

Convening for Action in British Columbia



Integrated Rainwater Management Planning: Capitalize on Green Infrastructure Opportunities to 'Design with Nature'

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

Convening for Action in BC: Visualize What We Want Our Regions to Look Like in 50 years

Create a Legacy: *Settlement Change in Balance with Ecology*

- 1. Influence choices by individuals and organizations*
- 2. Use the term "sustainability" as a lens for considering approaches that influence choices*

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Water Bucket Web Story #2 in the ISMP Course Correction Series

Preface

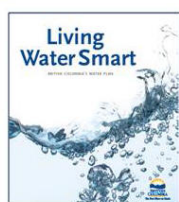
*This article is the second in a series that is designed to inform local governments and others about **Integrated Stormwater Management Plans (ISMPs)**: what they are; how local governments can do more with less; and how local governments can ensure ISMPs are outcome-oriented.*

An ISMP is a potentially powerful tool to achieve a vision for 'green' development, one that protects stream health, fish habitat and fish. Local governments now have a decade of experience from which to extract lessons learned.

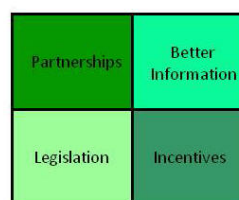
*Local government experience in Metro Vancouver and on Vancouver Island has informed the 'ISMP course correction' described in **Beyond the Guidebook 2010: Implementing a New Culture for Watershed Protection and Restoration in British Columbia**.*

*Since 2002, "integrated drainage plans" have typically been called "ISMPs" pursuant to the nomenclature established in **Stormwater Planning: A Guidebook for British Columbia**. The time has now come to describe truly integrated plans as "IRMPs" to reflect the paradigm-shift from pipe-and-convey 'stormwater' to landscape-based 'RAINwater'.*

This Story #2 explains why 'designing with nature' is key to climate change adaptation; identifies what municipalities will need to do to protect or restore stream health; and introduces principles upon which a Regional Team Approach to green infrastructure implementation is founded.



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

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Climate Change Adaptation Context for ISMPs

An ISMP is a tool for integrating actions at four scales: regional, watershed, neighbourhood, and site. Thus, an outcome-oriented ISMP can provide a clear picture of how local governments can be proactive in applying land use planning tools to create the future desired by all:

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

When the ISMP approach was introduced a decade ago, it reflected a significant paradigm-shift in community values. The implicit goal was to build and/or rebuild communities in balance with ecology – that is, accommodate development while protecting property and aquatic habitat. A decade later, climate change has become an integral part of the equation.

Prepare for Climate Change

There are two responses to climate change: mitigation and adaptation. **Mitigation** is about alleviating the effects of climate change through greenhouse gas reduction. **Adaptation** is about responding to the changes that will inevitably occur. Thus, the Province's perspective is that:

- 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.
- 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.

Understand the Water Balance

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 frequency 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 and/or climate change altered the Water Balance.

Build Greener Communities

Stream health is a function of flow duration, and therefore correlates with stream erosion. Flow duration can be measured and verified. Similarly, the potential for erosion or sediment accumulation within a watershed can also be assessed.

The foundation for *RAINwater Management* is 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 and/or climate change.

Building greener communities by 'designing with nature' creates opportunities to adapt to changes in the 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.

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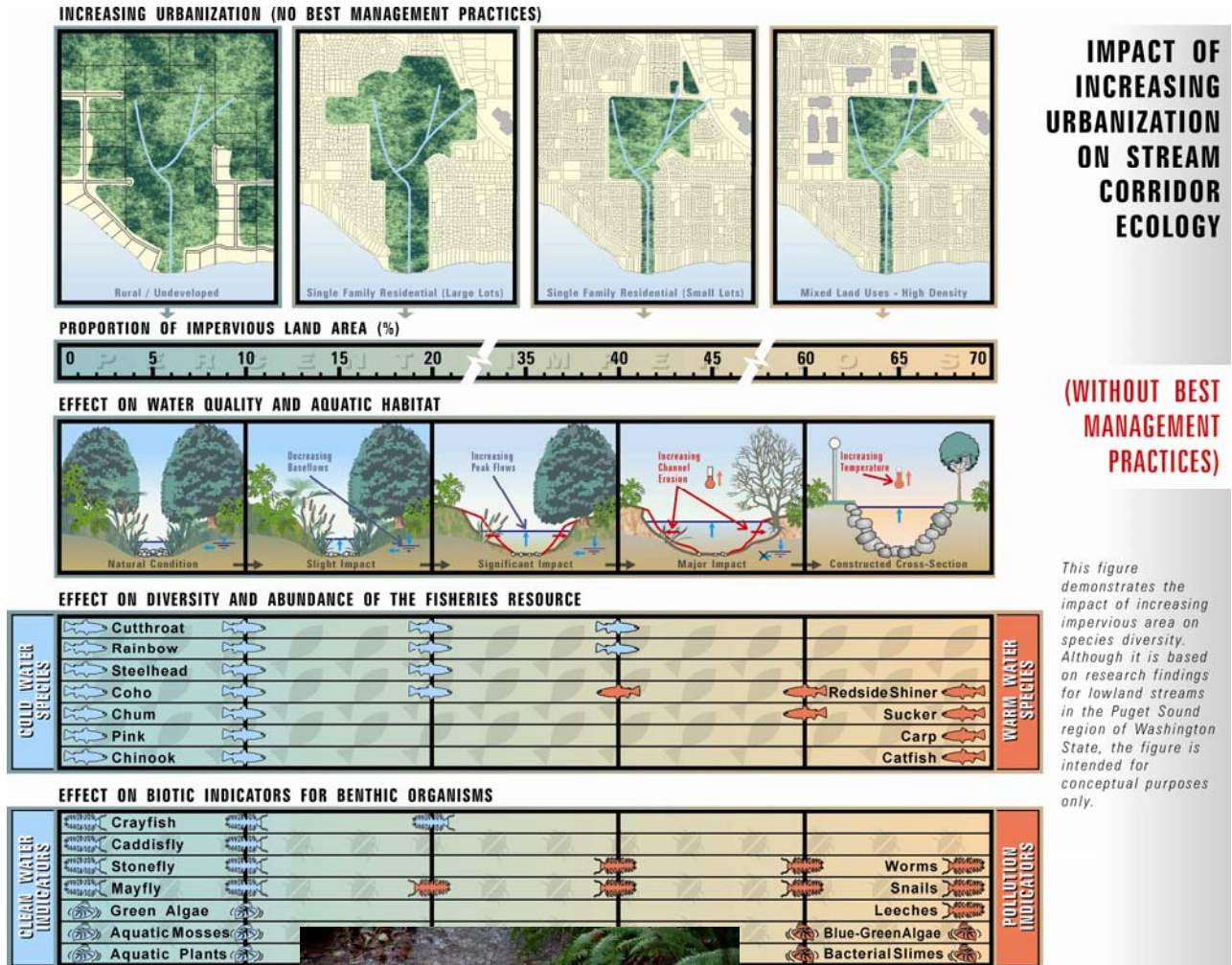


Photo Credit: Richard Boase

Figure 1

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

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'Design with Nature' Explained

Figure 2 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 *Beyond the Guidebook 2010: Implementing a New Culture for Urban Watershed Protection and Restoration in British Columbia*, released in June.

The 'design with nature' paradigm is adapted from the title of the seminal book by Ian McHarg, published in 1969. Experience shows that it is intuitive, it resonates, and it serves as a focal point for changing the *land ethic* for the better.

Designing with nature captures the essence of climate change adaptation. As stated on page 1, adaptation is about responding to the changes that will inevitably occur. Adaptation is at the community level and is therefore about collaboration.

Settlement Change in Balance with Ecology

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.

In 2002, **Stormwater Planning: A Guidebook for British Columbia** was a catalyst for action to implement a 'design with nature' approach to rainwater management and green infrastructure. 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. The basis for this premise was that municipalities exert control over runoff volume through their land development and infrastructure policies, practices and actions.

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 2

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Green Infrastructure Opportunities

If one goes back 10 years, there was a void of policy and legislation vis-à-vis green infrastructure. This led British Columbia down an educational path as the logical alternative to a prescriptive approach.

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.

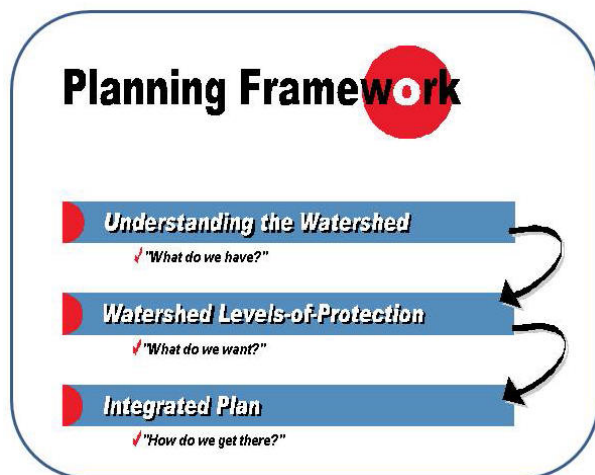
The case study experience introduced in *Beyond the Guidebook 2010* shows that a new land ethic is taking root in BC. Local governments have the tools and case study experience to 'design with nature'. BC is now at a tipping point.

Planning Framework

Lessons learned by those who have done it can help those who want to ensure that pending and/or future settlement change (development) is in balance with ecology.

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.

Think at multiple scales. Ask 'what can I do for the watershed?'



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."

An Example of Seizing an Opportunity: "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 to minimize the impact of rainwater runoff on the City's small streams. The City is doing the little things needed to create cumulative benefits over time."

"Installing rain garden features like those 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."



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Implementing the Course Correction

"Almost a decade ago I began representing DFO in dealing with local government and the development community regarding land use issues," continues 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."

The Process:

Vision → Target → Implement

"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 in the Capital Regional District, and what the Metro Vancouver Reference Panel is now telling us. Establish the vision, set the target and then implement."

Move from Planning to Action

Table 2 in *Beyond the Guidebook 2010* identifies what municipalities will need to do to create liveable communities and protect or restore stream health.

The framework presented in Table 2 will help 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. There must be clear linkages between the targets and development approval processes.

"We have tools such as the Water Balance Model and we have many on-the-ground examples of how to capture rain where it falls," states Corino Salomi. "Municipalities just need to get on with applying the tools and the experience so that they capitalize on opportunities rather than *missing opportunities*."

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 an ISMP that is guided by a '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," concludes Corino Salomi.

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Table 2 (brought forward from Chapter 7 in 'Beyond the Guidebook 2010')

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.

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Collaboration, Alignment and Consistency

Commencing in 2005, 'convening for action' programs have been initiated in three regions: Vancouver Island, Okanagan and Metro Vancouver. Each regional initiative has its own vision and road map. A commonality is the desire to change the way that land is developed and water is used.

Lessons learned are being shared. Intra-regional and inter-regional collaboration is resulting in consistent approaches to green infrastructure policies and practices.



Regional Team Approach

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

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.

Mission Possible

By bringing together local government implementers in neutral forums, this enables 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."

Because examples inform policy decisions by elected representatives, provide them with commonsense examples that make it easy for them to move from awareness to action.

Connecting people to the landscape is important. The mission for the Regional Team Approach is to change the *land ethic* for the better.

