



**the partnership
for water sustainability in bc**

Waterbucket eNews on April 16, 2024
<https://waterbucket.ca/wscblog/>

Living Water Smart in British Columbia:

EAP is a financial tool to help streams survive

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 April 16, 2024 features Tim Pringle, Anna Lawrence, and Sam Gerrand who personify the passing of the intergenerational baton. They tell the story of Year One of the 3-year transition strategy to embed EAP, the Ecological Accounting Process, at Vancouver Island University. EAP is a financial tool that fills a gap. It provides a measure of the Riparian Deficit which is a consequence of urbanization.

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 Kim Stephens

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

"Led by Tim Pringle, the Partnership for Water Sustainability created the EAP methodology based on 9 projects. The success is that EAP has been passed on to Vancouver Island University as part of the intergenerational baton. Now we are in a 3-year transition strategy to embed it."

"There are many different parts to EAP. With each part comes a pathway with capacity to help local governments. In his Master's thesis, Sam Gerrand has explored one pathway to apply EAP at a regional scale. This research holds exciting potential."

Anna Lawrence



Convening for action at the BC Land Summit: *Going beyond doing just enough*

Local government Asset Management Plans need real financial values in order to include budgets for M&M, maintenance and management, of streams.

EAP, the Ecological Accounting Process, is a financial tool to help streams survive because EAP gives local governments **realistic and defensible financial values**, based on parcel data from BC Assessment, on how much to invest in M&M.

At the BC Land Summit on May 9 in Nanaimo, Tim Pringle will tag-team with Anna Lawrence and Sam Gerrand to tell the story of Year One of the 3-year transition strategy to embed EAP at VIU.

Human settlement degrades stream systems. A series of reports by the Ombudsperson link weak oversight of riparian areas regulation to continuing degradation.

Meanwhile, the pressure on governments to **pave the way for housing** is seemingly relentless. So, how do communities find a balance between these competing realities? What are the **RISKS** and **COSTS** when we fail to get it right with our land development and drainage policies and practices?

In a world of competing priorities when governments must make hard choices on what and how much to fund, what are the **affordable and effective measures** that might drive changes in policies and practices to achieve a balanced outcome?

How will we course correct to find the balance that achieves a desired outcome such as: **create liveable communities and protect stream health**? The vision for the EAP Partnership is to continuously train the next generations of local government staffs and build capacity to get the job done.

Embracing the intergenerational baton

“As we become more familiar with EAP and its applications, it is becoming increasingly apparent that it requires tailored communication to a variety of audiences to emphasize that this is one tool to increase and maintain the health of our stream systems,” states Anna Lawrence who is being mentored by Tim Pringle as part of the **intergenerational baton strategy**.

Anna Lawrence is the Project Coordinator for the EAP transition strategy, and is with the Mount Arrowsmith Biosphere Region Research Institute at Vancouver Island University



Editor's Perspective by Kim A Stephens

Local government Asset Management Plans need real financial values

In the 1990s, [research⁴](#) by Richard Horner and Chris May at the University of Washington shook the foundations of traditional engineering practice and provided us with a science-based framework for understanding what stream system integrity means. We had our starting point for the goal of balancing use and conversation of land.

With publication of [Beyond the Guidebook 2015⁵](#), Tim Pringle and I framed water balance accounting and ecological accounting as the **Twin Pillars of Stream System Integrity** for a whole-system approach to assessing changes in hydrology and the riparian deficit, respectively. This launched the EAP journey!

Between 2016 and 2022, the Partnership carried out a program of applied research in three stages to test, refine and mainstream the EAP methodology and metrics. Under Tim Pringle's direction, we completed 9 case studies in collaboration with 13 local government partners in 5 regions of southwest BC.

We also built a relationship with the Mount Arrowsmith Biosphere Research Institute (MABRRI) at Vancouver Island University and involved students in the data analysis and GIS work. In fact, we relied on students.

With release of the [EAP Synthesis Report in 2022⁶](#), the timing was right to embed our EAP knowledge at MABRRI, launch the EAP Partnership, and begin training next generations of local government staff to tackle the **Riparian Deficit**. Multi-year commitments by local governments to build capacity and co-funding by UBCM make this possible.

“You cannot slice and dice nature because it is a system. EAP, the Ecological Accounting Process, recognizes this and is a financial tool to give streams the support they need to survive in the local government setting.”

Tim Pringle

⁴ https://waterbucket.ca/wcp/wp-content/uploads/sites/6/2023/03/PWSBC_Living-Water-Smart_Road-Map-for-Stream-System-Integrity_2023.pdf

⁵ <https://waterbucket.ca/wp-content/uploads/2017/10/Beyond-The-Guidebook-2015.pdf>

⁶ https://waterbucket.ca/gi/wp-content/uploads/sites/4/2022/06/EAP-Synthesis-Report-Beyond-the-Guidebook-2022_Jun-2022.pdf

Why we need EAP, the Ecological Accounting Process, to tackle the "Riparian Deficit"

"Can you talk about protecting natural assets without talking about specific land use practices? That is a basic question. And no, I do not think you can. Streams and riparian areas are going to be impacted unfavourably by development because they are no longer a natural system. They are an altered system."

Tim Pringle

"A measure of the consequence of human settlement is the **Riparian Deficit**," explains Tim Pringle, Chair of the Ecological Accounting Process (EAP) initiative.

"The Riparian Deficit applies to the regulated setback which is the interface between land and a stream. It is the natural systems equivalent of the well-known **Infrastructure Deficit** for engineered systems."

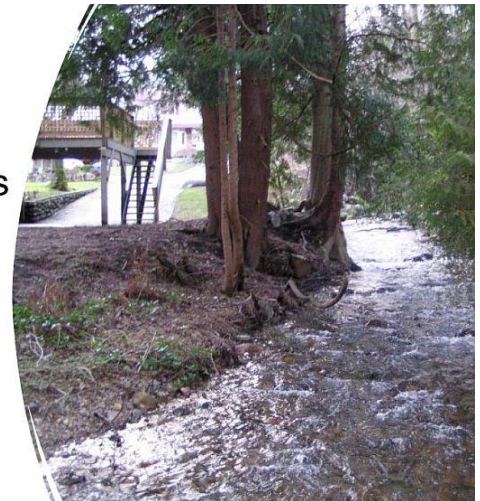
"EAP is a land use perspective. EAP provides local governments with the real numbers they need to deliver outcomes:

What is the number for the line item in a local government annual budget for community investment in maintenance and management, that is M&M, of streams?"

"Streams need a place to be. If we cannot get our heads around that, we are not going to keep our streams. When something does not get measured, it does not get managed," Tim Pringle stresses.

"It took me some time to understand the EAP methodology and various lenses of the stakeholders involved in Year 1. In Year 2 we can begin to communicate this methodology to a variety of audiences, starting at the BC Land Summit."

Anna Lawrence



STORY BEHIND THE STORY:

EAP is a financial tool to help streams survive - extracts from a conversation with Anna Lawrence and Sam Gerrand

"The story behind the story is about the importance of embedding knowledge of EAP into the youth who are going to be the future of our local governments. The framework that we have set up ensures this will happen," Graham Sakaki emphasized in a conversation about what being an EAP partner means to him and to Vancouver Island University. He is the MABBRI manager.

"There are lots of partnerships that exist for selfish reasons. But the EAP Partnership is selfless, and from all angles. It is a leap of faith for member local governments. Partnership for Water Sustainability commitment to passing the baton is unwavering."

Graham Sakaki, 2023

"Vancouver Island University is all-in because EAP is an idea that can change the game with respect to protection or restoration of riparian integrity along streams. And students are excited to contribute to the change."

Graham Sakaki,
Regional Institute Research Manager



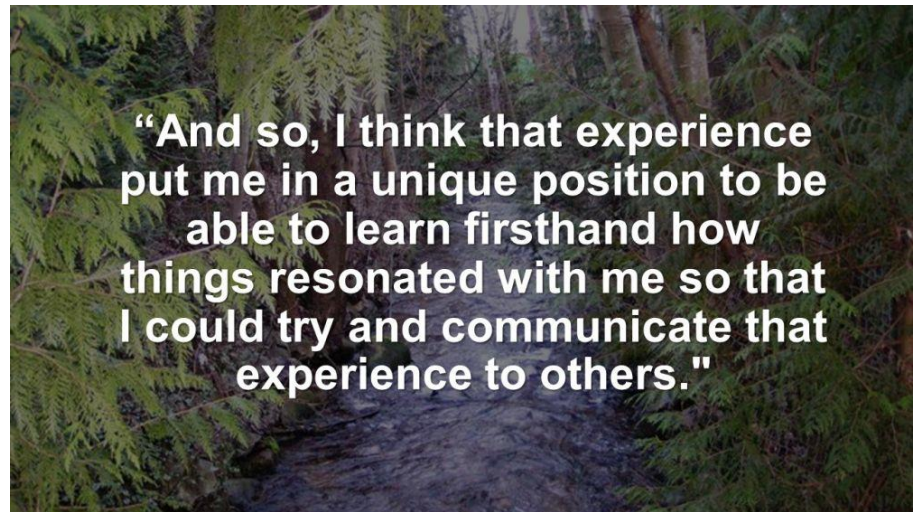
PART ONE: Reflections by Anna Lawrence about her journey as the coordinator

"Led by Tim Pringle, the Partnership for Water Sustainability created the EAP methodology and refined it with 9 demonstration projects. The success is that EAP has been passed on to VIU as part of the intergenerational baton. Now we are in the midst of a 3-year transition strategy to embed it," states Anna Lawrence.

"We have just completed three Year One projects through partnerships with three local governments. The work involved four students, two in Geographic Information Systems and two in the Master of Community Planning program, as well as three MABBRI staff who have been trained in the EAP methodology."

Coming up to speed in Year One: "I came into the EAP process with a completely different background because my master's degree is in Sustainable Leisure Management."

"So, it was a journey to get my head around the jargon and the different viewpoints and ways of thinking. This applied not only to the development of the EAP methodology but also to the different stakeholders."



"The 3-year transition strategy is an opportunity to absorb as much as we can. Not just me but all the others learning beside me."

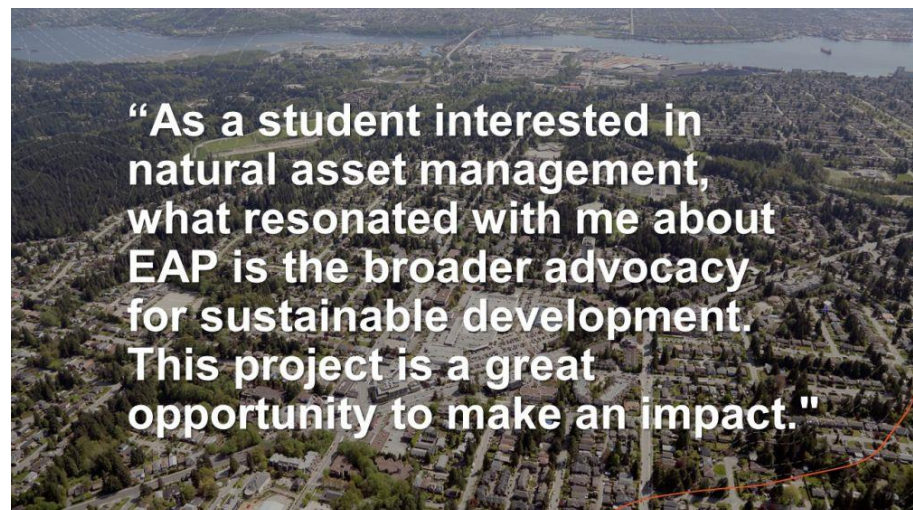
"There are many different parts to EAP. With each part comes a pathway with capacity to help local governments. In his Master's thesis, Sam Gerrand has explored one pathway to apply EAP at a regional scale. This research holds exciting potential."

PART TWO: Reflections by Sam Gerrand on the potential for EAP as a predictive tool

"I am the first master's student involved in EAP," states Sam Gerrand. "It is interesting because my research is an applied project that has direct implications for the local governments that we are working with."

"Partnerships with local governments and others are essential. They allow students to work on collaborative projects. Everyone benefits."

Graham Sakaki, 2023



“When Graham offered me a choice of projects for my thesis, EAP seemed like a perfect balance of something related to municipal planning and my personal interests. What really struck me about EAP is the application of science. And it is a way of communicating expert knowledge to people who are involved in the political process, the planning process, and actually implementing changes on the ground.”

Sam Gerrand, 2023

“My experience has been the same as Anna. A year ago, I was an outsider to the topic. It has been a fun journey learning what EAP is and the potential for its application.”

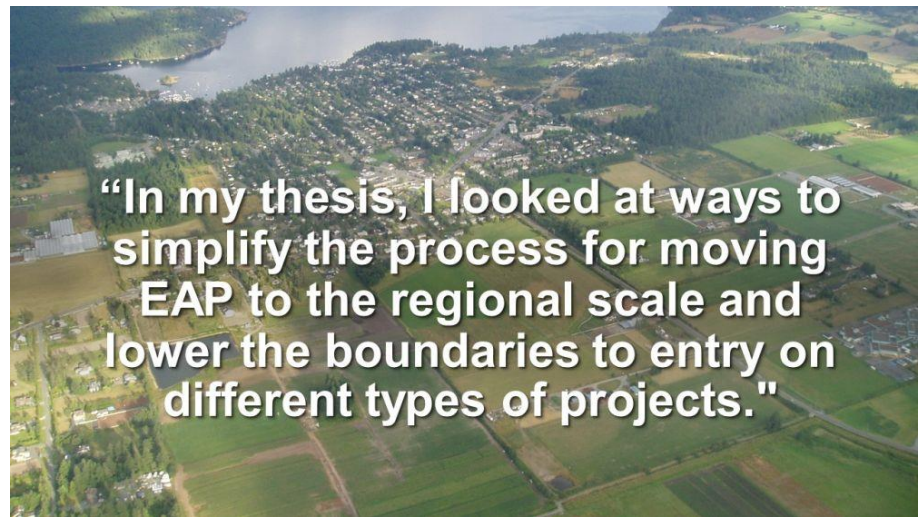
“It has also been exciting because I have a background in geographic information science and geography. And so I approached my project with the lens of that technical skillset and an applied topic.”

“As well, I spent a lot of time as a kid growing up around creeks and streams. My dad was involved in riparian area management. So I have an attachment to the research topic.”

What it means to do a deeper dive into the numbers

“The cool part is that because I worked on this project in an academic setting, I was able to investigate in more detail how EAP could be applied in a different way or even changed to be more useful to practitioners.”

“My research looked at ways we could take EAP from a stream-by-stream approach and apply it to a watershed scale or a regional scale. This might be really useful and cost-effective for local governments that have multiple streams in their jurisdiction.”



“In my thesis, I looked at ways to simplify the process for moving EAP to the regional scale and lower the boundaries to entry on different types of projects.”

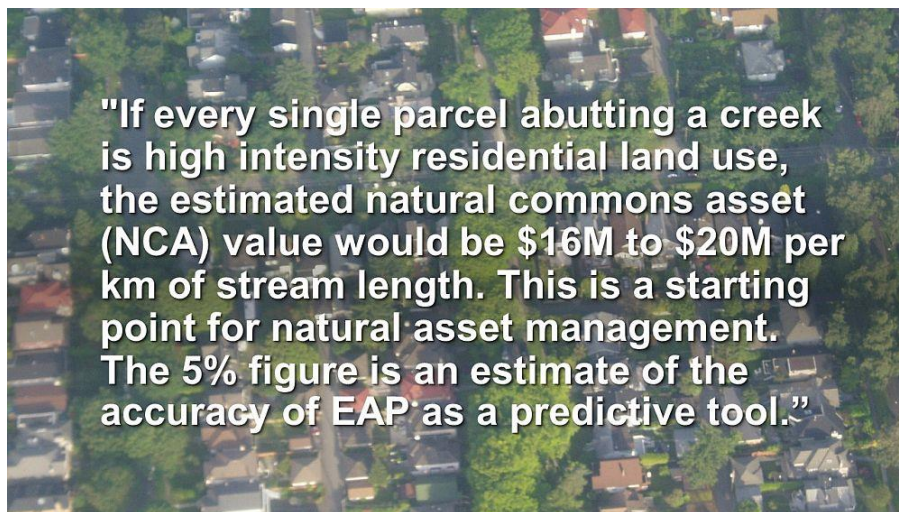
Natural Commons Asset (NCA) defined

The NCA is the portion of the stream corridor that lies in the regulated streamside setback zone as defined in the Riparian Areas Protection Regulation Act. The NCA width is the sum of the stream width plus the setback distance on each side of the stream.

“The exciting part of what I found is the strong relationship between land use intensity and the financial values of the streams that we are finding in the EAP studies.”

“What makes it exciting is the accuracy of land use intensity as an indicator for use of EAP as a predictive tool at the regional scale. The difference between predicted and actual values for the **Natural Commons Asset** financial value is within 5%.”

"That finding is really encouraging in terms of what it means for local governments. They can move forward in an affordable and effective way to deliver timely solutions," concludes Sam Gerrand.



PART THREE: Reflections by Anna Lawrence on the layers within the EAP process

"There are lots of layers to this partnership and projects. Not only is there a transition strategy, but there are also the partnerships with the local governments plus integrating other grad students," emphasizes Anna Lawrence.

"When we started this work. Sam and I were both getting our heads around the EAP methodology. And because we had yet to complete the three Year One partner projects, we were not fully understanding all the implications."

"But Year One is now behind us and we can see the many directions EAP could take. We are envisioning other areas of research as potential EAP projects. And thanks to a grant from Mitacs, we are able to take on up to six more research projects for graduate students, with opportunities to incorporate this into their thesis."

Absorb, communicate, and refine the communication

"I am very focused on the 3-year transition strategy because Year One was just trying to absorb as much knowledge as possible. And so, in Year Two I think it is time to begin that communication process. And Year Three will be refining that communication process."

"In summary, there have been and will continue to be multiple layers to EAP. In Year One, it was a juggling process with many moving parts and trying to keep them all in balance. And so, we look forward to sharing our EAP experience at the BC Land Summit," concludes Anna Lawrence.



APPENDIX A

THE STORY OF EAP: **EAP, the Ecological Accounting Process, is a financial tool to help streams survive**

EAP, the Ecological Accounting Process, is a financial tool to help streams survive

Why we need EAP to tackle the “Riparian Deficit”

Human settlement degrades stream systems. What are the RISKS and COSTS when we fail to get it right with our land development and drainage policies and practices? A measure of the consequence is the [Riparian Deficit](#). This applies to the regulated setback which is the interface between land and a stream.

“Streams need a place to be. If we cannot get our heads around that, we are not going to keep our streams. When something does not get measured, it does not get managed.”

Tim Pringle



Key Message One >

Science and regulations tell local governments how to protect streams. It is then up to them to take responsibility and act on the disconnect that occurs between land use oversight and maintenance and management of stream system condition.

Key Message Two >

[Asset Management Plans need a financial value in order to include budgets for streams.](#) The Riparian Deficit is equivalent to the Infrastructure Deficit, and is a measure of land use intrusion.

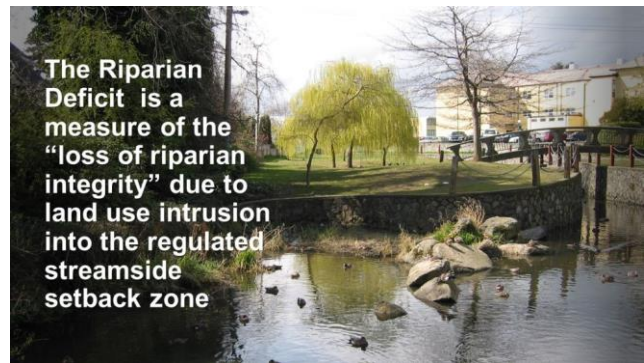
Key Message Three >

[Riparian Areas Protection Regulation and EAP are complementary.](#) A stream is a system. Stay true to the science that correlates changes on the landscape with consequences for stream condition.

The story of EAP

“In the 1990s, research by Richard Horner and Chris May at the University of Washington shook the foundations of traditional engineering practice and provided us with a science-based framework for understanding what stream system integrity means. We had our starting point for the goal of balancing use and conversation of land,” explains Kim Stephens, Partnership Executive Director.

“With publication of *Beyond the Guidebook 2015*, Tim Pringle and I framed water balance accounting and ecological accounting as the [Twin Pillars of Stream System Integrity](#) for a whole-system approach to assessing changes in hydrology and the riparian deficit, respectively. This launched the EAP journey!”



“Between 2016 and 2022, we carried out a program of applied research in three stages to test, refine and mainstream the EAP methodology and metrics. We completed 9 case studies in collaboration with 13 local government partners in 5 regions of southwest BC,” explains Tim Pringle, Chair. He conceived the EAP philosophy and led the program of applied research.

“We also built a relationship with the Mount Arrowsmith Biosphere Research Institute (MABRRI) at Vancouver Island University and involved students in the data analysis and GIS work. In fact, we relied on students.”

“With release of the *EAP Synthesis Report* in 2022, the timing was right to embed our EAP knowledge at MABRRI, launch the [EAP Partnership](#), and begin training next generations of local government staff. Multi-year commitments by local governments to build capacity and co-funding by UBCM make this possible.”

Consequences of weak oversight are measurable

“We landed on the concept of the [Riparian Deficit](#) as EAP evolved. The Riparian Deficit is a measurable consequence of weak oversight and failure to manage stream corridors and adjacent riparian areas,” states Tim Pringle.

“The [Striking a Balance](#) series of reports, completed between 2014 and 2022 by the BC Ombudsperson, identified failure by local government to employ adequate oversight of stream systems. In response to these scathing reports, the current provincial government is working to reinvigorate enforcement of the [Riparian Areas Protection Regulation](#), usually referenced by the acronym RAPR.”

“There are obvious synergies between EAP and RAPR. The two are complementary and mutually-reinforcing. Neither is dependent on the other because each is stand-alone.”

How do we change what we are doing on the landscape?

“In 2019, UBCM and the Ministry of Municipal Affairs formalized an expectation that local governments applying for provincial grants would integrate **natural assets** into their asset management processes. EAP shows them how to do it,” continues Kim Stephens

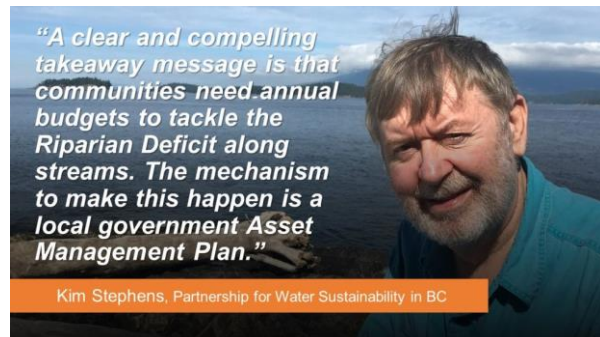
“EAP provides local governments with the real numbers they need to deliver outcomes: *What is the number for the line item in a local government annual budget for community investment in maintenance and management, that is M&M, of streams?*”

“To help local governments visualize how they can re-frame their thinking and remedy the consequences of failure to manage, we created the [Nested Concepts](#) graphic. The spotlight is on funding actions that achieve restoration of streamside protection zones.”



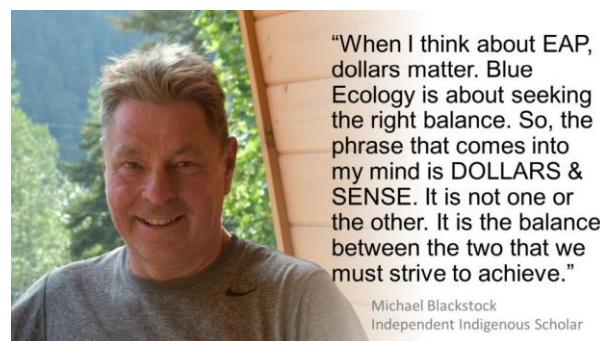
Streams need a place to be

"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? How concepts are explained is crucial to creating awareness, building understanding, and inspiring action to make things right and restore riparian integrity," states Tim Pringle.



Ecological Accounting Process is an expression of Blue Ecology

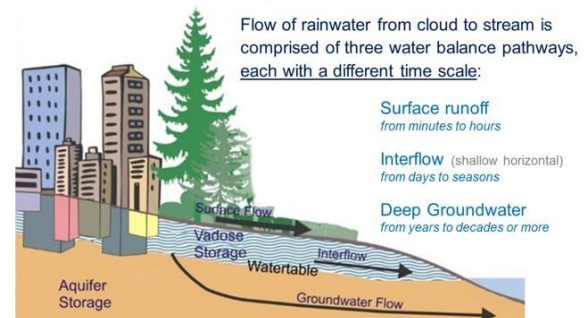
"EAP supports Blue Ecology which profoundly relates Indigenous views of water and streams as a *social commons*. The implication is that we have a shared responsibility to look after stream systems."



"Blue Ecology is a *water-first* methodology for building bridges between cultures. Think of it as a compass. It offers local governments a foundation and starting point for [Water Reconciliation](#) at the local scale. And it has both Indigenous and non-Indigenous buy-in."

Hydrology is the engine that powers ecological services

"EAP is a land use perspective. We evaluate land use realities in the context of how changes to [Water Balance Pathways](#) alter stream conditions and riparian cover. To appreciate what happens to rainwater after it falls, EAP looks at two zones of interest: the 30m inner stream setback zone; and the 200m outer land use zone."



A stream system as a land use

"The strength of EAP in making the financial case for streams is two-fold: how the methodology looks at streams through the lens of worth to the community; and how EAP values them as systems and as a land use."

"A stream is a land use because it satisfies two criteria: it is defined in the [Riparian Areas Protection Regulation](#); and it has a financial value based on [BC Assessment](#) data."

"The [Riparian Areas Protection Regulation](#) and the [BC Framework for Sustainable Service Delivery](#) are catalysts for quantifying Riparian Deficit values and then establishing budgets for ongoing stream corridor M&M."

"The oversight question is one that we are addressing with EAP. Local governments have real data to quantify the financial value of streams as physical assets. This metric allows them to put streams into the basket of asset management responsibilities," concludes Tim Pringle.

Now what?

“The inaugural meeting that launched the [EAP Partnership](#) was on October 27, 2022. That is the moment when Tim Pringle and I handed the intergenerational baton to Graham Sakaki and Anna Lawrence of MABRRI to lead the next phase of EAP evolution. It is a 3-year transition,” states Kim Stephens.

“This is an idea that can change the game. The strategy ensures that knowledge is retained at an institutional level, that is, Vancouver Island University. That is one step. As well, we will be continuously training youth to apply the EAP methodology.”

Graham Sakaki

Local governments invest in youth at Vancouver Island University

“During this first 3-year period, the three local governments driving EAP forward are Nanaimo, North Cowichan, and the Regional District of Nanaimo. They will each do three EAP projects per year,” says Graham Sakaki.

“The EAP Partnership is a good news story. It is about embedding knowledge in the next generation of people who will have influence in our governments, not funding expensive consultants to learn about EAP.”

Bill Sims, City of Nanaimo

“It is not just about students learning how to apply the methodology. It is also about passing on to them an understanding of the usability and practicalities of EAP. Many of these students are going directly into local government staff positions after graduation.”

Province-wide applicability

“Sam Gerrand has the distinction of being the first person to graduate with a master’s degree in EAP. Using the results from EAP studies completed to date, Sam’s research focus was on how to expand the application of EAP studies to a regional scale for use province-wide,” states Tim Pringle.

“The exciting part is the accuracy of *land use intensity* as an indicator for use of EAP as a predictive tool at the regional scale. The difference between predicted and actual values is within 5%.”

Sam Gerrand

“The cool part is that because I worked on this project in an academic setting, I was able to investigate how EAP could be applied in perhaps a different way or even changed to be more useful,” explains Sam Gerrand.

About the learning curve

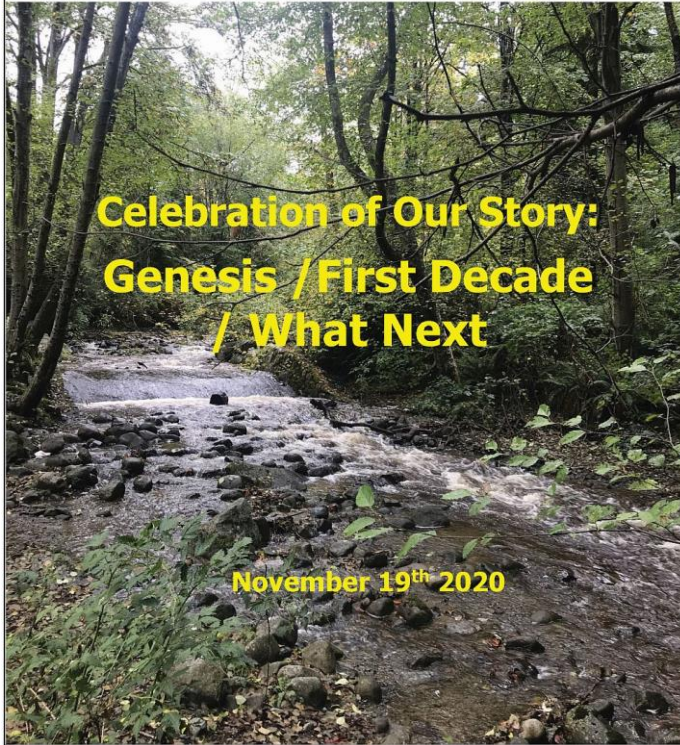
“I came into the EAP process with a completely different background because my master's degree is in Sustainable Leisure Management. So, it was a journey to get my head around the jargon and the different viewpoints and ways of thinking. This applied not only to the development of the EAP methodology but also to the different stakeholders,” reflects Anna Lawrence.

“The 3-year transition strategy for embedding EAP at VIU has multiple layers and partnerships, with several moving parts to balance. I am excited to see where this - and research like Sam’s - can take us in future years.”

Anna Lawrence



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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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