

We propose to do this work over the next several weeks. AMBC will use our network to poll other Communities of Practice and Associations and contacts across Canada to see who may have done similar work.

**Want to help?** Do you have some thought on making this work of best value to us? E-mail Wally Wells at AMBC at [wwells@live.ca](mailto:wwells@live.ca)

## How much should local governments spend each year to reduce the Riparian Deficit?

*By Kim Stephens and Tim Pringle, Partnership for Water Sustainability in BC. Kim is the Executive Director and Tim Pringle is a Founding Director and Chair, Ecological Accounting Process (EAP) initiative.*

*If we know how to do a much better job of protecting ecological features and stream systems in our communities and on our landscape, then why aren't we doing a better job? Why are streams still degrading? Why do we still see practices that exacerbate the situation? Why is understanding lacking? How do we change that?*

### Sustainable Drainage Service Delivery

In BC, local governments need to include stream systems in strategies, plans and budgets for Asset Management. The community uses these natural assets for municipal drainage, habitat, features in parks and enhancement of properties. Maintenance and management (M&M) concerns and issues arise around stream systems.

### A challenge for local governments is, how to move from stopgap fixes to long-term solutions for effective M&M of streams?

EAP, the Ecological Accounting Process, is a pillar for a pragmatic approach. With its focus on the Drainage Service, the **Riparian Deficit** is the number local governments need. It is the environmental equivalent of the **Infrastructure Funding Gap**.

**EAP uses real numbers for financial valuation:** In June 2022, the Partnership for Water Sustainability released the 4th in the Beyond the Guidebook Series. Titled *Synthesis Report on EAP, the Ecological Accounting Process, a BC Strategy for Community Investment in Stream Systems*, it showcases collaboration in action.

EAP methodology and metrics allow local governments to make a convincing financial case for annual investment in stream systems to reduce the Riparian Deficit

The essence of EAP is to discover the **Natural Commons Asset (NCA)** financial value of the stream. Defined in the *Riparian Area Protection Regulation Act*, the NCA is the stream channel plus the 30m setback zone on each side.

The NCA financial value can be readily quantified and is expressed as **\$ per km of stream**. The annual budget for maintenance and management (M&M) of a stream is **1% of the NCA value**. The concept of the **Riparian Deficit** interprets what the NCA number means.

The graphic below distills five key ideas that underpin EAP. These cascading concepts create a mind-map.



### WHAT is the Issue?

When one thinks about asset management, it is often in the context of municipal infrastructure and how this provides the “water service” or the “sanitary sewer service”, and so on. The Drainage Service is the neglected service, and the cost of neglect grows over time.

Why is this? There are several reasons. First, there is the failure to recognize that constructed infrastructure and the stream system are interconnected. Secondly, the science behind stream system integrity is not well understood by practitioners nor is it applied effectively.

So, what is the consequence of neglect? The **Riparian Deficit** grows as streams continue to degrade! This is a water balance issue.

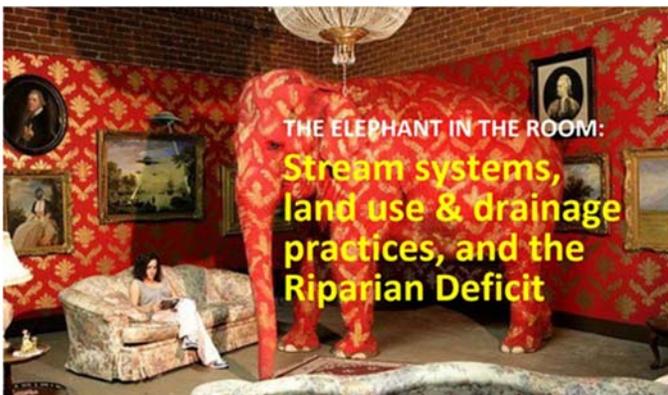


**Recognize there is an elephant in the room:** In the 1990s, seminal research at the University of Washington on the science of land use changes produced a road map for protection of stream system integrity.

For the past generation of practice, then, communities and practitioners should have known what they ought to be doing. And some have made progress. But, in the big picture, the last two decades have been characterized by an inability to act on the science. The consequence is a growing Riparian Deficit which is an unfunded liability.

Land use realities (master drainage planning, integrated stormwater planning, development pressures, etc.) push local government to pay lip-service to the role of the streamside protection zone. There is scant understanding of a stream system context, the value of water balance pathways, the condition of native vegetation and woodlands cover, and the need for restoration.

**Why aren't these factors considered and given equal weight to engineering considerations?**



An elephant in the room is the hollowing out of government capacity at all levels and the reliance on outside service providers. The question is, how does one create a situation where the environmental perspective is on an equal footing with the engineering and accounting perspectives?

Only then can there be a balanced and productive conversation about annual budgets for maintenance and management (M&M) of assets, whether those are

constructed assets or the natural component of the Drainage Service.

**The growing cost due to neglect of the Drainage Service, combined with the urgency of the drainage liability issue, is the driver for linking municipal infrastructure asset management and stream health as "cause-and-effect".**

**SO WHAT can be done?**

The "EAP story" is about a journey, one that began circa 1990 for pioneers working on parallel stream protection and restoration initiatives in British Columbia and Washington State. Three decades later, these parallel tracks have converged in the form of EAP.

**It has been a building blocks process requiring commitment, patience, and perseverance by many.**

Following publication of *Beyond the Guidebook 2015*, the Partnership embarked on a 6-year program of applied research to evolve and operationalize the EAP methodology and metrics through collaboration with willing local governments. The program involved 9 case studies and 13 local governments and yielded 19 "big ideas" which became foundational concepts.

**The EAP methodology defines what a stream is, finds the value of the stream using impartial BC Assessment data, and adds to that a riparian assessment that looks at the 30m zone and a further 200m upland area to evaluate the water balance condition and what is happening to water pathways.**

Because local governments need real numbers to deliver outcomes, we landed on the concept of the Riparian Deficit. This expresses three measures of value in a single number. The three are the financial value of the stream corridor as the **Natural Commons Asset (NCA)**, the social and ecological values, and the order of financial magnitude. The NCA financial value is **\$ per km of stream**; and the annual M&M budget is **1% of the NCA value**.



**Overcome barriers and challenges:** Having arrived at the EAP destination, the Riparian Deficit, the Partnership is able to reflect on the two issues which provided context for the journey: first, engineering measures are insufficient for stream and riparian protection; and secondly, the link to municipal asset management has not been clear.

To reach the destination, the Partnership had to address and show how to overcome four challenges: one, a lack of measurable metrics; two, confusion over **what is an asset versus a service**; three, ignorance about how to quantify the financial value of “natural assets” with real numbers; and four, numerous “one-off” projects that fail to build improved asset management practice.

Unless communities measure the effect of impacts, destabilization of stream channels and degradation of riparian assets and streamside protection areas will continue.



### NOW WHAT can we do?

EAP is a foundation piece for *Asset Management for Sustainable Drainage Service Delivery*. EAP is outcome oriented – restore and protect stream system integrity.

EAP is remarkable in its simplicity and is pragmatic. Start with an understanding of the parcel because that is how communities regulate and plan land use. It is the parcel level where you get the information that you need to change practice to protect natural assets. That is what everyone must get their heads around.

To build interdepartmental consensus about the need for shared commitment and sustained action, there must be a real number to focus attention on what is at stake. The Riparian Deficit is that metric. It enables local government to pose and answer the question:

#### What will change when EAP analyses provide financial values for natural assets such as streams?

With the perspective of hindsight, each local government participating in the 6-year program of applied research took a leap of faith that EAP would fit into their strategic directions. Now, with EAP as a foundation piece, these partners in the process have a rationale and a metric to take steps to do business differently.

A decade ago, the Partnership was hopeful that all players would embrace shared responsibility and communities would move from stopgap fixes to long-term restoration of properly functioning streams.

We are not there yet, in large part because of the hollowing out of government capacity at all levels and the reliance on outside service providers.

**Re-build internal capacity:** In view of the myriad of realities currently facing all organizations, the task of rebuilding local government understanding and capacity to protect stream system integrity will take time, energy,

and long-term commitment. The asset management task is two-fold in scope.

**One, influence current practitioners to adopt EAP into asset management strategies. Two, train the next generation of land use, GIS, and drainage professionals in the use of EAP. This starts in university.**

With completion of the current program to mainstream EAP through case studies, the Partnership has set a process in motion to embed EAP in a university setting to support the work of local government practitioners.

**Train new leaders and embed knowledge in-house:** “We believe that incorporating students from Vancouver Island University and other universities will support understanding and experience within municipal governments on the importance of EAP, and simply understanding EAP. Fortunately, most of VIU’s Master of Community Planning, and Master GIS students find themselves working within municipal governments,” states Graham Sakaki.

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### Beyond the Guidebook Series

- › *Stormwater Planning: A Guidebook for British Columbia*, released in 2002, is the foundation document for the Beyond the Guidebook Series of guidance documents. The titles themselves tell a story about the partnership journey in building on the Guidebook through case studies that showcase and celebrate good work, and advance implementation of science-informed approaches.
- › *Context for Rainwater Management and Green Infrastructure in British Columbia* (2007)
- › *Implementing a New Culture for Urban Watershed Protection and Restoration in British Columbia* (2010)
- › *Moving Towards “Sustainable Watershed Systems, through Asset Management* (2015).
- › *Synthesis Report on the Ecological Accounting Process, a B.C. Strategy for Community Investment in Stream Systems* (2022). The EAP Synthesis Report is written for land use practitioners, asset managers, stream stewards, and local government decision-makers.

**DOWNLOAD A COPY:** <https://waterbucket.ca/gi/wp-content/uploads/sites/4/2022/06/EAP-Synthesis-Report-Beyond-the-Guidebook-2022-Jun-2022.pdf>