



the partnership
for water sustainability in bc

Waterbucket eNews on May 10, 2022
<https://waterbucket.ca/wscblog/>



**Living Water Smart
in British Columbia:
*Natural asset
management... cutting
through the rhetoric***

Note to Reader:

Waterbucket eNews¹ 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 May 10, 2022 addressed the question, what does “managing natural assets” actually mean in a municipal asset management context? Local governments need real numbers to deliver outcomes. EAP, the Ecological Accounting Process, meets this test by providing a number that can be incorporated in an annual Asset Management Budget for stream system maintenance.

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 by David Mackenzie,
a *Lifetime Member* of the Partnership for Water Sustainability

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>

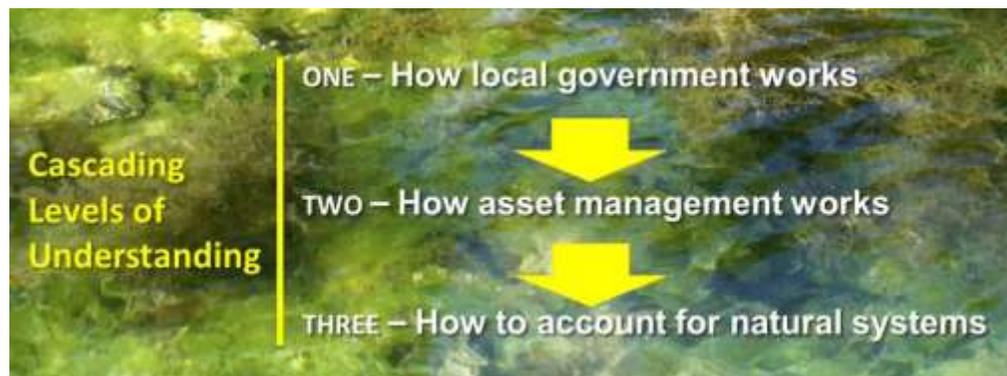
Editor's Perspective

Words matter. In the local government setting, what is a natural asset, really? It is a vague term that has become a buzz word that is not helpful. Why not use plain language that creates a mental picture? Stream corridor systems, parks, and conservation areas - these are land uses that constitute "natural assets". From a municipal asset management perspective, however, which is the most important, and why?

The answer is stream corridor systems because they provide a **“package of ecological services”** - drainage, habitat, recreation, and enjoyment of property. Streams are a major focus for community involvement. Consider how much work stewardship groups do to improve conditions in streams. We can all visualize what a stream looks like. How intuitively obvious is the generic phrase "natural asset"?

The stream is the natural component of the municipal "drainage service". The elephant in the room is the unfunded liability for urban stream stabilization and restoration. **The "drainage service" is the neglected service and the cost of neglect grows over time.**

The context for **EAP, the Ecological Accounting Process**⁴, is protection and restoration of stream systems. Two questions set the stage for EAP. First, what is the stream worth to the community? Secondly, how would a municipality operationalize EAP to pay for stream M&M? Three levels-of-understanding provide a frame of reference for EAP analyses.



⁴ <https://waterbucket.ca/gi/category/ecological-accounting-process/>

Asset Management for Sustainable Drainage Service Delivery

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 communities doing a better job? Why are streams still being degraded? How do we change that?

The EAP program supports local governments that: one, intend to adopt an integrated approach to **life-cycle maintenance and management** (M&M) of the “drainage service”; and two, recognize that the drainage service comprises two inter-connected components, namely, constructed infrastructure and the stream system.

EAP is one of the “twin pillars” for [Asset Management for Sustainable Drainage Service Delivery](#) and has evolved through an applied research program involving multiple local governments in southwest BC.



*Kim A. Stephens, MEng, PEng,
Executive Director*

*Partnership for Water Sustainability in BC
May 2022*



Cascading Concepts Create a Mind-Map for EAP, the Ecological Accounting Process

Figure 1



30-Second Takeaway

Management of "natural assets" within a local government's **Asset Management Strategy** is an idea whose time has come. This statement sounds good but what does "managing natural assets" actually mean in the local government setting?

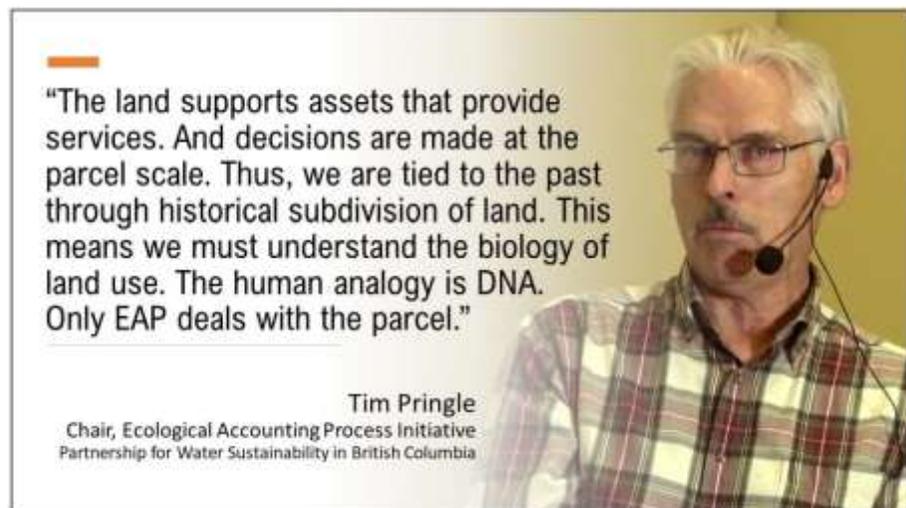
Rhetoric without meaningful context or content is not helpful. In this edition, we cut through the rhetoric. How concepts are explained is crucial. Use plain language. What is easily understood and can be measured gets implemented.

Visualize a Monday night meeting of a municipal Council and reflect on how Councils make decisions. The mindset and focus of Councillors are on what happens at the parcel scale. Also, how do you get buy-in from a Council for the add-on cost of "natural asset management" when local governments are already grappling with the financial challenges associated with the **"infrastructure deficit"** for water mains, sanitary sewers and roads?

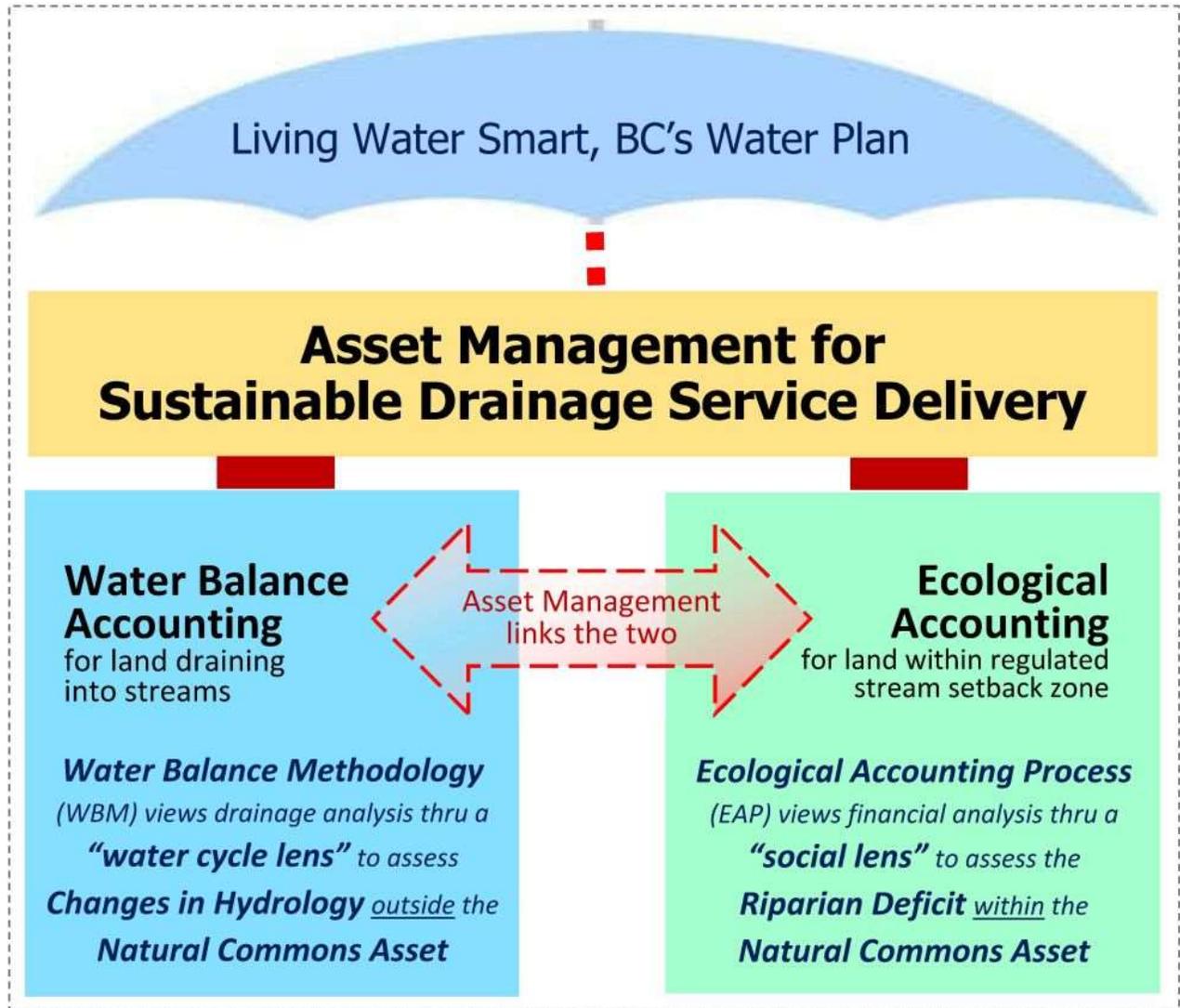
To help a continuum of audiences come to grips with the questions as posed, Figure 1 distils five cascading concepts. These underpin **EAP, the Ecological Accounting Process**. The visual is a mind-map for what follows in this edition of Waterbucket eNews.

EAP expresses stream system maintenance and management (M&M) as a measurable metric, the **Riparian Deficit**, which is the environmental equivalent of the **Infrastructure Deficit**. The riparian deficit is a measure of "loss of riparian integrity" due to land use intrusion into the regulated streamside setback zone.

EAP puts the environmental perspective on an equal footing with the engineering and accounting perspectives and thus bridges a gap.



Twin Pillars for Stream System Integrity



Hydrology is the Engine that Powers Ecological Services

Historical Context

EAP has its origins in the 1990s “salmon crisis” in the [Georgia Basin / Salish Sea / Puget Sound Bioregion](#). Listing of Coho salmon as an endangered species in Puget Sound was a catalyst for cross-border collaboration between BC and Washington State.

The road map for protecting stream system integrity – an outcome of seminal research at the Center for Urban Water Resources Management in Seattle – is the inspiration for the **Twin Pillars Concept** for linking “water balance accounting” and “ecological accounting” through asset management.

Richard Horner, Chris May, and others applied a systems approach, examined the interaction of all the variables, and correlated land use changes with impacts on **stream system condition**. They defined four limiting factors in order of priority. These factors provide the road map for action to protect and/or restore stream integrity.

Road Map for Protecting Stream System Integrity

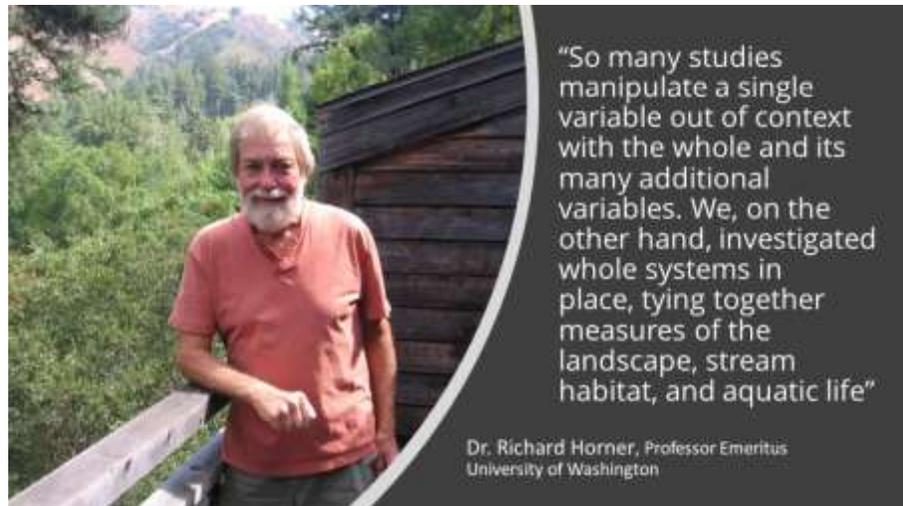
West coast research in the 1990s by Horner et al at the Center for Urban Water Resources Management in Seattle demonstrated that the order-of-priority for factors limiting ecological values of urban streams is:

LIMITING FACTOR 1: Changes in Watershed Hydrology – addressed thru the Water Balance Accounting Pillar

LIMITING FACTOR 2: Disturbance and/or Loss of Integrity of Riparian Corridor – addressed through the Ecological Accounting Pillar

LIMITING FACTOR 3: Degradation and/or Loss of Aquatic Habitat within the Stream

LIMITING FACTOR 4: Deterioration of Water Quality



Road Map for Protecting Stream Integrity

The top two factors are **changes in hydrology** on the land draining to the stream, and **loss of riparian integrity** (i.e., “the riparian deficit”) due to removal of vegetation and woodlands within a stream corridor.

The consequences of changes to the top two factors play out as **degradation of aquatic habitat** (#3) and deterioration of water quality (#4).

In 2015, the Horner and May "road map" led the Partnership for Water Sustainability to develop the "twin pillars" concept for **reconnecting hydrology and stream ecology** through asset management, for the "drainage service".

Ranking	Limiting Factor
1	Changes in hydrology
2	Disturbance and/or loss of integrity of the riparian corridor
2	Degradation and/or loss of aquatic habitat within the stream
4	Deterioration of water quality

Connecting Dots

The Fish Protection Act was a watershed moment and a call to action. The regulation defined the setback zone as a land use.

*The 1997 workshop led directly to the **SmartStorm Forum Series** (1999 thru 2001). Cross-border in scope and guided by a vision for an ecosystem-based approach to land and water development, the series set in motion a chain of events and associated outcomes.*

*These have rippled through time, resulting in provincial milestones such as: release of **Stormwater Planning: A Guidebook for BC** in 2002; followed by release of **Living Water Smart, British Columbia's Water Plan** in June 2008; and culminating in passage of the **Water Sustainability Act** in 2014.*

Connecting Dots: EAP is made possible by the **Riparian Areas Protection Regulation Act**. The regulation defines the setback zone as a land use. Originally titled the *Fish Protection Act* when it was enacted in July 1997, the Act established a first in North America. In 2016, it was renamed the Riparian Areas Protection Regulation Act by the *Water Sustainability Act*.

Looking back, and in terms of 'green infrastructure' and **the vision for reconnecting hydrology and stream ecology**, much of what has transpired over the past 25 years can be traced back to October 1997 and a focus group workshop convened by the UBCM in Richmond.

The workshop commenced the rollout of the Fish Protection Act. It was the prelude to a "watershed moment" session for local government elected representatives about implementation of streamside setback regulations. Bill Derry shared the Horner and May research and this set-in motion the chain of game-changers described in the sidebar.

For 20 years, Bill Derry chaired the Washington State local government committee that framed eight key questions circa 1990. These defined areas of research by graduate students under the guidance of Dr. Richard Horner. Chris May then pulled together this original research in his PhD dissertation. The BC Partnership for Water Sustainability continues to build on this foundation.

Bill Derry – Inaugural manager (1988) of the Snohomish County Stormwater Utility, one of the first in the USA. Founding Director (1990) of the Center for Urban Water Resources Management at the University of Washington.

Asset Management Context for EAP

In 2015, EAP was an idea. The methodology and metrics recognize the importance of the stream in the landscape. It has been a 6-year journey to test, refine and mainstream the EAP methodology and metrics through a building blocks program of applied research.

Water Balance Accounting, pillar number one, addresses changes on the land draining to the stream. **Ecological Accounting**, pillar number two, addresses changes within a stream corridor. Integration of the two is the goal.

Asset Management for Sustainable Service Delivery: A BC Framework provides local governments with an incentive to go down this path. The provincial expectation is that local governments would integrate "natural assets" into asset management processes. EAP shows them how to do it for stream systems and water assets such as wetlands.

The Vision: Embed a Sustainable Service Delivery Culture

The over-arching context for EAP is whether a local government has a life-cycle strategy for its constructed assets. This big picture context is defined by a local government finance vision that embeds a Sustainable Funding Plan.

EAP makes the financial case to put M&M of stream corridor systems and water assets on an equal footing with constructed assets (municipal infrastructure).

The essence of EAP is expressed as follows:

What is the environment that supports the package of ecological services?

This is a land use perspective.

An Asset is an Asset: Whether constructed or natural, an asset is an asset. And in the built environment, each asset type requires a budget for maintenance and management (M&M). The desired outcome is that BC local governments would apply EAP metrics to establish annual budgets for stream corridor systems.

Stream M&M would then be a line item within an Asset Management Strategy that accounts for both constructed and natural assets.

EAP is a Land Use Perspective: The strength of EAP is in how it looks at and values streams as systems and as a land use. A stream corridor is a land use because stream setbacks are defined in regulation. Also, a proxy financial value is readily determined from the BC Assessment database.

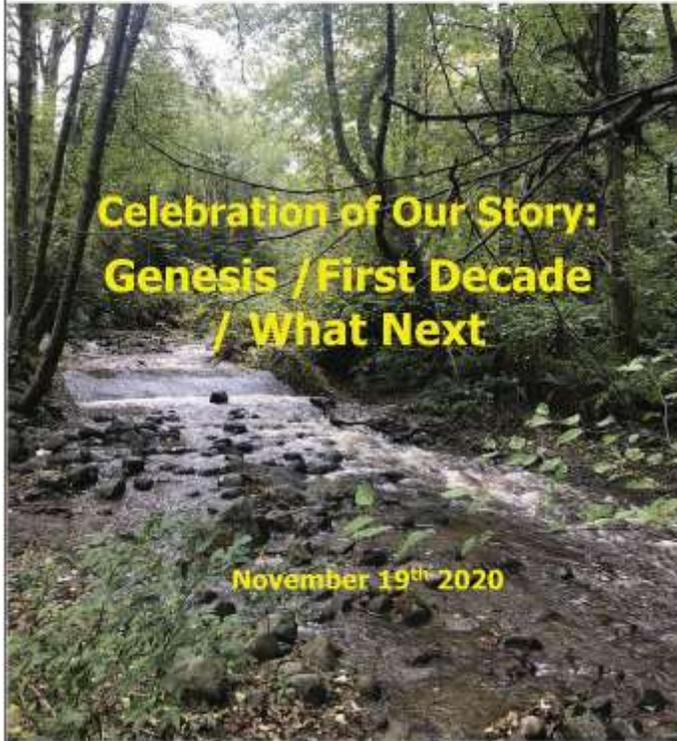
BC Assessment land parcel values are accurate, recent, and reflect the motivations of buyers and sellers over time. This means parcel values include social, ecological, and financial trend information.

The Bottom-Line: Local governments need real numbers to deliver outcomes. Because the stream corridor is a land use, EAP defines the regulated zone as the Natural Commons Asset (NCA). This foundation has two primary metrics or measures.

The NCA financial value is expressed as **\$ per km of stream length**; the annual M&M budget is **1% of the NCA value** consistent with accepted practice for constructed assets.



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TO LEARN MORE, VISIT:

<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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