OPINION: Vision for "Sustainable Watershed Systems" resonates with audiences in BC and beyond

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A new way of thinking about municipal infrastructure has the attention of the local government world. Simply put, natural watershed systems are infrastructure assets – we must manage and protect them as such.

A mere fifteen months ago the Partnership for Water Sustainability framed the following **program goal** for the Georgia Basin Inter-Regional Education Initiative:

> *By 2017, local governments would understand how to achieve "Sustainable Watershed Systems, through Asset Management"*

At the dawn of 2017, the purpose of this article is two-fold: take stock of our progress in 2016 to inform and educate; and foreshadow where we may be at year-end

The desired outcome that would flow from Sustainable Watershed Systems is a water-resilient future. This way of thinking builds on the vision for *Asset Management for Sustainable Service Delivery: A Framework for BC*; and has twin technical pillars – Water Balance Methodology and Ecological Accounting Protocol.

Understanding leads to action. Getting there is a step-by-step process to build practitioner capacity to get the job done. Presently, we are creating awareness of the goal.

Looking Back: What We Accomplished

Early uptake of the vision for Sustainable Watershed Systems has exceeded our expectations. There is clearly interest and an appetite to learn more. It is an idea whose time has come.

Asset Management Continuum: Starting in November 2015, we have introduced the Asset Management Continuum (see image below) to an array of audiences in a variety of forums and media.

Our key message is that Sustainable Watershed Systems will be the outcome in Step Three. But it is not a wait-and-see proposition. Even as local governments are progressing through Steps One and Two for their core infrastructure, they need to be laying the groundwork so that they will be ready to implement Step Three.

Our outreach program for sharing the Sustainable Watershed Systems message is broadly based. Within the initial 12-month period, getting the word out involved constantly making presentations to inform and educate:

> Regional boards and municipal councils (6), conference audiences (6), local government technical groups (3), professional groups (1), stewardship sector (1) and university classes (2).

So, what were the defining moments in 2016? In August, my keynote address at a national conference in Australia provided a platform to reflect on "parallel journeys". In October, publication of an op-ed in the Vancouver Sun demonstrated that our whole-system, water balance message is news worthy.

Asset Management Continuum for Sustainable Service Delivery

GROUND ZERO: In the beginning, no **Asset Management Plan** exists. A consequence is an 'unfunded infrastructure liability'.

STEP ONE: Local governments embrace the BC Framework, with an initial focus on core engineered assets (water supply, sewage, roads) and embark on an **Asset Management Strategy / Plan / Program** process.

STEP TWO: Local governments start thinking holistically and implement a life-cycle approach to infrastructure decision-making so that **Sustainable Service Delivery** for engineered assets becomes standard practice.

STEP THREE: For the drainage function, local governments will integrate natural systems thinking and climate adaptation into asset management and account for the **Water Balance Services** provided by watershed systems.

As understanding grows, local governments will progress incrementally along the **Continuum**

Australian Keynote: The BC approach to infrastructure asset management has learned from and built upon Australian experience, and is now taking asset management to another level with *Asset Management for Sustainable Service Delivery: A Framework for BC*.

To develop a storyline on parallel journeys for my 2016 keynote, I interviewed a cross-section of "water thought leaders" from across Australia. These conversations allowed me to identify over-arching themes that shaped my storyline and relevancy to an Australian audience.

The conference then served as the moment of truth for audience response. Would Australians be receptive to the storyline? Would they understand our way of watershed systems thinking? Would they grasp the significance of the Asset Management Continuum?

Just as the BC Framework has garnered both Canada-wide and international attention, so too is "Sustainable Watershed Systems, through Asset Management" attracting interest in our pragmatic whole-system, water balance approach to GETTING IT RIGHT.

Other regions recognize BC as a leader. They perceive BC moving in the right direction with integration of watershed systems thinking and asset management. International exposure allows us to judge how BC stacks up against the rest of the world.

Journey to a Water-Resilient Future

Visit https://youtu.be/JCrdEkK61GY to watch and learn how I introduced Australians to three "big ideas" that underpin where we are heading in BC, namely: Primacy of Hydrology, Shifting Baseline Syndrome, and Cathedral Thinking. The three are interconnected. The outcome would be Sustainable Watershed Systems.

Changes in hydrology, not water quality, must be the primary focus. If we can get the hydrology right, and recreate watershed systems, then as an added benefit the water quality would be greatly improved.

The good news is that redevelopment creates an opportunity. If we do get the hydrology right the second time, and restore the **watershed system**, this would then reset the ecological baseline.

Coined by University of British Columbia's Dr. Daniel Pauly, the Shifting Baseline Syndrome describes an incremental and imperceptible eroding of expectations and standards that results from each new generation lacking knowledge of the historical condition of the environment.

Resetting the ecological baseline would take time, inter-generational commitment, and perseverance. This is the essence of "cathedral thinking" which describes our BC vision for **Sustainable Watershed Systems.**

In embarking on the journey to a water-resilient future, we can learn from our ancestors. The foundation for cathedral thinking is a far-reaching vision, a well thought-out blueprint, and long-term implementation.

These ideas resonated with the audience in Australia, and opened eyes and minds to a different way of thinking. These ideas are also resonating with audiences in British Columbia.

Looking Ahead: What is on the Horizon

The BC Framework links local government services, infrastructure that supports service delivery, and watershed health. Thus, it sets a strategic direction that would refocus business processes to properly manage **watershed systems** within the built environment:

> *Mimic natural flows in streams. Preserve the natural pathways by which water reaches streams. Slow, spread and absorb runoff.*

Benefits of the whole-system approach include less flooding, less stream erosion, and more streamflow during dry weather when needed most. These water balance benefits ultimately translate into lower life-cycle costs and a water-resilient future!

But there is a caveat - moving from understanding to implementation requires a sustaining commitment by local governments to implement 'standards of practice' that restore the desired watershed condition over time.

Some communities already have some of the puzzle pieces needed to ensure a water-resilient future. What is lacking, however, are precedents that demonstrate HOW to fit those pieces together to form a complete puzzle picture…..AND also 'walk the talk' to implement a pragmatic whole-system approach that resets the baseline. This is a major gap. The Partnership is working with our local government partners to fill it through development of the **Ecological Accounting Protocol**.

By the end of 2017, success would be measured by progress on two case studies that would refine, apply and test application of the Ecological Accounting Protocol to show that: *To protect watershed health, engineered infrastructure out to fit into natural systems, rather than the other way around*.

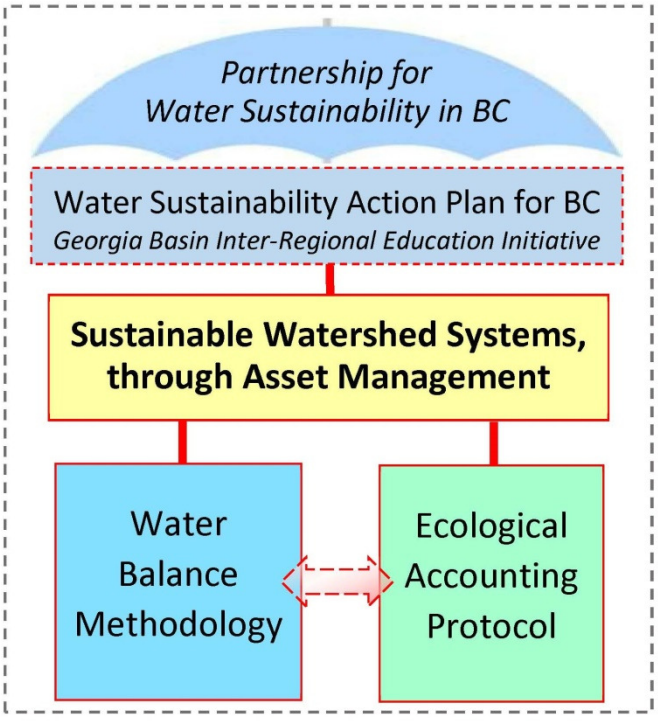
UPDATE: Ecological Accounting Protocol – A Tool to Calculate the Opportunity Cost of Drainage Infrastructure

By Tim Pringle, Chair, Ecological Accounting Initiative, Partnership for Water Sustainability in BC

*This article is a companion to **Vision for "Sustainable Watershed Systems" resonates with audiences in BC and Beyond**. It is a progress report on the ongoing development of the Ecological Accounting Protocol (EAP) by the Partnership for Water Sustainability in BC ("the Partnership").*

In November 2015, and with release of *Beyond the Guidebook 2015: Moving Toward "Sustainable Watershed Systems, through Asset Management"*, the Partnership launched a process to introduce EAP into standard practice. EAP is one of the twin technical pillars for the whole-system, water balance approach that would refocus business processes to properly manage **watershed systems** within the built environment.

EAP is a method of ascertaining economic values of services drawn from natural assets. It is a tool for practitioners in the local government setting. The purpose of EAP is to help practitioners calculate the opportunity cost of drainage infrastructure.



Synopsis

The purpose of this progress report to the Asset Management BC readership is to inform as follows:

- Provide a perspective on how the thinking behind the EAP pillar, and awareness of the EAP process, unfolded over the course of 2016.
- Draw attention to the significance of the EAP presentation at the FLOWnGROW workshop, co-hosted with the Okanagan Basin Water Board and Irrigation Industry Association in November, as a milestone moment in rolling out the concept.
- Foreshadow how the upcoming Comox Valley Eco-Asset Symposium fits into a bigger picture.

The EAP approach begins by first recognizing the importance of a stream in a natural state and then asking: how can we maintain those ecological values while allowing the stream to be used for drainage.

What Gets Measured Can Be Managed

If natural assets and derived services variables are not measured, they will not be managed in the context of drainage infrastructure.

This lesson is manifest in the persistent problems in the quality of infrastructure and unfunded liabilities associated with over-reliance on engineered measures (and other factors).

Getting the Logic Right: Over the past year, we have improved the logic of EAP. In a nutshell, it is about specific values (pricing) - not imputed, generalized values.

Since cost-avoidance, at least perceived cost-avoidance, motivates much of the decision-making process about infrastructure, and development in general, why has the obvious role of natural assets been omitted to date?

EAP suggests it is the lack of measurement.

Big Ideas & Details: The big ideas about imputed values are part of the sales pitch, but they are not the details needed for implementation.

EAP is about the details. What is the defined drainage system work offered by a natural asset worth? What is the price?

To fully appreciate how we have arrived at this logic, one needs to understand how a green infrastructure way-of-thinking has evolved over the past 15 to 20 years. It has been a building blocks process.

Green Infrastructure in Context

Policy and practices that recognize the value of natural assets began to attract widespread attention in BC communities circa Year 2000 when green infrastructure concepts were first introduced.

Macro versus Micro: Green infrastructure concepts and practices continue to evolve; the interest in eco-asset designations is the most recent stage (also "regenerative design"). However, these perspectives are rather macro.

Communities still need to deal with the micro realities. What does a stream do? Can it be drawn on to support infrastructure? Will such a process improve sustainable service delivery and the cost of doing it?

Increasingly, communities are expressing interest in the process of valuing natural assets as part of managing settlement growth. The Town of Gibsons, for example, is a leader in policy about eco-assets. The Municipal Natural Asset Initiative, a multi-partner initiative is sponsoring several projects to illustrate strategies to value natural assets and influence policy.

In March 2017, the conservation community in the Comox Valley is hosting an Eco-Asset Symposium. The Partnership is participating to explain the detailed method of the EAP to establish actual prices for civil services drawn from natural assets.

A Tale of Two Watersheds: Under the umbrella of the Georgia Basin Inter-Regional Education Initiative, later in 2017 the Partnership is planning to undertake two watershed case studies – one within a municipality (Town of Comox); the other within a regional district electoral area (Cowichan Valley) – to apply, test and refine EAP

Looking ahead, the Comox case study is envisioned as a tale of two watersheds. One would expose the price of not recognizing or using the services of the watershed. It is the negative cost case. The other would illustrate the price of the work needed to incorporate protection and use of natural assets for drainage infrastructure.

FLOWnGROW Workshop: The event was the fourth in an annual series organized by the Partnership. The series is designed to draw attention to leading thinkers and to 'big ideas' that would transform how communities tackle critical issues.

Throughout 2016, the presentations described in the companion article touched lightly on the vision for EAP. It was the FLOWnGROW forum that "made EAP authentic".

A Measure of True Value

EAP is a tool to help calculate the opportunity cost of drainage infrastructure to measure the true value of the natural system as an item of infrastructure.

The measurement and pricing process will build an index that quantifies and prices civil services drawn from natural assets that may be and, if possible, should be included in infrastructure design, construction, maintenance and operations.

As more projects are analyzed, the index will provide measures of the financial value of specific hydrological functions and services in a drainage context.

As for an approach to outreach and professional development, we believe that audiences would appreciate a conversation rather than a presentation. We hope they would be curious and gladdened to know that the Partnership has thought long and hard about the need for EAP and the role it would play in accurately valuing the existence of natural assets and the price/cost of the services that may derived from them for drainage infrastructure design, construction, and life-cycle management.

What Gets Measured Can Be Managed: This is an inclusive and logical approach. Recognize all of the variables in the equation. They must be measured, so we have figured out how to do it.

Communities and the practitioners that shape them will be glad to know that optimum infrastructure design and construction can and ought to equal watershed health. This is fundamental to sustainability.

Accepting this reality and dealing with it positively (measure and manage) contributes fundamentally to other challenges in the landscape - including climate change, food security, protecting property values, supporting healthy environments (air quality, proximity to nature, etc.), adding accessible natural amenities to the "urban" fabric, etc.

Finally, sustainability also means apply cathedral thinking; build basic settlement assets that will last. Drainage infrastructure and other infrastructure are realistic targets for greatly improved longevity and reduced life-cycle costs.

EAP will contribute significantly to such sustainability.

Let the taxpayers and politicians applaud!

To learn more: www.ecologicalaccountingprotocol.ca