



the partnership
for water sustainability in bc

Waterbucket eNews on February 18, 2025
<https://waterbucket.ca/wscblog/>

**Living Water Smart
in British Columbia:**

**Nature-First Cities:
*restoring relationships
with ecosystems and
with each other***

Note to Reader:

[Waterbucket eNews](#)¹ celebrates the leadership of individuals and organizations who are guided by the vision for [Living Water Smart in British Columbia](#)².

The edition published on February 18, 2025 featured a conversational interview with co-authors Dr. Sean Markey and Herb Hammond about their vision for *Nature-First Cities*. The book is intended to inspire government and community-based action by illustrating how cities can co-exist with nature. To that end, the book introduces a guiding philosophy and methodology the authors have framed as *Nature-Directed Stewardship*,

The umbrella for Partnership initiatives and programs is the [Water Sustainability Action Plan for British Columbia](#)³. In turn, the Action Plan is nested within [Living Water Smart, British Columbia's Water Plan](#).



Cover Image Credit: photo from *Nature-First Cities* supplied by Sean Markey

¹ <https://waterbucket.ca/wscblog/>

² https://waterbucket.ca/wcp/wp-content/uploads/sites/6/2017/11/livingwatersmart_book.pdf

³ <https://www.waterbucket.ca/cfa/sites/wbccfa/documents/media/81.pdf>

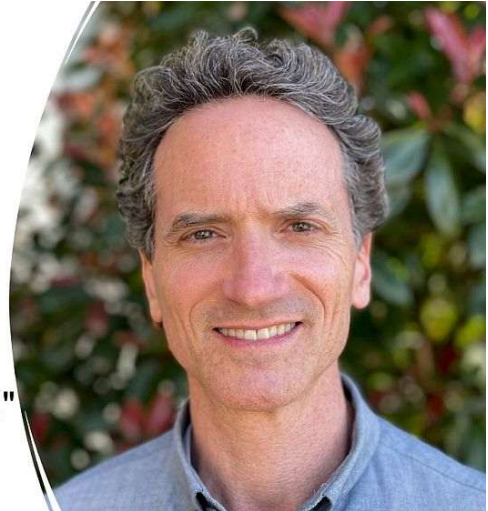
One-Minute Takeaway

“What are the costs associated with having cities that are not nature-based? What are the benefits if we invite nature back into our cities?”

Sean Markey, professor in the School of Resource and Environmental Management at Simon Fraser University

“Nature-First Cities is not a heavy academic book. We wrote it to be inspirational...and we challenge readers to understand why we have become so disconnected from nature and what happens when we start to rebuild that connection.”

Dr. Sean Markey
professor and certified planner



Nature belongs in cities, but how do we put nature first without pushing people aside? *Nature-First Cities* reveals the false dichotomy of that question by recognizing that people and nature are indivisible.

This new book by three B.C. authors shows how cities can co-exist with nature. Written by Herb Hammond, Sean Markey and Cam Brewer, *Nature-First Cities* is a guide to building urban ecosystems.

NATURE IS THE ANSWER: Co-authors Herb Hammond, Sean Markey and Cam Brewer



This book calls for action in cities based on the science and practice of *Nature-Directed Stewardship* (NDS) The authors make the case that the appropriate planning unit is a **focal watershed** – the largest watershed that fits within the boundaries of a city.

Nature-Directed Stewardship: an ecosystem-based approach to use and protection of land

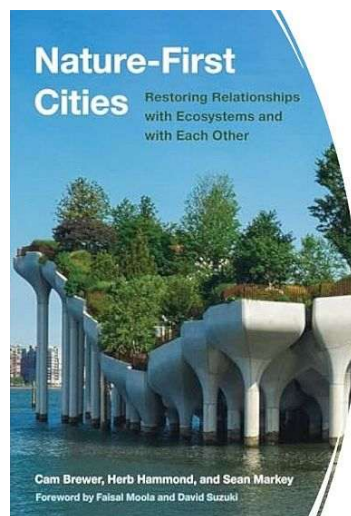
“Cam Brewer is the lead author. It has been an incredible collaborative exercise over about 12 years. Everyone has brought different strengths,” explains Sean Markey.

“I brought a lot of planning work into it. Herb Hammond has the science and the ecology, and the methodology around nature directed stewardship. Cam Brewer has brought his passion for nature. Actually, he intersects both of us in terms of his knowledge base.”

The forest sustains us; we do not sustain the forest

“I am a forest ecologist,” adds Herb Hammond. “I have worked primarily with Indigenous peoples for the past 40 years to help them advocate for a more ecosystem-based approach to using the land and protecting it.”

“That experience has resulted in the development of what I now call **Nature-Directed Stewardship**. And this is incorporated in the book as well.” Herb Hammond likes to remind audiences that the forest sustains us; we do not sustain the forest.



“Many of the concepts in the book, including the water movement network, align with the water and ecosystem management approaches and philosophies in the work of the Partnership for Water Sustainability.”

Sean Markey

Editor's Perspective by Kim A Stephens

Nature-First Cities: restoring relationships with ecosystems and with each other

In November 2013, Sean Markey reached out to me: *"I am working with Cam Brewer, Herb Hammond and the Still Moon Arts Society to produce an ecosystem-based plan for the Still Creek watershed in Vancouver."*

Sean asked for my perspective on **urban ecosystem-based planning** and, to elaborate on their concept, attached Cam Brewer's [Whitepaper on inviting nature home](#). Suffice to say, I was intrigued and readily agreed to meet.

At our initial meeting over breakfast, Sean inspired me with his vision. But I cautioned him that it would be challenging to resuscitate the "ecosystem-based approach" as a guiding philosophy for local government actions as they relate to rainwater management, green infrastructure and climate adaptation.

Nevertheless, I said to Sean, we must try. Within mere months, an opportunity arose for us to do exactly that when along came the right grad student at the right time.



Julia Berry, one of Sean Markey's grad students, asked me to co-supervise her Master's thesis titled *"Ecosystem-based Adaptation to Climate Change in Urban Areas: An Evaluation of Rainwater Management Practices in Metro Vancouver"*.

Julia Berry applied original thinking to core concepts and produced an evaluation framework for **Ecosystem-based adaptation (EbA)**. Her thesis is a foundation piece in a building blocks process that stretches over time. Publication of *Nature-First Cities* is the latest milestone in that process.

Think and Act like a Watershed Series drew attention to the "ecosystem-based approach"

Fast-forward from November 2013 to May 2016. At a meeting of the Metro Vancouver Stormwater Interagency Liaison Group (SILG), a forum for municipal local government representatives, Julia Berry presented her findings.



Metro film crew

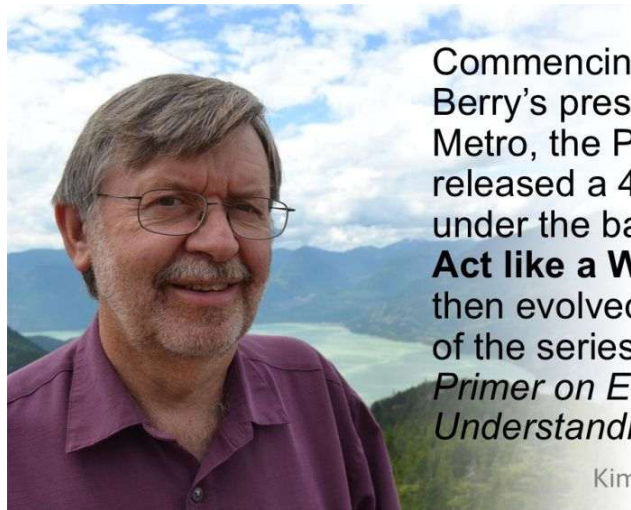
Julia Berry

The evaluation framework developed by Julia Berry can be used to assess and score the extent to which provincial, regional or municipal documents incorporate EbA principles.

The Metro Vancouver Close-Up Series filmed Julia's presentation to SILG

Julia Berry's thesis was the inspiration for the Partnership releasing [Sustainable Watershed Systems: Primer on Application of Ecosystem-based Understanding in the Georgia Basin](#) in September 2016.

The value of her work is that it connected contemporaneous research to past approaches that had been fallow for more than a decade.



Commencing with Julia Berry's presentation at Metro, the Partnership released a 4-part series under the banner **Think and Act like a Watershed**. We then evolved a compendium of the series into the *Primer on Ecosystem-based Understanding*.

Kim Stephens

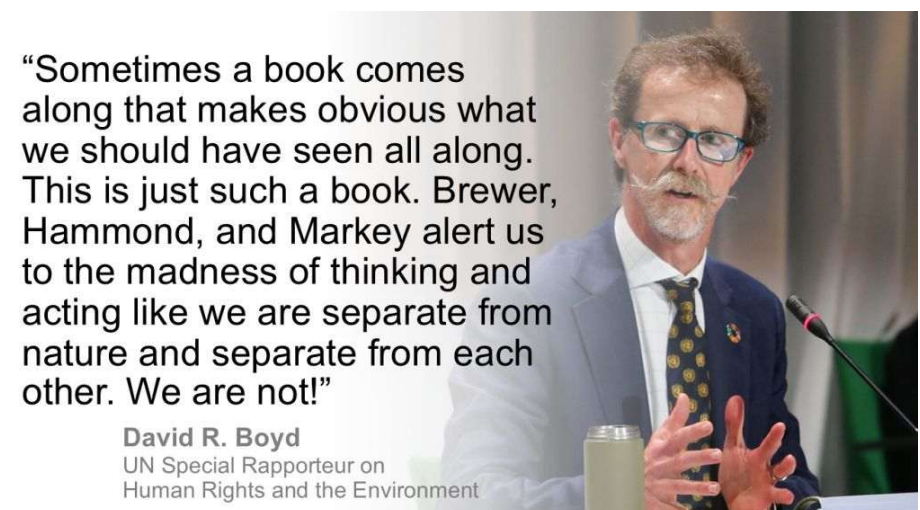
EAP provides the means to operationalize the vision for *Nature-Directed Stewardship* so that cities and nature can co-exist

Fast-forward from 2016 to the present. For almost a decade, the Partnership and the Nature-First Cities team have been progressing along parallel tracks. In the months ahead, we will be collaborating in ways that merge our efforts to give the *ecosystem-based approach* a major boost.



In the big picture, Tim Pringle and Herb Hammond are thinking along the same lines regarding water movement within a watershed and the concept of developing a restoration network built around the water network.

The Metro Vancouver region is at both a cross-roads and a tipping point for regional growth management and livability. Will the "streams and trees" component of the current Liquid Waste Management Plan be **the last stand or the beachhead** for a RISK MANAGEMENT approach to getting it right?



STORY BEHIND THE STORY:

Nature-First Cities: restoring relationships with ecosystems and with each other - *a conversation with Sean Markey and Herb Hammond*

The story behind the story is structured in three parts featuring Sean Markey and Herb Hammond, respectively. In Part One, Sean Markey recounts the origin story of how the book came about. In Part Two, Herb Hammond explains the nature-directed stewardship approach to restoration of urban ecosystems. In Part Three, the authors comment on the WHAT NEXT question.

Sean Markey's research at Simon Fraser University concerns issues of local and regional economic development, rural and small-town development, and sustainable planning and infrastructure. He works with municipalities, non-profit organizations, Indigenous communities, and the business community.

Herb Hammond, a forest ecologist, founded the Silva Forest Foundation, a charitable society dedicated to research and education in ecosystem-based conservation planning. He has worked cooperatively with Indigenous Nations and rural communities to develop more than 25 ecosystem-based plans across Canada, and in Russia, the United States, and Indonesia.

“Prepare to be entertained, educated, and stirred to advocate for nature-oriented cities. The authors condense key lessons from a vast landscape of research into a compelling decree for cities to transform and thrive.”

Cherise Burda, Executive Director, City Building Institute, Toronto Metropolitan University



PART ONE - The origin story as recounted by Sean Markey of how the book came about

"The origin story started about a decade ago when Cam Brewer and I worked on a report documenting the value of nature in cities," states Sean Markey. "What are the costs associated with having cities that are not nature-based? What are the benefits if we invite nature back into our cities?"

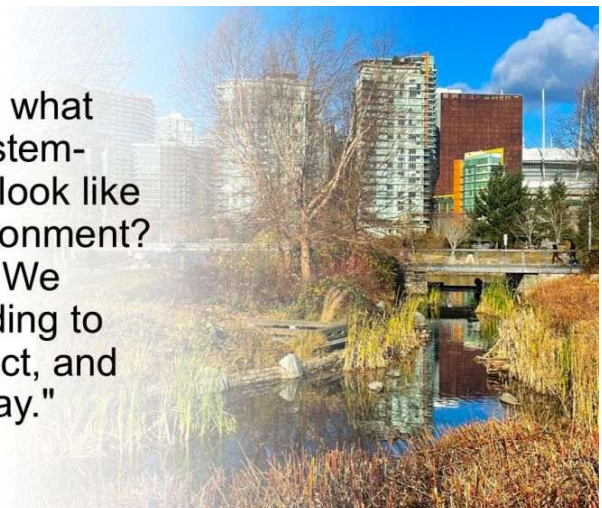
"That was a fairly standard survey of the literature and report writing. But we met afterwards and the conversation quickly turned to what would it take to actually do this? What would a strategy look like?"

"If we are to challenge how urban and human settlement development has taken place in Canada and North America without a deep understanding of our connection to nature, what is a strategy for bringing nature back into the cities ?"



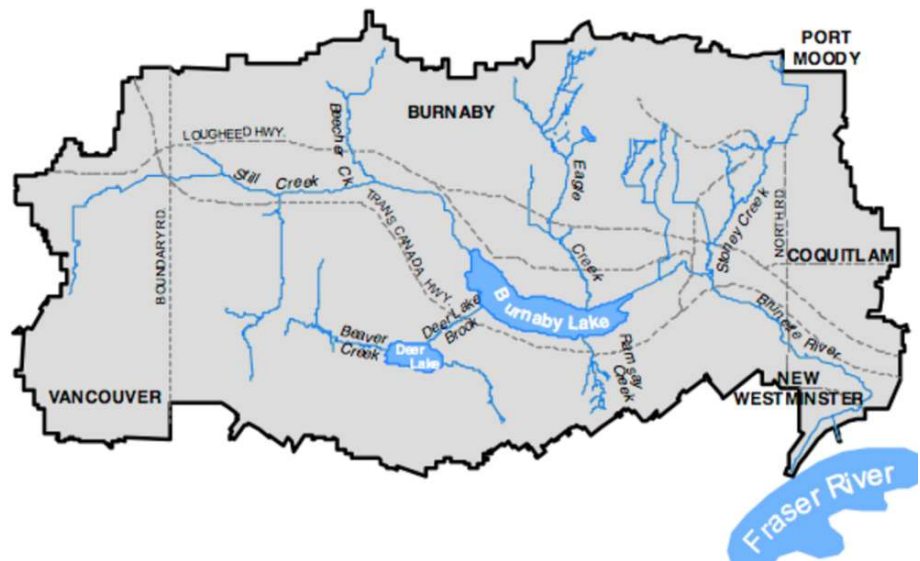
"And that led us into a conversation where we concluded that it would be pretty fascinating to work with Herb Hammond. So, we invited Herb down into an urban watershed for the purpose of exploring what happens when we apply the principles and practices of ecosystem-based conservation planning."

"We asked Herb, what would the ecosystem-based approach look like in an urban environment? Herb was game. We raised some funding to support the project, and we were underway."



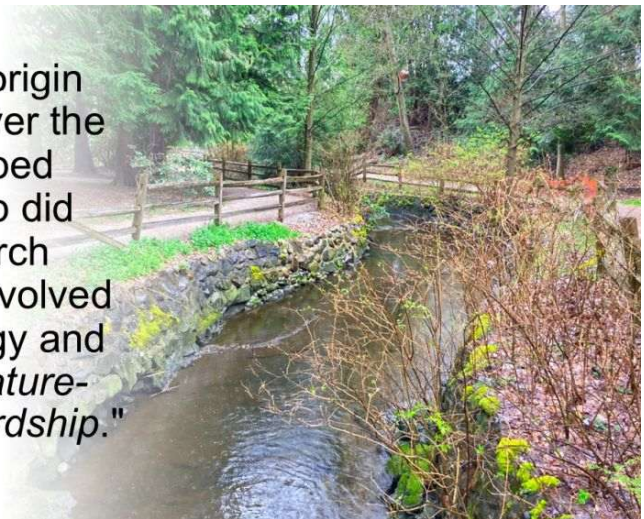
Case study applications of ecosystem-based approach

"The book contains two case studies. Still Creek in the cities of Vancouver and Burnaby is intensely urban. Shawnigan Lake on Vancouver Island is on the urban-rural fringe. The difference between the two is the extent and amount of green space that is available to work with, and with different growth pressures."



"In both cases, we are looking at watershed scale planning. Not just greening strategies. Not just creek restoration. But watershed-scale planning. Herb did the research and analysis to put together Nature-Directed Stewardship plans for both areas."

"That was the origin of the book. Over the years, we chipped away at it. Herb did the case research and basically evolved the methodology and strategy into *nature-directed stewardship*."



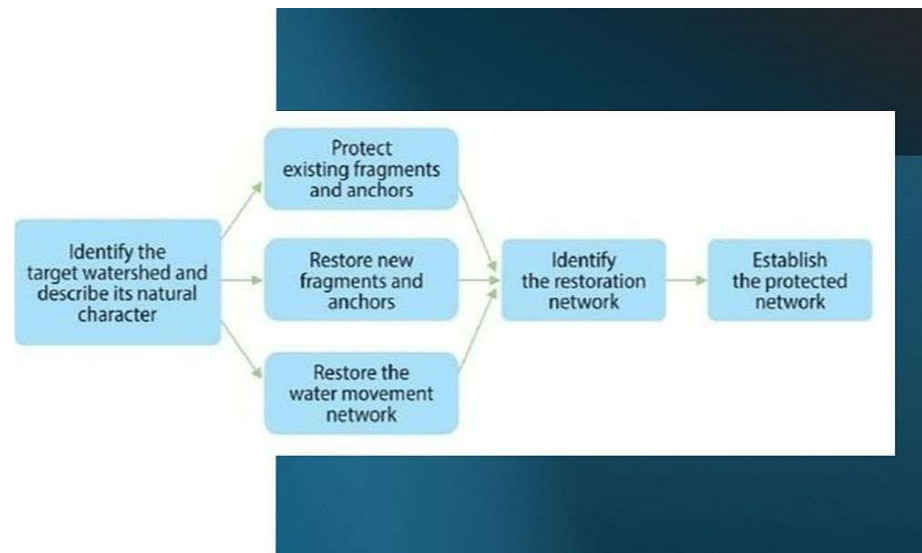
An overview of the methodology and strategy for Nature-Directed Stewardship

"*Nature-First Cities* is not a heavy academic book. We wrote it to be inspirational...and we challenge readers to understand why we have become so disconnected from nature and what happens when we start to rebuild that connection."

"What happens ecologically? What happens socially? Equity is a huge component of the book and one of the pillars around what makes nature-directed stewardship work. So, there is that broader picture around rehabilitating that sense of connectivity with people and nature in cities."

"The other aspect of *Nature-First Cities* is the practicality....this is how you do that. We showcase the science and methodology that Herb developed for doing nature-based stewardship, and what it would look like in two jurisdictions."

"We put together what we call a 3-part process of how you actually do this. First, protect existing fragments of natural or near-natural ecosystem character. Second, add new fragments and anchors of natural ecosystem character. Third, restore the natural water movement network."



"Recognizing that cities are full of people, we also propose a three-part process for establishing an urban restoration network: involve senior levels of government, do the nature-directed stewardship research, and build a community hub to keep everyone committed to achieving all the cascading benefits," concludes Sean Markey.

PART TWO - Restoration of urban ecosystems as explained by Herb Hammond

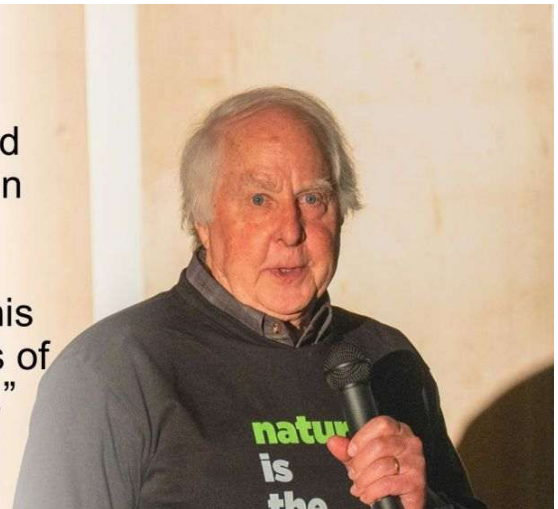
“When Sean Markey and Cam Brewer invited me to get involved in *Nature-First Cities*, it was a shock to walk into the Still Creek urban ecosystem. My first reaction was that the normal water movement network has been obliterated.”



Nature-Directed Stewardship is a planning system

“Our planning system, *Nature-Directed Stewardship*, relies on identifying a network of ecosystems that become ecological reserves. They are identified in multiple spatial scales.”

“We try to start with as large a watershed landscape as we can and work down to individual sites and patches, applying this concept of networks of ecological reserves.”



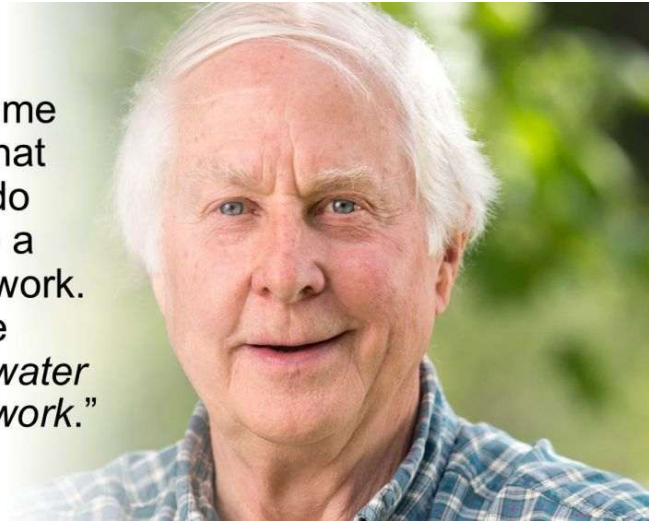
“So, at the largest scale you look at whole watersheds that are reserves. At the smallest scales, you look at fallen trees. Or biologically diverse areas.”

When a watershed is paved over!

“When we set about trying to identify that in cities, we thought we could link together enough of what is perceived by city planners oftentimes as green space - from things like corridors along streets to golf courses to parks to school grounds.”

“We very quickly realized that was not going to work. There is too much paved over land. Too many impermeable surfaces. That word impermeable kept hitting me in the head everywhere I looked. From the roofs of people’s houses to the streets to the sidewalks and beyond.”

“It quickly became obvious that what we needed to do was to develop a restoration network. And it would be built around a *water movement network*.”



Re-establish multiple layered canopies in watersheds

“We wanted to resurrect an understanding of the topography of the watershed that the city, or a portion of the city, was situated in. That included the picking what we called a focal watershed. Still Creek is one example of that.”

“And then, within that watershed, to look at sub-watersheds which are the tributaries to that watershed. By actually designing or RESURRECTING what that watershed would have looked like, we could overlay that watershed on top of the current development which would give us ways or locations to think about starting to re-establish that water movement network.”

“The methods we established ranged from things like looking at the natural character of the original ecosystem. What its natural composition, structure and function was like. And reintroducing that wherever we could.”

“One of the key aspects of that in cities like Burnaby and Vancouver is that the original character had a multiple layered canopy. And so water fell on the tallest trees and was then caught and transferred slowly into the system, giving the soil time to recharge even in the middle of a strong rainstorm, for example.

“Re-establishing multi-layered canopies could be done at different scales. It does not have to be just large, tall trees.”

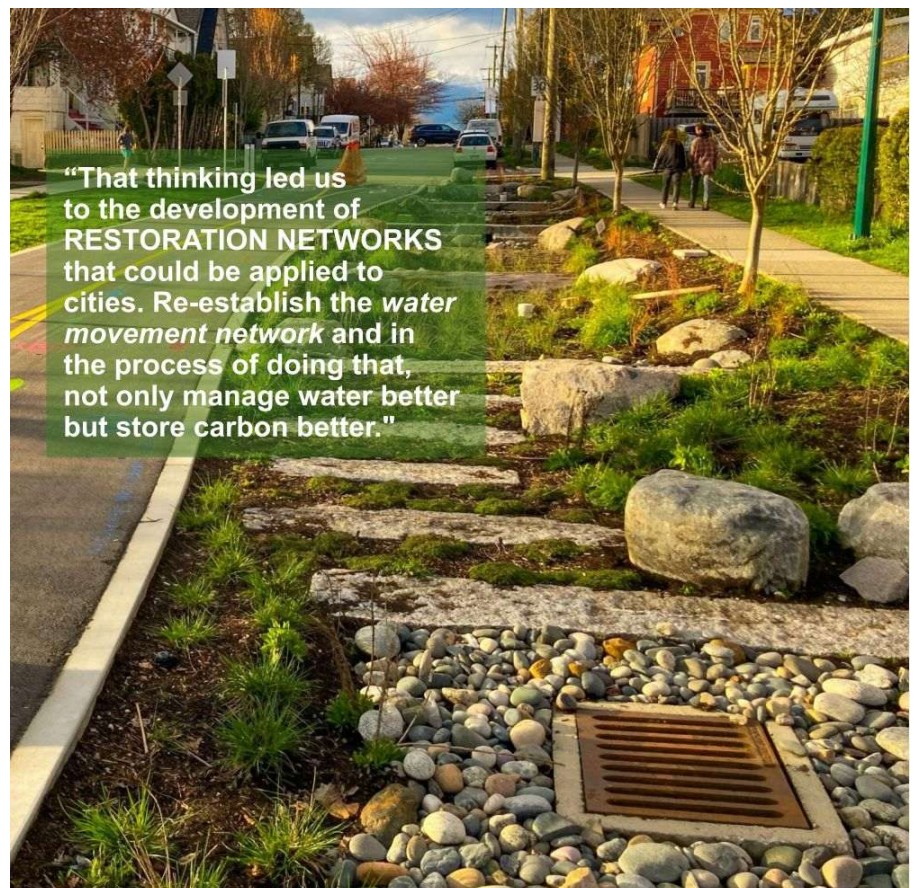
“It can be moderate size trees, with shrubs and things like herbs and mosses below.”



Restore the natural water movement network

“The other key aspect was to get rid of impermeable surfaces to make the system more permeable; and whether that could be done along main streams like portions of Still Creek itself, including daylighting portions of it.”

“Another big thing was to look at things like green roofs for houses and buildings, and changing parking lots from asphalt to drain rock that cleans better than asphalt does.”



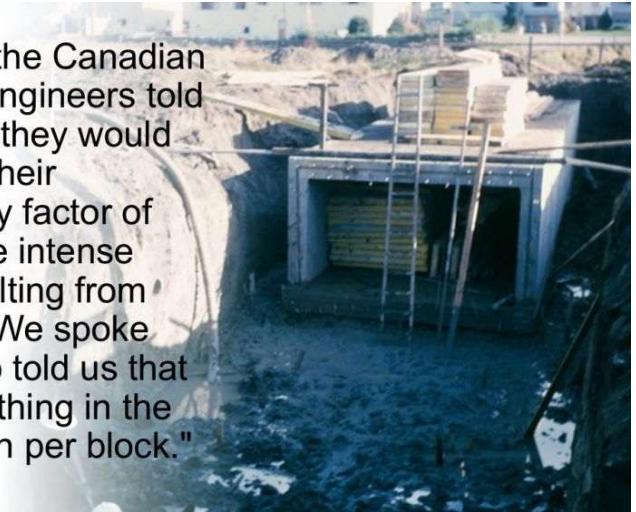
“That thinking led us to the development of RESTORATION NETWORKS that could be applied to cities. Re-establish the *water movement network* and in the process of doing that, not only manage water better but store carbon better.”

Reduce risk and save money

"In the world of climate change, there are big benefits to re-establishing the natural character, vegetation cover. The other thing that our research uncovered is how good natural ecosystems are for people's health. Not only for people in middle age but most importantly for young people."

"A connection to nature and being part of nature is not only a physical but an emotional and spiritual benefit to their health and wellbeing. The other thing we discovered was the economic benefits of doing this."

"Some time ago the Canadian Society of Civil Engineers told urban areas that they would need to expand their drainage pipes by factor of two to convey the intense storm runoff resulting from climate change. We spoke to engineers who told us that would cost something in the order of \$1 million per block."



"If we implemented the kinds of strategies necessary to build restoration networks, you could do an awful lot of restoration for \$1 million per block! The economic benefits of what we are proposing are there."

PART THREE - What Next?

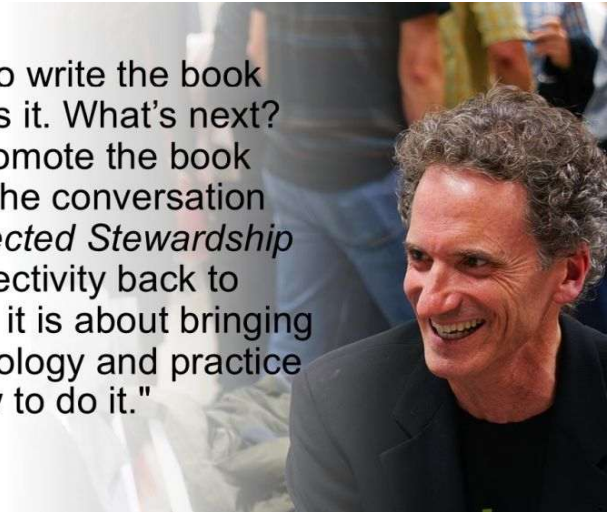
"Where we hope this will go now is to decision-makers who will start implementing this nature-directed approach at different scales," says Herb Hammond as he reflects on the *what next* question.

"The catalyst for that happening will be people taking the initiative to do work in their neighbourhoods and in their backyards and front yards, thereby setting examples for municipalities and dragging them into the process."

"But I am optimistic that transition of involving municipalities could occur pretty quickly once people see examples and the benefits that come with that change to Nature-Directed Stewardship."

“The point is not to write the book and say, yay that’s it. What’s next? We’re trying to promote the book because it starts the conversation about *Nature-Directed Stewardship* to build that connectivity back to nature. But really, it is about bringing a body of methodology and practice as to actually how to do it.”

Sean Markey



To delve into the details of *Nature-Directed Stewardship*, watch the video of Sean Markey

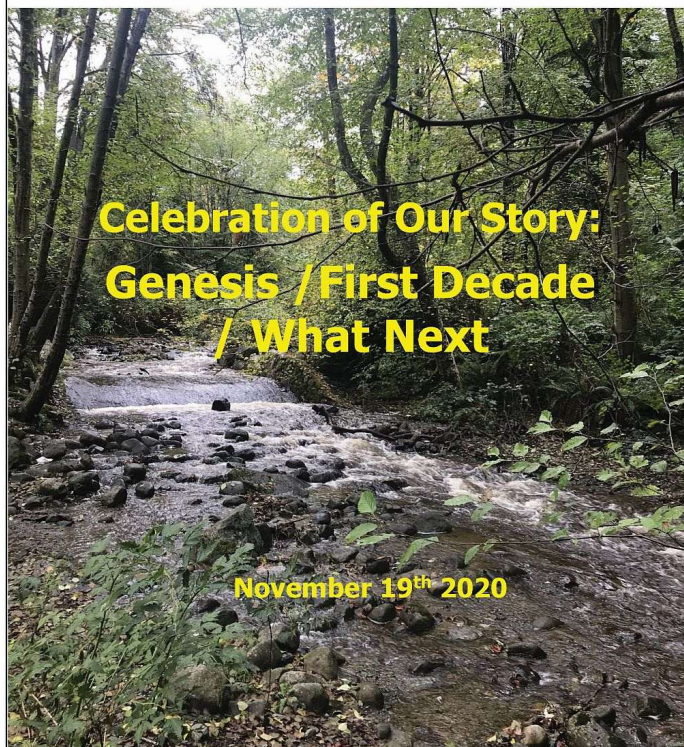
Presentation at an event hosted by Strong Towns Langley in November 2024.⁴



⁴ <https://www.youtube.com/watch?v=zGpT37883sc>



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<https://waterbucket.ca/about-us/>

About the Partnership for Water Sustainability in British Columbia

Incorporation of the Partnership for Water Sustainability in British Columbia as a not-for-profit society on November 19, 2010 was a milestone moment. Incorporation signified a bold leap forward.

Over two decades, the Partnership had evolved from a technical committee in the 1990s, to a “water roundtable” in the first decade of the 2000s, and then to a legal entity. The Partnership has its roots in government – local, provincial, federal.

The Partnership has a primary goal, to **build bridges of understanding** and pass the baton from the past to the present and future. To achieve the goal, the Partnership is growing a network in the local government setting. This network embraces collaborative leadership and **inter-generational collaboration**.

The Partnership believes that when each generation is receptive to accepting the inter-generational baton and embracing the wisdom that goes with it, the decisions of successive generations will benefit from and build upon the experience of those who went before them.



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