Runoff Capture Performance Targets*, released at the 2008 Water Balance Model Partners Forum.



Photo Credit: Mike Tanner

‘Urban Watershed’ Explained

In *Beyond the Guidebook 2010*, the term ‘urban watershed’ is a metaphor for those watersheds, or parts of watersheds, over which local governments exert control through regulation of land use. The distinction is important because:

- In Metro Vancouver and in the Capital Regional District, for example, the majority of municipalities completely encompass their watershed areas (or else share them with adjoining municipalities).
- Outside the major metropolitan regions, on the other hand, municipalities tend to be located at the bottom end of wilderness watersheds that are subject to provincial regulation.



In British Columbia, the term ‘local government’ encompasses municipalities and regional districts. The distinction is noteworthy because municipalities and regional districts are governed by the *Community Charter* and *Local Government Act*, respectively.

The *Community Charter* empowers municipalities with extensive and very specific tools to proactively manage the complete spectrum of rainfall events. These tools enable them to achieve watershed goals and objectives. Although the *Local Government Act* provides regional districts with similar enabling powers to establish a drainage function within a service area boundary, regional districts that do not have such a service do not have the same regulatory powers as municipalities. The Ministry of Transportation and Infrastructure has historically regulated drainage in electoral areas.

British Columbia case law makes clear the responsibility of municipalities to manage runoff volume to prevent downstream impacts. An increasingly important corollary to that responsibility is the need to work from the regional down to the site scale, to maintain and advance watershed health to ensure that both water quantity and quality will be sustained to meet both ecosystem and human health needs.

While a municipality has control over HOW rainwater runoff is generated and managed within its residential, commercial and industrial land uses, it does not have the same ability to regulate watershed activities that are taking place outside its municipal boundaries.

In summary, in this document ‘**urban watershed**’ refers to drainage tributary areas within which zoning and land use are under the jurisdiction of municipalities or areas for which a regional district has established a drainage service.



Photo Credit: Kim Stephens

Create Liveable Communities & Protect Stream Health



Photo Credit: Carrie Baron



Photo Credit: Carrie Baron

1. Moving from Awareness to Action in BC

The Province of British Columbia has provided a 'design with nature' policy framework that enables local governments to build and/or rebuild communities in balance with ecology:

This is what we want to collectively and incrementally achieve over time, and this is how we will work together to get there.

The future desired by all will be created through alignment of federal, provincial, regional and local policies and actions.

Guiding Principles

In *Beyond the Guidebook 2010*, we draw on BC case study experience to illustrate how success will follow when local government elected representatives, administrators and practitioners:

1. Choose to be enabled.
2. Establish high expectations.
3. Embrace a shared vision.
4. Collaborate as a 'regional team'.
5. Align and integrate efforts.
6. Celebrate innovation.
7. Connect with community advocates.
8. Develop local government talent.
9. Promote shared responsibility.
10. Change the land ethic for the better.

Major breakthroughs happen when decision makers in government work with grass-roots visionaries in the community to create desired outcomes.

The 'regional team approach' is founded on partnerships and collaboration; and seeks to align actions at three scales – provincial, regional and local.



"Everyone needs to agree on expectations and how all the players will work together, and after that each community can reach its goals in its own way."

Eric Bonham
CAVI Leadership Team

Enabling Philosophy

BC local government is among the most autonomous in Canada, and BC is perhaps the least prescriptive province.

Historically, the Province has enabled local government by providing policy and legal tools in response to requests from local government. Local government can choose to act, or not.

In general, the enabling approach means the onus is on local government to take the initiative. The Province recognizes that communities are in the best position to develop solutions which meet their own unique needs and local conditions.

This enabling philosophy has become a driver for a **Regional Team Approach** to implementing a new culture for urban watershed protection and restoration.

Call to Action

The program goals for Living Water Smart, BC's Water Plan and the Green Communities Initiative constitute a 'call to action' on the part of BC local governments.

The Water Sustainability Action Plan for British Columbia is a primary implementation interface with local government. The Action Plan program demonstrates what can be achieved through a 'top down and bottom up' strategy.

Beyond the Guidebook 2010 describes how water sustainability can and will be achieved through implementation of green infrastructure policies and practices. Getting there relies on a change in mind-set.



A Call to Action



Living Water Smart, BC's Water Plan

and the **Green Communities Initiative** provide a vision of what the regions of our province can look like if local governments.....

- prepare communities for climate change,
- choose to live water smart, and
- strive to build greener communities

Climate Change Adaptation: In an opening address at the 2008 Annual Conference of the BC Water & Waste Association (BCWWA), Jim Mattison discussed the two responses to climate change: mitigation and adaptation.

"**Mitigation** is alleviating the effects of climate change through reducing greenhouse gasses," Mattison stated. "**Adaptation** is responding to the changes that will inevitably occur."

"Mitigation and adaptation are both necessary and complementary strategies to cope with the climate change challenge. If mitigation is about CARBON, then adaptation is about WATER.

Jim Mattison identified four key policy areas that need work to support adaptation planning. These are: sustainability, adaptability, efficiency and collaboration.

By choosing to live water smart and build greener neighbourhoods, communities will be more prepared for climate change.

Living Water Smart, BC's Water Plan and the Green Communities Initiative are both about adaptation. They encourage 'shared responsibility' in the local government setting so that 'green choices' by all players will achieve 'design with nature' outcomes. *(To learn more, refer to Chapter 6.)*

Build Greener Communities: Figure 1 illustrates the progressive changes in hydrology and resulting impacts on stream health when land use change alters the Water Balance. Hence, the lynch-pin of Living Water Smart is this objective:

- *By 2012, all land and water managers will know what makes a stream healthy, and therefore be able to help land and water users factor in new approaches to securing stream health and the full range of stream benefits.*
(p 43 in Living Water Smart)

As total runoff volume increases (as impervious area increases), so does the magnitude of the channel-forming event. As volume increases, the stream channel erodes to expand its cross-section.

A critical parameter for erosion is the number of runoff events per year that equal or exceed the magnitude and duration of the natural channel-forming event – i.e. before urbanization altered the Water Balance. *(To learn more, refer to Chapter 2.)*

By building greener communities, this creates opportunities to protect and/or restore the natural Water Balance. When the Built Environment is enhanced through a water-centric approach, and is guided by 'design with nature' principles, the resulting benefits cover a spectrum of outcomes - from community liveability to stream health.

A Perspective on Climate Change

*"If mitigation is about CARBON,
then adaptation is about WATER."*



Jim Mattison, Assistant Deputy Minister
Water Stewardship Division
Ministry of Environment
April 2008

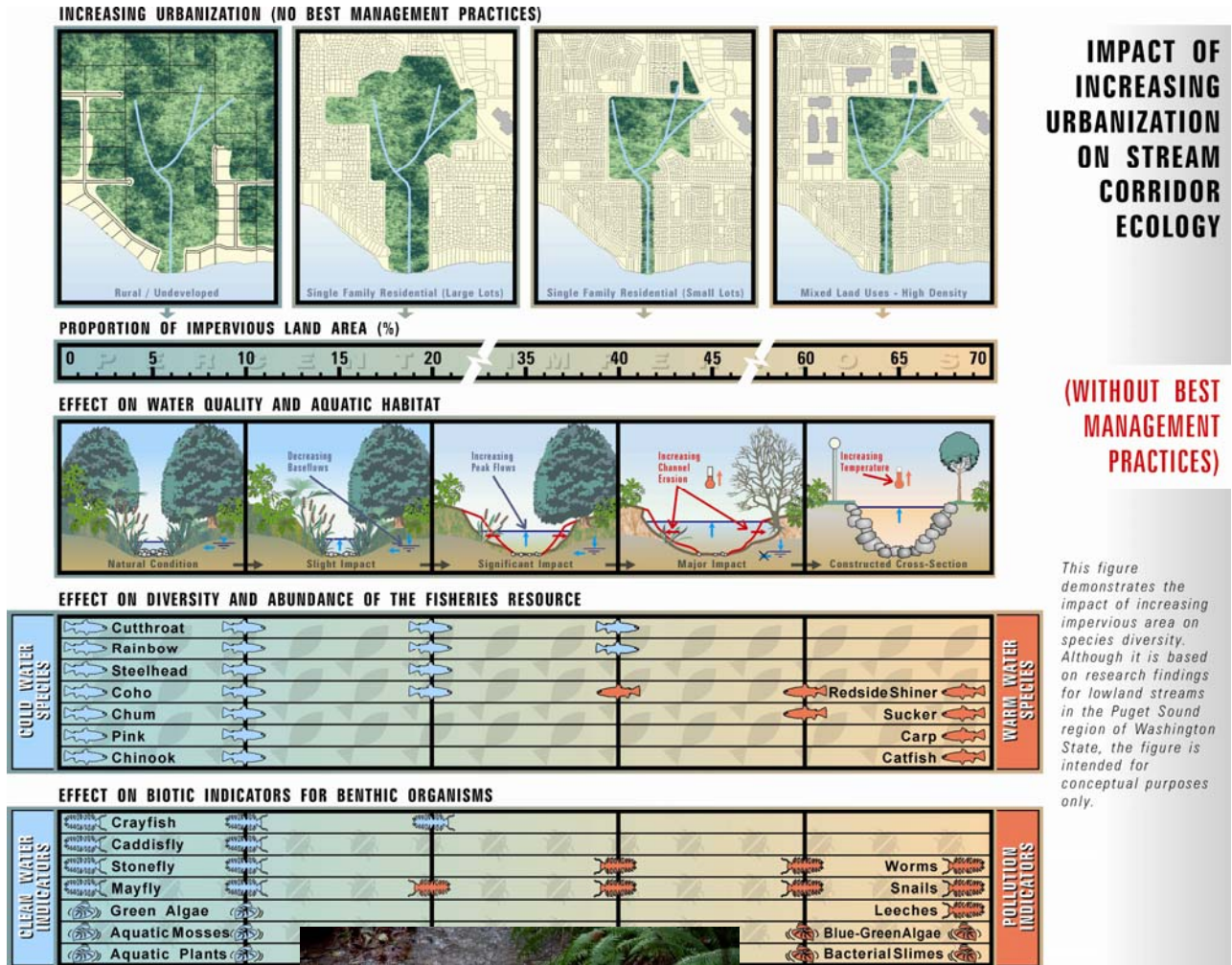
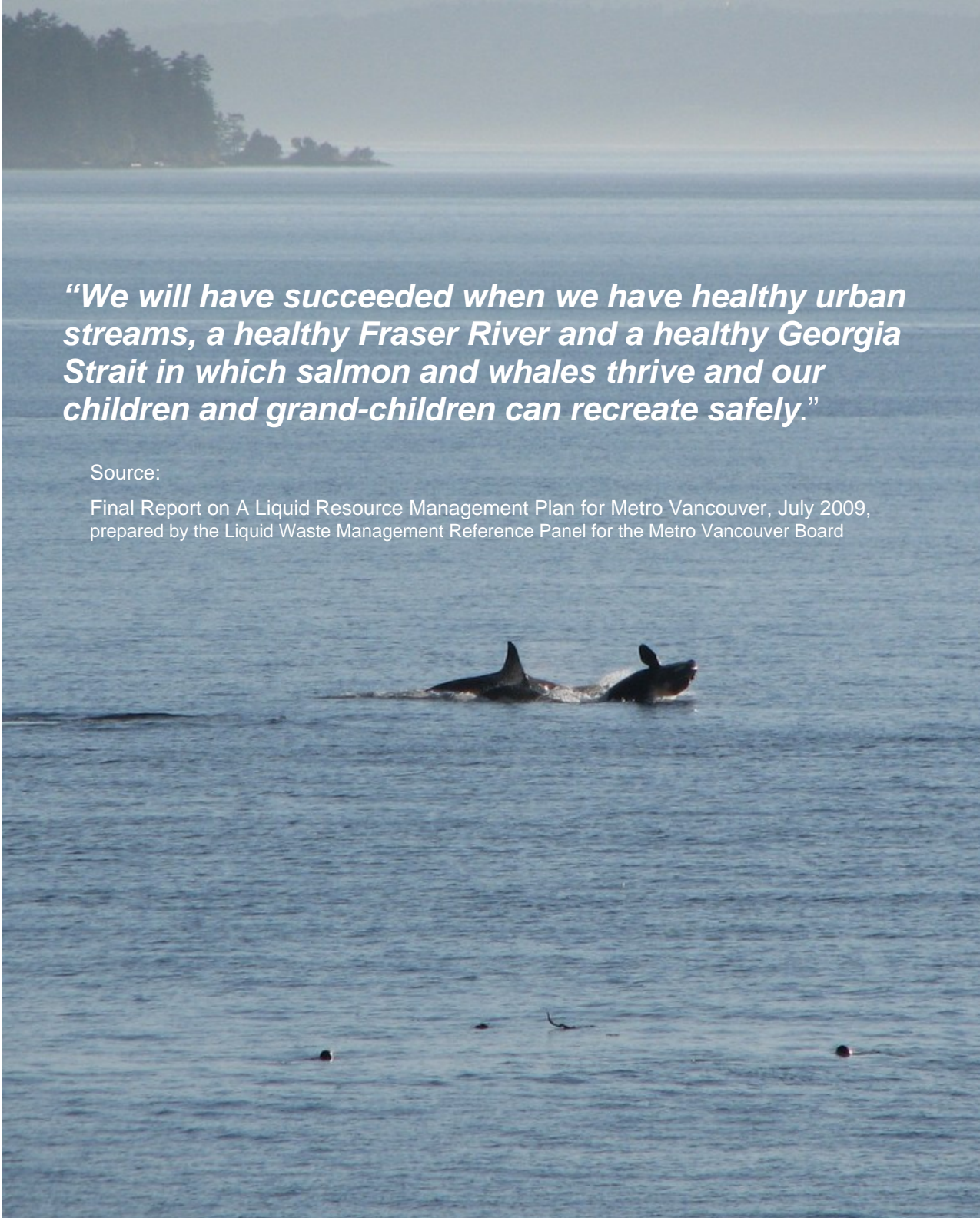


Photo Credit: Richard Boase

Figure 1

Source: Stormwater Planning: A Guidebook for British Columbia, 2002



“We will have succeeded when we have healthy urban streams, a healthy Fraser River and a healthy Georgia Strait in which salmon and whales thrive and our children and grand-children can recreate safely.”

Source:

Final Report on A Liquid Resource Management Plan for Metro Vancouver, July 2009,
prepared by the Liquid Waste Management Reference Panel for the Metro Vancouver Board

Photo Credit: Jim Dumont

Stormwater Planning: A Guidebook for BC

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2. Stormwater Planning: A Guidebook for BC

Release of Stormwater Planning: A Guidebook for British Columbia in 2002 was a catalyst for action to implement a 'design with nature' approach to rainwater management and green infrastructure.

It was a 'catalyst for action' because...

- The Guidebook provided
 - Direction
 - Science-based principles and objectives
 - Guidance on how to do integrated planning
- The Guidebook introduced these core concepts:
 - Rainfall spectrum
 - The "retain, detain, convey" integrated strategy
 - Water balance methodology
 - Performance targets
 - A "learn by doing" adaptive framework

Watershed Restoration is Achievable

The Guidebook applied a science-based understanding, developed the water balance methodology to establish performance targets, and demonstrated that urban watershed restoration could be accomplished over a 50-year timeframe as and when communities redevelop.

The premise underpinning the Guidebook was that land development and watershed protection can be compatible (Figure 2). The basis for this premise was that municipalities exert control over runoff volume through their land development and infrastructure policies, practices and actions.

Landscape-Based Approach: Also in 2002, a Metro Vancouver working group and provincial staff collaborated to produce a discussion paper titled A Watershed / Landscape-Based Approach to Community Planning. The Guidebook was a pioneering application of this approach.

"The premise underpinning the landscape-based approach is that resource, land use and community design decisions will be made with an eye towards their potential impacts on watershed health," states Erik Karlsen, the principal author.

Water-Centric Planning Defined: Released in 2004, the Water Sustainability Action Plan incorporated A Watershed/Landscape-Based Approach to Community Planning as a core element. This was rebranded as 'water-centric planning' in 2006.

Water-centric planning means...

- We will plan with a view to water – *whether for a site, a region, or the province*
- We will integrate missions, mandates and accountabilities
- We will move towards a **water balance** way-of-thinking and acting.... to deal with uncertainty, manage / accept risk, and build in resiliency



Beyond the Guidebook 2007

In June 2007, Beyond the Guidebook: Context for Rainwater Management and Green Infrastructure in British Columbia was released. By then, practitioners were becoming comfortable with what 'rainfall capture' meant in practice. So, it was time to focus attention on how to truly protect and/or restore stream health in urban watersheds.

Beyond the Guidebook initiated the paradigm-shift from the single-function view of traditional 'stormwater management' to the integrated and holistic perspective that is captured by the term 'RAINwater Management'. This also set the stage for defining water sustainability as an outcome of green infrastructure policies and practices.

In 2007, 'Beyond the Guidebook' built on the Guidebook foundation:

- **Guidebook** emphasis is on rainfall capture (volume control) at the site scale
- **Beyond the Guidebook** focus is on the relationship between volume control and resulting flow rates in streams

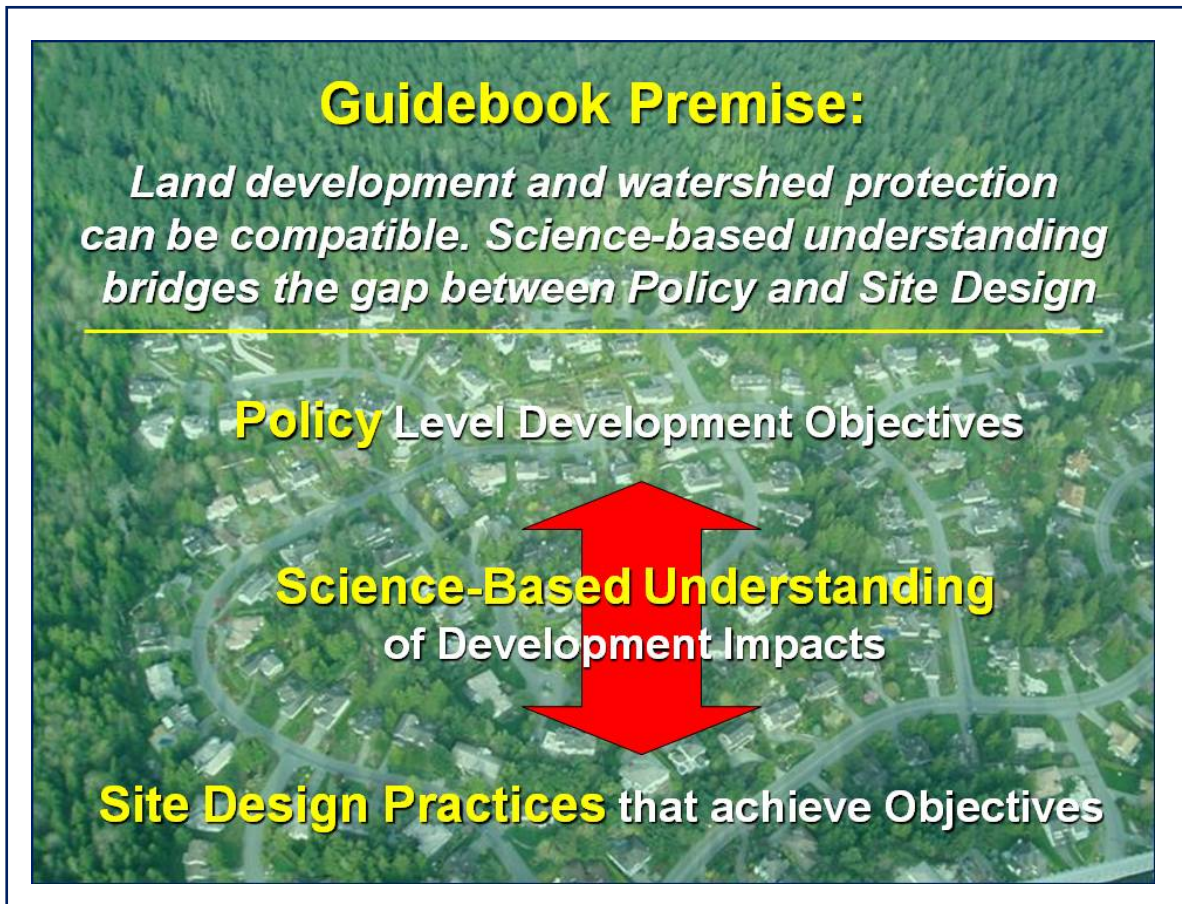
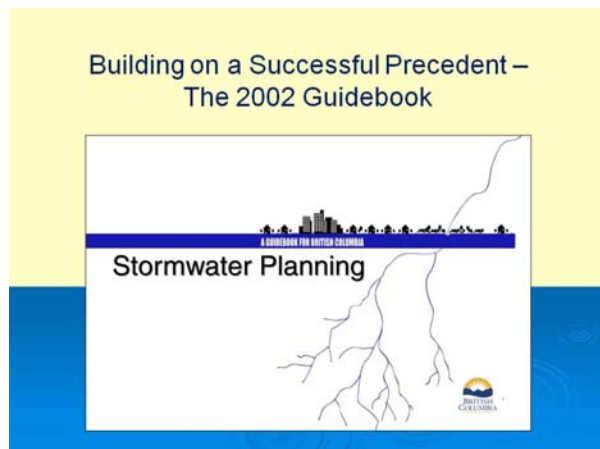


Figure 2

Building on Case Study Experience

To ensure local government and practitioner credibility, the Guidebook drew heavily on BC case study experience. This is one of its strengths in offering a common sense, effective and affordable approach. 'Beyond the Guidebook' has continued to build on this case study foundation.



Water-Centric Planning: A Guidebook for British Columbia: "Leading and implementing change requires bridging of the gap between *planning* and *action*," states Glen Brown, Chair of the Water Sustainability Committee of the BCWWA.



"To bridge this gap, the Province in partnership with BCWWA and the Real Estate Foundation launched Convening for Action in British Columbia in 2005. We envisioned a series of pilot programs and case studies, with outcomes synthesized as chapters in **Water-Centric Planning: A Guidebook for British Columbia**.

"In 2005, we said this would be a different kind of guidebook. We said that the Guidebook would be the 'telling of the stories' of how change is being implemented on-the-ground in BC. Before the chapters could be written, however, the regional case studies had to run their course."

"Well, it is five years later, and **Beyond the Guidebook 2010** is the story of how we got to here and where we are going next. *This is the Water-Centric Guidebook.*"

It Started with the Town of Oliver: "Convening for Action initiated a water-centric pilot through collaboration with the Town of Oliver and the Regional District of Okanagan-Similkameen," continues Glen Brown. "The opportunity for collaboration resulted from two planning initiatives: the Town of Oliver was a case study for *Smart Growth on the Ground*; and the Regional District was developing a Regional Growth Strategy."

"We branded these two case studies as *Convening for Action in the South Okanagan*," adds Tim Pringle, Director of Special Programs for the Real Estate Foundation of BC. "The Town of Oliver was the first building block and informed our contribution to the Regional Growth Strategy."



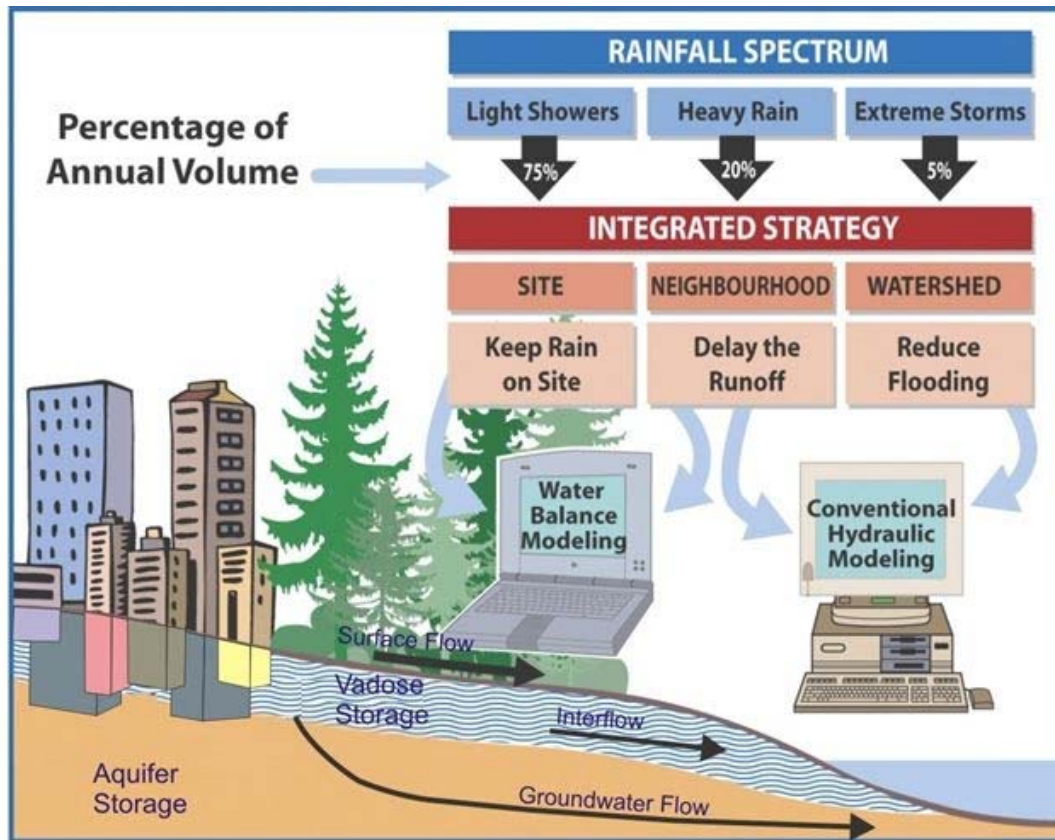
"We learned a lot about the power of a 'top down bottom up' strategy for influencing attitudes. In particular, a sharing and learning session hosted by the Town of Oliver in March 2006 had lasting significance. It became the prototype for an educational approach that leads to action."

Regional Team Approach: "The experience gained in the South Okanagan enabled us to be successful in Metro Vancouver and on Vancouver Island. **Beyond the Guidebook 2010** is the story of people collaborating in the three regions. Central to the story is the regional team approach," notes Glen Brown."

"Beyond the Guidebook is built around Figure 3. The science behind it provides the technical foundation for achieving water sustainability through green infrastructure."



- The Province - those who provide legislative framework
- Local Government - those who plan and regulate
- Developers - those who build
- Stewardship Sector - those who advocate for conservation
- Agricultural Sector - those who grow food
- Academia - those who provide research



Source: Stormwater Planning: A Guidebook for British Columbia, 2002

Integrated Strategy for Managing the Rainfall Spectrum

Figure 3

Explanatory Notes – Key Messages:

Urban development reduces the 'vadose storage' and interflow. Therefore, restore these capabilities by means of green infrastructure solutions.

Basements and underground structures will lower groundwater levels to the footing level. The ground above this then becomes part of the vadose zone and can be used for vadose storage. When designed properly, this zone can form part of the green infrastructure solution.

Definitions: 'Aquifer Storage' refers to the saturated zone where all void spaces are filled with (ground)water. 'Vadose Storage' refers to the unsaturated zone where void spaces are filled with air AND water.

From Rainfall-Based to Runoff-Based Approach

The term 'RAINwater management' has been coined to differentiate the past practices that concentrated upon the drainage system response to storms.....and the needs of the aquatic environment. The foundation upon which the 'RAINwater management' concept is built is the estimation of the amount of water in the stream over a long period of time.

This provides the linkage between the needs of the aquatic environment and the potential to physically alter the stream with increased erosion induced by urban development. The RAINwater management approach allows one to directly connect the impacts to a stream with the causes in the urban landscape.....and the mitigation methods needed to restore the natural water balance in the stream (Figure 4).

Performance Targets: "In 2002, the Guidebook introduced a science-based methodology for setting performance targets for managing **RUNOFF VOLUME** and **RUNOFF RATE**, states Peter Law (Ministry of Environment), Chair of the 2002 Guidebook Steering Committee. "We linked the use of performance targets to the Integrated Strategy (Figure 3); and we defined the rainfall spectrum in terms of three tiers, with each tier corresponding to a component of the Integrated Strategy, namely: *Rainfall Capture*, *Runoff Control* and *Flood Mitigation*."



"We referenced the three tiers to a value that we defined as the **Mean Annual Rainfall (MAR)**," continues Ted van der Gulik (Ministry of Agriculture & Lands), IGP Chair and a member of the 2002 Guidebook Steering Committee. "We introduced the MAR concept in order to facilitate a paradigm-shift in the way rainfall is viewed."



"As our understanding of what is achievable through 'RAINwater management' has grown, we have moved beyond the MAR concept. It is in addressing the relationship between 'rainfall capture' and 'runoff rate control' that Beyond the Guidebook picked up where the Guidebook left off in 2002."

Stream Health: "Over the past decade, experience has shown that landscape-based measures for 'rainfall capture' are typically low risk, especially when they reflect an understanding of how to employ soil depth and tree canopy coverage to best advantage," states Richard Boase (District of North Vancouver), IGP Co-Chair.



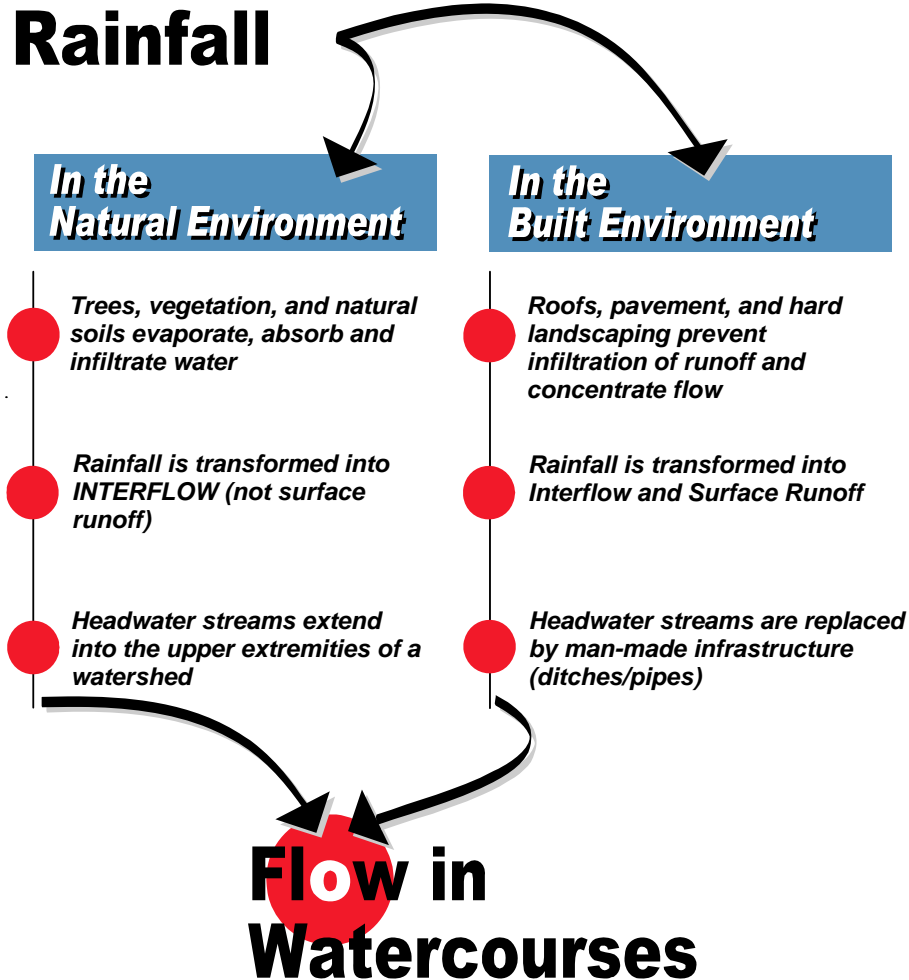
"By 2007, this experience had set the stage for the next leap forward – which is to apply a 'runoff-based approach' to rainwater management at a watershed scale. This approach addresses the interaction of runoff with the physical aspects considered important to the aquatic environment."

"Stream health protection is a driver for Beyond the Guidebook. Stream health is a function of flow duration, and therefore correlates with stream erosion. Flow duration is something that we can measure and verify. We can also assess the potential for erosion or sediment accumulation within a watershed."

"As explained in Beyond the Guidebook 2007, several qualitative indicators can be utilized in assessing the potential for erosion or sediment accumulation within a watershed. The methodology is based upon shear stress as applied to the stream bed and banks over time. This is a measure of the energy available to cause erosion in a stream. Continuous simulation is the key to evaluating multiple development scenario comparisons."



"Using long-term records to calculate runoff means that the durations and frequencies of various occurrences within the watershed and stream can be estimated easily. Also, the 'runoff-based approach' leads us into examining the hydrograph for the entire year, not just one or two events," concludes Richard Boase. (To learn more, refer to example and explanation on p.11)



Source: Chapter 3, *Stormwater Planning: A Guidebook for British Columbia*, 2002

Desired Outcome: Manage Natural Environment and Built Environment as Integrated Components of a Healthy Watershed

Figure 4

Beyond the Guidebook 2010: Implementing a New Culture for Urban Watershed Protection and Restoration In British Columbia

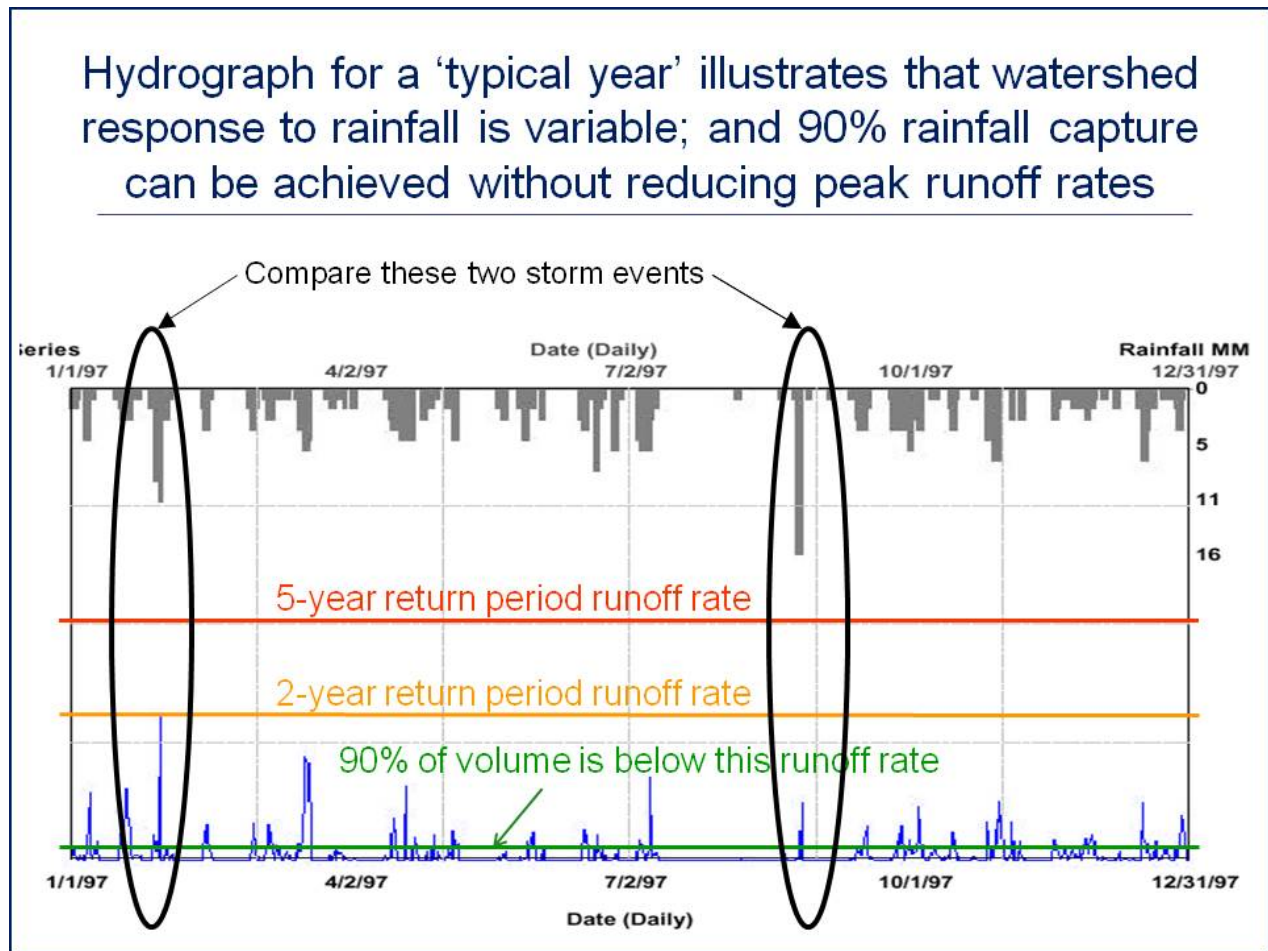
A Typical Year: The hydrograph below (Figure 5) illustrates a core concept underpinning Beyond the Guidebook.

This graphic shows that the larger of two rainfall events resulted in much less runoff. The smaller event was preceded by a period of wet weather such that more runoff resulted.

The hydrograph also shows that 90% of the total annual volume corresponds to a very small runoff rate. The implication of this finding is that the 90% can easily be managed through rainfall capture measures.

For the other 10%, it is a matter of detaining and conveying in accordance with the integrated strategy for managing the complete rainfall spectrum.

Further, that retaining 90% on site would have little effect on peak runoff rates unless other practices are brought to bear. This implies that retaining 90% of the rainfall is only a part of the requirement for an effective rainwater management system. This underscores the need to manage the complete rainfall spectrum as illustrated by Figure 3.



Watershed Hydrograph for Typical Year

Figure 5

Changing the Culture

Chapter 3 - Table of Contents

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3. Changing the Culture

Over the past decade, experience under the Water Sustainability Action Plan for British Columbia (i.e. 'Action Plan') has demonstrated that the potential for creating change on the ground via a transformational document revolves around four basic ingredients:

1. Start with a unifying concept that makes sense (e.g. 'design with nature' goal);
2. Develop a science-based and pragmatic methodology for undertaking technical analyses (e.g. water balance);
3. Create a web-based calculation tool that has a user-friendly interface (e.g. Water Balance Model for BC); and
4. Implement a multi-audience outreach and continuing education program (OCEP) that provides consistent messaging.

A fifth ingredient is patience. It takes time to incrementally change the practitioner culture and implement a new way of doing business.

Moving from Education to Implementation: Figure 6 below is adapted from the Guidebook. It illustrates how education leads to implementation. This mind-map is guiding Action Plan program delivery. The Guidebook also explains that facilitating institutional change is a function of three principles:

- **Principle #1: Melt the Opposition** – Obtain commitment from key stakeholders to support change (i.e. new values and beliefs).
- **Principle #2: Implement the Change** – A good idea is immediate, but preparation for implementation can take 5 to 10 years. Change will then take place quickly.
- **Principle #3: Re-Freeze** – Reinforce new values and institutionalize the change.

Principle #1 is accomplished through a collaborative decision process that builds consensus and aligns all levels of government. This process commenced five years prior to release of the Stormwater Planning: A Guidebook for British Columbia in 2002 when the Union of British Columbia Municipalities convened a focus group workshop. This set in motion a chain of outcomes that culminated in release of Guidebook.



Figure 6

Changing the Culture: First, Inform & Educate

Building on the understanding embodied in Figure 6, changing the culture is a five-step process:

- First, Inform & Educate
- Second, Empower a Team
- Third, Define the Goal
- Four, Build the Vision
- Fifth, Create a Legacy

Convene for Action

For the past decade, the Action Plan has been building local government and practitioner capacity to implement The New Business As Usual in BC. The grass-roots approach is captured by this sound-bite: *Capitalize on 'teachable moments' to inform and educate.*

When 'convening for action',
we build capacity through a 3-step process:

1. **Challenge** practitioners and others to step back from existing paradigms
2. **Inform** them regarding alternatives
3. **Provide** the tools and experience to develop land and use water differently

A Made in BC Process: "We have developed and implemented a 'made in BC' process that we call Convening for Action in BC," states Raymond Fung, Past-Chair of the Water Sustainability Committee. "When we gather, it is for a purpose. There must be an action item or an outcome. Our aim is to move from talk to action by developing tools, providing training, and building capacity."



South Okanagan Regional Pilot: "The South Okanagan Regional Growth Strategy provided the first opportunity to test the 'convening for action' approach. That experience has been adapted in Metro Vancouver and on Vancouver Island. Cross-fertilization between and within regions means that local governments can continually build on the experience of others; and they can take turns leapfrogging ahead," concludes Raymond Fung.

Build Capacity

"In 2002, the steering committee decided the Guidebook would be *outcome*-oriented. The emphasis is on HOW to move from planning to action. It engages practitioners to strive for holistic solutions," continues Ted van der Gulik. "Our outcome-oriented approach to community design has been keyed to a 'top down and bottom up' strategy that couples a provincial policy framework with on-the-ground practitioner education."

When 'building capacity',
we create a picture of the desired future:

1. **Vision:** What we want our communities to look like in 50 years
2. **Goal:** Design with nature to achieve settlement change in balance with ecology
3. **Strategy:** What we are going to do better or differently to get from here to there

Settlement Change in Balance with Ecology:

"Through outreach and education, our vision is to influence land and water practitioners to learn about and implement land use practices that better balance settlement activity and ecological assets in local and regional landscapes. The key principle is that settlement and ecology are equal values and they must be as much in balance as possible for the wellbeing of human and natural systems," concludes van der Gulik.

Local Government Gets It: "Every September, my Ministry meets with the Mayors and Councils of local governments at their annual conference. These sharing sessions provide us with insight as to how they think. Over the past five years, we have been observing a cultural change taking root," states Glen Brown, an Executive Director in the Ministry of Community & Rural Development.

"They are walking the talk. We see a definite effort to move towards the new understanding of how to provide sustainable infrastructure and green solutions in an economically viable way. Local government buy-in is reflected in their recent grant applications for senior government funding."

Changing the Culture: Second, Empower a Team

Figure 7 shows the logos of the primary partners and partnerships who (that) are collaborating and working as a team under the umbrella of the Water Sustainability Action Plan for British Columbia. The members of the team share a vision for improving the way communities develop land and use water.

Program Delivery Role of BCWWA

At the centre of this network of land and water practitioners is the Water Sustainability Committee (WSC) of the BCWWA. The WSC is the managing partner and is responsible for providing leadership, facilitation and organizational services for Action Plan program delivery.

The BCWWA has entered into Memoranda of Understanding with three Vancouver Island regional districts (Capital Region, Nanaimo and Cowichan Valley) on behalf of the Action Plan to facilitate implementation of program elements.

Breadth of Strategic Partnerships

The Action Plan comprises elements that holistically link water management with land use, development and resource protection.

To advance implementation of a fully integrated Action Plan, the WSC has built a partnership network that extends beyond those core partners identified in Figure 7. Partnerships are categorized under three 'threads' to reflect the breadth of roles that the WSC plays under the Action Plan umbrella. These threads are:

- **Initiator** – where the WSC is the vehicle for direct action.
- **Collaborator** – where the WSC is the vehicle provider for others.
- **Educator** – where the WSC spans boundaries as the connector of initiatives or is an education facilitator.

The WSC is building a 'partnership architecture' that solidifies commitment to achieving practical outcomes under the umbrella of the Action Plan.



Figure 7 – Strategic Partnerships under the Action Plan Umbrella

Changing the Culture: Third, Define the Goal

Figure 8 below defines what the 'design with nature' goal means from a local government perspective. The graphic is both a backdrop and a mind-map for all outreach and continuing education program elements delivered under the umbrella of the Water Sustainability Action Plan.

Design with Nature

"We adapted the 'design with nature' paradigm from the title of the seminal book by Ian McHarg, published in 1969. Our experience is that it is intuitive, it resonates, and it serves as a focal point for changing the land ethic for the better," explains Raymond Fung, current Chair of the Green Infrastructure Partnership.

"Designing with nature captures the essence of climate change adaptation. Adaptation is about responding to the changes that will inevitably occur. Adaptation is at the community level and is therefore about collaboration."

Evolution of the Design with Nature Mind-Map:

"The Inter-Governmental Partnership used the 'design with nature' branding for the first time at the Union of BC Municipalities Conference in September 2003. The occasion was the formal launch of the Water Balance Model," continues Raymond Fung.

"In May 2005, the Green Infrastructure Partnership developed the original version of Figure 8. We essentially adapted Smart Growth principles, albeit in action-oriented sound-bites. The catalyst for developing this mind-map was a consultation workshop with the Metro Vancouver Regional Engineers Advisory Committee."

In 2008, two developments contributed to further evolution of the 'design with nature' definition. First, the Metro Vancouver Regional Board appointed a community-based Reference Panel with a mandate to provide independent review and recommendations to guide the Metro Vancouver Integrated Liquid Waste & Resource Management Plan. Secondly, the Province released Living Water Smart. The combination of the two provided inspiration for the version presented below.

Collaboration, a 'Design with Nature' approach, and re-use of resources are keys to climate change adaptation

- Develop compact, complete communities
- Increase transportation options
- Re-use and recycle water, energy and nutrients from liquid wastes
- Protect and restore urban 'green' space
- Strive for a lighter 'hydrologic footprint'
- Achieve higher levels of stream, wetland and marine environment protection



Figure 8

Changing the Culture: Fourth, Build the Vision

Figure 9 below conceptualizes the ‘convening for action’ process. Three objectives are building blocks for a long-term process of change:

- **Achievable and Affordable Goals:** Apply a science-based approach to create a shared vision for protecting or improving the health of individual watersheds over time.
- **Participatory Decision Process:** Build stakeholder consensus and support for implementing change; and agree on expectations and performance targets.
- **Commitment from Everyone:** Take action to holistically integrate water management with land development practices.

A key learning from the Guidebook and Beyond the Guidebook 2007 implementation experience is the importance of grounding the discussion: Simply put, examples inform policy.

Bridging to Innovation

The ultimate objective when *Convening for Action* is to build an informed ‘community of interest’ so that over time it will evolve into a ‘community of practice’. The inherent challenge lies in moving from talk to action. Leading and implementing change requires bridging of the gap between interest (talk) and practice (action).

Bridging the gap is primarily a people matter, not a technical one. Elected representatives and others are already aware of the technical solutions, including the legislative and financial elements, which are necessary to achieve the vision for communities in balance with ecology.

Bridging the gap between interest and practice involves motivating people to engage in ways that provide sufficient meaning to inspire them and lead to action.

Starting in 2005, *Convening for Action* programs on Vancouver Island, in Metro Vancouver and in the South Okanagan have shown what can be accomplished through peer-based education.



Figure 9

Changing the Culture: Five, Create a Legacy

Figure 10 below captures the essence of what it takes to create a lasting legacy. It depends on influencing individuals and organizations to make choices for the greater good – which is why British Columbia has been following an educational rather than prescriptive path.

Cumulative Benefits

“As the *Convening for Action* process has been evolving over the years, we have looked at the world of local government through the eyes of elected representatives and senior managers,” states Glen Brown.

“Recognizing that the individual property or development application is a primary lens for local government decisions, our emphasis is on how to implement affordable changes in development practices at the site scale.”

“Case study experience has led us to this synopsis: start with a shared vision; draw a picture of what the community can look like; and create the legacy one property at a time. It is about cumulative benefits.”

Balance Requires Measurement

“A reality is that we manage what we can measure,” observes Tim Pringle, Director of Special Programs for the Real Estate Foundation of British Columbia.



“While we are very good at measuring settlement, mainly in financial terms, we have not been that effective in quantifying the ecological implications and/or impacts associated with the rapid pace of development that BC has been experiencing. This disconnect in measuring what matters has resulted in an unbalanced approach when making development decisions.”

Change the Land Ethic: “If we were in fact measuring ecological values, there would be more ‘weights’ on the ecology side of the balance scale; thus leading to more informed conclusions and hence different decisions,” states Pringle.

“As communities develop and/or redevelop, the desired outcome in 'designing with nature' is that settlement change will be in balance with ecology. It is all about changing the land ethic.”



Figure 10

Vision and Task

“A vision without a task is but a dream.
A task without a vision is but drudgery.
A vision with a task is the hope of the world.”

Source: Church inscription
Suffolk, England, 1786

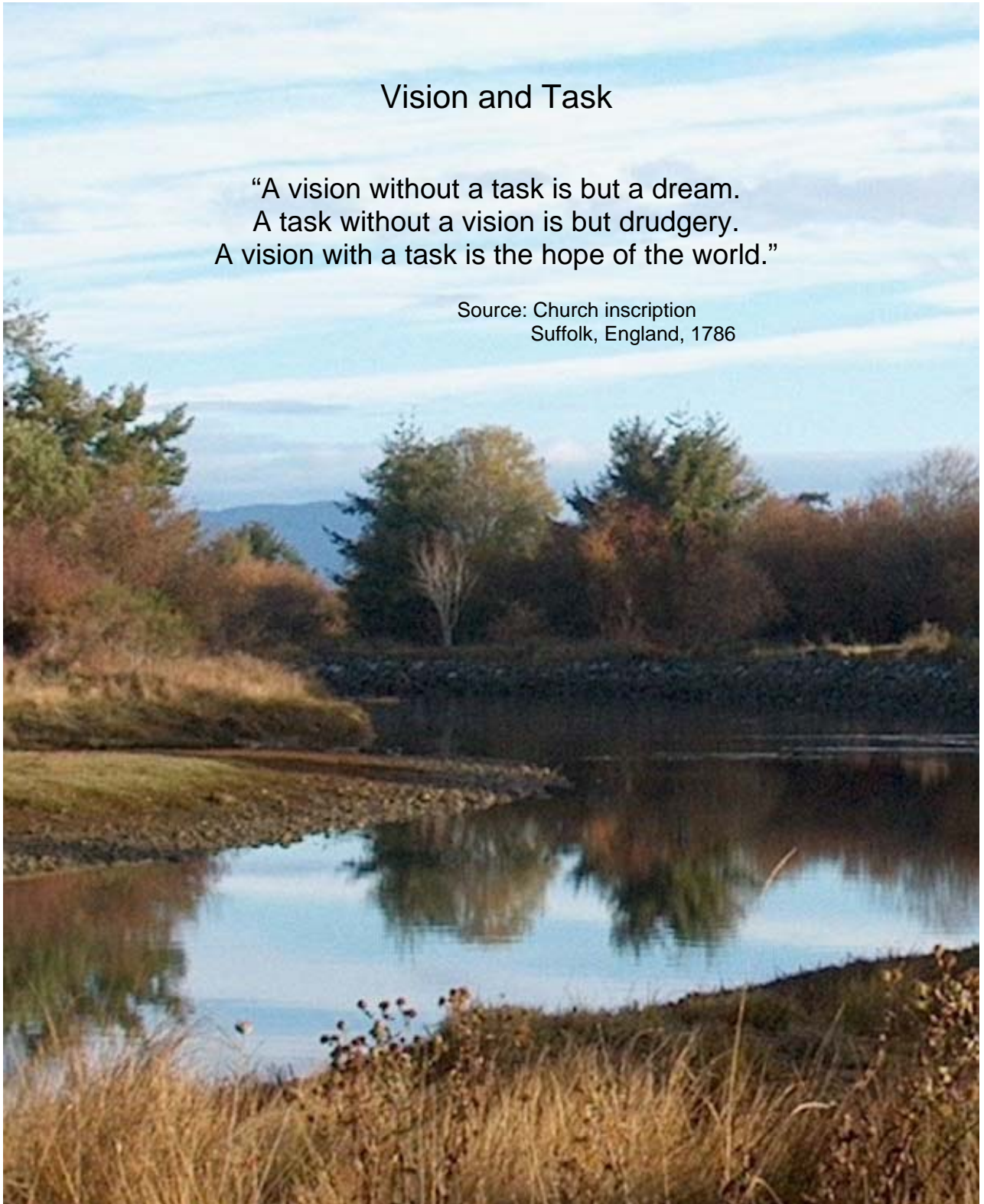


Photo Credit: Jim Dumont

Convening for Action in British Columbia

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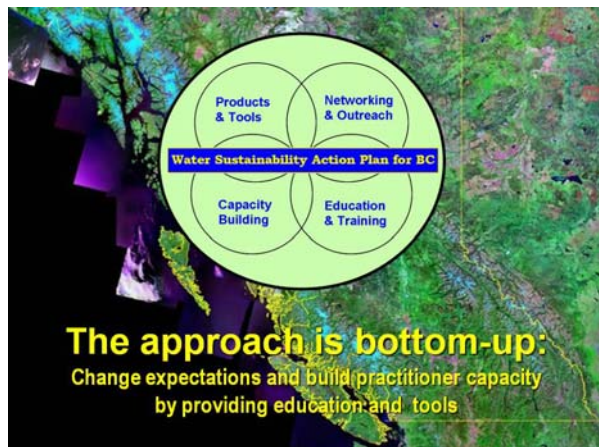
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4. Convening for Action in British Columbia

The Water Sustainability Action Plan for British Columbia is about implementation - in particular, showcasing what local government implementers are doing on the ground to effect changes in land development, infrastructure servicing and water use practices.

The Action Plan is also about building capacity to implement The New Business As Usual by:

- informing and educating practitioners;
- aligning expectations with desired outcomes;
- empowering a 'regional team approach'; and
- providing tools that enable 'design with nature'.



Regional Initiatives: "Commencing in 2005, we have initiated and cross-fertilized 'convening for action' programs in three regions: Vancouver Island, Okanagan and Metro Vancouver," states Tim Pringle.

"Each regional initiative has its own vision and road map. However, a commonality is a desire for a **Regional Team Approach** founded on partnerships and collaboration."

"The term 'regional team approach' is resonating. Insertion of the word **team** in 'regional approach' has had a profound impact on how practitioners view their world. Team implies there is personal commitment; it also suggests there is a game plan and a coachable context. The regional team approach is proving to be a powerful motivator."

Okanagan Genesis

Convening for Action in British Columbia was formally launched at the **Okanagan Conference on the Future for Water**, held in Kelowna in February 2005. Participation in this regional event provided the first opportunity to publish the *What -So What - Now What* mind-map (refer to Figure 11); and to present the vision for *Water OUT = Water IN*.

The 'Kelowna Conference' was followed by the **Penticton Water OUT = Water IN Workshop**, held in April 2005. This was the first 'convening for action' event. The 'Penticton Workshop' introduced a number of key concepts that the Action Plan has continued to build upon, in particular the equation shown on Figure 12.

It Started in the South Okanagan: In 2005, the Action Plan partnered with the Regional District of Okanagan-Similkameen to 'convene for action' at a sub-regional scale.

The partnership enabled the South Okanagan Regional Growth Strategy to establish a provincial precedent: the strategy is *water-centric*.



Mini-Summit on Water for Life & Livelihoods: In May 2006, the **Whistler Mini-Summit** raised the profile of the South Okanagan as a provincial pilot for water-centric planning. Held as part of the BCWWA Annual Conference, the Mini-Summit provided a focus group opportunity to test an approach to engaging an audience in a dialogue.

The Whistler Mini-Summit also introduced the *Settlement Change in Balance with Ecology* way of thinking about water sustainability. This principle is an extension of the *Water for Life and Livelihoods* approach to community well-being.

Transferability to Vancouver Island: Starting in September 2006, South Okanagan experience has been successfully adapted by the Convening for Action on Vancouver Island initiative. Branded as CAVI, this demonstration program is facilitating change at a regional scale.

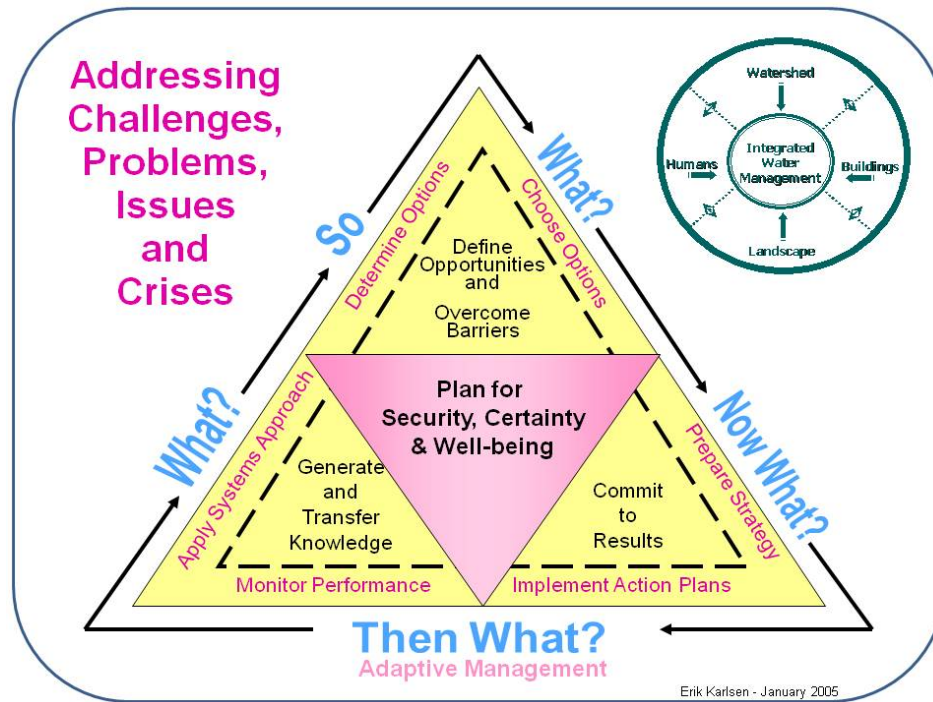


Figure 11

Water for Life & Livelihoods:

*This deceptively simple equation embodies principles and concepts for dealing with uncertainty and managing risk; and implementing an holistic approach to **Drought Management & Rainwater Management***

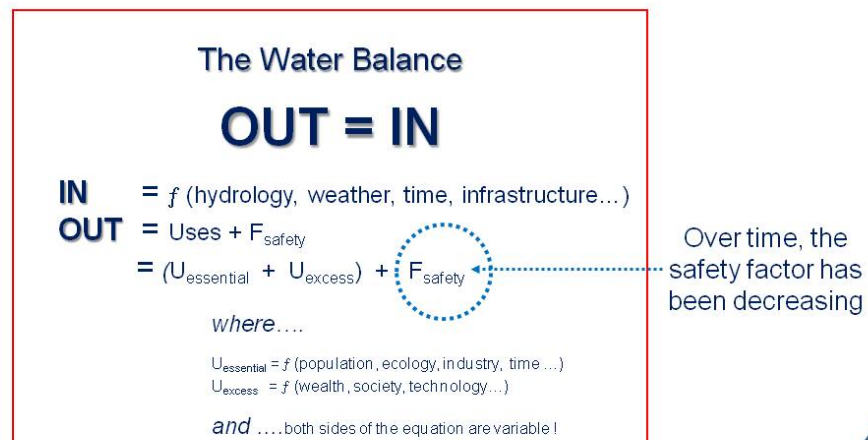


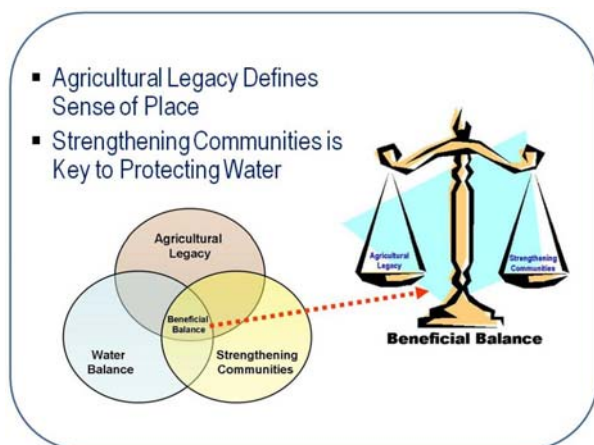
Figure 12

South Okanagan Growth Strategy: Precedent for Water-Centric Action

The South Okanagan Regional Growth Strategy recognizes the relationship between land and water in terms of both water use and water runoff. The innovation is the toolkit that follows policy, and which leads to benchmarking and monitoring/measuring what matters.



Beneficial Balance: “When Kim Stephens and I got involved in the South Okanagan, we started by having conversations with people from Osoyoos to Summerland,” reports Tim Pringle. “We asked questions and we listened. These conversations yielded insights that we captured in a graphic that we called the *beneficial balance*. We found that it helped communities visualize how to integrate land and water issues. The Regional District recognized the value of the ‘convening of the action’ process when it incorporated the graphic in the Regional Growth Strategy document.”



Inter-Regional Sharing: “As we travelled from community to community to have conversations about growth and water, we soon realized that there was a limited awareness of what their neighbours were doing; and there was little or no sharing of experience, between regions,” recalls Kim Stephens, Program Coordinator for the Water Sustainability Action Plan.



“In December 2007, the Green Infrastructure Leadership Forum in Nanaimo created an opportunity for the South Okanagan experience to directly inform the Vancouver Island audience. John Slater, Chair of the Okanagan Basin Water Board, suggested it would be most effective if I was the one who told their ‘South Okanagan story’ from three perspectives: regional leader, regional planner and municipal administrator.”

“So I did three interviews. I asked each person what one message would you like me to convey on your behalf to the Vancouver Island audience.”

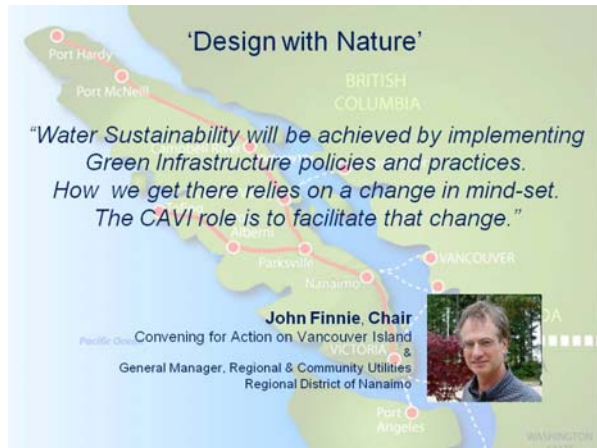
“John Slater said ‘elected representatives are starting to think and act regionally as well as locally’. Susanne Theurer emphasized that ‘to agree on where growth should occur, urban and rural elected representatives will have a new framework to dialogue with one another’. Tom Szalay said ‘to make informed decisions, elected representatives must first be informed. To inform elected representatives, technical advisors must communicate using clear and understandable language’.”

Connecting the Dots in the South Okanagan: Three Perspectives

- **John Slater:**
regional leader
Mayor of Osoyoos
- **Susanne Theurer:**
regional planner
Regional District of Okanagan-Similkameen
- **Tom Szalay:**
municipal administrator
Town of Oliver

Vancouver Island Implementation

“When we launched CAVI in September 2006, we identified several desired outcomes. First and foremost, that by 2010 Vancouver Island would be well on the way to achieving water sustainability,” states John Finnie, CAVI Chair. “CAVI defines water sustainability in terms of how we use water, and how water drains off the land.”



CAVI Genesis: “This all started in 2002 when I was still with the Ministry of Municipal Affairs and a Director of BCWWA,” recalls Eric Bonham, a founding member of the CAVI Leadership Team, and also a member of the 2002 Guidebook Steering Committee. “I had the opportunity to travel the length and breadth of Vancouver Island and talk to people about the issues of concern to them. I would ask ...*where are we going on Vancouver Island?*”

“It became clear through these conversations that there was a shared concern: there was no forum for discussing the future of Vancouver Island. Filling a vacuum provided the impetus for CAVI.”

“You will not find CAVI listed in the Yellow Pages. CAVI is a process. CAVI is a vision. CAVI is you and me and everyone else. That is the strength of this grass-roots initiative. It is a collective effort to see where we can go on Vancouver Island, and do it in a way that is a little bit different. We are doing this as a genuine team.”

“The big issues are settlement change and ecology. What we have is precious and unless we have a vision now, 50 years down the road we will end up where we don’t want to be.”

Formation of VICT: “The strength of the CAVI approach on Vancouver Island is the engagement of our partners on a one-on-one basis who ‘buy in’ to the vision of water-centric planning. The process is accumulative, as others from diverse backgrounds are drawn to the common goal of achieving water sustainability,” emphasizes Eric Bonham when he reflects on what has been accomplished since 2006.

Rainwater Management & Local Government: CAVI is broad-based and encompasses government, the private sector, the stewardship sector and academia. Local government, for example, is represented on the CAVI Leadership Team through the *Vancouver Island Coordinating Team (VICT)*.

Formed at the end of 2006, VICT serves as an implementation and outreach arm of CAVI. In concert with CAVI’s direction, VICT champions rainwater management on Vancouver Island by:

- Helping local government improve rainwater practices by providing access to resources and local expertise;
- Demonstrating practical, cost-effective, ecologically functional solutions to common problems that apply across all landscapes;
- Promoting knowledge transfer and showcasing innovative on-the-ground projects; and
- Aligning efforts across disciplines and across organizations to advance the state-of-the-practice of rainwater management on Vancouver Island.

“It is exciting to be part of a network of change, where only after a short period, we are seeing



results on the ground,” confirms Jay Bradley, VICT Chair. “The Learning Lunch seminar series in the Comox and Cowichan valleys are demonstrable evidence of how practitioners, property owners and politicians are embracing the need for change, and are willing to look at options for the ‘New Business as Usual’.”

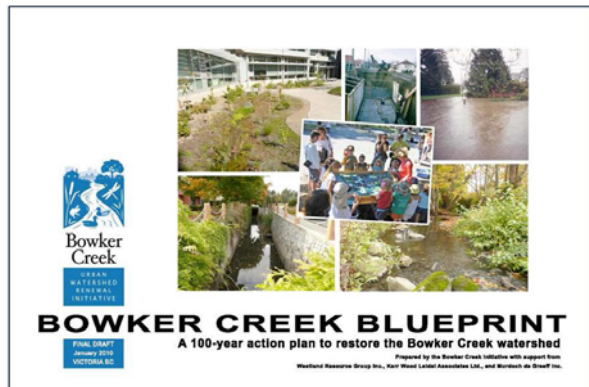
Jay notes an important lesson learned from the VICT experience is the need for collaboration and integration across regions. “We cannot achieve rainwater sustainability, or effect positive change on Vancouver Island, if each municipality or region works on its own,” he adds.

Bowker Creek Blueprint: “The CAVI vision is that we will build and/or rebuild our communities in a way that achieves water sustainability over time. The Bowker Creek Blueprint process provides us with a road map that shows us how to get there,” states John Finnie.

Context: The Bowker Creek urban watershed is located in the Capital Regional District. The Bowker Creek Initiative (BCI) is a unique multi-jurisdictional collaboration which produced the Bowker Creek Blueprint, a 100-Year Action Plan.

- It will guide creek corridor and watershed restoration as the watershed redevelops.
- It will be implemented over a period of decades because change can be slow in the urban environment.

Having an action plan in place will ensure that positive changes can happen incrementally. (*To learn more, refer to Chapter 7*)



Bowker Creek Forum and Beyond: “The Bowker Creek Blueprint is impressive. The BCI is leading the way with their ‘design with nature’ strategy for watershed restoration. By drawing attention to the Bowker Creek Blueprint, the CAVI team believes this will help us advance the Regional Team Approach in other jurisdictions,” explains John Finnie.

“For these reasons, CAVI partnered with the BCI and the Capital Regional District to hold the **Bowker Creek Forum** in February 2010. This flagship event provided a platform to advance a regional team approach throughout the Georgia Basin.”

Vision for Georgia Basin Regional Team Approach

Starting in 2007, CAVI has been effective in getting the message out about the need for a shared vision for Vancouver Island communities; and a consistent Island-wide approach to green infrastructure policies and practices.

The Bowker Creek Forum drew attention to five watershed-based initiatives in five regional districts (refer to Figure 13). All five are keyed to integration of water and land planning. Each one has established a provincial precedent.

Hands across the Georgia Strait: Vancouver Island and Metro Vancouver are learning from each other, and are moving in the same direction.

“Program elements implemented by CAVI have built on Metro Vancouver approaches. In 2007, for example, there were parallel **Showcasing Green Infrastructure Innovation Series** on both sides of the Georgia Basin,” states Ray Fung, GIP Chair. (*To learn more, refer to Chapter 5*)

“The Vancouver Island experience has since informed and influenced elements of the Metro Vancouver Integrated Liquid Waste & Resource Management Plan, in particular those actions that will advance a *regional team approach*. For example, the **Vancouver Island Learning Lunch Seminar Series** is seen as the model for an approach to team-building and integration that is desired in the Metro Vancouver region.”

An Earlier Example of Collaboration: In 2005, the Rainwater Harvesting Series comprised workshops in Metro Vancouver and the Capital Regional. Organized under the banner of ‘convening for action’, the two were part of a cross-Canada series of transformational events.

Drawing on the experience of two international experts, workshops connected the dots between WHY harvest rainwater and HOW to cost-effectively implement rainwater collection, storage, treatment and delivery systems.

“In 2005, we were pushing the envelope with the holistic approach that we were introducing and advancing via this series,” recalls Ray Fung.



Figure 13

Explanatory Notes – Provincial Significance

The Province intervened in the Comox Valley to both create a new regional district and mandate regional plans that can feed into **An Integrated Watershed Approach to Settlement**.

The Nanaimo Region's **Action Plan for Water** created a drinking water and watershed protection service area with taxation authority in an electoral area.

The **Cowichan Basin Water Management Plan** is a provincial case study for watershed governance changes being contemplated as part of *Water Act Modernization*.

The **Bowker Creek Blueprint** reflects community values. This outcome has been achieved because the Bowker Creek Initiative is a partnership that has enabled community groups and municipal staffs to coalesce around a shared vision: *What do we want this watershed to look like in 100 years, and what steps will we take to get there?*

The **Integrated Liquid Waste & Resource Management Plan** establishes the framework for moving beyond regulatory compliance to transitioning Metro Vancouver to an approach where management of liquid discharges and rainwater resources is planned and implemented within a broader, sustainability framework.

Creation of a Practitioners Network

Local governments in BC are demonstrating that the practitioner culture can be changed through collaboration, partnerships and alignment. The Regional Team Approach is an outcome of 'convening for action'; and is evolving into a provincial 'practitioners network'.

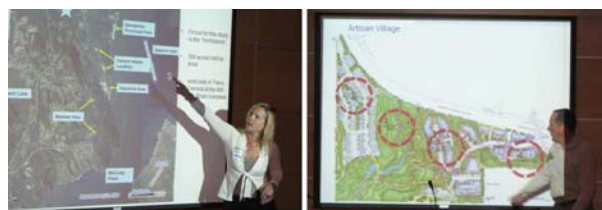
The Bowker Creek Forum was the latest in a series of Forums. It was preceded by the Cowichan Valley, Surrey, Penticton and Nanaimo forums. The first three were organized under the umbrella of Living Water Smart and the Green Communities Initiative.

Cowichan Valley Water Balance Model Forum:

The Cowichan Valley has been an incubator for proving out ideas and approaches to building practitioner capacity for adaptation elsewhere in the Georgia Basin (refer to p. 47). In October 2008, for example, the Cowichan Valley Regional District hosted a Water Balance Model Forum.

"This sharing and learning event brought together developers, their consultants and local governments. Willing development proponents were asked to apply the Water Balance Model to their projects. Three case studies at different scales provided the technical foundation for roundtable exploration about how to implement green infrastructure effectively," explains Jay Bradley, VICT Chair.

"In the larger context, the forum was indicative of how far along our community of Vancouver Island practitioners has come. We are fostering a growing understanding of the fact that what goes on at a site, in terms of how rainwater is treated, is linked not only to stream and watershed health, but also to our social well-being and aesthetics of our communities. Unlike the pipe-and-convey approach, the use of source control features is an investment in green value that brings returns for the developer and end-users of a site."



Surrey Water Balance Model Forum: In March 2009, a practitioners Forum hosted by the City of Surrey adapted the Cowichan Valley format to address this challenge statement:

How do we simultaneously work together as staff within a municipality and as a region AND externally with developers and other private sector players, to ensure we implement sustainable approaches to development?

The Surrey Forum was co-sponsored by the Inter-Governmental Partnership and the Green Infrastructure Partnership.

Outcomes: "A Forum goal was to start a dialogue between policy makers and project implementers. This learning event accomplished a range of objectives related to implementing rainwater management and green infrastructure in Metro Vancouver," states Ted van der Gulik, IGP Chair.

"The Forum initiated branding of 'shared responsibility' as a way of doing business. Also, it provided a platform for Surrey to announce that it is moving beyond pilot projects to a watersheds objective approach (refer to Chapter 7)."



"Examples inform policy. Case studies in the morning session provided the policy people with an appreciation for what is involved in constructing green infrastructure. The afternoon session then provided the implementers with an understanding of provincial, regional and local goals...and what they are intended to achieve. We wanted participants to think about how their choices can influence what neighbourhoods look like, and how embracing shared responsibility can lead to different choices," explains Ray Fung, GIP Chair.

Beyond the Guidebook 2010: Implementing a New Culture for Urban Watershed Protection and Restoration In British Columbia

Penticton Forum: Held in April 2009 as an adjunct to the BCWWA Annual Conference, the Forum was organized in collaboration with the Okanagan Basin Water Board and three provincial Ministries. This flagship learning event showcased how partnerships, collaboration, innovation and integration are helping local governments in three regions respond to this challenge statement:

How do we align our efforts at three scales – provincial, regional and local – to do business differently, prepare communities for change, and choose to be water smart?

Each regional initiative is developing a vision and road map to change the way that land is developed and water is used.

The Penticton Forum also showcased web-based provincial tools that have been developed to help communities achieve water sustainability through truly green development.

Leading Change: “The ‘convening for action’ vision is that the Penticton Forum will prove to be a transformational event that inspires participants to do better. Creating a lasting legacy requires sustained commitment to make things happen. The Penticton Forum is an important milestone in advancing a **regional team approach** that aligns local actions with provincial goals for the common good,” summarized Glen Brown, WSC Chair, when he provided context for desired outcomes.

The Penticton Forum comprised four modules built around the ‘creating our future’ theme. Participants were challenged to apply what they learned at the Penticton Forum: *What will you do differently after today?*

Smart Planning & Living Water Smart: Approaches and Tools for Doing Business Differently in BC

- A. Creating Our Future:
What Do We Want British Columbia to Look Like?
- B. Doing Business Differently:
Convening for Action in the Okanagan
- C. Doing Business Differently:
Convening for Action in the Georgia Basin
- D. Facilitating Our Future:
The Natural City Vision

Nanaimo Green Infrastructure Leadership Forum: The Cowichan Valley, Surrey and Penticton events were preceded by the Nanaimo Forum, held in December 2007. CAVI partnered with the Association of Vancouver Island Coastal Communities to co-host this Georgia Basin event.

Creating Our Future: Rod Sherrell, President of AVICC, opened the Leadership Forum by stating that “we can create our future because local government controls land use”.

“If we are to control our destiny, then we need to challenge Vancouver Islanders to visualize what they want this place to look like in 50 years and get on with creating our future.”



After today, our hopes for tomorrow are...

We hope to develop an ongoing conversation about planning that results in good decisions for the future needs of our communities.

We hope to move beyond awareness of big picture issues to local actions that help Island communities develop solutions to their specific challenges

Inform and Educate: Designed to start a conversation that would lead to a region-wide dialogue around achieving settlement change in balance with ecology, the Leadership Forum emphasized the ‘telling of stories’ to energize participants.

“Although this high-profile event was a success, we concluded that there had to be a more effective way to inform and educate those who would benefit most,” recalls John Finnie. “That realization led us to sound out several local governments about an idea we had for inter-departmental learning that would result in a shared understanding of green infrastructure challenges and solutions.”

“The Nanaimo Green Infrastructure Leadership Forum was the genesis for the **Vancouver Island Learning Lunch Seminar Series**, launched in 2008 in both the Cowichan Valley and Comox Valley (refer to Chapter 5).”



Linking the Site to the Health of the Region

“What the cell is to the body,
the site is to the region”

Patrick Condon, 1998
Design Centre for Sustainability
University of British Columbia

Outreach & Continuing Education Program

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5. Outreach & Continuing Education Program

The Water Sustainability Action Plan for British Columbia is the partnership umbrella for an Outreach and Continuing Education Program (OCEP) that promotes a 'water-centric' approach to community planning and development (*refer back to page 5 for definition*).

The New Business As Usual

OCEP comprises inter-connected elements that give local governments and practitioners the tools and experience to better manage land and water resources. The inter-connected elements fall into four areas of activity as identified in the Action Plan logo below:



Tools: Two tools in the toolbox are the Water Balance Model and the Water Bucket Website. They are the twin engines driving OCEP:

- In September 2003, the Inter-Governmental Partnership (IGP) launched the web-based WBM as an extension of Stormwater Planning: A Guidebook for British Columbia.
- In November 2003, the Province convened a provincial 'water focus group' working session in the Okanagan. The Water Bucket Website was an outcome. It was launched in April 2005.

Figure 14 conceptualizes what is important to understand about the Water Balance Model.

Water Balance Model: "The WBM quantifies the effectiveness of site designs that incorporate rainfall capture features such as rain gardens and absorbent soil. It does a continuous simulation over the period of record to test facility performance under different combinations of land use, soil and rainfall," states Ted van der Gulik, IGP Chair.



"Because the WBM demonstrates how to achieve a light 'hydrologic footprint', it helps planners and designers wrap their minds around how to implement 'green solutions' on-the-ground."

"The power of the WBM process lies in the conversations that result from users generating a single number – the percentage of rainfall that becomes runoff. Comparison of scenarios creates understanding, especially when the focus is on the hydrologic implications of the assumptions that underpin those percentages."

Water Bucket Website: "waterbucket.ca is the key to the communications strategy for the Action Plan. The website is designed to provide the complete story on integrated land and water management – why, what, where and how," states Mike Tanner, Website Partnership Chair.



"Water Bucket stories establish expectations about program curricula and event outcomes. To get the word out, we work with our partners to craft email-type news releases that are complete with embedded links. We are finding that these news releases are taking on a life of their own."

Implementing a New Culture in BC: Next, seven OCEP elements that have progressively advanced The New Business As Usual are described:

- A. Water Balance Model Outreach
- B. Water Balance Model Training Workshops
- C. Convening for Action Consultation Workshops
- D. Showcasing Green Infrastructure Innovation Series
- E. Beyond the Guidebook 2007
- F. Vancouver Island Learning Lunch Seminar Series
- G. Water Bucket Website

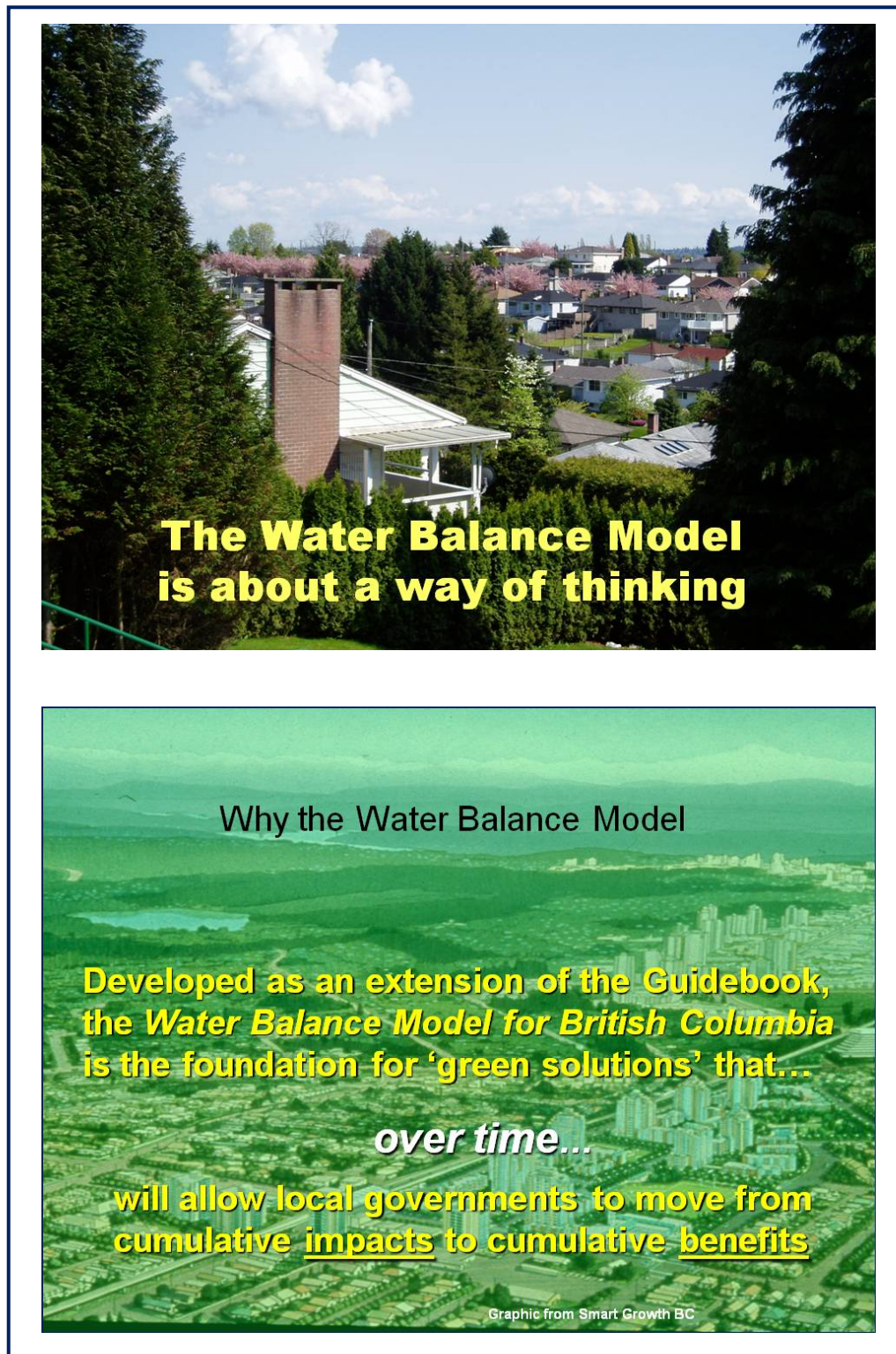
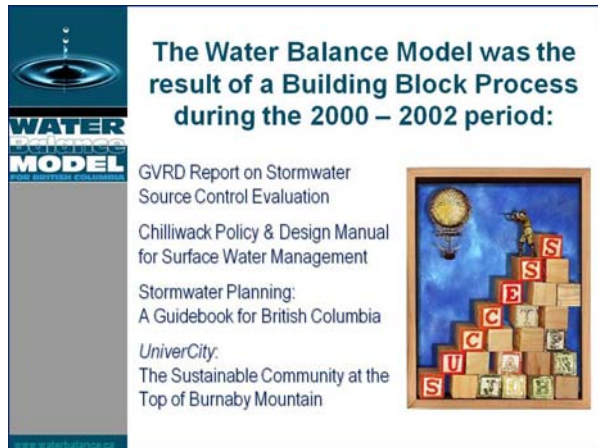


Figure 14

OCEP: Water Balance Model Outreach (A)

A decade ago, a number of organizations played critical roles in a building block process that culminated in development of the web-based WBM.



Building Block Process

In 2000, UniverCity, the sustainable community built atop Burnaby Mountain, was the catalyst for WBM development. Translating high expectations into practical design guidelines meant revisiting accepted drainage engineering practice.

In 2001 the Greater Vancouver Regional District recognized the value of the water balance approach and funded the development of a working model. The results of the applied research are core chapters in Stormwater Planning: A Guidebook for British Columbia.

Also in 2001, the **Chilliwack Manual** was the feedback loop for vetting the Guidebook content and the water balance methodology. In turn, the feedback loop for the Chilliwack Manual was a set of guidelines that were tested through pilot applications on development projects.

In July 2002 the Inter-Governmental Partnership was formed. Initiated within Metro Vancouver, it quickly expanded to become a provincial group with municipal representation from four regions: Greater Vancouver, the Fraser Valley, Vancouver Island and the Okanagan Valley.

Approach to Informing and Educating

“When we formed the IGP, we were faced with a fundraising challenge. Our 4-phase plan for WBM development envisioned migrating to the Internet by Phase 4. Then a \$50,000 grant in early 2003 from the Real Estate Foundation changed history. We had the resources to immediately develop a web-based tool,” recalls Ted van der Gulik.

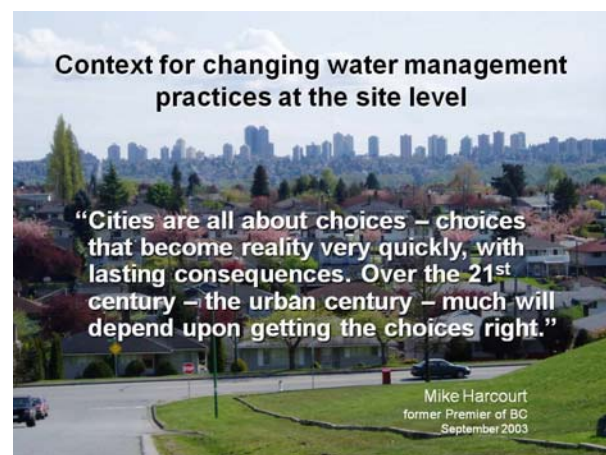
Context for Building Broad-Based Support for Change:

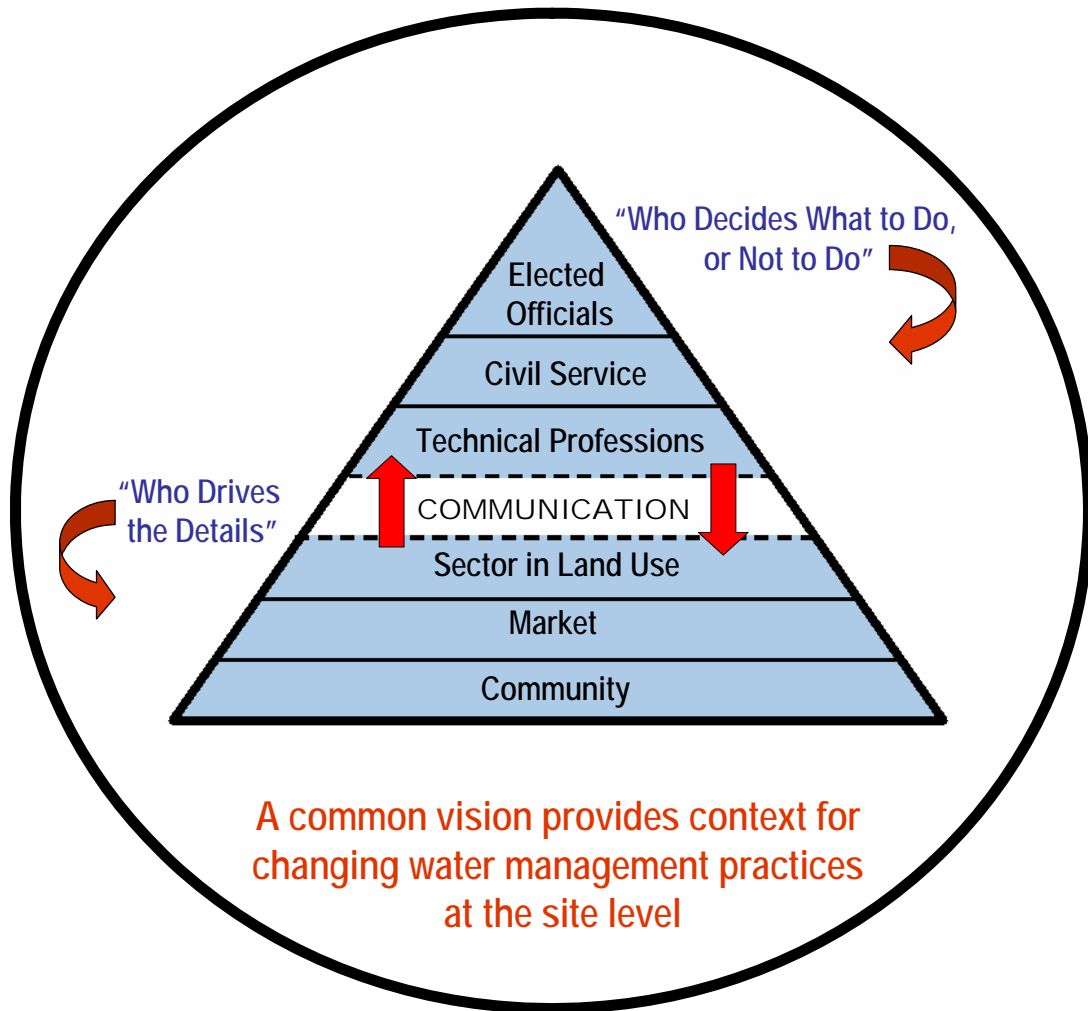
“It was Tim Pringle who highlighted the need for OCEP to support WBM delivery once the initiative was web-based,” continues Kim Stephens, Program Coordinator for the Water Sustainability Action Plan. “Within a matter of months, the Real Estate Foundation and Metro Vancouver had agreed to co-fund a pilot program that we launched at the UBCM Conference in September 2003.”



“With Tim’s inspiration, we created a vision and a picture of a layered approach to communicating with a range of audiences (Figure 15). The ‘pyramid mind-map’ has guided us ever since. In 2010, we believe we are close to bridging the communication gap between those who decide what to do and those who drive the details.”

“Because the IGP vision is to change the way land is developed, it was essential that we have high-level political endorsement from the get-go. UBCM provided us with such a platform at its Urban Forum. This event commenced the WBM rollout.”





Goal of the ‘New Business As Usual’ -
Influence What the Built Environment Will Look Like

Figure 15

Creating Understanding

Based on the mind-map embodied in Figure 15, the IGP developed and delivered a comprehensive set of professional development or continuing education 'modules'. The resulting OCEP was multi-pronged to convey the benefits of an integrated approach to different audiences; and to build broad-based support for changes in land development practices.



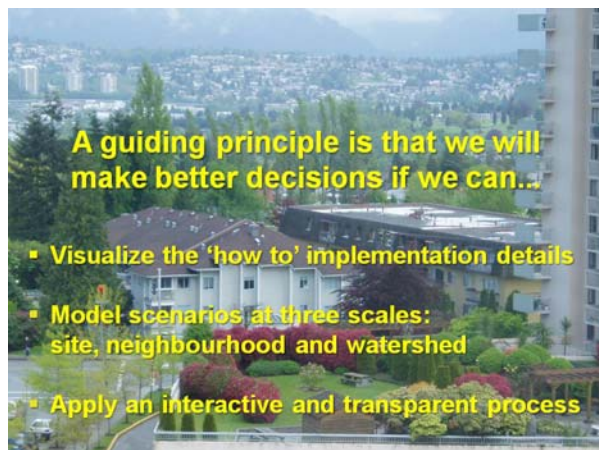
Collaboration with Industry

"From the start, we recognized the importance of reaching out to all practitioners, and creating a common language. In fact, this has been a guiding principle," adds Ted van der Gulik. "We have seen the INTEGRATION word bandied about over the years. Our goal was to give actual meaning to the integrated approach. We viewed the WBM as a way to facilitate integration of perspectives."



Consistent Messaging: "The IGP outreach team was ready, willing and available to make presentations at the drop of a hat. These opportunities enabled us to spread the word about the why, what and how of designing with nature," recalls Kim Stephens. "We developed an easy-to-follow storyline. We delivered consistent messaging that resonated with all our audiences, ranging from community-based to government."

Growing Smarter: "Over the years, we have collaborated with organizations such as UDI, APEGBC, PIBC, CMHC and the EMCO Corporation to deliver seminars and workshops at locations throughout southwest BC, and north as far as Dawson Creek," states Kim Stephens. "Because our visions are aligned, collaboration has enabled the IGP to extend our reach. There is value for everyone in being on the same stage."



Early Adopters

Four cities in four regions – Chilliwack (Fraser Valley), Surrey (Metro Vancouver), Kelowna (Okanagan) and Courtenay (Vancouver Island) – were early adopters in embracing the paradigm-shift and were Water Balance Model founding partners in 2002. Also, Chilliwack and Surrey were original members of the Inter-Governmental Partnership steering committee. All four played key roles in helping to deliver early outreach.

During the two-year period preceding release of Stormwater Planning: A Guidebook for British Columbia in 2002, three of these cities – namely Chilliwack, Surrey and Kelowna - each contributed case study experience that facilitated development and verification of the water balance methodology.

Launch of WBM in 2003: “The City of Kelowna assisted with the rollout of the Guidebook and pre-launch of the WBM in Spring 2003 in communities such as Penticton and Prince George,” recalls Ted van der Gulik. “The participation of the City’s Alan Newcombe (Drainage Manager) in our road show added credibility; and City case study experience provided on the ground examples that reassured participants about the paradigm-shift.”

“The WBM pre-launch created awareness and interest that led UBCM to provide the IGP with a platform for the formal launch of the WBM at their September 2003 Annual Conference. The support of two mayors was key: Mayor Barry Janyk of the Town of Gibsons and Mayor Clint Hames of Chilliwack were the WBM champions.”

“Mayor Janyk, Dipak Basu (City of Chilliwack) and Kim Stephens tag-teamed to tell the WBM story at the UBCM Urban Forum. Dipak provided the core content; he showcased Chilliwack examples.”



Mayor Barry Janyk



Mayor Clint Hames

WBM Forums in 2004: “Chilliwack and Surrey each hosted a forum in early 2004. The objective of the forums was to foster broad-based provincial support for commonsense improvements in rainwater management practices at the site level,” continues Ted van der Gulik.

“Led by Dipak Basu, the Chilliwack Forum was designed to help stakeholders in the Eastern Fraser Valley understand what ‘thinking outside the pipe’ and ‘designing with nature’ actually mean on the ground.”

“Led by Rémi Dubé, the Surrey Forum was part of the City’s commitment to providing green infrastructure leadership. The Forum provided the City with an opportunity to report out on the East Clayton Sustainable Community.”



WBM Events in Thompson-Okanagan: “In 2005, the City of Kelowna (John Vos) was the catalyst for a series of events that broadened the reach of the WBM. First, the City connected us with the EMCO Corporation (Keith Lumby). This industry collaboration provided us with access to a new audience when EMCO organized a trade event in Kelowna. Success led to an event in Kamloops.”

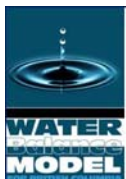
“Capitalizing on the momentum created by this success, the City and APEGBC jointly sponsored a WBM seminar. In turn, this set the stage for 4-way collaboration with UBC-Okanagan. Thanks to Dean Bernie Bauer, we held a training workshop at the university in February 2006. This reinforced the early support that the City’s John Vos provided,” concludes Ted van der Gulik.

OCEP: Water Balance Model Training Workshops (B)

"In 2003, we brought in professional educators from Royal Roads University to help us develop a workshop training curriculum. We then undertook a series of pilot workshops to familiarize our WBM Partners. The experience we gained influenced our approach to subsequent workshops," states Ted van der Gulik.



Learning Outcomes: "The objective of training workshops is to equip participants with the understanding and experience they will need to do business differently when they return to their work places," continues Kim Stephens. "Workshops are structured in four parts, and each part has a learning outcome. The knowledge-building is a cumulative process."

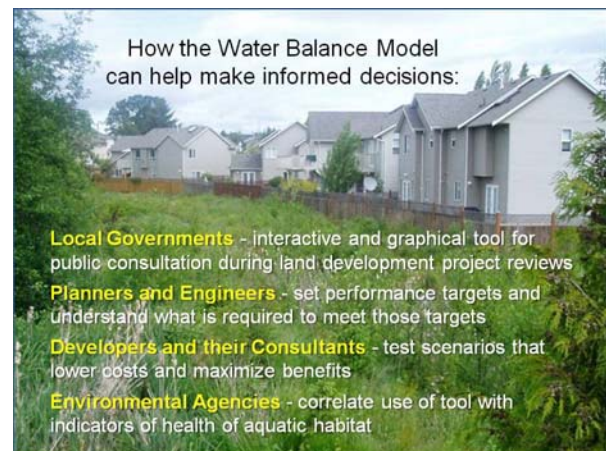


**Learning Outcomes:
Participants will be able to....**

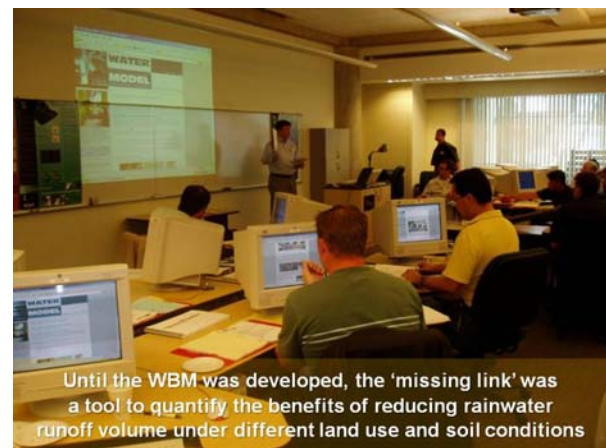
- WHY THE WATER BALANCE MODEL:** Identify and express why we need to change the way we develop land and manage water at the site level
- HOW TO USE THE MODEL:** Use the WBM effectively to enter data and generate outputs
- SOURCE CONTROL:** Understand the capabilities of the WBM to evaluate rainwater source controls and how to achieve performance targets for volume reduction and rate control
- SCENARIO MODELING:** Apply judgment in using the WBM effectively to produce practical and achievable solutions in real-life situations

Collaboration with Academic Institutions: Over a two-year period, five post-secondary institutions hosted training workshops on-campus in computer labs for practitioners: BC Institute of Technology, North Island College (Courtenay), University of BC, University of Victoria and UBC-Okanagan.

"Looking back, our collaboration with academia made a material difference in helping to build OCEP credibility in the early years," reflects Ted van der Gulik.



Ongoing Enhancement: "WBM development is driven by the community of users. This means that each training session serves as a feedback loop. We identify what works well and what could be better. The IGP is constantly enhancing the WBM to reflect the needs and wants of the user community. It truly is an application of adaptive management," concludes Kim Stephens.



OCEP: Convening for Action Consultation Workshops (C)

During the period May 2004 through June 2007, four consultation workshops were organized under the Convening for Action in British Columbia umbrella: two were held in Metro Vancouver; and the other two on Vancouver Island.

Metro Vancouver Consultations

Formation of the Green Infrastructure Partnership (GIP) was a direct outcome of the WBM session at the 2003 UBCM Conference. The new partnership then organized two Consultation Workshops within a 12-month period:

- **The first, in May 2004**, was organized from the practitioner perspective and included pioneer practitioners and/or advocates of emerging green infrastructure practices within the Georgia Basin. The consultation explored the diversity of issues and difficulties inherent in defining and implementing a green infrastructure approach to land development.
- **The second, in May 2005**, was organized from a local government manager perspective. Designed to engage the Metro Vancouver Regional Engineers Advisory Committee, it was branded as the REAC Workshop.

“The 2005 workshop truly was a dynamic and transformational event; and inspired a complete revamping of our approach and work plan. This influenced everything that has followed, including on the Island,” states Raymond Fung, Chair.

Vancouver Island Consultations

“Pilot program successes in the South Okanagan and Metro Vancouver gave the various partners confidence to see what we could accomplish by ‘convening for action’ at a regional scale on Vancouver Island,” reports Glen Brown,



“In 2006, the Real Estate Foundation of BC and two Ministries (Environment and Community Services) came

together to form the CAVI Partnership and provide funding for a program that would be delivered by the CAVI Leadership Team through BCWWA. It was Mac Fraser, Director of Planning Services with the Islands Trust, who suggested the CAVI acronym for Convening for Action on Vancouver Island (*note: refer back to pages 19 and 22*).”

Water in the City Workshop (September 2006):

“The first of two CAVI consultation workshops was organized as an adjunct to the Water in the City Conference,” continues John Finnie, CAVI Chair. “To start the conversation, we posed this question: *How will Vancouver Island handle a doubling of the population and what will it look like then?*”

Creating Our Future Workshop (June 2007):

“The second consultation workshop was organized as an adjunct to the Gaining Ground Summit. This was our 2007 program kickoff. Local governments that are demonstrating green infrastructure leadership shared their stories,” summarizes John Finnie.

2005 Consultation Workshop - Program Outline

Context is Everything & Change Happens

Roundtable Sharing:

What are the conditions that make implementation of Green Infrastructure either easy or difficult?

Change - Challenges & Strategies:

So What are the options and the best choices for changing minds?

Roundtable Input:

Now What are the strategies and commitments so that Green Infrastructure can move from market-niche to market-share?

Next Steps:

Then What do we do to move from concept to policy to implementation?

Over the next three years, the CAVI mission is to...

- Integrate with other groups
- Bring together local government and the development community
- Encourage introduction of a ‘design with nature’ way-of-thinking in local government decision processes
- Celebrate examples of green infrastructure that achieve ‘design with nature’ outcomes
- Evolve a framework for water-centric planning that is keyed to accepting and managing risk, learning by doing, and rewarding innovation

OCEP: Showcasing Green Infrastructure Innovation (D)

Formation of the Green Infrastructure Partnership was a milestone development. It broadened the 'design with nature' coalition beyond government. It also set in motion the next evolution of OCEP.



2005 Metro Vancouver Workshop

"Going into the 2005 Metro Vancouver REAC Consultation Workshop, the GIP vision was to develop a Model Subdivision Bylaw and green infrastructure standards. The workshop proved to be a revelation for all those who participated," recalls Ray Fung, Chair.

"As we went around the table, the stories came out as to what Metro Vancouver municipalities were doing. A common refrain was: 'We didn't know you were doing that!' The energy in the room just kept building and building."

"At the end of the day, we literally tore up our work plan. It was clear that practitioners did not need another guidance document that would go on a shelf. Rather, they needed to network and learn from each other."

An Integrated OCEP

"Prior to the workshop, OCEP was built around the WBM. After the workshop, we expanded the scope to integrate the interests of the GIP as well as the WBM and Water Bucket leadership teams," continues Ray Fung.



"In addition, the OCEP emphasis shifted from 'informing and educating' to 'showcasing and sharing'. We witnessed the motivational power of celebrating successes. We also recognized the need to get the story out about the leadership being shown by local government."

Showcasing Innovation: "Innovative practices are being implemented in communities throughout BC. Yet practitioners in local government are not necessarily aware that they are being innovative; and often are not aware of innovation taking place in other municipalities," adds John Finnie.

"Because people are so busy in their own worlds, it takes a third party to connect them. This is the role that CAVI and the GIP play."



"Practitioners in local government do want to learn from those who are innovating, and they do want to visit projects that are precedent-setting. They just need a starting point and a push to get the ball rolling."

"During the period 2006 - 2008, the Showcasing Innovation Series created pride and enabled local governments to tell their stories in a way that no other forum provided," concludes John Finnie.

The REAC Consultation Workshop resulted in 'Celebrating Green Infrastructure'



Because it is lonely being a champion, and everyone in local government is so busy, participants expressed a strong desire to pool resources and convene on-the-ground to share 'how to do it' experiences

The 2005 REAC Consultation Workshop culminated in a truly integrated program for 'turning ideas into action' on-the-ground !

Outreach & Continuing Education Program (OCEP)

Water Bucket Website	Celebrating Green Infrastructure: Showcasing Innovation Series	Communication Guide for Elected Officials	Guide to Green Infrastructure Standards	WATER BUCKET MODEL
Speaker Series		Communication Guide for Senior Managers	Green Infrastructure Standards	Streamlined Environmental Approvals Protocol

Mayors and Chairs Focus Group

“Another pivotal outcome of the 2005 workshop was our decision to consult with a number of Mayors and Chairs from the Okanagan, Metro Vancouver and Vancouver Island. We formed an ad hoc focus group to help us,” states Ray Fung (refer to next page for the list of members).

“We had it in our minds to write a *Communication Guide for Elected Officials*. We saw this filling a gap because what has been lacking is this – written information on green infrastructure from the perspective of elected officials, for elected officials. So we conducted one-on-one interviews.”

“A distinguishing feature of the focus group was that everyone had thought about how to achieve environmental, economic and social objectives through a community’s infrastructure choices.”

Key Messages: The one-on-one interviews yielded consistent insights. A unifying theme was the issue of leading and implementing change; also, emphasis was placed on the importance of mobilizing political will to achieve settlement change in balance with ecology. Key messages as synthesized in a 2006 summary report are:

1. Time is of the essence.
2. To create a legacy, there must first be a shared vision.
3. Trumpet small successes.
4. Encourage innovation.
5. Federal/provincial infrastructure programs will ultimately drive changes to infrastructure standards and practices.
6. Leaders can create the ‘buzz’, the interest and the energy to imagine what the future could look like and then make it happen.
7. The position of mayor provides a leader with the credibility and authority necessary to translate a community vision into action.
8. Mayoral collaboration will be a powerful force for change when there is a shared regional vision for the Built Environment.

“What we learned was not unexpected. Rather, it was more a case of validation. The findings and key messages are standing the test of time,” concludes Ray Fung.

Metro Vancouver Outcomes: The Focus Group process opened the door to exploratory meetings with the Metro Vancouver political leadership. In October 2006, for example, the steering committee for the Green Infrastructure Partnership met with the *Sustainable Region Initiative Task Force* to seek support for a Mayors Forum on Green Infrastructure.



Credibility enhanced by SRI Task Force: The meeting was facilitated by Mayor Pam Goldsmith-Jones (District of West Vancouver), a member of the Focus Group. “I have been asked by the Green Infrastructure Partnership to help them support local leaders throughout BC, so that we – the politicians - can champion the idea that designing with nature, particularly with regard to how water flows, has everything to do with achieving a built environment that is truly sustainable”, the Mayor informed the Task Force.



“As the leaders appointed to design the Sustainable Region Initiative for Metro Vancouver, we view you as critical partners in affecting positive change with regard to infrastructure design in the region. The Green Infrastructure Partnership wishes to help you deliver on the promise of a sustainable region. We are looking for your leadership, and we wish to support you in taking the long term view for the betterment of the region today, and into the future.”

Sustainability Community Breakfast provided a platform: The success of the sharing session with the Task Force led to Green Infrastructure Partnership participation in Metro Vancouver’s breakfast meeting program in December 2006.

“It was enlightening to learn how much has been accomplished by the Green Infrastructure Partnership in such a short period of time, and I have certainly gained a better appreciation for the part played by Metro Vancouver in funding the development of tools such as the Water Balance Model and Water Bucket Website; and providing local governments with the opportunity to share their experiences through the Showcasing Innovation Series”, stated Johnny Carline, Chief Administrative Officer and breakfast program host.





Vic Derman,
Vice-Chair, Capital Region Water Commission
Director, Capital Regional District
Chair, 2006 Water in the City Conference
Councillor, District of Saanich



Pam Goldsmith-Jones,
Mayor, District of West Vancouver
Director, Metro Vancouver



Robert Hobson,
Chair, Central Okanagan Regional District
Councillor, City of Kelowna



Sharon Shepherd,
Mayor, City of Kelowna
Director, Central Okanagan Regional District



John Slater, MLA
Chair, Okanagan Basin Water Board
Chair, South Okanagan Regional Growth Strategy
Mayor, Town of Osoyoos

Mayors and Chairs Focus Group

Vancouver Island Outcomes: Similarly, the success of the Mayors and Chairs Focus Group opened doors on Vancouver Island and led to the launch of CAVI in conjunction with the 2006 *Water in the City Conference*. After that, CAVI partnered with the Association of Vancouver Island Coastal Communities (AVICC) to co-host the *Green Infrastructure Leadership Forum* (refer to p. 26).

The Genesis for CAVI: In September 2005 and again in May 2006, we held what we called



‘Meeting of the Minds’ workshops in the City of Parksville. We invited individuals who were committed to action. This is where CAVI got its start,” reports Eric Bonham, a founding member of CAVI.

“We re-branded Meeting of the Minds as CAVI at the *Water in the City Consultation Workshop*. The stars were in alignment because Vic Derman was Conference Chair, and the Real Estate Foundation and Corix provided financial support for the workshop. During workshop program development, it was Mac Fraser of the Islands Trust who suggested the CAVI acronym. It stuck.”

Partnership with AVICC: Rod Sherrell (Chair, Regional District of Mount Waddington), Barry Janyk (Mayor, Town of Gibsons) and Barry Avis (Councillor, Town of Qualicum Beach) were the members of the AVICC Board who facilitated the partnership with CAVI. Rod Sherrell and Barry Janyk were President and Vice-President, respectively, in 2007.



Rod Sherrell



Barry Janyk



Barry Avis

Okanagan Outcome: In 2006, the Okanagan Basin Water Board became a Water Bucket Partner and established a precedent when it funded development of Okanagan Water, the first regional community-of-interest. The others are theme-based (refer to p. 53 for more information).

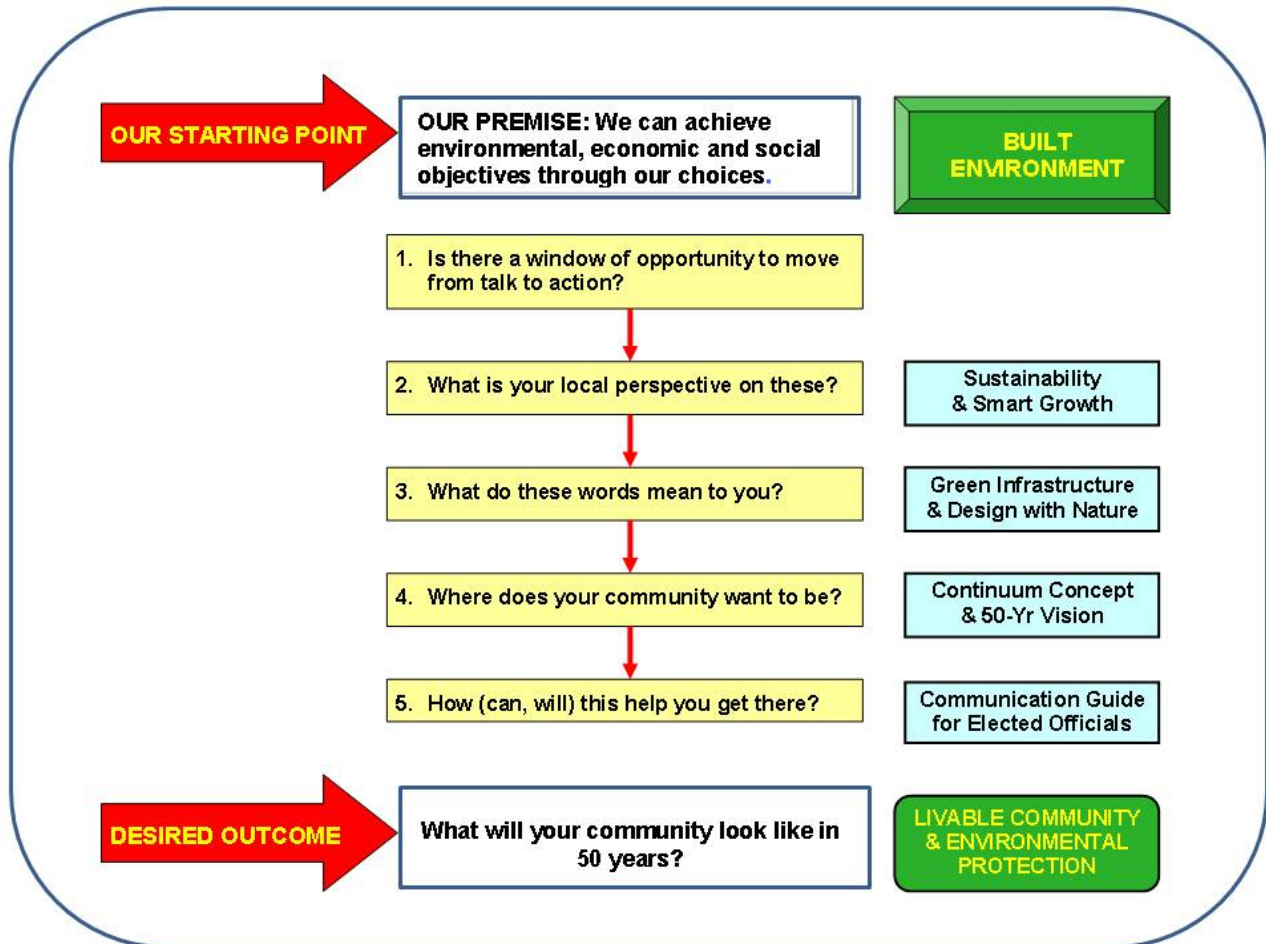
Conversation Template

A ‘conversation template’ (Figure 16 on next page) guided the one-on-one interviews with elected officials. It comprised a set of five questions that drilled down from *high level* to *ground level*. The questions were open-ended. The answers influenced the line of follow-on questions.

The Interview Process: When conducting these interviews, we outlined the frame-of-reference below to initiate the conversation:

- We understand that *green infrastructure* is but one of a myriad of issues that an elected official must process on an ongoing basis.
- Our approach is based on listening to them rather than ‘talking at them’.
- We recognize that senior municipal managers may only have ‘milliseconds’ to convey the essence of green infrastructure to elected officials.
- Similarly, senior managers may only have ‘minutes’ to absorb the supporting details from their technical staff.
- Therefore, choice of language is critical for effective communication, whether it be between technical staff and senior managers, or between senior managers and elected officials.
- Before we can write a Communication Guide, we need to understand what elected officials already know plus what they would like to know about green infrastructure.
- Only then can we judge what level of information transfer will be useful to them.

The insights yielded by the interviews have helped us determine how we can be clear and compelling in conveying key messages.



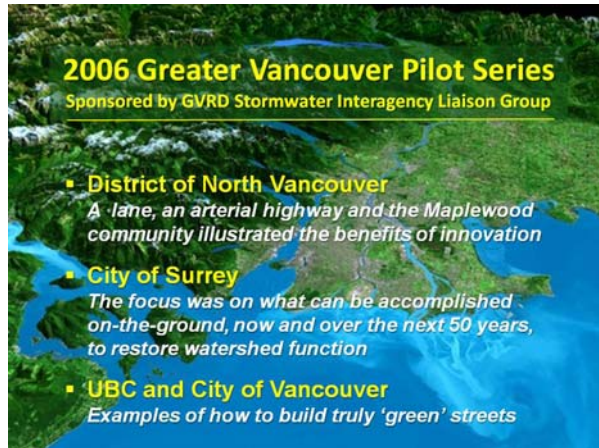
Source: *Water – Choosing Sustainability for Life & Livelihoods: Convening for Action in British Columbia*, progress report released by the Green Infrastructure Partnership in September 2006

Conversation Template for Interviews with Ad Hoc Mayors & Chairs Focus Group

Figure 16

Metro Vancouver Showcasing Series

“The goal in showcasing innovation is to promote networking and build regional capacity....by sharing green infrastructure approaches, tools, experiences and lessons learned as an outcome of *designing with nature*”, states Ray Fung. “It was exciting to see how local governments responded to the Metro Vancouver pilot in 2006.”



Vancouver Island Showcasing Series

“The purpose of showcasing innovation is to celebrate, and build on, the on-the-ground successes that are enhancing the ways communities are being developed and water is being managed,” states John Finnie. “In 2007, there were six showcasing events on alternating Fridays on each side of the Georgia Basin.”



Format for Success: “In 2006 and again in 2007, the Showcasing Innovation Series created opportunities to have one-on-one conversations where learning takes place. Each event comprised background presentations in the morning and a tour of project sites in the afternoon.”

“The site tour created those unplanned moments for spontaneous and effective sharing of knowledge and lessons learned,” summarizes Ray Fung.

Raising the Bar: “The 2007 Series was about networking and relationship-building north of the Malahat divide. Building on success, the 2008 Capital Region Series was about raising the bar and establishing expectations to achieve *design with nature* outcomes at a community scale.”

“In 2008, we featured projects that demonstrated what is meant by The New Business As Usual, and set provincial benchmarks for others to measure themselves against,” reports John Finnie.



Support for Showcasing Innovation Starts at the Top

The Chairs of four regional districts made opening statements of support at 2007 Showcasing Innovation events.

Showcasing Innovation in Metro Vancouver:

"The Corporation of Delta is excited to be the host for the first event in the 2007 Showcasing Innovation Series. And I am excited to report that last year's pilot program spawned a **Showcasing Green Infrastructure Innovation on Vancouver Island Series,**" stated Mayor Lois Jackson, Chair of the Metro Vancouver Board.



"Clearly, this program is resonating with local government. No other forum provides us with the same kind of opportunity to "tell our stories". It is evident that there are many champions in local government; and it is important that we recognize and celebrate what they are doing. This is all part of creating our future. And when we ask what will this community look like in 50 years, we can point to the green infrastructure examples and then we will know what it will look like in 50 years."

Showcasing Innovation in Nanaimo Region: "In the Regional District of Nanaimo, the elected representatives are providing direction through the Regional Growth Strategy. Our actions show that the Board members believe in sustainability," stated Joe Stanhope, Chair.

"Through the Urban Containment Boundary, we have avoided urban sprawl and we are doing our best to do what is right; and that is why the RDN Board is both supporting and partnering with CAVI. As a Board, we believe it is our job to protect the *quality of life* values that attract people to Vancouver Island."



Joe Stanhope provided context for the day when he described how he has applied 'design with nature' principles to achieve a water and energy saving home.

Showcasing Innovation in Cowichan Valley:

Mayor John Lefebure touched on the need for collaboration in his opening remarks: "As both the Mayor of North Cowichan and Chair of the Regional District, I am really pleased to see the involvement of both staffs in the Showcasing Innovation Series. This is really good because I need you both working together."



"Water in the District of North Cowichan is a huge concern. The Cowichan Basin Water Management Plan is such an important regional initiative that we simply must follow through....because there are major issues around water supply, and I relate those issues to how land is developed."

"We must focus on preserving what we have that provides our quality of life. As a group, politicians tend to be conservative. This means we tend not to be as forward looking as perhaps we should be. Moving forward from today, I would like the political leadership of Vancouver Island to be more proactive. I am pleased and excited that CAVI is partnering with the Association of Vancouver Island Coastal Communities to co-host the Green Infrastructure Leadership Forum."

Showcasing Innovation in the Comox Valley:

"Like most other areas on Vancouver Island, the Comox Valley is at a major crossroads as to how we will develop and still maintain the natural beauty of our community. This is a real challenge," stated Courtenay Mayor Starr Winchester, Chair of the Comox Strathcona Regional District.



"We want to keep our rural areas rural, yet we are faced with many people coming into the valley. We are experiencing phenomenal growth. So we are really depending on the practitioners to keep us grounded and realistic so that growth will be sustainable."

Mayor Winchester concluded by referring to the position of her Council on sustainability: "Two years ago we made a resolution to raise the bar, and that's why you are here today...to help us further raise the bar so that we can ensure a sustainable future for the Comox Valley."

Leading by Example at Universities

Three universities have participated in the Showcasing Innovation Series and each has been an event host or co-host: University of British Columbia (2006), Simon Fraser University (2007), and the University of Victoria (2008).

University of British Columbia: “Breaking new ground at UBC, the Sustainability Street Project has revolutionary closed-loop systems - the world's first systems integrating rainwater runoff, wastewater treatment and ground source heating, and a small-scale biodiesel production unit which will transform waste cooking oil into a clean-burning fuel. The project is an educational resource that will evolve over time,” explained David Grigg (Associate Director of Infrastructure and Services Planning) in 2006.



Simon Fraser University: In 2007, *UniverCity* on Burnaby Mountain showcased what a ‘sustainable community’ on top of a mountain looks like. “UniverCity is a pioneer application in North America of ‘adaptive management’ (or learn by doing) in a local government setting,” stated Chris Hartman, Vice-President. “Lessons learned in capturing rain where it falls are being reflected in engineering designs for successive phases of the rainwater/stormwater management system.”



University of Victoria: “A community of more than 25,000 people, the University of Victoria is a case study for green buildings and compact growth,” stated Sarah Webb, the university’s Sustainability Coordinator in 2008. “Over the past five years, UVic has been able to transition from an incremental approach in planning and resource management to a water-centric approach that is much more holistic and integrated – the *new business as usual.*”



New green roofs at the Social Sciences and Mathematics Building

OCEP: Beyond the Guidebook 2007 (E)

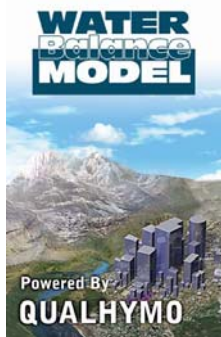
The decision in 2005 to integrate the Water Balance Model with the QUALHYMO engine led, in turn, to the decision to launch the Beyond the Guidebook initiative in 2007.

WBM powered by QUALHYMO

“Very quickly, the WBM had emerged as a tool of choice in making sustainable land development decisions because it demonstrated how to achieve a light ‘hydrologic footprint’. By the beginning of 2005, however, it was clear to the steering committee that we needed to make a bold leap forward to meet rising expectations,” states Ted van der Gulik

One-Stop Shopping for Engineers: “We saw an opportunity to provide one-stop shopping for drainage engineers whose primary interest was in modelling the rainwater overflows to storm sewers once on-property source controls had reached capacity. Our challenge was to provide expanded functionality for engineers yet avoid self-defeating complexity that would make the WBM unattractive to other audiences.”

“Developed by Dr. Charles Rowney in the early 1980s for the Ontario Ministry of Environment, QUALHYMO is a proven hydrologic engine. Merging it with the WBM created the pan-Canadian tool and dramatically expanded the capabilities of the WBM. Because Dr. Rowney is one of the pioneers of hydrologic modelling in Canada, we were thrilled when he agreed to play a guiding role as the IGP’s Scientific Authority.”



“The IGP vision is that the WBM powered by QUALHYMO is a tool that will ultimately influence the greening of the built environment and protect stream health. We foresee the tool as a means to an end in bridging the engineering and planning perspectives.”

Stream Health Methodology

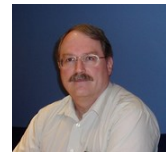
Kim Stephens, Guidebook project manager, provides this perspective: “The Guidebook makes a distinction between *Runoff Capture* and *Rate Control*, and emphasizes that a combination of the two is necessary for effective rainwater management. By addressing the inter-relationship between Runoff Capture and Rate Control, ‘Beyond the Guidebook’ picks up where the Guidebook left off in 2002.”

Beyond the Guidebook: Where Science Meets Analysis

Integration of the Water Balance Model and QUALHYMO meant engineers now had a runoff-based tool for source control evaluation and stream health assessment

Beyond the Guidebook Genesis: The pilot for “going beyond the Guidebook” was the City of Surrey’s Fergus Creek watershed plan. This formalized the Stream Health Methodology that is incorporated in the WBM powered by QUALHYMO.

“The methodology is a function of flow duration. This enables us to correlate green infrastructure effectiveness in protecting stream health,” explains Jim Dumont, IGP Engineering Applications Authority. “The reason is that rainwater runoff volume management is directly linked to stream erosion and water quality.”



Application of DFO Guidelines: “Beyond the Guidebook enables practitioners to make a clear distinction between a **rainfall-based approach** and a **runoff-based approach**. The latter leads to analysis of runoff interaction with the physical aspects considered important to the aquatic environment.” (Refer back to p. 9)

“The science-based analytical methodology that has been validated through the Fergus Creek pilot enables local governments to explore the fundamental requirements implicit in the DFO Guidelines for stream health and environmental protection,” concludes Jim Dumont.

Rollout of Beyond the Guidebook

At the WBM Partners Forum in March 2007, the IGP commenced the rollout of 'Beyond the Guidebook'. This was a prelude to release of the actual document in June 2007.


In November 2007, the Green Infrastructure Partnership collaborated with the IGP and APEGBC (Association of Professional Engineers & Geoscientists of BC) to hold a 'Beyond the Guidebook' seminar. This constituted the formal launch of 'Beyond the Guidebook'. Subsequently, the Ministry of Community Development issued a Circular to all local governments in BC.

"We wanted regional and municipal governments to be informed that the 'Beyond the Guidebook' approach to rainwater management is endorsed by the Province and reflects a 'design with nature' approach to climate change adaptation," states Glen Brown.

2007 Beyond the Guidebook Seminar

Held in Metro Vancouver, the **Beyond the Guidebook Seminar** attracted participants from around the province. This event served to inform local government and land use practitioners regarding the emerging policy framework and senior government expectations for applying a 'Beyond the Guidebook' approach to land development and watershed management.

Leveraging Change: The Ministry of Community Development unveiled its road map for leveraging change through the Green Communities Initiative. "We are slowly raising the bar for local government – for example, we are saying show us what you are doing to protect stream health," stated the Ministry's Chris Jensen, VICT Co-Chair.



Today's Expectations are Tomorrow's Standards

TODAY: Program guides "provide direction" and ranking criteria support selection of green projects

TOMORROW: Grant conditions will be used to bring some recipients up to a certain 'green' standard

DOWN THE ROAD: Meeting a 'green' standard will be a requirement for grant eligibility

Inter-Governmental Alignment: Corino Salomi (Area Manager, Habitat & Enhancement Branch,



Lower Fraser Valley) spoke on behalf of the Department of Oceans & Fisheries and provided a federal perspective on 'Beyond the Guidebook'. He described it as a 'must read'. Corino Salomi is a member of the steering committees for both the IGP and the Green Infrastructure Partnership.

"We are moving from guidelines to tools," stated Corino Salomi. "The purpose of the 'Beyond the Guidebook' initiative is to help local governments and the development community establish what level of rainwater runoff volume reduction makes sense at the site, catchment and watershed scales. The objective is to protect stream health, which is broader than how much volume one can infiltrate on a particular development."

The Shift from Stormwater to RAINwater

- 2001: Urban Stormwater Guidelines and Best Management Practices for Protection of Fish and Fish Habitat
- 2002: **Stormwater Planning: A Guidebook for British Columbia**
- 2002: GVRD Template for Integrated Stormwater Management Planning
- 2003: Water Balance Model for British Columbia
- 2005: GVRD Source Control Design Guidelines
- 2007: **Beyond the Guidebook**

Fergus Creek Pilot: The seminar was structured in three parts to deal with the WHY, WHAT and HOW in going 'Beyond the Guidebook'. The City of Surrey organized the HOW part. Designed as a 'min-charrette,' this enabled participants to work in groups to resolve 'how to do it' implementation issues related to Fergus Creek scenarios.

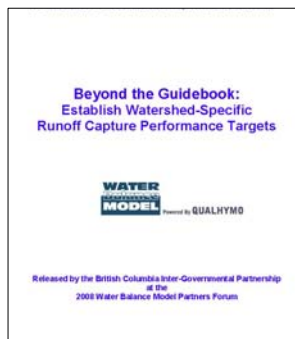
The learning outcome for the min-charrette was that participants would be able to express how green infrastructure policies and practices can be successfully implemented at the site scale to protect stream health at the watershed scale.

The way the Fergus Creek mini-charrette was conducted resonated with participants. "Having engineers do a planning exercise was brilliant," observed Carolyn Drugge, City of Vancouver Engineering. "It was fun and inspirational to be part of the process."

Beyond the Guidebook Publications

The IGP, the Green Infrastructure Partnership and CAVI jointly released three explanatory documents as part of the ongoing rollout of 'Beyond the Guidebook' during 2008. These supplemented the June 2007 guidance document.

Watershed Performance Targets: At the WBM Partners Forum in February 2008, the IGP released **Beyond the Guidebook: Establish Watershed-Specific Runoff Capture Performance Targets.**

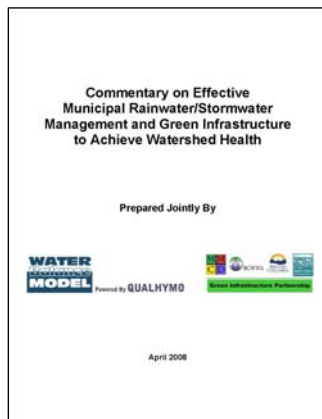


This is a primer on how to define and set a performance target to prevent stream erosion and protect stream health.

The WBM powered by QUALHYMO enables a watershed target to be established; it also

enables the user to assess how to meet the watershed target at the site scale. The critical consideration is that the watershed target be characteristic of conditions in the watershed.

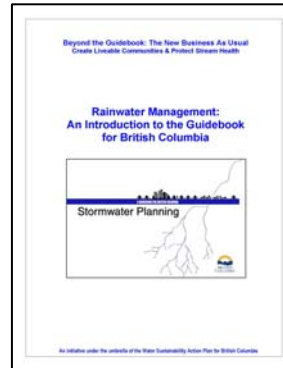
Achieving Watershed Health: Metro Vancouver is updating its Liquid Waste Management Plan. Released in April 2008, a **Commentary on Effective Municipal Rainwater/ Stormwater Management and Green Infrastructure to Achieve Watershed Health** has informed development of strategies and actions for Metro Vancouver.



The Commentary provides context and a framework for law and policy changes; incorporates the 'targets document'; and identifies actions that can be taken at three scales – regional, local and private – to create liveable communities and protect stream health.

Guide to the Guidebook: In June 2008, the IGP and CAVI released **Rainwater Management: An Introduction to the Guidebook for British Columbia.**

This provides a broad-brush picture of Stormwater Planning: A Guidebook for British Columbia. The



emphasis is on core concepts. The desired outcome is that readers will be interested in learning more by delving into the Guidebook.

The guide is written for both expert and non-expert audiences. It explains how the Guidebook is structured

to meet the information needs of different audiences; and it provides a transition into **Beyond the Guidebook: The New Business As Usual.**

This guidance document was developed to support the curriculum for the **Vancouver Island Learning Lunch Seminar Series**, a precedent-setting approach to delivering peer-based education to local government practitioners in the places where they work.

2008 Gaining Ground Summit

"We are using the slogan The New Business As Usual to convey the message that, for change to really occur, practices that until now have been viewed as the exception must become the norm moving forward," stated Dale Wall (Deputy Minister, Ministry of Community Development) when he announced the launch of both the WBM powered by QUALHYMO and the **Vancouver Island Learning Lunch Seminar Series** at the Gaining Ground Summit in May 2008. The Series continued the rollout of 'Beyond the Guidebook'.



"We have to build regulatory models and develop models of practice and expertise to support The New Business As Usual."

Dale Wall is a founding member of the Green Infrastructure Partnership.

OCEP: Vancouver Island Learning Lunch Seminars (F)

The idea for the [Vancouver Island Learning Lunch Seminar Series](#) was an outcome of the 2007 Green Infrastructure Leadership Forum.

Collaboration and Consistency

“When we came up with the Learning Lunch idea, our objectives and expectations were quite modest,” reports John Finnie, CAVI Chair. “We



wanted to explore a collaborative approach that we believed would help local governments make informed land development decisions that meet multiple objectives.”

“Initially we were thinking in terms of a small group setting...perhaps 12 to 15 people drawn from the various departments within a willing local government. We wanted to bring together engineers, planners, building inspectors and bylaw enforcement officers; and we wanted the focus to be on aligning efforts to implement effective green infrastructure.”

Genesis for Regional Team Approach: “The idea resonated, so much so that the original inter-departmental concept quickly mushroomed into an inter-governmental concept. The Cowichan Valley Regional District and City of Courtenay both volunteered to host a regional seminar series. This was the genesis for the regional team approach,” continues Jay Bradley, Chair of the Vancouver Island Coordinating Team (VICT).

“Each series spread the curriculum over three sessions. This enabled participants to take in new information, reflect on it, blend it with their own experience, test it, and (we hope) eventually apply it in making decisions.”

“The curriculum for the 2008 Series was founded on a number of provincial guidance documents, notably Stormwater Planning: A Guidebook for British Columbia.”

Guidebook Legacy: The Guidebook set in motion a chain of outcomes that has resulted in British Columbia being recognized internationally as a leader in implementing a natural systems approach to rainwater management in the urban environment.

“By 2008, however, one of the lessons learned was the need for a program that will ensure



province-wide consistency in understanding of approaches and desired outcomes,” observes Peter Law, Chair of the 2002 Stormwater Guidebook Steering Committee.

“Hence, a premise underpinning the Learning Lunch Seminar Series is that this consistency is best achieved by taking a continuing education program into the places where local government practitioners work.”

“The 2008 Vancouver Island Learning Lunch Seminar Series was the first step in building a regional team approach so that there will be consistent messaging regarding on-the-ground expectations for rainwater management and green infrastructure,” adds Jay Bradley.

Political Endorsement: Success begets success. In 2008, political endorsement of the Learning Lunch concept flowed from the earlier success of the [Showcasing Green Infrastructure Innovation Series](#) in 2007.

“The 2007 series was the catalyst for Island-wide networking and relationship-building that, in turn, generated enthusiasm for implementing the Learning Lunch concept,” states John Finnie.

Both the Cowichan Valley Regional Board and City of Courtenay Council voted unanimously to sponsor and host the Cowichan Valley and Comox Valley series, respectively.

“The Board viewed the Learning Lunch Series as an opportunity to develop a policy framework for the Cowichan Valley,” reports Kate Miller, Manager of Regional Environmental Policy. “It meant that we could foster an informed dialogue that would ultimately lead to adoption of a set of tools for implementing green infrastructure region-wide.”

Learning Lunch Curriculum

“The jump in scope from inter-departmental to inter-governmental had major implications for the curriculum design,” recalls John Finnie. “Now we had the challenge of designing a program that would hold the attention of a group of 50-plus over an extended period of time. The dynamics of the two situations are totally different.”



“The experience gained and lessons learned from the Showcasing Innovation Series became invaluable. We knew the keys to success would be engaging participants with case study applications, and interacting with rather than talking at the audience.”



Inter-Governmental Commitment to Regional Team Approach:

Kate Miller emphasizes that the political commitment was substantial and tangible: “Inter-departmental participation by member municipalities effectively meant closing front counters on three Fridays for most of the day so that planning, engineering, operations and building inspection staff could attend the Learning Lunch seminars.”



“There are five local government jurisdictions in the Cowichan Valley; and the same group of developers and development consultants have projects in all or most of those jurisdictions,” states Peter Nilsen, Deputy Engineer with the District of North Cowichan. “It is therefore essential that the development community hears a consistent message from local governments regarding rainwater management and green infrastructure expectations when doing business at the front counters in each of those jurisdictions.”



Consistency at the Front Counter: “The Cowichan Valley Learning Lunch Seminar Series provided an inter-departmental learning opportunity for collaborative exploration. The organizing team represented the environmental planning, municipal engineering, development services and building inspection perspectives. The series was conducted as a cumulative process, from philosophy to tools,” explains Kate Miller.

“We wanted to make it easy for participants to remember what they heard and why it is relevant to their day jobs,” recalls Rob Conway, Manager of Development Services with the Cowichan Valley Regional District. “So, we identified a defining or over-arching message for each seminar by coming up with a memorable sound-bite.”



“Throughout the series, our theme and our challenge was to ask participants what will they do better or differently to achieve a shared vision for the Cowichan Valley,” recalls David Hewetson, Building Inspector with the City of Duncan. “This is why it was so important to get everyone thinking in terms of the *What – So What – Now What* mind-map.”



Provincial Guidance Documents: “In terms of the actual curriculum design, it was a matter of drawing on a number of provincial guidance documents and making them interesting and relevant to a mixed audience,” summarizes Kim Stephens, seminar team leader.



“Five provincial resources ultimately formed the curriculum backbone: the *Stormwater Guidebook*, *Beyond the Guidebook*, the *Green Infrastructure Guide*, *Develop with Care*, and *A Guide to Green Choices*.”

“We also produced a *Guide to the Guidebook*. It is written for both expert and non-expert audiences, and provides a broad-brush picture. The emphasis is on core concepts. The objective is to interest readers in learning more by delving into the 2002 Guidebook.”

Table 1 presents a synopsis of the three seminars that comprised the Learning Lunch curriculum.

Table 1

2008 Vancouver Island Learning Lunch Seminar Series
Curriculum for 'Beyond the Guidebook: The New Business As Usual'

Session	Theme	Scope
1	<p>Today's Expectation are Tomorrow's Standards</p> <p>EVOLUTION</p> <p><i>(What)</i></p>	<p>Session #1 traced the evolution of rainwater/stormwater management policies and practices over the past two decades. This provided a frame-of-reference and a common understanding for subsequent sessions.</p> <p>The <i>2002 Stormwater Guidebook</i> and the <i>Water Balance Model</i> were introduced so that participants would have an understanding of the purpose and application of performance targets.</p> <p>A desired outcome was that participants would understand WHY drainage practice comprises a continuum of paradigms, and communities progress at different rates along the continuum.</p>
2	<p>Legal and Policy Strategies to Support Green Infrastructure</p> <p>TOOLS</p> <p><i>(So What)</i></p>	<p>Session #2 introduced the extensive and very specific tools available under the Local Government Act so that they can proactively manage the complete spectrum of rainfall events: from light showers to heavy rain to extreme storms.</p> <p>The <i>Green Infrastructure Guide</i> was explained so that participants would know how to use it effectively as a resource.</p> <p>A desired outcome was that participants would understand WHAT bylaw and policy tools enable incorporation and retrofitting of engineered green infrastructure into development plans.</p>
3	<p>Nature Knows No Boundaries</p> <p>TARGETS</p> <p><i>(Now What)</i></p>	<p>Session #3 elaborated on a performance target approach to land development that makes sense, meets multiple objectives, is affordable, and results in net environmental benefits at a watershed and/or regional scale.</p> <p>A framework for 'bringing it all together' was introduced so that participants could explore a regional team approach that ensures a common understanding and consistency at the front counter.</p> <p>A desired outcome was that participants would understand HOW a Design with Nature approach to rainwater management (i.e. using infiltration and trees) will influence the greening of the built environment and protect stream health.</p>

CONTEXT: In 2007, Beyond the Guidebook advanced a performance target methodology for correlating green infrastructure effectiveness in protecting stream health. To support Beyond the Guidebook, the Province funded integration of the *Water Balance Model* with the *QUALHYMO* hydrologic engine. The web-based *Water Balance Model* powered by *QUALHYMO* is unique, bridges engineering and planning, links the site to the stream and watershed, and enables local governments to establish watershed targets. In 2008, Vancouver Island was the pilot region for rollout of *Beyond the Guidebook: The New Business As Usual* through an innovative and precedent-setting approach to providing continuing education for local government practitioners, namely: the Learning Lunch Series.

Comox Valley is Demonstrating the Regional Team Approach

“Because the Learning Lunch Series is guided by a philosophy of continuous improvement, the Comox Valley team adapted the Cowichan Valley prototype and raised the bar to achieve a transformational outcome,” reports Kim Stephens.

“As the 2008 hosts, Kevin Lagan and Derek Richmond of the City of Courtenay seized the opportunity the Learning Lunch Series created. It allowed them to make a difference in the Comox Valley. Their passion energized their peers and gave substance to the regional team approach.”

Milestones in the Evolution of OCEP: “This had an impact. The Comox Valley team was responsible for the next milestone in the evolution of OCEP. When the IGP launched the WBM in 2003, it was all about *informing and educating*. Then the 2005 Metro Vancouver consultation workshop was the catalyst for *showcasing and sharing*. In 2008, the Comox Valley team initiated a process that we now call *developing talent*.”

Developing Talent: “For the best part of a decade, the Real Estate Foundation had been investing in the Comox Valley stewardship sector to build local capacity,” reflects Tim Pringle. “Through CAVI, there was an opportunity in 2008 to align the efforts of the local government and stewardship sectors; and that is how the Comox Valley Land Trust became a partner in the Learning Lunch program.”



“To create the desired future, it is essential that communities declare their values and develop talent; and that is what the Learning Lunch program is doing for the Comox Valley.”

“The Comox Valley team comprises talented people who would do more if they could. They are developing the talent to go on a journey to jointly use their capability to manage the community more effectively than in the past. The regional team approach will help them get there. Their willingness to work together is impressive.”

Provincial Significance: “The Comox Valley is a microcosm of what is happening throughout BC. Lessons learned there in balancing settlement change and ecology can be applied elsewhere. A key goal is to enable communities to realize more benefits than liabilities from the development that takes place,” states Kim Stephens.

“This was the backdrop for the CAVI decision to concentrate our efforts and collaborate with the Comox Valley players. We wanted to demonstrate what can be accomplished via the regional team approach. From a team-building perspective, the Comox Valley is a manageable scale, and is large enough to be a provincially significant case study.”

“The Comox Valley is provincially significant for another reason. In July 2007, the Province had intervened to create the Comox Valley Regional District and mandate both a *Regional Growth Strategy* and a *Regional Water Supply Strategy*. These obligations provided a driver for the four local governments to align their efforts and move towards an integrated approach.”

Living Water Smart: Released in June 2008, Living Water Smart comprises 45 commitments, two of which have framed the learning outcomes for the Comox Valley program:

- **2008 Series:** *By 2012, all land and water managers will know what makes a stream healthy, and therefore be able to help land and water users factor in new approaches to securing stream health and the full range of stream benefits* (p 43 in Living Water Smart)
- **2009 Series:** *Fifty percent of new municipal water needs will be acquired through conservation by 2020* (p 75 in Living Water Smart)

These are complementary outcomes. The link is water-centric land development standards.

LIVING WATER SMART

..... government's vision and commitment to ensure
our water stays healthy and secure, now and in the future.

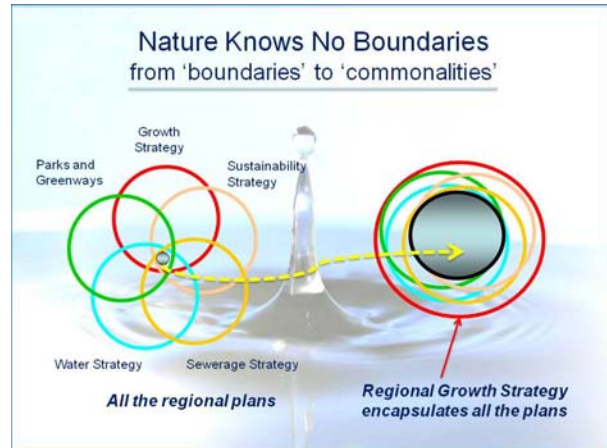


From 'Boundaries' to 'Commonalities' in the Comox Valley

Team-building is a cumulative process. The Comox Valley is in the third year of the Learning Lunch program. After the City of Courtenay hosted the 2008 Series, the Comox Valley Regional District hosted the 2009 Series. The Town of Comox is host for the 2010 Series.



Nature Knows No Boundaries: According to Derek Richmond, Manager of Engineering with the City of Courtenay, "To be successful in the Comox Valley, we need to work outside our normal boundaries; and we need to proactively communicate and work with others. The 2008 Series set in motion an inclusive process at the ground level that continued with the 2009 Series."



Getting Ahead of the Wave: Successive Comox Valley series have employed provincial guidance documents, guests from other regions, on-the-ground examples, walkabouts, and town hall sharing sessions to stimulate discussion of HOW to achieve water sustainability by implementing green infrastructure policies and practices.



"The 2009 Series theme, **Getting Ahead of the Wave**, defined what we believed we had to accomplish in building on the foundation provided by the 2008 Series" states Kevin Lagan, Director of Operational Services for the City of Courtenay.

"The 2009 Series has provided us with the springboard to achieve **integration** of current Comox Valley regional initiatives in subsequent phases of collaboration. If the Regional Growth Strategy can successfully encapsulate all the regional plans, then the municipal implementers will have the mandate they need to ensure 'consistent integration' happens on the ground."

The Four Cs: "Man imposes his own boundaries. So, we have an issue of inconsistencies ... or incongruities ... between natural and imposed boundaries which sets up a series of problems. Our challenge is to work around and with boundaries. We would like to shift the paradigm from boundaries to areas of commonality," states Derek Richmond.



"For the regional team approach to be truly successful, we simply must think of ourselves as a team, not as individuals within silos; and we need to break down boundaries through **communication, collaboration, cooperation and coordination.**"

"In the Comox Valley, we now have a great opportunity to move ahead with implementing the real elements of 'integrated planning'. We have recognized the need, realized the benefits, talked about examples of where this has happened and we are coming to grips with more clearly defined ways of how to facilitate this on an ongoing and consistent basis."

Demonstrating Commitment to An Integrated Watershed Approach to Settlement Change

Developed by the Comox Valley team through collaboration, the graphic below conceptualizes **An Integrated Watershed Approach to Settlement**. The ultimate goal of the regional team approach is to maximize the intersection of the elements. Creating linkages among different areas of action will create a stronger implementation plan.



The Water Challenge: “Water is the underpinning of the community, and this is why an integrated approach to settlement and land development is essential for the Comox Valley,” stated Kevin Lorette, General Manager of the CVRD Property Services Branch, when he explained the multi-faceted ‘water challenge’.



“Water is a key component for all the regional strategies that we are currently developing simultaneously. All will have to be integrated into one plan. At the core is growth – we are bringing these strategies together in 2010 to manage growth. We will be looking at all aspects of water.”

“When we move into the action phase, it will not be one organization doing it. This involves everybody. Job functions will be modified so that everyone has a role in implementation. If we all work together, we will be that much more effective.”

Tangible Outcomes: In 2009, the regional team process crystallized three tangible outcomes that the four Comox Valley local governments have carried forward into 2010:

‘tangible outcomes’ from the 2009 Series

1. CV-OPS
(the acronym for Comox Valley Inter-Governmental Engineering/Operations Liaison Group)
2. Planning & Engineering Collaboration Protocol
3. Integration theme for 2010 Series

“As I see it, the power of the Learning Lunch program results from the fact that it is internally driven by staff. As a result, the process of organizing the series and developing the curriculum is already enabling people in all four local governments to work together,” states Judith Walker, Municipal Planner with the Village of Cumberland.



“On the matter of *watershed stewardship*, the planners are already there. The missing piece has been the engineering part. The Learning Lunch process has been beneficial in bringing together the two perspectives,” adds Marvin Kamenz, Municipal Planner with the Town of Comox.



“The next step is to collaboratively define a process for implementation at the ground level that is easily understood by all parties,” concludes Jack Minard, Executive Director of the Comox Valley Land Trust.



A Regional Response to Climate Change: “The theme for 2010 will be ‘watershed issues of climate change’. We see the series as an effective tool to support the efforts of CV-OPS as it implements a regional team approach to infrastructure issues of regional concern,” foreshadows Glenn Westendorp, Public Works Superintendent, Town of Comox. (see p.73)



OCEP: Water Bucket Website (G)

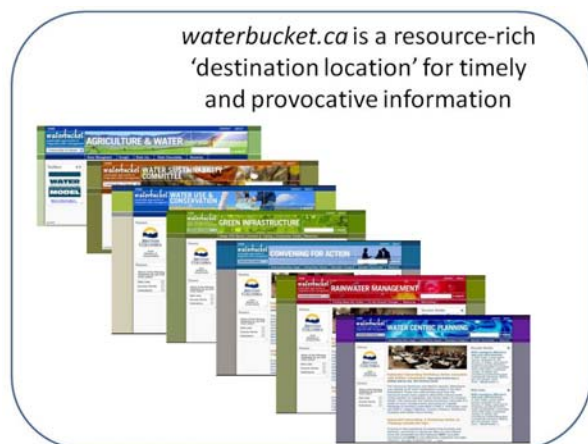
“The vision for the Water Bucket website has been to provide a resource rich, highly interactive ‘destination location’ for information and communication related to water sustainability in British Columbia. By providing universal access to information we believe we will see improved standards in all aspects of land development and water resource management,” states Mike Tanner, Chair.



Communities-of-Interest: “The Water Bucket website comprises a family of ‘communities-of-interest’, or COIs, that provide a ready-made platform for advancing a ‘design with nature’ approach to community development. COIs that correspond to elements of the Water Sustainability Action Plan include:

- Convening for Action
- Water-Centric Planning
- Green Infrastructure
- Rainwater Management
- Water Use & Conservation

These COIs provide local governments with a sustainability lens through which they can view their plans and planning activities. Our long-term vision is that *communities-of-interest* will evolve into *communities-of-practice*.”



Informing and Educating: “The Water Bucket is designed in a magazine style to appeal to specific target audiences. The menu dropdowns within each COI create the ‘storyline’ and supporting themes. Because we have the Water Bucket, we can record our history even as we are creating it,” explains Mike Tanner.

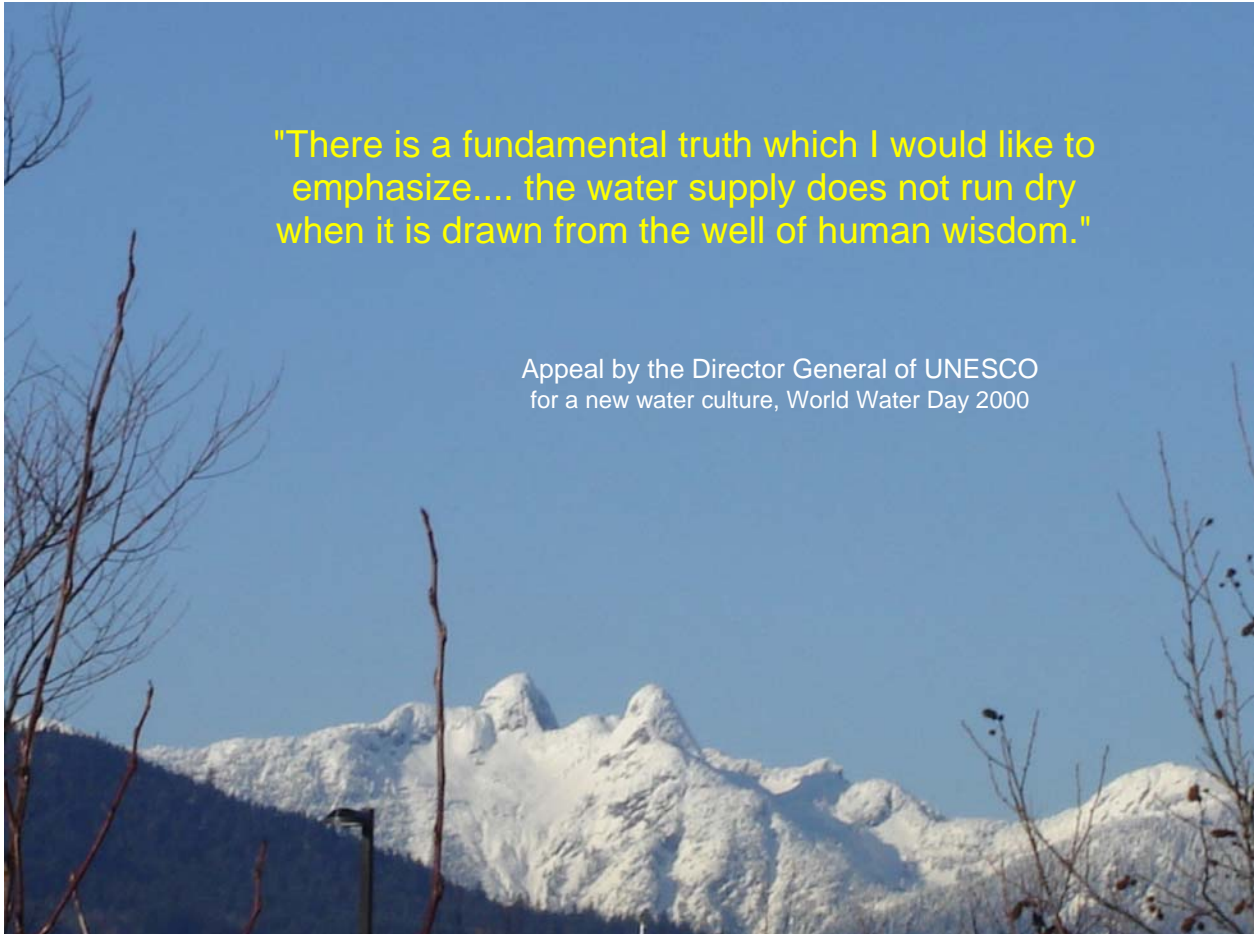
“Since 2007, Vancouver Island has been the Action Plan pilot region for a bottom-up approach to informing and educating municipal planners, engineers and others. The experience gained through this process has demonstrated the valuable role that Water Bucket plays in delivering information and sharing lessons learned.”

“We have found it extremely effective to publish news-style stories that create interest in Action Plan programs and events. Our experience is that the use of photos and images is engaging; and attributing quotes to individuals in a conversational style has more impact than dry technical writing.”

A Practitioner Perspective: “Communication is vital. Use of the Water Bucket website to tell the story of the Learning Lunch Series is proving especially effective,” states Marvin Kamenz, Municipal Planner. “The storytelling is leading to understanding about why we need to do business differently; and this is promoting competition and a *race to the top*.”

“The Water Bucket is the technical voice that is getting the technical story out in a consistent way. The Water Bucket is providing reasons to have the conversation about ‘**why change**’.”





"There is a fundamental truth which I would like to emphasize.... the water supply does not run dry when it is drawn from the well of human wisdom."

Appeal by the Director General of UNESCO
for a new water culture, World Water Day 2000

Photo Credit: Mike Tanner

Beyond the Guidebook: Connecting Dots & Building Blocks

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6. Beyond the Guidebook: Connecting Dots & Building Blocks

The first five chapters have provided historical context. To understand where one is going, one needs to understand where one has come from, and how one got here. A corollary is that it is best to judge progress by the distance travelled, rather than the distance remaining to reach the goal.

“It Starts With a Conversation”

“Building blocks and connecting dots – that’s what our story is about,” reflects Tim Pringle. In 2005, it was Tim Pringle who said: “If we are to truly change the land ethic for the better, we need a different approach. So, let’s try having informed conversations with people in local government and the development community, and we will see where a listening approach leads us.”

“The success of Convening for Action in British Columbia is that it starts with a conversation; and conversations ultimately lead to alignment of practitioner efforts to achieve a shared goal. That is the essence of our story.”



*Through experience,
we have learned that....*

To Build Trust & Respect,
It Starts with a Conversation.

Listen, Listen, Listen.

Because...

Conversations →
will lead to Dialogue →
will lead to Consensus

“It takes a conversation to trigger an Ah-Ha moment; and that is the moment when people open their minds and take in new ideas. It is through conversations that we connect the dots.”

“But practitioners also need practical research and tools to enable them to do business differently. This is what we mean by building blocks. A key message is that the research and tools are leading to a desired outcome – and that is, settlement change in balance with ecology. This is the new land ethic,” concludes Tim Pringle.

Chapter 6 sets the stage for Chapter 7 and a new form of ‘watershed governance’.

Contrast with Washington State

By the end of the 1990s, British Columbia and Washington State had the same science and a common understanding of what it meant.

The two had the same point of departure, yet Washington State has followed the prescriptive route, in part because of national end-of-pipe regulations. Their experience provides a contrast with the educational path that BC has taken.

What is Holding Washington State Back: In October 2007, a panel comprising Ed O’Brien and Dr. Gary Minton of Washington State and Rémi Dubé (City of Surrey) and Kim Stephens of British Columbia compared the two differing approaches at a cross-border conference.

“In Washington State, we cannot achieve environmental protection using current methods of development,” bemoaned Ed O’Brien of the State Department of Ecology.



“Not many new developments are applying low impact development techniques. There isn’t a land use dictator who can demand change. It will take public education to instil a culture change for us to have any hope that we can protect aquatic resources in the urban environment.”

Implementing a New Culture in BC

For the past decade, the Action Plan has been incrementally raising the bar and building practitioner capacity to implement a new culture in BC. Next, six outcomes are described. These have resulted from local governments embracing The New Business As Usual:

1. Shared Responsibility Matrix
2. Expectations and Tools for Living Water Smart
3. Okanagan Sustainable Water Strategy
4. Metro Vancouver Integrated Liquid Waste and Resource Management Plan
5. East Coast of Vancouver Island:
“One Market - Cobble Hill to Campbell River”
6. Water Balance Model – Plan for the Future

These are building blocks, and demonstrate how a ‘top down bottom up’ strategy leads to action.

Shared Responsibility Matrix

Shared responsibility is a foundation piece for Beyond the Guidebook 2010. The law and policy component of OCEP produced a decision support tool that was branded as the **Shared Responsibility Matrix**.

Between 2007 and the end of 2009, the Matrix evolved from a set of generic “what we would like to do” questions that were framed through the eyes of practitioners in local government.

Shared Responsibility Explained

“All of us have an impact on the land, on the water, and on the way things look,” states Susan Rutherford. She represented West Coast Environmental Law Research Foundation on the Green Infrastructure Partnership from 2005 through 2010.



“Policy and legal tools can help developers, regulators and designers collaborate to implement green infrastructure solutions and ensure responsible outcomes. Each party in the process has a responsibility.”

Matrix Purpose: “We developed the Responsibility Matrix (Figure 17) as an holistic way to encourage players with different perspectives to talk candidly with each other about implementation of green infrastructure or other sustainability goals,” continues Susan Rutherford.

“The matrix is structured in two parts. In the first part, the three columns are GOAL, PARTY and TOOL. Our focus is on the linkages – that is, how people interact and/or collaborate to achieve community development sustainability goals.”

“In the second part, the three columns elaborate on the first part: DESIRED OR REQUIRED OUTCOMES, RELEVANT STAFF OR OTHER ACTORS and INSTRUMENTS FOR ACTION. Under desired outcomes, we can define a series of objectives and/or situations – for example, ensuring that the minimum topsoil requirement is achieved and maintained over time.”

Imagine

“Our theme is ‘imagine’. What we have in mind when we say ‘imagine’ is that players would imagine a legal tool or procedure that would ensure that barriers are removed or other parties in the process more effectively fulfil their piece of the sustainable development puzzle.”

“If someone says something is not working – that barriers prevent success - then our challenge for them is: *Think about what would make it work, and what are you going to do to make that alignment of goals happen?*”

Outcome-Oriented: “There are solutions to be found if all parties in the community development process, i.e., staff within local and regional governments as well as private and other actors external to government but no less involved in the development process, simply talk to each other about how they could all work together more effectively, using law reform or other process changes as tools.”

“Once we know what we want our watersheds and neighbourhoods to look like, the next step is to decide *what the tools are that will get us there*. All of us ...whether we are regulators, developers or designers ...need to understand and care about the goal if we are to know our role in relation to it and to create the future that we all want,” concludes Susan Rutherford.

Living Water Smart: “At the end of the day, planners and engineers and other disciplines must come together to determine the issues and solutions,” adds Lynn Kriwoken, a Director in the Ministry of Environment and the Province’s lead person for development and delivery of Living Water Smart, BC’s Water Plan.



“While legislative reform is a foundation piece, collaboration takes place outside the legislative framework.”

“This is why we constantly emphasize that Living Water Smart is about motivating and inspiring everyone to embrace **shared responsibility**. Influencing behaviour and attitudes is at the heart of moving from awareness to action.”

Responsibility Matrix

Goal	Party	Tool
<ul style="list-style-type: none"> ▪ Objectives ▪ Situations ▪ Responsibilities 	<ul style="list-style-type: none"> ▪ Regional staff and elected representatives ▪ Municipal staff and elected representatives ▪ Private actors (developers, builders, homeowners, stewardship groups, universities and colleges, etc.) 	<ul style="list-style-type: none"> ▪ Law ▪ Bylaw ▪ Policy ▪ Procedure ▪ Incentive ▪ Penalty ▪ Security ▪ Budget
Desired or Required Outcomes	Relevant Staff or Other Actors	Instruments for Action

Application of Responsibility Matrix

Desired Outcome	Relevant Actors	Instruments for Action
Onsite Rainwater Management	<ol style="list-style-type: none"> 1. Regional Government 2. Municipal Government 3. Developer 4. Builder 	<ol style="list-style-type: none"> 1. Living Water Smart policy direction; Regional liquid resource management plan 2. Regional targets translated to site level action using Water Balance Model tool and Land Use Planning, site standards; linkage made between watershed plan and development practices/neighbourhood plan; Official Community Plan direction; visible political leadership on issue 3. Bylaws require a) onsite rainwater management facilities b) security for performance c) regular inspection and reporting re: maintenance (e.g. on business license renewal); departments charged and funded to inspect 4. Communication, contractual provisions, occupancy permit

Figure 17 – Shared Responsibility

Expectations and Tools for Living Water Smart

“Living Water Smart is an idea that people are embracing. The solutions and commitments go beyond what government does,” states **Lynn Kriwoken**. “Living Water Smart is a plan that is as much about land as water....because only with healthy water can we enjoy all the values that we take for granted. Times are changing and the way we do business is also changing.”

“By choosing to live water smart, communities will be more prepared for climate change and their quality of life will be enhanced. If we can show how to get the water part right, then other parts are more likely to follow.”

Implementation Themes

Living Water Smart comprises 45 commitments, which are grouped into five themes:

Living Water Smart - Implementation Themes

1. Governance, legislation, regulatory change
2. Efficiency, outreach, public awareness
3. Science, information & learning
4. Watershed planning & restoration
5. Community planning and development

WSC Delivery Role: “The partnership umbrella provided by the Water Sustainability Action Plan has allowed the Province to leverage partnerships to greatly enhance the profile and resulting impact of Living Water Smart,” continues Lynn Kriwoken. “The WSC is playing a key delivery role (*refer back to page 14*) in two of the five theme areas, namely: community planning and development; and efficiency, outreach, public awareness.”

“In effect, the Action Plan partners and the WSC in particular are functioning as the on-the-ground Living Water Smart implementation arm with local government. The in-kind support from local governments is substantial and growing, and means my team can focus our work effort on legislative reform.”

Build the Vision, Create the Legacy

“The ultimate goal of the Living Water Smart and Green Communities initiatives is to establish expectations that, in turn, will influence the form and function of the built environment. If land and water practitioners are then successful in bringing a water for life and livelihoods vision to fruition by embracing **shared responsibility** (*as explained on p. 56*), this will create a legacy for those who follow in our footsteps,” states Lynn Kriwoken.



“Living Water Smart is about adaptation - that is, collectively what we need to do...to adapt...to prepare for climate change. How we will get there is all about collaboration – that’s my code for *silo jumping*. We must get out of our silos and broaden our perspectives. Learn from others, share with others – that is when we grow.”

Building a Vision & Creating a Legacy

- **Issue:** How We Manage Population Growth
- **Impact:** Growth Resulting in Urban Densification (Land Constraints; Smaller Lots)
- **Sustainability:** *Means Design with Nature*
- **Built Environment:** We Can Improve It
- **Natural Environment:** We Can Protect It
- **Cumulative Benefits:** Accrue Over Time
- **Outcome:** Sustain Community Livability

Cumulative Benefits: “Our immediate objective is to encourage ‘green choices’ that will flow through time, and will be cumulative in creating liveable communities, reducing wasteful water use, and protecting stream health.”

“In urban settings, measures that ‘green’ (and improve) the built environment can also protect or help restore the natural environment. How communities choose to develop or redevelop individual sites has ripple effects at the watershed scale. By designing with nature, this means actions on the ground can add up and result in **cumulative benefits** over time,” concludes Lynn Kriwoken.

Living Water Smart Actions & Targets

Of the 45 actions and targets in Living Water Smart, three in particular serve to establish expectations vis-à-vis how land will be developed (or redeveloped) and water will be used. These three are listed below and are cross-referenced to the three subject areas and page numbers in the Living Water Smart vision document:

- **Doing Business Differently:** By 2012, all land and water managers will know what makes a stream healthy, and therefore be able to help land and water users factor in new approaches to securing stream health and the full range of stream benefits (page 43)
- **Preparing Communities for Change:** By 2012, new approaches to water management will address the impacts from a changing water cycle, increased drought and risk, and other impacts on water caused by climate change (page 61)
- **Choosing To Be Water Smart:** By 2020, 50% of new municipal water needs will be acquired through conservation (page 75)

"To make it possible to achieve Living Water Smart targets and actions, the Province has developed a suite of tools (refer to Figure 18 on next page)," reports Ted van der Gulik, the Senior Engineer in the Ministry of Agriculture & Lands. He has been the Province's lead person for development of all but the Water Conservation Calculator.

Web-Accessible Tools: "These tools are all web-based and accessible to anyone with a computer. They are intended to support new approaches to water management. They can be applied on-the-ground by land and water practitioners."



"Our vision is that they will collectively facilitate informed decision-making with respect to climate change adaptation."

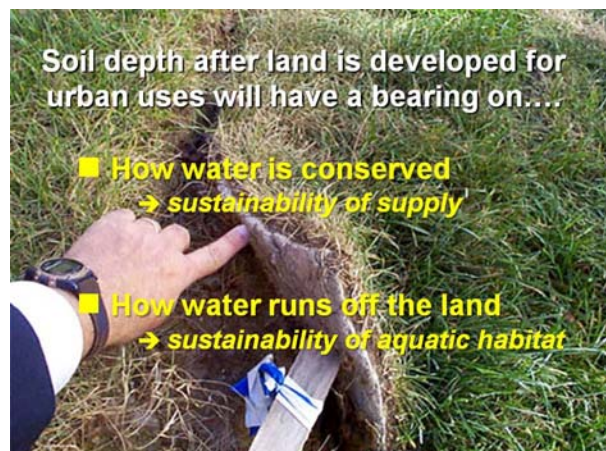
"Four of these tools --- the Water Balance Model, the Water Conservation Calculator and the two Irrigation Scheduling Calculators --- are built on a Universal Calculator technology platform."

An Holistic Approach

"We now have the tools that we need to influence practitioner and community behaviour. Also, the programs these tools support are linked. So, in 2010 our mission is to link everything together," continues Ted van der Gulik.

"We are emphasizing the fundamentals of green infrastructure. Topsoil depth is the point of connection between *RAINwater Management* and *Drought Management*. Topsoil depth creates a sponge. The sponge achieves two outcomes: reduce water need during dry-weather periods; and limit runoff during wet-weather periods."

"To help municipal staff and designers advance rainwater management and water conservation goals, the IGP has collaborated with the Green Infrastructure Partnership to develop the **Topsoil Primer Set**. It comprises a Law & Policy Primer and a Technical Primer. The approach is holistic."



Connecting the Dots: "A properly designed water conservation program has the ability to extend the life of infrastructure, reduce repair, treatment and



power costs, reduce power expenses, and defer or eliminate the need for major capital costs," states Liam Edwards, the Director of Infrastructure and Engineering with the Ministry of Community and Rural Development. "Use of the Water Conservation Calculator may become a Ministry requirement as part of the infrastructure grant application process."

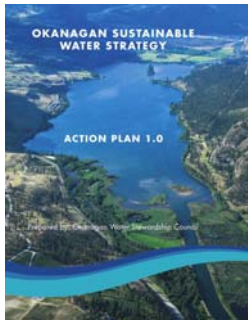


Web-based provincial tools enable
Water-Centric Planning & Living Water Smart

Figure 18

Okanagan Sustainable Water Strategy

Completed in late 2008 by the Okanagan Watershed Stewardship Council, the **Okanagan Sustainable Water Strategy** seeks to ensure



water resources are managed in a broader sustainability framework.

"The Sustainable Water Strategy is grounded in action. Twelve high-level Guiding Principles for water management and policy provide a framework for the Strategy. The key action

items were developed respecting these Guiding Principles," explains Anna Warwick Sears, Executive Director of the Okanagan Basin Water Board (OBWB).

"When Living Water Smart was released, we could not help but notice that it bore a remarkable resemblance to our Water Strategy!"

What 'Convening for Action' Means

"In the Okanagan, we are 'convening for action' at four levels to facilitate valley-wide change," continues Anna Warwick Sears. She identifies these levels as follows:

1. Inter-jurisdictional elected officials convening as OBWB directors.
2. Appointments of key partners to the Board – including First Nations and water suppliers.
3. The Okanagan Water Stewardship Council, a multi-stakeholder technical advisory group
4. The way the OBWB does business.

"The convening for action concept can be expanded to encompass all our activities. The Okanagan Basin Water Board is the hub for water science and policy. Our mandate is to communicate and coordinate. In the process, we are tapping into a huge reservoir of volunteers. This creates the energy and momentum for change."



Build a Vision, Create the Legacy

"The Stewardship Council developed the Okanagan Sustainable Water Strategy over a 30-month period. It literally involved thousands of hours of effort on the part of Council members," reports Ted van der Gulik, who is Vice-Chair.

"The Council is a diverse group. We went through a process of informing and educating each other. We reached a common understanding and consensus on a shared vision for achieving settlement change in balance with ecology."

"The Council's Vision is that the Basin will have clean and healthy water in sufficient abundance to support the Okanagan's natural ecosystems, agricultural lands and high quality of life for perpetuity."

"Accurate, up-to-date water information and scientific knowledge will support community and regional planning. Water will be managed in a spirit of cooperation, and a valley-wide ethic of conservation will create a lasting legacy of sustainable water resources for future generations."

"The Okanagan Sustainable Water Strategy starts the process and has been developed with input from many water professionals. To achieve fruition, the plan will need a coordinated effort from law makers and practitioners and buy in from residents to ensure that changes are made on the ground."

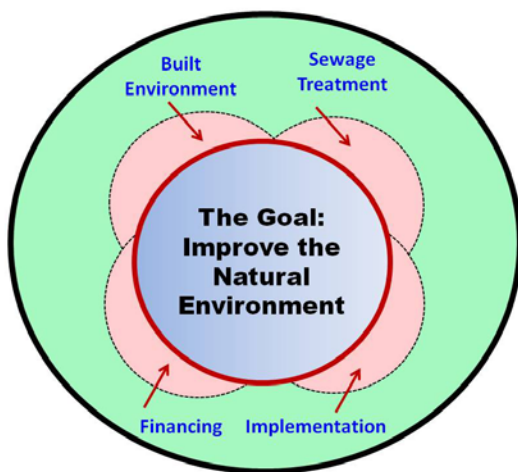
Collaborative Governance Explained: "The story of *Convening for Action in the Okanagan* is really about putting collaborative governance to work," reflects Anna Warwick Sears.

"Water stakeholders and citizens from many different parts of society contribute advice and ideas that influence the decision-making process. At all levels of convening, we are actively undertaking collaboration for action. In short, 'convening for action' reflects a synergy – the whole is greater than the sum of the parts."

"Everyone in the Okanagan agrees on the need to protect our quality of life in a healthy environment with a balanced use of water. The way the OBWB does business is collaborative. Through our grant programs, we are able to maximize partnerships; and in turn increase the convening of community by bringing together the resources to make things happen."

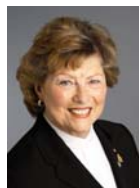
Metro Vancouver Integrated Liquid Waste and Resource Management Plan

Metro Vancouver has developed an Integrated Liquid Waste and Resource Management Plan. Comprehensive in scope, the Plan is aligned with Living Water Smart and other provincial initiatives. It also provides a framework for developing and implementing outcome-oriented watershed plans that have clear linkages with land use planning and development approval processes.



Align Goals, Strategies and Actions

“When the Board met in March 2009, it approved realigning the goals, strategies and actions in the updated Liquid Waste Management Plan (LWMP) to keep current with senior government policies and positions, as well as ensure that Metro Vancouver’s and senior governments’ environmental and fiscal objectives and actions are mutually supportive and successful,” states Lois Jackson, Metro Vancouver Chair.



“The LWMP supports provincial government positions in many areas. Local watershed planning is supported and enhanced through completion and implementation of municipal Integrated Stormwater Management Plans required by the LWMP,” adds Fred Nenninger (Division Manager, Metro Vancouver Policy & Planning)

Advisory Role of Reference Panel

“The Integrated Plan has been influenced for the better by the contributions of the 10-person advisory Reference Panel. The process has demonstrated what can be accomplished when local government staff and community representatives respect each other, share a vision for the region, and are motivated by the common good. It is a powerful example of collaboration in action,” states Johnny Carline, Chief Administrative Officer.



“Appointed in April 2008, the Reference Panel reports directly to the regional politicians. The panel comprises non-government organizations, technical experts and practitioners. They have brought expert knowledge and relevant experience to the table. Through reporting out and ongoing interaction with Metro Vancouver’s Waste Management and Finance committees, the Reference Panel has made an observable difference in stimulating informed discussion about liquid waste/resource and rainwater management issues.”

A Recommended Policy Framework: “The Reference Panel’s *July 2009 Report* was the culmination of several thousand hours of volunteer time and effort. The heart of the report is **A Recommended Policy Framework for Liquid Resource Management in Metro Vancouver**,” states Kim Stephens, Reference Panel Chair.



“The Policy Framework is keyed to an educationally-based ‘regional team approach’, one that develops a common understanding and results in consistent expectations region-wide.”

“The Reference Panel has praised the Integrated Plan because it can translate the visionary **Metro Vancouver Sustainability Framework** into tangible actions on the ground. However, it is written as a regulatory document. This limits the extent to which it is able to ‘tell a story’ that will resonate with the public. Therefore, it needs to be read in tandem with the Reference Panel report to create a picture of a desired outcome that will inspire people to strive for constant improvement – **this is what we want our region to look like, and this is how we will get there.**”

One Market – Cobble Hill to Campbell River

Research by the Real Estate Foundation, undertaken by Tim Pringle for the [2009 Comox Valley Learning Lunch Series](#), concludes that real estate development in the mid-region of the east coast of Vancouver Island is a common market.

This one market concept is a significant and material finding. It suggests that communities can choose from among development proposals, and can therefore control their destinies.



Communities Can Pick and Choose

“The *one market* way-of-thinking resonated with those who participated in the 2009 Series,” observes **Geoff Garbutt**, Executive Manager of Strategic and Long-Range Planning with the Comox Valley Regional District.



“It makes sense that mid-Island communities have choices. Knowing this, it means mid-Island communities can establish expectations as to what we want and what we will accept from developers.”

“Because we can pick and choose, we can position the Comox Valley to be a *region of choice* for the *right development in the right place*.”

“An implicit message to the development community is that there is money to be made when *green development* is truly aligned with community values and regional goals.”

Provincial Precedents

“The Cowichan Valley, Nanaimo and Comox Valley regional districts have all established provincial water-centric planning precedents; however, these are at a watershed-scale,” states John Finnie, CAVI Chair.



“Looking ahead, we anticipate that the Bowker Creek Blueprint (*refer to page 23*) will serve as a catalyst to help all three jurisdictions drill down to the local scale and truly integrate water cycle and land use planning. The ‘one market’ concept plus effective integration will help them achieve the *Green Communities Vision* on the ground.”

“The Cowichan Basin Water Management Plan is a provincial case study for watershed governance changes being contemplated as part of *Water Act Modernization*.”

“The Nanaimo Region’s Action Plan for Water created a drinking water and watershed protection service area with taxation authority in an electoral area.”

“The Province intervened in the Comox Valley to both create a new regional district and mandate regional plans that can feed into *An Integrated Watershed Approach to Settlement*.”

Right Development in the Right Place

The ‘one market’ research has culminated in a decision support matrix. It can be utilized as an evaluation tool by local governments to determine the acceptability of developer proposals for large-scale real estate development.

“We have produced three typologies and associated characteristics so that we can compare apples with apples. The three typologies are complete community, master planned community, and tract development,” explains Tim Pringle.

“Stepping back to look at the really big picture, an over-arching question is: *How will communities from Cobble Hill to Campbell River align their efforts to ensure the right development in the right place in the right time?*”

“Answering this question leads us to a regional team approach that is founded on broad and inclusive partnerships and collaboration.”



Premier Gordon Campbell with the Water Balance Model Team
Winners of a 2009 Premier's Award for Innovation and Excellence

- Standing (L to R):** Richard Boase (Co-Chair), Ed von Euw, Premier Campbell, Tim Pringle and Jim Dumont (Engineering Applications Authority)
- Sitting (L to R):** Ted van der Gulik (Chair), Kim Stephens, Laura Maclean (Past Co-Chair) Adrian Irwin, Chris Jensen, and Ben Kangasniemi
- Missing from photo:** Dr. Charles Rowney (Scientific Authority), Rémi Dubé, Jay Bradley, Corino Salomi, David Hislop, John McMahon, Mark Wellman, Glen Brown and Doug Backhouse (Website Architect)

Water Balance Model – The Plan for the Future

In November 2009, the BC Inter-Governmental Partnership (IGP) and the Alberta Low Impact Development Partnership (ALIDP) jointly released a blueprint document titled *Water Balance Model for Canada – The Plan for the Future*.

“*The Plan for the Future* presents a road map for greatly increasing both the computational capabilities of the Water Balance Model and its usability in visioning future alternatives for use of water and land,” explains Ted van der Gulik, Chair of the Inter-Provincial Partnership with Alberta.

“Our mission in making the WBM more robust is to help local governments make informed land use decisions, implement affordable and effective land development strategies, green the urban landscape, and improve watershed health.”



Implementation

“Under a federal/provincial agreement with BC, the federal *Regional Adaptation Collaboratives* program has made a 3-year funding commitment. This financial support will enable the partnership to substantially implement a \$500,000 program. In 2010 we are adding four modules to the WBM engine: Water Re-Use, Stream Erosion, Climate Change and Tree Canopy Rainfall Interception.”

“Among the many enhancements that we will be implementing over the next three years are capabilities not currently available in commercial software,” concludes Ted van der Gulik.

Create a Vision of Future Watershed

“The WBM differs from other drainage simulation tools in three fundamental ways: it is web-based; development is driven by the community of users; and it can help create a vision of the future watershed,” states Richard Boase, IGP Co-Chair.

Scenario Comparison: “The WBM allows the user to create an understanding of the past and compare it to many possible futures. This capability allows communities to assess how watersheds can be altered, for good or bad. Then they can create a vision of where they would like to go and how the watersheds can meet their vision,” continues Jim Dumont, IGP Engineering Applications Authority.

“For the purposes of a WBM simulation, the starting scenario can be the watershed in any state, whether that is forested, existing urban, future planning, or just about any condition that the user may wish to assess. Yet another key message is that the existing watershed condition should not be seen as a limiting condition; rather, it is just one of many potential conditions.”

“This is where the WBM shines as it is not constrained by starting or ending points. It compares whatever the user can envision.”

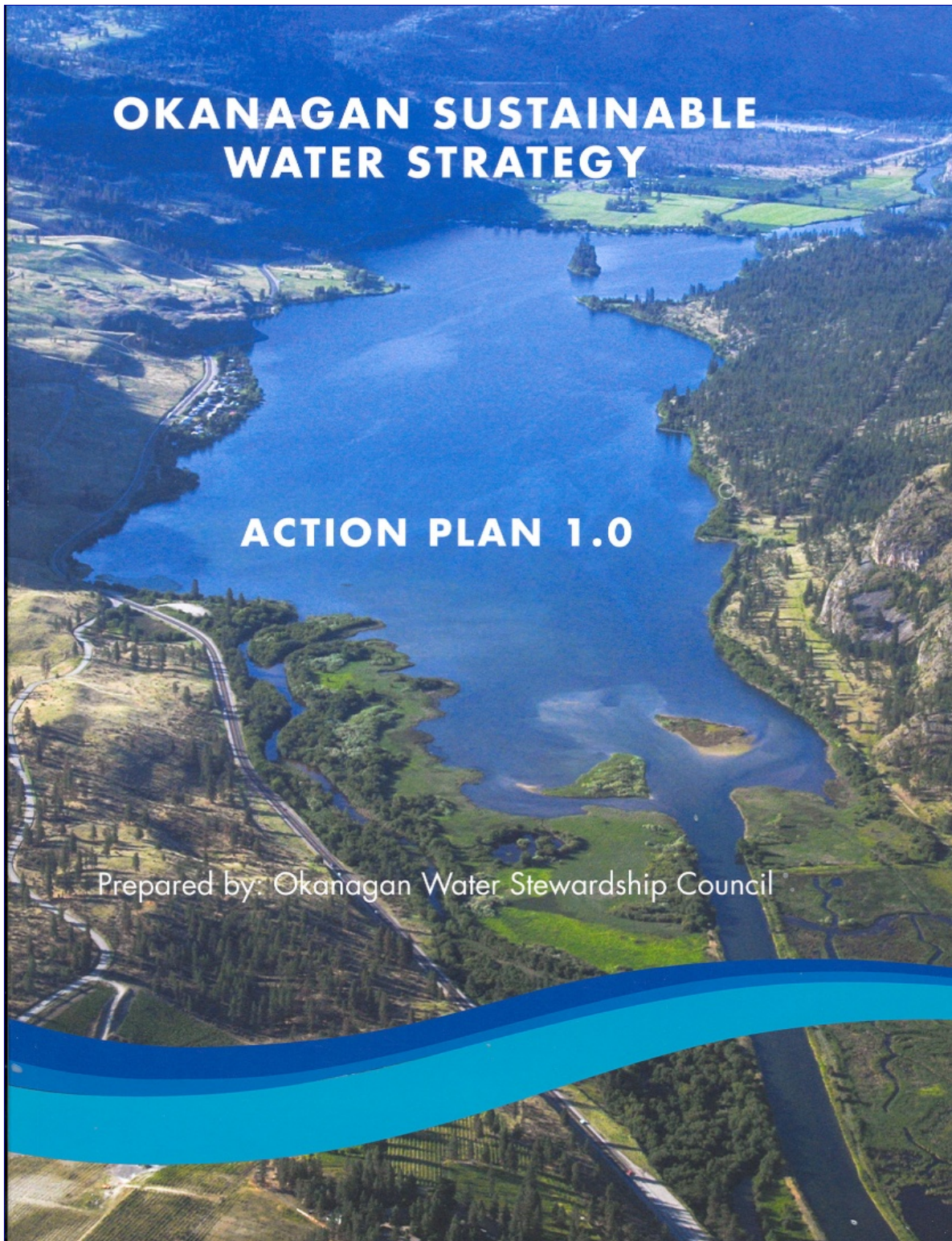
“Implementation of *The Plan for the Future* will allow a single analysis tool to be used from planning through design; and in this way the flow of intent and information will be seamless, while maintaining integrity in process,” concludes Jim Dumont.

Restoring the Urban Landscape

“Our watersheds have been experiencing death by a thousand cuts as the house footprint has grown larger and larger over the decades,” states Richard Boase.



“The message for local governments is clear: single family properties hold the key to watershed health; we have to do a better job of educating residents about the link between their back yards and stream health; and we need to work directly with homeowners if we are to restore the rainfall capture capacity of the urban landscape.”



Developing Outcome-Oriented Watershed Plans

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7. Developing Outcome-Oriented Watershed Plans

This chapter provides local governments with 'how to' guidance for developing **outcome-oriented** urban watershed plans. Chapter 1 introduced ten Guiding Principles that provide a framework for a successful implementation process:

1. Choose to be enabled.
2. Establish high expectations.
3. Embrace a shared vision.
4. Collaborate as a 'regional team'.
5. Align and integrate efforts.
6. Celebrate innovation.
7. Connect with community advocates.
8. Develop local government talent.
9. Promote shared responsibility.
10. Change the land ethic for the better.

The case study experience introduced in previous chapters shows that a new land ethic is taking root in BC. Changing the culture requires a process. This takes time to complete. There is no short-cut; however, lessons learned by those who have done it can help those who want to do it.

A Municipal Perspective: "Our municipality can learn and borrow from the other successful case studies, municipal experiences, and resources that are readily available to us," notes Rodney Stott, Environmental Planner with the District of Maple Ridge. "We are at an important cross roads where we are ready to make some minor amendments to our municipal tool kit that can lead to some significant improvements with respect to our current planning, engineering, operations, and building practices."



"There are quite a few communities in British Columbia that have been implementing higher level design and construction standards which can lead to more attractive and functional solutions. It has been proven out by others that this can be done in a way that doesn't have to be too prescriptive."

What 'Outcome-Oriented' Means

"Outcome-oriented planning is a problem-solving PROCESS. It is not a procedure. It is not a matter of applying a regulation or a checklist," states Tim Pringle. "Going through a process becomes *talent development*. Participants have to be committed to the outcome. To get there, they have to function as a team. It is the talent development process that enables development of outcome-oriented plans. It is very definitely a grounded approach."

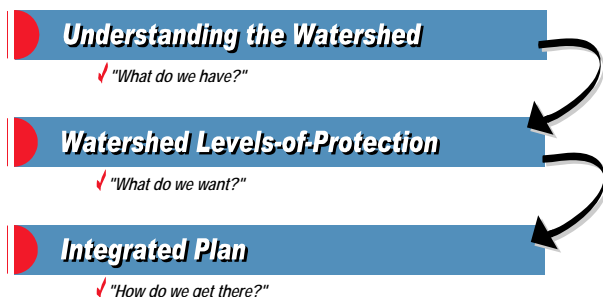


Planning Framework: According to Tim Pringle, the 'convening for action' experience has demonstrated that four ingredients will be in the mix when practitioners in a local government setting undertake to develop outcome-oriented plans. The participants will have to collaborate to:

1. Define the problem
2. Declare the community's values
3. Select and apply the right tools
4. Wrestle with the solutions

"This is not high-level or theoretical language. It is about hard work and applying common sense. Mutual support and the shared process are also critical. This is what we have learned from successful outcome-oriented processes such as the Bowker Creek Blueprint. Focus on values and actions. Keep it simple. Find a starting point that is intuitive to everyone. Ensure actions are practical and easy to implement," he concludes.

Planning Framework



Leading and Implementing Change

A pattern is emerging. Local governments in BC are embracing outcome-oriented approaches. This chapter introduces and profiles those who are applying the ten Guiding Principles and establishing 'design with nature' precedents:

1. Bowker Creek Blueprint (*refer to p. 23*)
2. Comox Valley Regional Team (*refer to p.50 -52*)
3. Vancouver Island Municipalities (*Nanaimo, Campbell River, Ucluelet, Langford, View Royal, Central Saanich, Sooke*)
4. Metro Vancouver Municipalities (*Surrey, North Shore, Langley Township, Delta, Vancouver*)
5. South Okanagan Partnership

A New Form of Governance: "The Bowker Creek Blueprint is all about what I call a new form of governance. It is quiet, silent and very effective. It starts with a vision. It is about turning the whole game plan around to a new way of doing business," observes Eric Bonham, a founding member of CAVI and a former Director in two provincial Ministries.



"What I like about the Bowker Blueprint is the temerity, the audacity, to have a 100-year vision. We need to have a 100-year vision because it takes time to turn things around when one is talking about watershed health. If we do not implant the long-term vision, we will end up with the usual death by a thousand cuts."

"The Bowker Blueprint is about reclaiming what was lost due to our past indifference. We are now talking about how to reverse the trend and bring settlement back into balance with ecology."



Achieving Watershed Outcomes

Table 2 identifies what municipalities will need to do to create liveable communities and protect or restore stream health. These outcomes require a truly integrated process that is founded on the ten Guiding Principles (*refer back to pages 1 and 67*).

The methodology embedded in the Water Balance Model powered by QUALHYMO enables a watershed target to be established; it also enables the user to assess how to meet the watershed target at the site scale (*refer to pages 44 and 65*).

There must be clear linkages between the targets and development approval processes. Financial and legal tools must also be in place to ensure implementation of outcome-oriented strategies.

Integrated Stormwater Management Plans: When the Green Infrastructure Partnership and the IGP developed Table 2 in 2008, a key objective was to provide local governments with a bridge from the Guidebook to Beyond the Guidebook. The need for this bridge had resulted from local government experience in undertaking Integrated Stormwater Management Plans (ISMPs).

As explained in Chapter 1 of the Guidebook, "Use of the ISMP term is unique to British Columbia. The City of Kelowna first used the term in 1998 to make a clear distinction between 'suburban watershed management' and the Province's 'integrated watershed management' process for natural resource management in wilderness watersheds. This is an important distinction. Local government typically has control over stormwater in residential, commercial and industrial land uses. It does not necessarily have control over watersheds."

Chapter 9 in the Guidebook elaborates on how to develop and implement an ISMP.

Unintended Consequences: The intent of an ISMP is two-fold in scope: integrate engineering, planning and environmental perspectives; and facilitate holistic solutions to protect natural resources that are at risk. The unintended consequences of ISMPs completed to date have informed the course correction described in Beyond the Guidebook 2010.

Table 2

**Developing Outcome-Oriented Watershed Plans:
Framework for Moving from Planning to Action**

Action	Level of Commitment
<p>Complete and implement integrated rainwater/stormwater management plans that are affordable and effective in protecting or restoring Watershed Health</p>	<ul style="list-style-type: none"> ▪ Local governments, in collaboration with senior governments, develop Integrated Plans that enable implementation of integrated strategies for greening the built environment; and include establishing watershed-specific runoff targets (for managing the complete rainfall spectrum) that make sense, meet multiple objectives, are affordable, and result in net environmental benefits at a watershed scale. <p><i>(Note: To date, “integrated drainage plans” have typically been called “ISMPs” pursuant to the nomenclature established in Chapter 9 of the 2002 Guidebook. The time has come to describe truly integrated plans as “IRMPs” to reflect the paradigm-shift from pipe-and-convey ‘stormwater’ to landscape-based ‘RAINwater’)</i></p>
	<ul style="list-style-type: none"> ▪ Local governments, in collaboration with senior governments, establish watershed targets that are characteristic of actual conditions in watersheds, recognizing that there will be different strategies for already developed versus partially developed watersheds.
	<ul style="list-style-type: none"> ▪ Local governments, in collaboration with senior governments, evaluate the acceptability of watershed-specific runoff targets on the basis of an evaluation framed by these three questions: <ol style="list-style-type: none"> 1. What target will achieve the watershed health objective? 2. What needs to be done to make the target achievable? 3. Do the solutions meet the test of affordability and multiple objectives?
	<ul style="list-style-type: none"> ▪ Local governments, in collaboration with senior governments, implement green infrastructure solutions that result in effective rainfall management at the site, catchment and watershed scales.
<p>Embed “IRMP” landscape-based strategies in neighbourhood concept plans</p>	<ul style="list-style-type: none"> ▪ Local governments develop rainwater/stormwater and land use plans through an inter-departmental process that is collaborative and integrated. ▪ Local governments provide guidance as to how watershed-specific targets can be met at the development scale.

Source: **Commentary on Effective Municipal Rainwater/Stormwater Management and Green Infrastructure to Achieve Watershed Health**, April 2008

Released jointly by the Green Infrastructure Partnership and the Inter-Governmental Partnership in conjunction with the consultation process for Metro Vancouver’s *Integrated Liquid Waste & Resource Management Plan*

The Commentary is accompanied by a paper titled *Beyond the Guidebook: Establish Watershed-Specific Runoff Capture Performance Targets*, released at the 2008 Water Balance Model Partners Forum.

ISMP Template

The 'unintended consequences' revolve around application of the ISMP Terms of Reference Template 2005. Developed by Metro Vancouver, the Template is nested within the Guidebook. The *Liquid Waste Management Plan* approved by the Province in 2002 included a commitment by Metro Vancouver municipalities to integrate land use and drainage planning. This was the genesis for the ISMP Template.

"Unfortunately, ISMPs completed to date have tended to be engineering-centric, and in general can be described as 'glorified' master drainage plans. ISMPs that do not integrate land use and drainage planning are resulting in unaffordable multi-million dollar infrastructure budget items that become municipal liabilities, without providing offsetting stream health benefits," stated the Metro Vancouver Reference Panel in its Final Report.

When the Reference Panel reported out to Metro Vancouver regional politicians in July 2008, it identified the ISMP process as the 'elephant in the room' for the region because 130 plans "would potentially result in an aggregate unfunded liability that could easily equal the \$1.4 billion cost of sewage treatmentthe issue is known, but there seems to be a reluctance to 'tell it like it is'."

This finding led the Reference Panel to recommend that Metro Vancouver municipalities "re-focus **Integrated RAINwater/Stormwater Management Plans** on watershed targets and outcomes so that there are clear linkages with the land use planning and development approval process."

"The elephant in the room" – unfunded municipal liabilities resulting from:



Unintended outcomes of ISMPs
(Integrated Stormwater Management Plans)

Letting Go of the ISMP Template in the CRD:

At the Bowker Creek Forum, Jody Watson of the Capital Regional District (CRD), and the Chair of the Bowker Creek Initiative, stated that a defining moment in the Bowker Creek Blueprint process was the decision to 'let go of the ISMP Template'.



"We started the planning process by retaining a consulting firm to develop a Master Drainage Plan. A deliverable was the terms of reference for an ISMP."

"We established a sub-committee to review what the consultant had proposed. As we went through the ISMP Template, we had discomfort as to what we were going to get at the end of the day; and what would be valuable for all of us, and in particular for the municipalities (Saanich, Oak Bay and Victoria)."

"We already had the experience with the master drainage plan; and the major capital costs associated with that plan – in the order of \$20 million to \$40 million. There was huge discomfort at the municipal level in trying to take those costs forward to their Councils. They wouldn't do it."

"There came a time when we just had to let the ISMP Template go. While part of the reason was that it was too engineering-centric, the biggest reason was that we did not have the funding. ISMPs are very expensive and consultant-heavy."

"We took a step back and decided that the best way to go forward was to bring in a facilitator who was not an engineer. Collectively, we found that we had all the information that we would need. The facilitator helped steer the committee through a process. We were successful."

Letting go of ISMP Template

We let the Template go because:

- Big dollar amounts
- Too strategic – needed specific details
- Engineering-centric
- Expensive modeling - what would it tell us that we did not already know
- Not enough funding to complete study

Instead, we relied on:


- Collective knowledge of committee & previous studies
- An external facilitator to help pull everything together

Bowker Creek Blueprint

The Bowker Creek Initiative (BCI) demonstrates how to apply a 'regional team approach' to urban watershed restoration in the Georgia Basin. The players driving the BCI have brought their shared vision to fruition through development of the **Bowker Creek Blueprint**.

Why Bowker Creek?

A pilot for other watersheds within the region

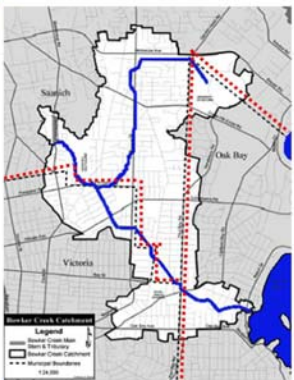


- Learning opportunities for a new way of doing business
- Raising public and institutional awareness
- Multi-jurisdictional watershed
- Location in the urban core with many interested residents

From 'Collective Indifference' to 'Design with Nature'

"Why did we choose Bowker Creek when it is a rather degraded watershed," Jody Watson asked rhetorically at the Bowker Creek Forum in February 2010. "The answer is that we saw it as an opportunity. If we could make it right in Bowker Creek, we could make it right anywhere."

Jody Watson's storytelling provided context for the 'collective indifference' that had characterized the urbanization of Bowker Creek for more than a century; and for the 'design with nature' ethic that is now driving watershed restoration.



Watershed

- Area ~ 1,020 hectares
- ~ 56% impervious
- Mostly clay soils
- ~ 30,000 residents

Main channel

- ~ 8 km long
- > 60% in culverts
- Hardened bottom and banks
- Open reaches largely non-functioning

Knowledge-Based Approach Works

Once the Bowker Creek regional team 'let go' of the ISMP Template, they applied a 'knowledge-based approach' to watershed restoration. The experience was transformational; and laid the foundation for Blueprint development.

Why do we need a blueprint?

- Details needed for municipalities to incorporate actions into their plans and budgets
- Directed change in the urban environment requires a solid plan over the long term



Why the Blueprint: "In 2003, the three municipalities and the CRD Board approved the *Bowker Creek Stormwater Management Plan*", stated Jody Watson. "While this guidance document gave strategic direction, it did not provide municipal planners with the level of detail they need to effectively review individual development applications in the context of either a greenway or creek day-lighting strategy."

"This really stymied municipal staff. So we concluded that we needed to get those necessary details down on paper. The meat of the Blueprint lies in the appendices. We wanted to keep the document easy to read, and easy to get through."

"To help municipal staff make decisions, there were all sorts of things that we had to incorporate. To meet as many of the goals and objectives of the 2003 Management Plan as possible, we had to integrate a lot of information."

Inter-Disciplinary Roundtable: The knowledge-based approach meant that the regional team convened as an inter-disciplinary roundtable to synthesize their individual areas of knowledge.

"Drainage, land use, environmental and social information was compiled and assessed in a holistic way that enabled the members of the team to apply their collective best judgment, reach-by-reach," emphasized Jody Watson.

Implementation: Municipal Perspectives

At the Bowker Forum, Adriane Pollard (District of Saanich) elaborated on what should be simple and what might be difficult to implement. Then Anne Topp (District of Saanich) dealt with issues, opportunities and key factors for success. They set the scene for Steven Fifield (Manager of Underground Utilities, City of Victoria) to describe the Trent Street Rain Gardens as an example of what implementation looks like on the ground.

What Should Be Simple, What Might Be Difficult:



“Council has been recently engaged by the Bowker Creek Initiative: a bus tour of the watershed; an open house for councillors to be introduced to the Draft Blueprint; a public open house; and presentations to Council committees. There is generally a good feeling and understanding of the work being done,” stated Adriane Pollard, Manager of Environmental Services.



What should be simple...

- Council's acceptance of the blueprint
- Annual financial support for the BCI
- Maintaining the community momentum of raising awareness and taking initiative
- Supporting/completing the Blueprint's top ten creek corridor key actions
- Most of the Blueprint's watershed actions



What might be difficult...

- Moving from the old business-as-usual/existing infrastructure to LID and rainwater management
- Day-lighting on private property
- Competing for acquisition dollars
- Recognizing the gains made over time
- Keeping track of actions & setting future priorities

Issues: “The big elephant in the room is always money. Municipalities have lots of competing interests for spending money; lots of projects to keep staff busy; and finite financial resources. We are all challenged to do more with less and get it done,” stated Anne Topp, Manager of Community Planning.



Opportunities: “We all have heard the quote ‘if you don't know where you are going, it doesn't matter what road you take’. With completion of the Blueprint, the Bowker Creek Initiative knows where it wants to go and now we need to find the road to get there. Integrating with and using other plans to advance the Blueprint will be ongoing. An example is the proposed **Shelbourne Corridor Action Plan**. Integration of the Blueprint with that plan will strengthen both.”

Key Factors for Success: “I do not remember who came up with the idea to make this a 100-year plan but I think the group agreement to use the idea was **brilliant**. There are some big ideas in the plan and a 100-year time frame might take the sting out for the people thinking about all the little issues that could impact implementation.... This approach gives us time. This plan is not just about water. It is about how this community wants to live and connect to the environment.”

“Back to money... the 100-year approach should help us. We don't have to do the \$20 million, \$40 million ISMP approach. Keeping the pieces small and creating bite-sized pieces should allow the slow and steady approach.”

“The reach-by-reach approach is *marketing friendly* for citizen and council. They can focus on the piece they know best and relate to the picture. The actions are *descriptive and understandable* without the overkill of the background technical work that supports the plan.”

Trent Street Rain Gardens: “You have to be committed and you have to think long-term. Location wise, Trent Street was a great opportunity. This type of green feature is the future of good watershed management in Bowker Creek and other watersheds in our region,” concluded Steven Fifield.



Comox Valley Regional Team

"In the Capital Regional District, the regional team approach emerged as an outcome of the Bowker Creek Initiative. This took many years of trials and tribulations. In the Comox Valley Regional District, on the other hand, there was an upfront decision by the players in 2008 to embark on a journey as a regional team," states Kim Stephens.

"Either way, an over-arching message is that it takes time and patience for stakeholders in a local government setting to first align and then integrate their efforts. And similar to the Bowker experience, a 'top down bottom up' strategy for watershed governance is emerging in the Comox Valley. In both cases, community advocates are at the table as partners with local government. This partnership theme is a common thread with the Metro Vancouver Reference Panel."

A Provincial Pilot

"The Comox Valley is a provincial pilot for demonstrating a regional team approach because the four local governments stepped up to the plate. The Learning Lunch Seminar Series (*refer to p. 50-52*) is the vehicle for bringing people together and generating momentum. We are all learning from the process," continues Kim Stephens.

Support from the Top: High-level endorsement for launching a 'regional team approach' was provided when Mayors and Chief Administrative Officers representing the four Comox Valley local governments dropped in to show their support for the 2008 Learning Lunch Seminar Series. This moment is recorded on YouTube.



Sandy Gray, City of Courtenay CAO, lauded the objectives of the Learning Lunch Seminar Series. "We are thrilled by the work of CAVI. It is a tremendous initiative," he said. "The cooperation that is taking place around a consistent approach to development is very critical to all of Vancouver Island."



Regional Response to Climate Change

"Watershed-based land use planning has real meaning on the ground for the Town of Comox," states Glenn Westendorp, Chair of the 2010 Learning Lunch Series. "Because Comox is downstream of future developments located within the regional district, we require a unified and consistent regional approach to rainwater management and green infrastructure."



2010 Learning Lunch Series: "The Series theme, *A Regional Response to Climate Change*, defines the desired outcome. This shows how far we have come as a regional team in three years. We are ready to establish performance targets for integrated land and water management."

"At the end of 2010, the four local governments will prepare a Joint Report for our politicians. We will summarize tangible outcomes from the 3-year program. That will be their moment to endorse an holistic approach to green infrastructure, one that integrates rainwater and drought management strategies. The Comox Valley planners already have a Memorandum of Understanding for review of land development proposals. This MOU has established a precedent for inter-governmental collaboration," concludes Glenn Westendorp.

Collaboration, Adaptation and Risk Management A Regional Response to Climate Change

- 1. Collaboration:**
Comox Valley Regional Initiatives (So What)
- 2. Adaptation:**
Design with Nature to Achieve Rainfall Capture & Water Conservation Goals (Now What)
- 3. Risk Management:**
Respect the Power of Mother Nature (Then What)

Vancouver Island Municipalities

A distinguishing feature of the CAVI program is the networking, sharing and relationship-building that have been enabled by Showcasing Innovation and Learning Lunch series.

This section draws attention to seven other Vancouver Island municipalities (Figure 19) that have contributed to the success of the CAVI program by sharing their stories. Each is raising the bar by incrementally implementing a new culture that achieves the goal of urban watershed protection.

North of the Malahat: The cities of Nanaimo and Campbell River, and also the Village of Ucluelet, have successfully challenged their local development communities to meet higher municipal expectations for 'green' development.

South of the Malahat (Capital Region): The City of Langford, Town of View Royal, District of Central Saanich and District of Sooke have all established provincial precedents related to rainwater management and green infrastructure.

A Ministry of Environment Perspective

At the 2008 Vancouver Island Learning Lunch Seminar Series hosted by the City of Courtenay, Margaret (Maggie) Henigman of the Ministry of Environment's Nanaimo regional office provided this perspective during a town hall sharing session: "Since 1996 I have been working across Vancouver Island, both reviewing development proposals and monitoring project implementation. In the last couple of years I have been really pleased to see a huge shift take place in the way projects are being done."



"As I reflect on the current Vancouver Island situation, it strikes me that we have created a new social norm; and it is being accepted by the development community as a whole. The change in attitude is really gaining momentum. Everywhere I go I am seeing evidence of the new ethic. It is not that everyone is perfect, but the change is really coming along."

The Development Context

"Vancouver Island offers large tracts of privately owned land, communities with urban/rural character, and unique natural amenities, in particular access to waterscapes, which attract large-scale development. We have observed that development proposals for complete communities, resort-based and mixed-use developments rely on these assets," states Tim Pringle.

Scale of Projects: "Over the last three years, we have been presenting the results of our ongoing research at CAVI events. In 2008, for example, we examined and categorized 40 land development projects that have an aggregate value of more than \$10 billion. It is all about scale. These are big projects; they take up lots of land, and therefore have an impact on the landscape."

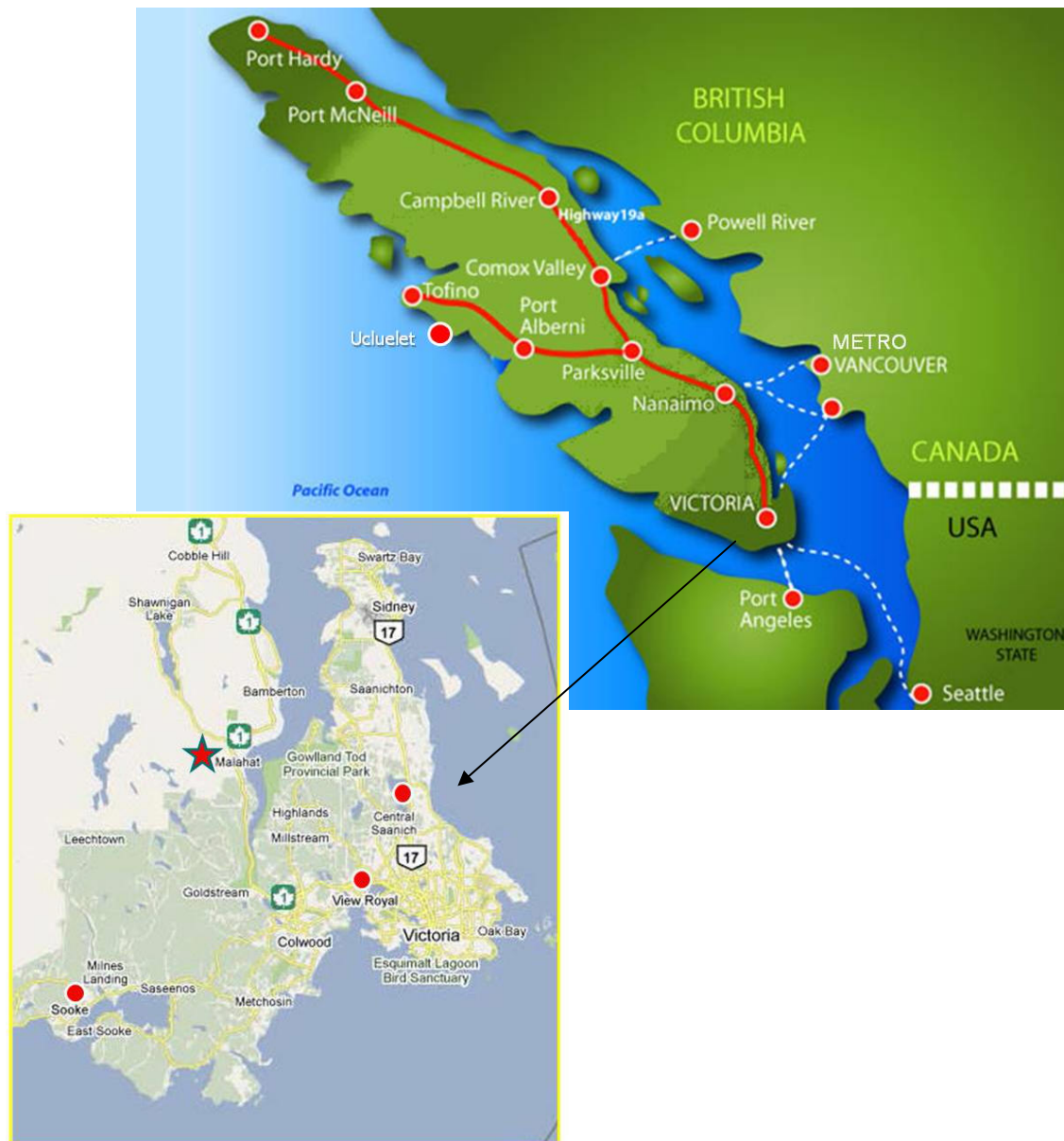
Proposed Residential and Mixed Use Development Projects With a Value ≥ \$15 million		
Number of Projects	Value of Projects (\$ billions)	Proportion of Total Value
40 in total	\$10.400	100%
3 are 'light green'	\$0.133	1%
8 are 'deep green'	\$5.908	57%
29 are conventional	\$4.369	42%

Reference Sources:
 Stats BC major projects inventory
 Conversations with developers
 Interviews with local government planning departments

Market-Niche to Market-Share: 'Green Value' refers to the intentions of land owners and developers to implement a range of strategies that recognize and protect ecological values at a watershed, sub-region and/or site scale.

"Overnight, Green Value development has moved from market-niche to market-share. In 2006 and 2007, development defined as 'deep green' accounted for about 10% of the value of residential building permits in five regional districts. Looking at what is currently on the books for projects with a value greater than \$15 million, Green Value development accounts for roughly a 60% market share, a six-fold increase."

"Whether or not all of these projects actually get constructed, this finding indicates that the development market sees advantages to incorporating green strategies in the design of large projects," concludes Tim Pringle.



Location Maps for Vancouver Island Municipalities:
North and South of the Malahat Summit

Figure 19

North of the Malahat Summit

The Inland Kenworth truck and heavy equipment facility in the City of Nanaimo illustrates what can be accomplished through collaboration when a municipality challenges a development proponent to be innovative.



Turning the Tide in Nanaimo: According to Dean Mousseau, the City's Manager of Development Engineering, "We view this project as the one that changed the thinking of the consulting community in Nanaimo, particularly on redevelopment projects. We are turning the tide because development and redevelopment projects are now incorporating features for rainwater runoff capture."



"Inland Kenworth set in motion a chain of events. We are now working with a development community stakeholder group to establish **Green**



Design Guidelines in conjunction with updating the City's current general design guidelines, found within the Official Community Plan," continues Gary Noble, the City's Development Approval Planner.

"The Green Design Guidelines will establish a new baseline that incorporates a more environmentally sustainable approach. The intent is that the guidelines will evolve as the development community becomes increasingly familiar with what works and what does not," adds Rob Lawrance, Environmental Planner.



From Vision to Implementation in Ucluelet: At the 2007 Green Infrastructure Leadership Forum,



Felice Mazzoni (Director of Planning) captivated the audience when he told the story of how the District of Ucluelet had asserted control over its destiny during an era of rapid change.

"With a clear vision that everyone is committed to, it is possible to create an integrated whole that, over time, fulfills that vision. In Ucluelet, key elements of our vision reflected the desire to accommodate growth yet at the same time maintain a rural 'feel'. As well, we wanted to include sustainability initiatives."

"Ucluelet has applied planning principles that are transferable to larger cities or other rural communities that are experiencing development pressures," concluded Felice Mazzoni.

Integration in the City of Campbell River: At the 2009 Comox Valley Learning Lunch Series,

Rob Buchan explained the City of Campbell River's approach to inter-departmental integration; and how the Development Review Committee is helping to achieve the City's sustainability vision. He is the manager of the newly created Land Use Services Department.



"Two major considerations in working together are structure and small 'c' culture," stated Rob Buchan. "Our new structure facilitates working together. Everyone in the department has something to do with land use and development."

"Our Development Review Committee is an example of how process (small c cultural) can assist the communication process. We can invite developers in at any stage in the application. Earlier is better because then we have more ability to effect positive change. We invite other stakeholders as well: fire, parks, sustainability and environment. We all sit there together. We hear the application. We talk about it and we communicate. This forces us out of our silos."

"Our interests are not always the same. We have to dialogue and come up with solutions. This facilitates the ability of the departments to work together as a team towards the corporate goals."

South of the Malahat Summit

The City of Langford is represented on the CAVI Leadership Team; and was a host municipality for the 2008 Showcasing Innovation Series.

Learn by Doing & Manage Risks in Langford:

The City of Langford was an early proponent of rainwater infiltration - in fact, its Subdivision Bylaw calls for 100% on-site rainwater management. The Langford experience serves as a case study application of how to implement Adaptive Management as envisioned in *Stormwater Planning: A Guidebook for British Columbia*.

At the heart of the City's approach to innovation is its corporate philosophy for managing risk, learning by doing, and adapting quickly to new information and changing circumstances. "A corporate culture that is willing to accept and then manage risk with regards to infrastructure standards can open the door to creativity, innovation – and its rewards," states John Manson, City Engineer.



"The City is prepared to take risks, and we have a development community that is open to new ideas. We will often suggest pilot projects when we are not sure about the risks or the consequences. We are not afraid to make the odd mistake.....because the corporate philosophy recognizes that being innovative includes an experimentation factor. We strive for 95% successful implementation; and we just keep adjusting to deal with the 5% exceptions."



Innovation in View Royal: In 2007, the Province rewarded View Royal with a \$7.4 million infrastructure grant for its vision and innovation in developing an ecosystem-based plan for retrofitting the old Island Highway with transportation and rainwater management enhancements.

Rain gardens are a core element of the design with nature strategy. "A driver is restoration of water quality in Portage Inlet, often described as the jewel of Victoria," states Emmet McCusker, Director of Engineering.



"We are talking in terms of a major shift in the way people think about their road frontage. It will be really important to develop a community spirit that in turn fosters an ethic. To that end, the Town will be partnering with community groups to take the "my rain garden" concept from vision to reality."



'Green' Roadways: The View Royal showcasing innovation day was built around an interactive group exercise. The *View Royal Template* for grant applications was applied to four case study examples provided by participating municipalities (Sooke, Langford, Metchosin and Victoria).

"To provide reality, each group was tasked with developing a concept for enhancing a specific section of a real road located in each of four municipalities," explains Emmet McCusker. "We shared our View Royal Template so that we could help our peers bring their innovative ideas to the forefront when they apply for infrastructure grants. We wanted to raise the bar in the region."

Beyond the Guidebook 2010: Implementing a New Culture for Urban Watershed Protection and Restoration In British Columbia

Rainwater Management in Sooke: The District is the first BC municipality to produce a stand-alone *Liquid Waste Management Plan for Rainwater*.

"We followed the Ministry of Environment's 'Proposed Guidelines for Preparing Liquid Waste Management Plans', released in March 2004. At the same time, we updated our OCP. The timing was perfect. This provided direction," reports Laura Byrne, Engineering Technologist.



Sharing and Collaboration: "Partnerships are so vital. Furthermore, networking was key to doing the Liquid Waste Management Plan affordably. By working with other agencies, and not duplicating efforts, we got it done. Now we are proceeding with development of Rainwater Management Plans for 18 watersheds over 7 years. Four are completed."

"Because Sooke is a small municipality with limited financial resources, we have had to pare down and make the plans practical in order to be affordable. Again, networking and collaboration are making it possible for us to do this effectively."

"The Rainwater Management Plans provide a framework for the development of on-the-ground solutions for the management of rainwater at a watershed scale. Also, they integrate planning for drainage infrastructure and ecological assessment and restoration with municipal planning processes. This integrated approach provides solutions to drainage and ecological concerns. We recognize the value of healthy watersheds – we know what we have to protect."

Rainwater Source Control: The District of Sooke is working on revising its *Subdivision and Development Standards Bylaw* to require green infrastructure for rainwater runoff capture. It also encourages the use of the Water Balance Model.

'Green' Road: "The case study sharing exercise organized by Emmet McCusker in 2008 was tremendous. Our participation reaffirmed the direction Sooke was heading. We are now proceeding with construction of our 'green' road. The View Royal showcasing day provided us with tangible value!" concludes Laura Byrne.

Rainwater Management in Central Saanich: The District is a Water Balance Model Partner and is the first Vancouver Island municipality to create an ISMP in accordance with the methodology laid out in the Guidebook.

"Central Saanich received the **2010 Watershed Award** from the Federation of Canadian Municipalities; and also the CRD EcoStar Award," reports Nirmal Bhattacharya, P.Eng., MCIP, Municipal Engineer.



"The ISMP project was guided by a stakeholders committee that included government agencies, area farmers, local interest groups, residents and District staff. The District took all feedback and concerns into consideration and collaboratively developed an holistic and sustainable rainwater management plan that will be implemented over the next five to 20 years."

"Because Central Saanich is a Water Balance Model partner, it has embraced the vision of the Inter-Governmental Partnership to advance a 'design with nature' approach to land development," continues Roland Rocheleau, ISMP Project Manager.



Rainwater Source Control: In February 2010, Central Saanich Council adopted the *Surface Water Management Bylaw* to require rainwater runoff capture. It encourages use of the Water Balance Model at the individual property scale.

"The Bylaw was an outcome of the ISMP," states Nirmal. "There was already a clause in our engineering specifications that requires 'no net increase in runoff' after a site is developed. But it was redevelopment of a site with a large paved area that led us to re-think our approach. We said let's try to do something. This led us to create the Bylaw which now gives us the means to restore the water balance when properties redevelop."

"We are already seeing how people are viewing their properties differently now that we can point them to the Water Balance Model. Their use of the tool is raising their awareness of how they can achieve rainfall capture; and they are learning how to use soil and landscaping as an alternative to storage tanks," concludes Roland Rocheleau.

Metro Vancouver Municipalities

Ten municipalities in Metro Vancouver are Water Balance Model Partners. The cities of Abbotsford and Chilliwack in the neighbouring Fraser Valley Regional District are also partners.



Fisheries & Oceans Perspective

Corino Salomi is DFO Area Manager for the Lower Fraser Valley. His area of responsibility extends from Mount Currie to Boston Bar. This allows him to see the big picture in terms of region-wide action on the ground.



“We are seeing broad awareness and application of green infrastructure across the South Coast region,” states Corino. “At the same time, and keeping in mind that the objective is to maintain stream health, we can characterize the current situation as being one of missed opportunities to consistently do business differently and better on individual properties.”

“Comparing Metro Vancouver and Fraser Valley to the Bowker Creek approach boils down to ‘missed opportunities’. The 100-year Bowker Blueprint takes care of missed opportunities. That’s why, for example, it is heartening when I see pavement being cut to create a ‘bus bulge’ in the City of North Vancouver. The City is doing the little things needed to create cumulative benefits over time.”

Overcoming Fear and Doubt

At a rainwater conference hosted by the University of British Columbia in June 2007, Kim Stephens drew on his Metro Vancouver experience to tell a story that provided the flavour of what it was like to be in the hot seat when introducing a new way of thinking and doing in 2000.



“During the 2000-2001 period we had to overcome fear and doubt in order to move ahead with projects such as the East Clayton Sustainable Community in Surrey, and UniverCity on Burnaby Mountain. It was David Reid who coined the *overcoming fear and doubt* mantra; it stuck and became an integral part of the UniverCity story.”

“By early 2001, we were literally hanging on by our fingernails. At the time, it was Patrick Condon of UBC who said: *“If we fail, it will be a generation before anyone will even have the opportunity to try again; so we must not fail.”* Well, we did not fail. And because we succeeded with East Clayton and UniverCity, those hard-fought successes have ultimately made it possible to change land development practices to capture rain where it falls.”



Stoney Creek ISMP: Because Simon Fraser University is situated at the top of the Stoney Creek drainage system, the Stoney Creek ISMP established the rainwater management criteria and set the bar for the community development that has followed at UniverCity.

The inter-municipal Stoney Creek plan (Burnaby, Coquitlam, Port Moody) was the pilot ISMP for the Metro Vancouver region, and was awarded the *2000 Environmental Award* by the Association of Professional Engineers and Geoscientists of British Columbia. The Stoney Creek experience is embedded in the Guidebook.



City of Surrey – “From Pilot Projects to a Watershed Objectives Approach”

When the City of Surrey hosted the second event in the 2006 Showcasing Innovation Series, historical context was provided by Paul Ham, Surrey’s General Manager, Engineering. Paul Ham was also Chair of the Green Infrastructure Partnership from 2005-2008.

“The East Clayton Neighbourhood Concept Plan provided the first large-scale opportunity to ‘test’ a new approach advocated by Patrick Condon and others. This new approach, which is sometimes characterized as ‘the future is the past’, embodied a design with nature way-of-thinking about drainage,” stated Paul Ham.



“Looking back, it is sometimes hard to believe that almost a decade has passed since the City initiated the East Clayton plan. With the passage of time, we tend to take the early innovation for granted. From my perspective, one aspect which really stands out about the East Clayton plan is the integration of sustainability objectives.”

In providing context for City of Surrey actions over time, Ham highlighted three provincial initiatives that had an early influence on City of Surrey thinking. These were the UniverCity Sustainable Community on Burnaby Mountain, the Provincial Guidebook, and the experience of the City of Chilliwack when it developed its *Manual for Surface Water Management* as a feedback loop for Guidebook development.

“The early results from East Clayton combined with the on-the-ground experience of Chilliwack gave Surrey the confidence to implement new green infrastructure objectives in two plans – the Campbell Heights Economic Development Plan (1999-2000), and the Highway 99 Corridor Land Use Plan (2002). In fact, Council made the use of green infrastructure practices a condition of both plans.”

“Investigation of opportunities for the application of green infrastructure objectives is now expected in all the City’s land use plans. Furthermore, ISMPs will provide the basis for implementing green infrastructure objectives to support a design with nature approach on a watershed scale”, concluded Paul Ham.

Shared Responsibility: “Once we know what we want our watersheds and neighbourhoods to look like, the next step is to decide *what the tools are*



that will get us there,” states Vincent Lalonde. In 2008, he succeeded Paul Ham as General Manager. “All of us need to understand and care about the goal if we are to

create the future that we all want. So we designed the *2009 Water Balance Model Forum* to start a dialogue between policy-makers and project implementers about shared responsibility.”

Watershed Objectives: “On the matter of implementing on-site rainfall capture, there is a fundamental difference between Surrey and other Metro Vancouver municipalities,”

continues Remi Dubé, Acting Development Services Manager with the City. “Surrey has moved beyond pilot projects; we are moving to a broader watershed objectives approach to capturing rain where it falls to better protect our streams.”



Water Balance Model Building Blocks: The Stream Health Methodology (*refer to page 44*) now embedded in the WBM evolved through three successive Surrey case studies: East Clayton, South Newton and Fergus Creek.

“East Clayton was an early application of performance targets at a neighbourhood scale. Also, and most importantly the analysis combined



mass balance and flow duration to test the achievability of performance targets,” states Jim Dumont.

“But it was the South Newton case study where the methodology really came together in terms of how to integrate the mass balance and stream erosion analyses. Until then, they were separate analyses.”

“The experience gained in East Clayton and South Newton was then applied in the Fergus Creek ISMP to develop the Stream Health Methodology. This methodology is a function of flow duration, and hence stream erosion.”

Beyond the Guidebook 2010: Implementing a New Culture for Urban Watershed Protection and Restoration In British Columbia

Community Outreach in Surrey: The City has been proactive in going beyond the engineering boundaries to foster a change for the better in the community's 'land and water ethic'. The City's efforts to engage the broader community encompass homeowner outreach initiatives and educational programs in schools.

Online and Interactive Educational Resource: 'Sustainability in My Backyard' is an educational resource developed by the City. "What happens when it rains?" is a simulation of the path that water takes in different situations. Students can explore the impacts to nearby creeks and streams when water hits a built environment (refer to Figure 20 on next page)."

"The simulator offers students, teachers and Surrey residents an interactive way to discover the unique design elements of the East Clayton Sustainable Neighbourhood development," states David Hislop, City of Surrey Project Engineer.

"Also, they can explore the impact of rain and drainage on the nearby North Creek by comparing different rain scenarios and how the sustainable design features work."



"Students compare the impacts based on traditional neighbourhood development techniques, to the impacts when the sustainable design features are employed."



Ongoing Celebration of East Clayton Success: "We are not just 'greening' urban drainage, we are facilitating a stewardship ethic through ongoing celebration of East Clayton innovation", states Carrie Baron, Drainage & Environment Manager.

"To sustain the early momentum, each successive homeowner needs to understand the WHY behind the on-site drainage retention philosophy. Each year, high school students deliver a brochure door-to-door. We also tell our story at Community Day events and at mall displays."



"It is all about continual education. Slowly we are changing the mind-set. It makes a difference that the educational approach is endorsed by Council through Sustainable Surrey,"

Transformation of Robson Park: "We are really excited about the impact that Robson Creek daylighting has had in mobilizing the community in a 70-year old neighbourhood in North Surrey (refer to Figure 20 on next page)."

"Park transformation started with Engineering and Parks collaborating on a joint project. We then involved the neighbourhood, streamkeepers and local school to create a shared vision. The community now has a great new park with educational water features."

"The locals say they have never seen so many people use the revitalized Robson Park. This success story shows that things don't have to stay the same; over time we can bring value back into a neighbourhood."

Connecting with High School Students: "We are working with the Surrey School District to help teachers incorporate local environmental examples into course curricula. Everyone else seems to focus on the grade fives; in contrast, we are targeting high school students. We make the material relevant to their interests."

"This is a long-term commitment. We believe we are successful even if we only reach 2 students out of 30. It will catch on over time," concludes Carrie Baron.

Beyond the Guidebook 2010: Implementing a New Culture for Urban Watershed Protection and Restoration In British Columbia

The screenshot shows the homepage of the 'Sustainability in My Backyard' website. At the top, there is a navigation bar with links for 'Home', 'About East Clayton', 'Walking Tour', 'In the Classroom', and 'Simulator'. Below this is a large banner image of a residential street with houses and trees. The main content area is divided into several sections: 'About Sustainability in my Backyard' with a descriptive paragraph; 'About East Clayton' with a small image and text; 'East Clayton Walking Tour' with a small image and text; 'Rain and Drainage Simulator' with a small image and text; and 'In the Classroom' with a small image and text. At the bottom, there are logos for Environment Canada, the City of Surrey, and the 'PASSION IN ACTION' logo.

<http://www.sustainabilityinmybackyard.ca/>



Robson Park Revitalization & Robson Creek Day-Lighting Project

Figure 20 – Examples of City of Surrey Success

North Shore Municipalities – “The Right Trees in the Right Places”

The District of North Vancouver, District of West Vancouver, and City of North Vancouver are founding members of the Water Balance Model Partnership.

Trees Intercept Rainfall: “Trees can intercept upwards of 50% of the rain that falls each year on a watershed. Removing the tree cover means that more and more rainfall is converted into runoff volume,” explains the District’s Richard Boase. “A quantum increase in runoff volume then impacts stream and watershed health. The impacts are cumulative consequences of repeated erosion and sedimentation.”



“On the North Shore mountainside, potentially doubling the runoff volume has major implications for rainwater and watershed management. Only so much rainwater can be infiltrated naturally or forced unnaturally into the ground. We need trees to reduce the proportionate volume of rainfall that eventually becomes runoff.”

“This need was a driver for the three municipalities collaborating to implement the North Shore Tree Canopy Interception Research Project (2006-2010) in partnership with UBC and others. The research has quantified the proportion of rainfall intercepted by the tree canopy in an urban setting.”

“The research has provided a science-based understanding about the benefits of maintaining a tree canopy in the urban environment. This understanding will inform stream health protection strategies on the North Shore and elsewhere. Soon, these findings will be incorporated in the WBM to populate a new Tree Canopy Module.”

A network of 60 *Tree Canopy Climate Stations* was established across the North Shore

... to investigate the effects of tree density, tree structure and tree species on rainfall interception



Rain Gardens at Bus Bulges: The City of North Vancouver is leading by example in demonstrating on-the-ground applications of a 'design with nature' way-of-thinking and acting. This is illustrated by drainage features constructed within the highly urban Lonsdale Avenue corridor.

"Rain gardens have been included in bus bulges on Lonsdale to minimize the impact of the built environment on the City's small streams. But this is just part of the picture," states Tony Barber, Manager of Engineering Planning and Design.



"The rain gardens also help to sustain the adjacent street trees and make the streetscape a more comfortable and attractive environment for walking. Studies have shown that appealing streetscapes also improve the viability of adjacent businesses."

"As far as the bus bulges themselves, they reduce transit dwell times and therefore help to make transit a more attractive alternative. So to sum it up, these bus bulges help to contribute to the social, economic and environmental aspects of the sustainability of the City of North Vancouver."

The drainage features have been praised by Corino Salomi of DFO (*refer back to p. 79*). "Not only do the features appear functional, they are visually appealing and interesting. Installing features like these on a busy street like Lonsdale takes dedication and in my opinion demonstrates the kind of leadership needed to bring about improvements in how rainwater is viewed and managed. This is an example of seizing, not missing, an opportunity."



District-Wide ISMP for North Vancouver: The District has a bold vision to systematically retrofit individual properties as they come up for redevelopment. The catalyst for pending action is the ‘death by a thousand cuts’ consequences for watershed health.

“Through our Official Community Plan Update, the District is advancing a vision for restoring the rainfall absorption capacity of our watersheds, one property at a time, over time,” states Richard Boase. Much like the visions for the **Bowker Blueprint** and Philadelphia’s **Green City, Clean Waters** plan, this will take a 50-year commitment.”

Risk to Watershed Health: “To draw attention to the urgent need for action on single-family residential properties, we have created a set of images to illustrate why and how watershed health is at risk. Mackay Creek is our case study.”

“The watershed is at maximum build-out; and is undergoing redevelopment as the older housing stock is replaced. We analyzed trends and examined specific properties to quantify the implications of an expanding house footprint. Within 20 years, 10 percent of the existing lots in the Mackay watershed could be redeveloped, with a consequent **25% increase** in impervious area and **10% increase** in annual runoff volume (refer to Figure 21 on next page for redevelopment example).”

“We are developing a set of prescriptive solutions that would reverse the trend. An absorbent topsoil layer is a fundamental building block. This is why the WBM team views the **Topsoil Law and Policy and Technical Primer Set** as a potentially powerful tool to help municipalities achieve a watershed restoration vision (refer back to p. 59).”

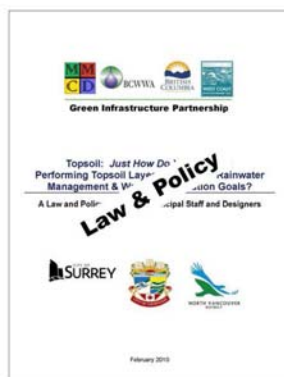
Watershed Landscape Restoration Strategy: “The District of North Vancouver has observed the experience of other municipalities that have applied the ISMP Template. They have spent a lot of money to get reports that say spend more money. The District simply cannot afford to go down a path that leads to engineering solutions that are unaffordable and unrealistic.”

“We suspect the ISMP process as currently defined is beyond the District’s financial ability to undertake and implement. Yet we are faced with a looming 2012 deadline to have work done to meet our regulatory commitment under the region’s Liquid Waste Management Plan.”

“We need an outcome-oriented alternative to the ISMP Template, and we believe we have it with our proposed **Watershed Landscape Restoration Strategy**. This is our District-Wide ISMP, and we hope to implement it through the current OCP Update (refer to Figure 21 on next page).”

Ecological Integrity: “A key message is that the focus of this landscape-based strategy is on restoring ecological integrity. We are not talking about changing floor space ratios. We are just saying people have to pay closer attention to the surficial treatment of our watershed landscape.”

“Restoring and protecting our watersheds starts by changing the land ethic. Since this is about behaviour, we have to build from the ground up. This can be achieved by an holistic strategy that is keyed to *cumulative and complementary steps*. We start with the individual property and we move out from there,” concludes Richard Boase.



In 20 years, 10% of existing single family lots could be redeveloped in the Mackay Creek watershed. Ecology is from the ground up. So, applying the Water Balance Model, we can theorize that by.....

- Improving top soil depth to 400 mm; and
- Collecting roof runoff on-site in a simple rain garden

We could potentially see results that show:

- ✓ 10% less impervious area per lot than existing
- ✓ 5% less annual runoff per lot than existing
- ✓ 42,000 m³ decrease per year rather than 105,000 m³ increase in total runoff volume

With the same redevelopment

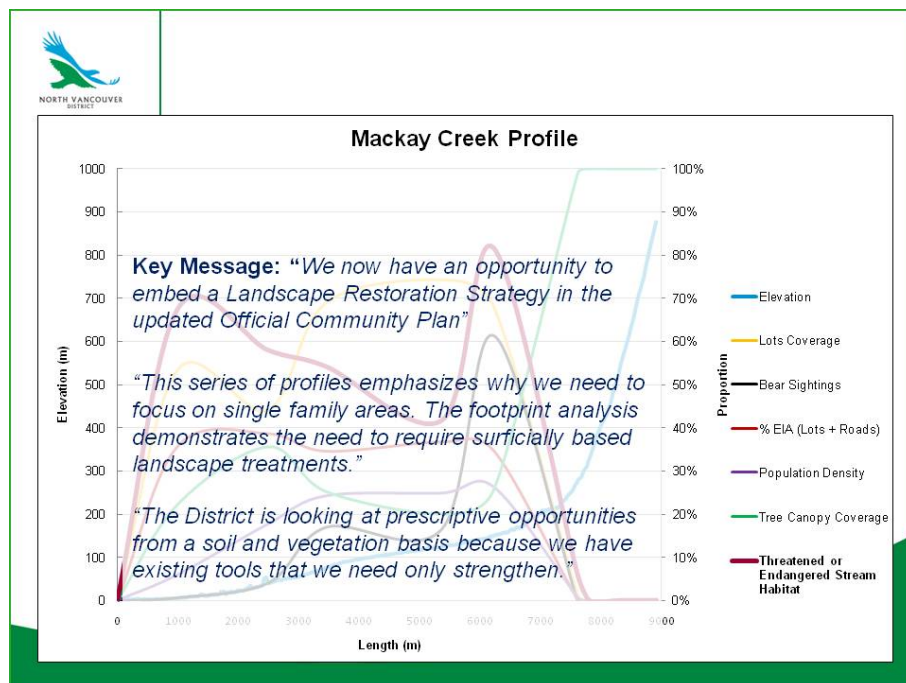
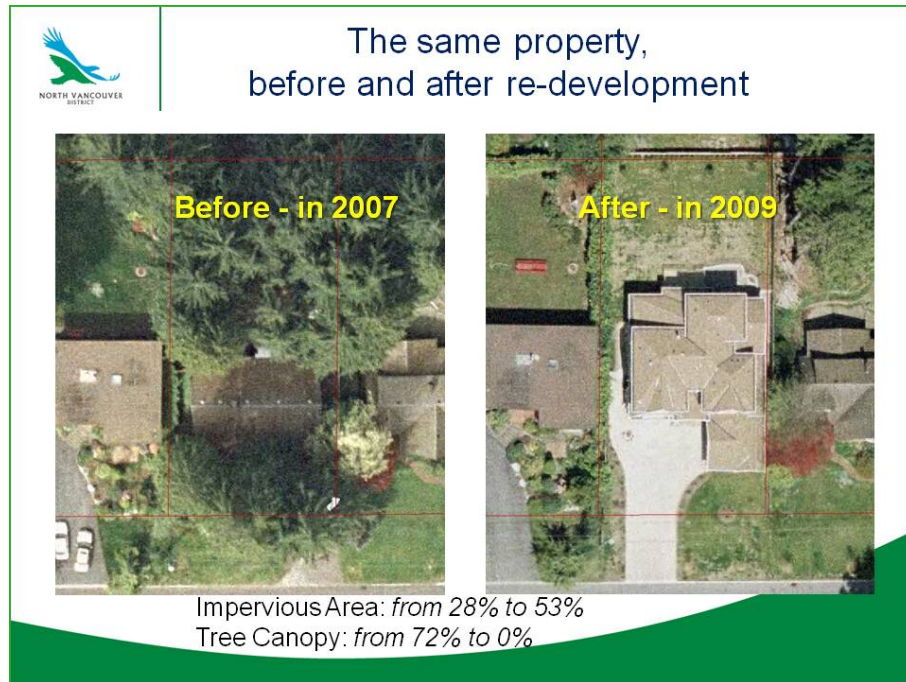


Figure 21 – Turning a Risk into An Opportunity in the District of North Vancouver

Langley Township, Delta & Vancouver – “Leading by Example”

Vancouver and Delta were founding members of the WBM Partnership. Langley Township joined two years later in 2005. All three municipalities have hosted Showcasing Innovation events.

New Neighbourhoods and Green Infrastructure Innovation in Langley: “The Township is *walking the talk* when it comes to putting sustainability into practice,” Colin Wright (General Manager, Engineering) stated at the 2007 event. “As municipalities, we are the focal point. We have to show leadership on-the-ground. We have to be in harmony with nature. When we are in harmony with nature, things will go well. In Langley, we believe there is a sea-change about to happen. The community is ready for green infrastructure.”



“The Routley, Yorkson and Northeast Gordon neighbourhood communities illustrate how a ‘water-centric’ approach is changing the way that land is developed in Langley,” stated Ramin Seifi, Director of the Community Development Division.



“Each neighbourhood features a different green innovation: A multi-purpose greenway and shallow infiltration systems on individual residential properties were first implemented in Routley; a ‘third-pipe system’ for roof drainage connects to a sand filtration treatment system and deep-well injection for aquifer recharge in Yorkson; and most recently, we have built truly ‘green streets’ in North East Gordon Estates.”



Landscape-Based Rainwater Management in Delta: “We have some 500 kilometres of roadways, and we have embarked upon a long-term program to systematically and incrementally improve the urban landscape. The corporate vision is to enhance community liveability by beautifying streets, one block at a time,” states Hugh Fraser, Deputy Engineer of Engineering.



“Within the engineering department, Delta has added a landscape designer to the engineering design team to assist with incorporating rainwater capture technologies into landscaped amenities that beautify roadways.”



‘Green’ Streets in Vancouver: By 2005, the City had established two BC precedents with the Country Lanes and Crown Street projects. These demonstrated the ease of rainwater infiltration.



Crown Street

Country Lane

“The City of Vancouver is proud to have contributed to the ‘working with nature’ philosophy and applying the principles of the WBM to the City’s Olympic Village project,” states the City’s David Desrochers, Manager, Sewers & Drainage Design. “Furthermore, we are looking forward to the success of the East Fraserlands redevelopment project as it will become the largest site application of the WBM in the City of Vancouver.”



South Okanagan Partnership

"In 2005, the Real Estate Foundation and the Water Sustainability Committee agreed to pilot a strategy emphasizing water-centric planning values in the context of several regional initiatives in the South Okanagan," states Tim Pringle. "The partners intended to use tools such as the Water Balance Model and relationships with regional stakeholder agencies as well as three Ministries (Agriculture, Community Services and Environment) to advance water sustainability in the planning." (Refer to pages 7 and 19)

"The initiative took on the name 'Convening for Action' and soon found itself contributing to the *Regional Growth Strategy* (RGS) process as well as *Smart Growth on the Ground* and the *Agricultural Area Plan*. The latter two projects pertained to Oliver & District and involved regional stakeholders as well as external participants."

Changing Land Ethic

"The March 2010 *Okanagan Water Supply & Demand Project Phase 2* report (by a partnership led by the Okanagan Basin Water Board) sums up the changing ethic about water sustainability in the region. The report describes a modelling component that 'developed an Okanagan water budgetthe results of Phase 2 show a need for more careful management and choices on development, the future of agriculture, and environmental protection'.



This shows the increasing awareness of the relationship between land and water, and the impacts of choices."

According to Tim Pringle, "Convening for Action decided to move its work to Vancouver Island in 2006, rather than be another layer of consultation in the South Okanagan. Operating as CAVI, it has refined its educational and research services to continue to support water-centric planning in the local government context." (Refer to Chapter 5).

South Okanagan Similkameen Conservation Program

A Convening for Action partner in 2005, the *South Okanagan Similkameen Conservation Program* (SOSCP), had a key stakeholder role in the RGS process (2005-2007). Bryn White, Program Manager, joined SOSCP in 2006 and noted its lead role on the Land Use Team, one of 6 teams contributing to the RGS process.

"We gained respect for our expertise about stewardship and conservation and helped form the five policies for the second goal of the RGS, 'Ensure the Health of Ecosystems'. SOSCP also assisted in developing the "performance indicators" needed to make these policies active," reports Bryn White.



"Convening for Action's influence was apparent in documentation (including graphics) and corporate knowledge used in producing the RGS plan. Several of my Board Directors asked me to pay attention to CAVI's ongoing work as a source of new practical ideas that could help SOSCP to devise and implement its strategy to enhance the capacity of local governments in the South Okanagan to implement RGS policies for protection of ecosystems."

"Currently, SOSCP is confirming funding for the second year of the *South Okanagan and Lower Similkameen Local Government Ecological Standards and Practices Capacity Building Initiative*. The budget of \$184,250 includes \$97,250 cash, of which 65% will be provided by local governments, SOSCP and the Okanagan Similkameen Conservation Alliance. The funding pays for the salary of an environmental planner and other support contractors shared by the three local governments committing funding. Not only does this initiative provide a round table for sharing issues and solutions, it offers a long-term commitment to the region's ecological well being."

SOSCP exchanges experiences with the Comox Valley Land Trust, whose Executive Director is a key player in CAVI's Learning Lunch Seminar Series. "CAVI is a real team of practitioners," concludes Bryn; "we want to create the same kind of learning environment in our valley."

Ensuring ISMPs are Outcome-Oriented

The need for a 'course correction' in the way ISMPs are done was flagged on page 68. The Bowker Creek Blueprint and other case studies profiled in this chapter demonstrate how local governments can make the necessary correction.

Implement a New Culture

"The big learning from the Bowker Creek process is the process itself. We have a good model to work with," Jody Watson stated at the Bowker Forum in February 2010.

"I hope that in future we will get to a point where we don't have to develop a specific plan for a watershed.... because we will have changed the culture and the thinking; and how we develop and how we engineer."

"It will all be changed so that natural areas are protected as part of the way we do business. We are not there yet, but everyone is starting to move in that direction. Regionally we may need to do a few more key watersheds to continue that learning and get to a point where it is just the way we do business."



Apply a Knowledge-Based Approach: "In 2001, the Regional District of Nanaimo was the pilot local government for development of the outcome-oriented **Knowledge-Based Approach**. The RDN case study is described in Chapter 5 of the Guidebook. A decade later, the Bowker Blueprint reinforces why we must focus on solutions and outcomes," states John Finnie, CAVI Chair. "When the right people with the right knowledge are involved at the right time to apply *informed judgment* in a collaborative process, the outcome-oriented approach saves time and money."

Why RAINwater Management

Figure 22 captures the evolution of drainage planning in BC over the past 30 years. The importance of Figure 22 is that it embodies the paradigm-shift that is driving the 'ISMP course correction' from an approach that is engineering-centric to one that is holistic, integrated and landscape-based – i.e. **RAINwater Management**.

Focus on Form and Function: "It is important to use descriptions which are linked closely with the objectives and ideas," states Robert Hicks of Metro Vancouver. "Ideally, the right choice of wording will frame the concepts clearly, and provide the terminology with some longevity. Clarity will help with uptake."



"In Germany, for example, it is *Regenwasser* (rainwater) and *Nahenatur Entwässerung* (near natural drainage). In the UK, it is 'sustainable urban drainage systems' (SUDS). Use of these terms has inspired many BC practitioners to focus on function and solution - site level, rainwater, green, integrated, infrastructure, etc."

"For the past decade in Metro Vancouver, we have been considering *rainfall management* rather than *stormwater management*. Rainwater falls on the site. If you manage it on site, then you don't have stormwater runoff," states Ed von Euw, Metro Vancouver Senior Engineer. He has led development of the region's **Integrated Liquid Waste & Resource Management Plan**. "Rainwater is so all-encompassing that it is actually included under all three of our goals and several strategies."



Switch to IRMP: "When we were developing the Guidebook, Ted van der Gulik coined the line on page 1-1 that says '*stormwater is the component of runoff that is generated by human activities*'. We considered the distinction important," recalls Peter Law, Chair. "We also weighed whether the title should be 'stormwater' or 'watershed-based' planning. To provide practitioners with a point of departure that they understood in 2002, we opted for 'stormwater'. The time is now right to make the break from 'ISMP' and instead use '**IRMP**' – that is, **Integrated Rainwater Management Plan**."

from Stormwater Management to RAINwater Management

From TRADITIONAL to

- Drainage Systems
- Reactive (Solve Problems)
- Engineer-Driven
- Protect Property
- Pipe and Convey
- Limited Consultation
- Local Government Ownership
- Extreme Storm Focus
- **Peak Flow Thinking!**



INTEGRATED:

- Ecosystems
- Proactive (Prevent Problems)
- Interdisciplinary Team-Driven
- Protect Property *and* Habitat
- Mimic Natural Processes
- Extensive Consultation
- Partnerships with Others
- Rainwater Integrated with Land Use
- **Volume-Based Thinking!**

Source: Chapter 3, *Stormwater Planning: A Guidebook for British Columbia*, 2002

Rainwater Management: Key Elements of the Transition to an Integrated Approach

Figure 22

Federal Fisheries Perspective

“Almost a decade ago I began representing DFO in dealing with local government and the development community regarding land use issues,” states Corino Salomi. “At that time, we knew what needed to be done to protect ecological integrity. When I participated in inter-governmental meetings, I would ask those around the table: what is taking so long; when are we going to have some action?”



“Now, when I look back at the record of the past 10 years, I have admiration for what so many have been accomplishing. I also have a heightened appreciation of the extent to which development issues are complicated and/or complex, and therefore require the holistic approach that is RAINwater management.”

Implement the Course Correction: “When it was first conceived in 2001, the ISMP Template was a great concept but there have been challenges with its application. By 2005, it had evolved into a significant document that demonstrates the complexity of addressing development issue at a watershed level. On the other hand, the ISMP Template clearly shows that maintaining watershed or stream health can be as simple as committing to protecting riparian areas and managing rainwater.”

“People have asked: does a municipality really need to spend \$200,000 for a report concluding they should maximize rainfall capture in the watershed? That question resulted in the term “**ISMP-Light**” or a minimum level effort ISMP based on commitments to riparian protection and site level rainwater management.”

“The validity of this thinking is reinforced by what the Bowker Creek Initiative has demonstrated, and what the Metro Vancouver Reference Panel is now telling us. Establish the vision, set the target and then implement.”

“The **Commentary** (refer back to Table 2) was a first step in helping local governments make the needed ISMP course correction. Released in 2008, it presents a conceptual framework for setting watershed-specific performance targets and then implementing them at the development scale. Now we need to go the next step.”

“We have tools such as the Water Balance Model and the Topsoil Primer Set; and we have many on-the-ground examples of how to capture rain where it falls. Municipalities just need to get on with applying the tools and the experience so that they capitalize on opportunities rather than *missing opportunities*.”

Why Beyond the Guidebook: “It helps to look back to understand how we got to here. In 2001, DFO released the 4-page *Urban Stormwater Guidelines and Best Management Practices for Protection of Fish and Fish Habitat*. That document set a direction. By 2007, however, we had concerns about how the document was being interpreted and applied. **Beyond the Guidebook 2007** represents the initial course correction (refer back to p. 44 - 45).”

The Shift from Stormwater to RAINwater

- **2001:** *Urban Stormwater Guidelines and Best Management Practices for Protection of Fish and Fish Habitat*
- **2007:** *Beyond the Guidebook: Context for Rainwater Management and Green Infrastructure in British Columbia*

Establish Watershed-Specific Targets: “Future population growth in the Georgia Basin will largely be accommodated in partially or significantly developed watersheds. Redevelopment creates opportunities to get it right the second time around, one property at a time. This is why the Bowker Blueprint is such an important precedent. It is about restoring the ecological integrity of the urban landscape over decades.”

“To make that happen, there needs to be a roadmap (blueprint) so that community liveability AND stream health both benefit from property redevelopment opportunities. This requires a different kind of ISMP, one that is guided by the ‘connect the dots’ type of thinking that establishes achievable and watershed-specific targets.”

“Rainwater management has a bigger picture. It is not just about drainage. Non-point source pollution, species at risk, ecosystem functions, and drought management are all coming to the forefront. Everything is linked. So, watershed targets and land development solutions must be holistic in scope.”

Provincial Government Context

Living Water Smart, BC's Water Plan and the Green Communities Initiative must be viewed as an integrated package. Living Water Smart presents the vision, and the Green Communities Initiatives provides enabling tools to achieve the vision.

Implementation Framework: "The fact one has a PLAN does not mean one has implementation," states Glen Brown. "An ISMP that produces an unaffordable price-tag can have an unintended consequence: paralysis and/or inaction."

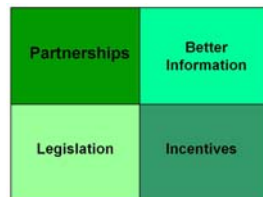


"A local government does not require an ISMP for it to implement green infrastructure practices. When you know something needs to be done (think of the Bowker Blueprint), and there are easy first steps, jump in....get started....even if it is incremental."

"What a local government does need is that its engineering, planning, finance and operational folks work together. That collaboration is the beginning of implementation."

"If one goes back 10 years, there was a void of policy and legislation. This led us down an educational path as the logical alternative," states Glen Brown. "We took the Guidebook, which is a document, and we moved it to implementation. The educational path takes time; it is incremental; it takes effort."

"Now, the Green Communities Initiative provides a comprehensive framework for helping local governments in BC create **integrated communities**. The framework has four elements; and these elements encompass plans and strategies that complement and support Living Water Smart."



"The Guidebook and Beyond the Guidebook are elements of the Green Communities Initiative. Beyond the Guidebook 2010 is about strategies, tools and resources that will help communities move from awareness to implementation."

Incentives for Innovation and Integration:

"Provincial grant programs provide local governments with incentives for implementation of new ways of doing business. Grant programs will be leveraged to achieve Living Water Smart targets. Those who are proactive and show leadership are the ones who are being rewarded," continues Glen Brown.

"On the implementation side, it is how those incentives feed back into the planning side. More and more, good implementation relies on good planning."

Grants Foster Innovation & Integration

"The reality of an increasing local government infrastructure deficit means that there will be even stiffer competition for available funding. As a result, there is a greater incentive for local governments to demonstrate how their innovation and integration will be effective in meeting the goals of both the Green Communities Initiative and Living Water Smart."

Glen Brown, Executive Director
Ministry of Community & Rural Development
September 2009

Move to a Level-of-Service Approach: "Money – it should be about how to get the most value out of every dollar spent. Too often, thinking stops after the capital investment is made. Yet everyone needs to be thinking in terms of life-cycle costs, including future recapitalization of the investment. This is not normally considered in traditional infrastructure decision-making."

"And when you think about it, how often can an 'engineering solution' be described as a band-aid, especially when it reflects an end-of-pipe way of thinking? A 'design with nature' solution, on the other hand, deals with the cause of a problem; and is usually the outcome of interdisciplinary and interdepartmental collaboration and interaction."

"When you think about it some more, you realize we really should be talking about *level-of-service*. What level do you wish to provide, and what level can you afford. The **Commentary** (refer back to Table 2) envisions a level-of-service approach to setting watershed-specific runoff targets. It identifies the questions that should be asked when evaluating the acceptability of targets. From the stream health perspective, for example, appropriate and effective green infrastructure is a way to increase the level-of-service."

Implementing the Course Correction

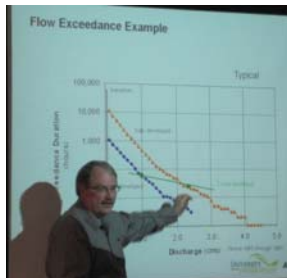
As highlighted in the previous sections, the unintended consequences of ISMPs completed to date have drawn attention to the need for a course correction in the way ISMPs are developed.

Coupled with the framework presented in Table 1, the intent of this section is to provide local governments and practitioners with guidance for implementing the necessary course correction. This guidance is organized in three theme areas:

- Are watersheds and streams all the same? Should a single process or prescription be applied to all?
- Is there too much engineering in the ISMP process?
- A new factor for consideration

Re-focusing ISMPs on watershed outcomes will help communities get the best return on their investment of scarce resources.

Should a Single Process be Applied to All: “Not all streams and watersheds are the same; nor should all targets and initiatives be established with a standardized prescription. What is appropriate for a stream and watershed on the North Shore may not be appropriate in Surrey, or vice versa,” observes Jim Dumont.



“It is equally important that the process of watershed evaluation and of creating a vision of the future watershed

consider the effects of land use change, the environment, public needs and affordability.”

“Each watershed may have a different future, have different publicly accepted visions for the future, and require a very different set of management objectives from other watersheds. Each watershed is unique and the ISMP process should address the uniqueness; and should provide recommendations and strategies that recognize those unique features.”

Is There Too Much Engineering in ISMPs: “We can see that the intent of the current ISMP Template is to create a plan for the future for individual watersheds. Yet this guiding objective appears to have been flavoured through the inherent bias of engineers.”

“On the one hand, several important engineering considerations are being addressed as part of this current ISMP process. On the other hand, some of the aspects that are being examined in detail would be best left until later. This would allow the vision of the watershed to be established with less cost.”

“An example of analysis that can be deferred would be the pipe-by-pipe evaluation of capacity, and potential costs associated with applying new drainage standards to increase the level of protection and to allow for potential impacts resulting from our changing climate. When we assess the acceptability of new standards, two questions must be asked:

1. Is there sufficient will and funding to accomplish this?
2. Does this question require an answer as part of the ISMP process?”

“Application of new standards will almost certainly involve upgrading a great proportion of the existing drainage infrastructure. It may be questioned as to whether there is a value in this or whether a different set of questions might result in a lower cost option. This should not be within the realm of creating a vision of the future watershed; rather it should be an issue for operations groups of the municipalities.”

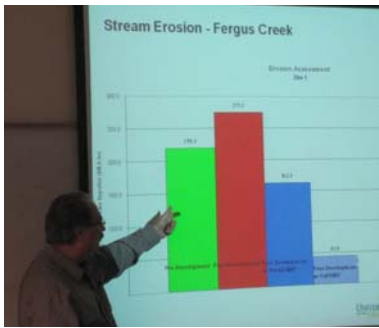
“A further argument that this engineering assessment may reasonably be postponed until after the vision of the watershed is clear is the simple example of the rainfall spectrum. Watershed and stream health are most greatly affected by the small rainfalls, while the flooding in urban areas is a result of very large and infrequent events. It is most appropriate to review the effect of small rainfalls on the stream and leave questions of flooding to a more appropriate time. This would allow a very large reduction in the cost of undertaking and implementing an ISMP,” concludes Jim Dumont.

A New Factor for Consideration: “One factor that is going unnoticed in the ISMP Template involves the streams and the processes that affect them, combined with the timescales over which change is wrought.”

“It should be readily apparent that streams are not static; in fact they experience constant change. While a natural stream will undergo a regular and reasonably predictable change, it will maintain its basic characteristics.”

“A stream that is affected by urban development will change dramatically and will continue to alter its characteristics until they become stable in response to the new hydrology of the watershed.”

Timeframe for Change: “This path to stream stability can take several decades to reach equilibrium and while that form may be more stable it will be different than the original, and may have different habitat values. The generally accepted view is that the altered stream will have habitat of a lower aquatic value.”



“Such adverse changes can be anticipated with our current scientific knowledge and we can quantify some of the driving forces and we can develop mitigation methods that can be evaluated using quantifiable methodologies.”

“If we examine the timeframe of the impact we may see that most urban streams are in the midst of this change and we may not see their final shape for many years. Our planning of a future watershed vision should recognize this and provide an allowance to create a more appropriate and achievable set of objectives.”

“This should be considered in the ISMP process, with a recognition that the streams you see are in a state of change and will not remain as they are, no matter how much we may desire this,” concludes Jim Dumont.



Lessons Learned from the Bowker Process:

The Bowker Creek Initiative Steering Committee has identified seven distinguishing characteristics that capture the essence of their lessons learned and experience gained. These are listed below in order of significance:

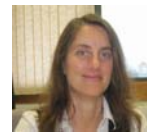
1. Community Values Drive BCI and Blueprint
2. Coordinator Role is Crucial
3. Outreach – A Powerful Tool
4. Commit to the Vision
5. Integrate Watershed & Creek Actions
6. Regional Alignment Starts with a Regional Team Approach
7. Blueprint Allows for Climate Change

Commit to the Vision: “Looking back, the turning point occurred in November 2008 when the steering committee brought in a third party to facilitate the internal conversation. That allowed us all to take a step back and look at the big picture instead of getting stuck in the details,” recalls Jody Watson, BCI Chair.



“Out of this renewal process came a reaffirmation and a recommitment to the Bowker Creek Vision by all the partners. At the same time, the partners developed a Members Agreement to work cooperatively. This agreement created a better understanding of the desires, constraints, and job realities of everyone around the table. The US versus THEM way-of-thinking changed to the WE paradigm. The players around the table realized that they can help each other.”

“The Saanich, Victoria and Oak Bay portions of the Bowker Creek watershed are very different. Yet, it is essential that we be supportive of each other and work as a team,” continues Adriane Pollard. “When we get together, we talk about what part can we all play in reaching a mutual goal, whether it involves funding, expertise, or facilitation.”



“Implementing the Blueprint is all about shared responsibility. We often need to remind ourselves to move beyond the attitude that we are not involved simply because something is not within our boundaries. The message is that WE all want this done. So we must help each other in any way that we can.”

Mission Possible: “A Top Down Bottom Up Strategy”

“When convening for action, we create a picture of the future that we want,” emphasizes Eric Bonham. “By bringing together local government implementers in neutral forums, we are enabling the implementers to collaborate as regional teams. Their action-oriented focus will result in ‘how to do it’ examples that help decision-makers visualize what policy goals look like on the ground.”



“Never forget that examples inform policy decisions by elected representatives. So provide them with commonsense examples that make it easy for them to move from awareness to action.”

Creating Our Future

When speaking at CAVI and other events, Eric Bonham tells an anecdote about John Muir, the Scottish-born visionary who was responsible for creation of the national parks system in the United States in the late 19th century.

“Everything is connected. This is the approach we are taking with CAVI. We are trying to connect people...up and down Vancouver Island. We are talking about creating our future.”

“John Muir managed to get the ear of President Teddy Roosevelt. He took him to the top of Mount Yosemite where they discussed the need for park protection. The point of the story is that major breakthroughs happen when you have decision-makers working with visionaries. John Muir represented the grass-roots and the President was the senior policy maker in the United States.”

CAVI - Mission Possible
“A top down bottom up strategy”

“When we try to pick out anything by itself, we find it hitched to everything else in the universe.”
John Muir

President Teddy Roosevelt & John Muir
“Decision Maker. Visionary”
At Yosemite National Park in 1903

Connect to the Landscape

“The vision of the Real Estate Foundation is that we will be a pivotal connection in making land use knowledge and practice in British Columbia a model for the world,” states Karin Kirkpatrick, Executive Director. “The Foundation’s hands-on role with Convening for Action in British Columbia has allowed us to frame this challenge for land and water practitioners: *What is our land ethic, and how can we view the context differently?*”



Grant Program: “One of our goals is to influence practitioners to be more responsible. This means they will be informed and accountable. Connecting people to the landscape is important. Our mission is to change the *land ethic* for the better. The Foundation can facilitate, influence and/or reward desired outcomes through our grant program.”

“In 1985 the Province enacted legislation which established the Real Estate Foundation as a non-profit corporation. We receive interest from ‘unassigned’ trust deposits held by real estate agents and we use the funds to provide grants for activities related to real estate and land use.”

Research and Solutions: “In our unique role as a funder of organizations doing good work related to land use, we have a bird’s eye view of what is happening in BC with respect to land use issues and projects. We also have access to new research, case studies, and other fresh information on innovative and unique solutions.”

“We see our role as being able to make connections and to share and promote the research and knowledge that we have access to. A prime example is the work that Tim Pringle has done to help local governments view the Vancouver Island context differently: *One Market – Cobble Hill to Campbell River.*”

Changing the Land Ethic: “When the Foundation refers to the **New Business As Usual**, we mean that ‘design with nature’ will be everyday practice...and we will move to an approach that is cohesive, concerted and leads us to sustainability,” concludes Karin Kirkpatrick.

Developing a Shared Vision

“To reach consensus on a shared vision of what is desirable and achievable for watershed protection or restoration, people need a picture of what a stream corridor could and/or should look like,” states Peter Law, Chair of the Steering Committee that developed the Guidebook. “Often, the visioning process boils down to whether or not a stream corridor will have a functioning aquatic ecosystem.”



A Communication and Decision Tool: Figure 23 on the next page is reproduced from the Guidebook and captures the evolution of drainage planning philosophy over the past 50 years. In 1998, this graphic and the concept of 20-yr and 50-yr visions helped the Councils for the cities of Burnaby, Coquitlam, Port Moody and Kelowna make policy choices.

“The graphic translates scientific findings on the impact of land use change into a decision-making tool for green infrastructure goals and objectives. It illustrates the consequences for stream corridor ecology of various attitudes towards rainwater management. It provides stakeholders with clear visual choices regarding desired ISMP outcomes,” explains Peter Law.

Reason for Optimism: “When the Province released the Guidebook in 2002, we thought we would be doing well if we could just *Hold the Line*. We hoped we might have enough successes after 20 years that maybe, just maybe, we would then *Improve Conditions* in the decades that followed. Well, it is 2010 and we have exceeded our own expectations. What was a dream in 2002 may now in fact be achievable.”

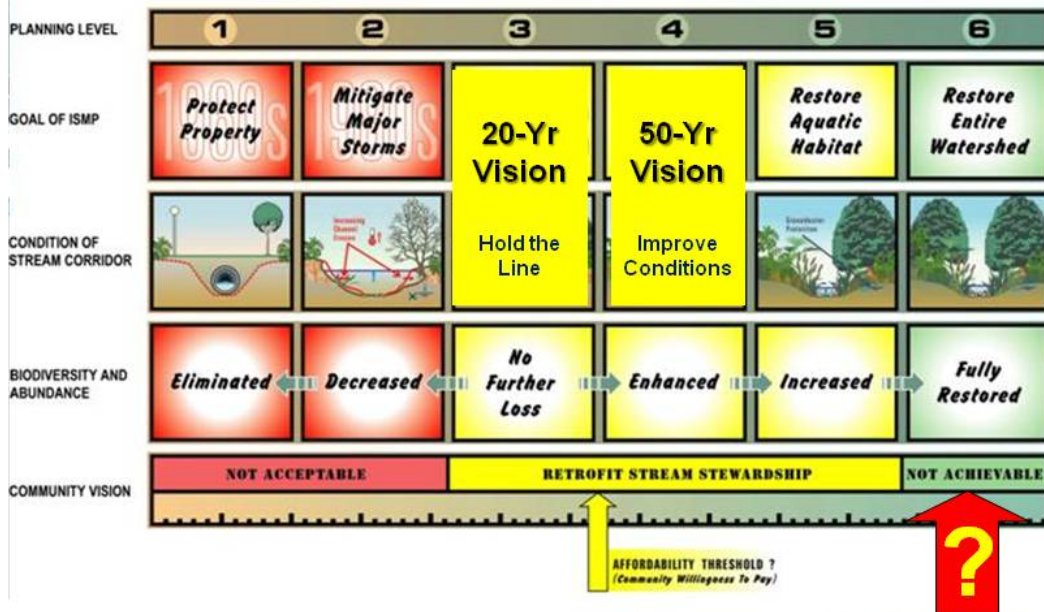
“After reflecting on all the stories told in *Beyond the Guidebook 2010*, I am just blown away at how the original Stormwater Planning Guidebook really foreshadows how this subject has moved forward over the past 10 years.”

“We coined the acronym **ADAPT** in the 2002 Guidebook, and I am pleased to see how so many sectors of the land development industry (from local government planners to design engineers to backhoe operators) in British Columbia have taken up the challenge to find more sustainable solutions in developing land in a way that is not harmful to the environment. I am proud to have been part of this team approach to finding integrated solutions,” concludes Peter Law.

ADAPT is the acronym for five guiding principles of integrated rainwater management. Refer to Figure 24 on page 97.

*What we believed to be 'unachievable' in 1998
may in fact now be within our grasp*

ALTERNATIVE VISIONS FOR THE LONG-TERM ENVIRONMENTAL HEALTH OF STREAM CORRIDORS
Conceptual Framework for Selection of ISMP Level



Now achievable?

Source: Stormwater Planning: A Guidebook for British Columbia, 2002

A Science-Based Communication & Decision Tool

Figure 23

ADAPT

- A**gree that stormwater is a resource
- D**esign for the complete spectrum of rainfall events
- A**ct on a priority basis in at-risk drainage catchments
- P**lan at four scales – regional, watershed, neighbourhood & site
- T**est solutions and reduce costs by adaptive management

Source: Executive Summary (pages ES-3 through ES-6),
Stormwater Planning: A Guidebook for British Columbia, 2002

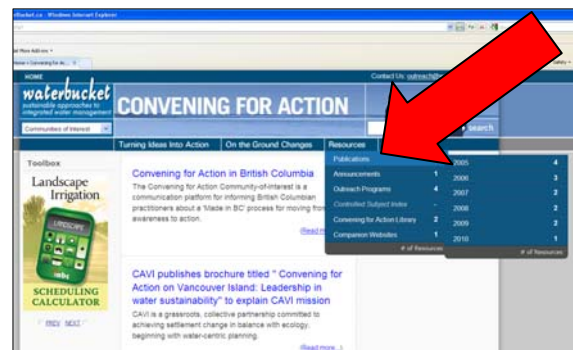
Guiding Principles of Integrated Rainwater Management

Figure 24

8. To Learn More: Reference Documents

Listed below are reference documents for each of the preceding seven chapters. These documents can be accessed from the Convening for Action Community-of-Interest on Water Bucket at www.waterbucket.ca.

Or go directly to www.conveningforaction.ca and then click on the “Resources » Publications” dropdowns.



Chapter 1 - Moving from Awareness to Action in BC

- Living Water Smart, British Columbia's Water Plan, released in June 2008
- Water Sustainability Action Plan for British Columbia, released in February 2004
- Living Water Smart & Building Green Communities: Implementing a 'regional team approach' in British Columbia, released in August 2009

Chapter 2 - Stormwater Planning: A Guidebook for BC

- Stormwater Planning: A Guidebook for British Columbia, released in June 2002
- A Watershed/Landscape-Based Approach to Community Planning, released in March 2002
- Water-Centric Planning in Oliver: Dealing with Uncertainty & Managing Risk, released in April 2006
- Beyond the Guidebook: Context for Rainwater Management & Green Infrastructure in British Columbia, released in June 2007
- Beyond the Guidebook: Establish Watershed-Specific Runoff Capture Performance Targets, released in February 2008

Chapter 3 - Changing the Culture

- Moving Towards a Water Balance Way-of-Thinking and Acting in the South Okanagan: A Synthesis of Conversations with Okanagan-Similkameen Residents, released in February 2006
- "Design with Nature" philosophy guides Water Sustainability Action Plan for British Columbia: Desired Outcome is to achieve "Settlement Change in Balance with Ecology" as communities develop and redevelop, released in March 2010
- Capture Rain Where It Falls: Application of the Water Balance Model to 'Design with Nature', released in March 2009
- How does a community weigh the benefits and liabilities of change driven by demand for land use?, released in August 2009

Chapter 4 - Convening for Action in British Columbia

- Report on a Mini-Summit dealing with Water Stewardship & Sustainability in the South Okanagan, released in May 2006
- Summary Report on Cowichan Valley Water Balance Model Forum, released in October 2008
- The Story of the 2009 Surrey Water Balance Model Forum: Living Water Smart and Making Green Choices to Create Liveable Communities and Protect Stream Health, released in March 2009
- The Story of the 2009 Penticton Forum: Smart Planning & Living Water Smart, released in May 2009
- Summary Report on Green Infrastructure Leadership Forum (Creating our Future: What could our communities look like in 50 years? - Initiating a Dialogue about 'A Positive Settlement Strategy' for Vancouver Island & Coastal Communities), released in December 2007

Chapter 5 - Outreach & Continuing Education Program

- A Look Back to the SmartStorm Forum Series: Genesis for the Water Balance Model, released in March 2010
- Report on the Green Infrastructure Consultation Held on May 11, 2004 in Vancouver, released in June 2004
- The Green Infrastructure Partnership: Convening for Action in British Columbia, July 2005 Progress Report
- Water - Choosing Sustainability for Life & Livelihoods: Convening for Action in British Columbia, released in September 2006
- Celebrating Green Infrastructure: Summary Report on 2006 Showcasing Innovation Series (Greater Vancouver), released in October 2006
- Summary Report on Showcasing Green Infrastructure Innovation in Metro Vancouver: The 2007 Series, released in November 2007
- Summary Report on Showcasing Green Infrastructure Innovation on Vancouver Island: The 2007 Series, released in November 2007
- Summary Report on Showcasing Innovation in the Capital Region, released in October 2008
- Rainwater Management: An Introduction to the Guidebook for British Columbia, released in June 2008
- Moving from Stormwater Management to RAINwater Management: A Federal Fisheries Perspective, released in November 2007
- Integration of Rainwater Management & Green Infrastructure in British Columbia: A Provincial Perspective, released in November 2007
- The Story of the 2008 Vancouver Island Learning Lunch Seminar Series, released in January 2009
- The Story of the 2009 Comox Valley Learning Lunch Seminar Series, released in November 2009

Chapter 6 - Beyond the Guidebook: Connecting Dots & Building Blocks

- Rainwater Management on Diverging Paths in British Columbia and Washington State, released in November 2007
- Shared Responsibility Underpins a Regional Team Approach to Creating Our Future in British Columbia, released in December 2009
- Final Report on A Liquid Resource Management Plan for Metro Vancouver, released in July 2009
- Topsoil: Just How Do You Obtain a Performing Topsoil Layer to Advance Rainwater Management & Water Conservation Goals, released in February 2010

Chapter 7 - Developing Outcome-Oriented Watershed Plans

- Commentary on Effective Municipal Rainwater/Stormwater Management and Green Infrastructure to Achieve Watershed Health, released in April 2008
- Template for Integrated Stormwater Management Planning 2005, released December 2005
- The Story of the Bowker Creek Blueprint: A 100-Year Action Plan to Restore the Watershed, released in March 2010
- University of British Columbia Brings Rainwater Management Science into the Community, released February 2007
- Stormwater Management, Low Impact Development, Sustainable Drainage, Green Infrastructure, RAINwater Management....what is an appropriate term to use?, released in March 2009
- Influencing Expectations on the Ground in British Columbia: Today's Expectations are Tomorrow's Standards, released in April 2009
- The Province of British Columbia's Expectations and Programs for Green Communities, released in July 2009

“And finally, we still need to remember that it is
not solely wisely developed or green urban
infrastructure but human behaviour which
ultimately determines our sustainability”

Peter Andzans
Manager, Community Sustainability
City of Abbotsford
January 2008

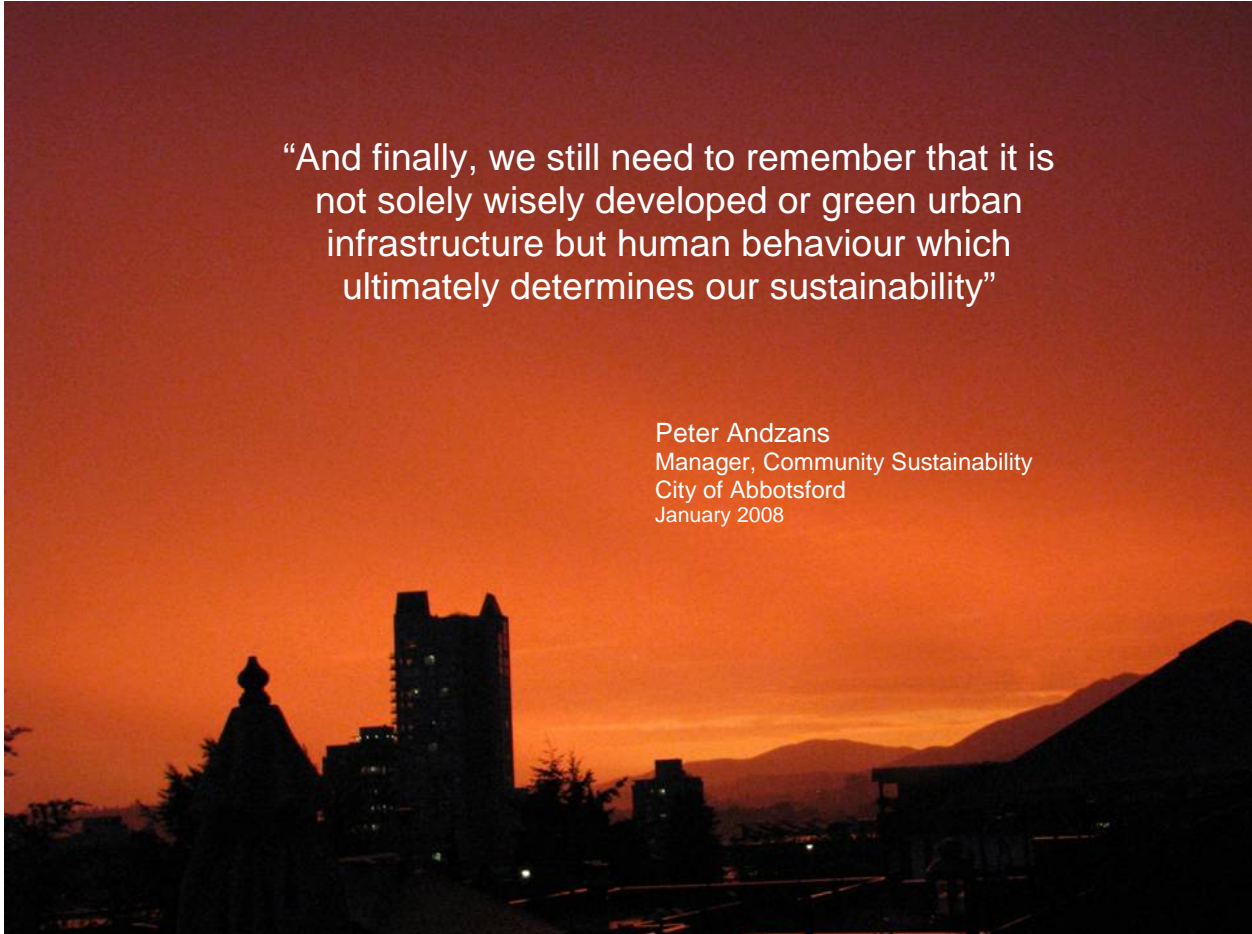


Photo Credit: Mike Tanner

Beyond the Guidebook 2010: Implementing a New Culture for Urban Watershed Protection and Restoration In British Columbia

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