



YOUR LOCAL ASSET MANAGEMENT COMMUNITY OF PRACTICE IN BC.

Enhancing BC communities through leadership in asset management.

THIRTY THIRD EDITION – FALL 2021

Operations and Maintenance: The Savior of the Capital Budget

The theme of this newsletter is the [link between capital costs for replacement of assets and operations and maintenance](#), especially maintenance. In our asset management processes, we often state an 'infrastructure funding gap'. This usually refers to money that should have been spent on infrastructure renewal that was not. Integrating this into the future expenditures for infrastructure renewal is a daunting exercise that often worries Council with the proposed level of expenditure.

The following are points often heard from our local governments. In an unscientific survey of about 50 local governments, we asked the following questions:

- 'How much of the workday of operations and maintenance staff is spent fixing things that are broken or about to break?' The answer: About 85-95% of our time.
- 'Do you have enough staff time and skill sets with population growth, addition of new infrastructure and new technologies, for proactive other than reactive maintenance?' The answer: No.
- 'When you carry out capital projects, are the operations staff in public work or facilities, most familiar with the existing asset, consulted for input on the impact of design, material and equipment choices prior to construction?' The answer: Normally no.



- 'Do you do routine preventive maintenance and inspection?' The answer: Normally no, as we do not have enough time.
- Do public works and engineering and construction, including design consultants, talk to each other? Answer: Not very often. Knowledge of operations and insights of operating staff we know leads to better design, equipment choices and maintenance.
- Often the first budget cut by Council is the operating budget for our assets.

We have too many stories to tell here about the results of these disconnects, most leading to a very negative result.

Like your vehicle, if you do the right routine preventive maintenance, the vehicle is reliable, provides transportation when you need it, is safe and gives you piece of mind. More important, it will likely last longer than you originally expected thereby deferring capital costs for a replacement of the vehicle and elongating the life of the exist asset. So why do we not apply the same thinking to our assets providing services in our communities. We need to staff operations and maintenance appropriately and keep up with the number of maintenance hours needed to effectively manage the assets and with training for new technologies to service changing way. Let's stop cutting the maintenance budgets, because in the longer run, this costs taxpayers money and doesn't save money.

On another note, you will see a new article entitled "[What is in a WORD](#)". There is a push, very correctly, to simplify our language and ensure, among disciplines, that there is a common understanding of a word or phrase. Take time

to read this article then read the article about ‘deficits’ contributed by Tim Pringle and Kim Stephens of Partnership for Water Sustainability in BC.

Balancing Community Growth and Operations & Maintenance Staff Capacity

David Allen, CAO (Retired) City of Courtenay with assistance from David Love, Director, Strategic Initiatives (Retired) City of Courtenay



Failing to respond effectively to community growth can diminish local government organizational capacity resulting in increasing service failures, reduced service levels, and the premature replacement of costly capital assets. The good news is that appropriately resourced Operations and Maintenance programs play an important role in responding to growth and advancing Sustainable Service Delivery.

This article outlines how we analysed the gap between community growth and the staff capacity necessary to operate and maintain the new assets required to service the City’s growth. Ultimately, this analysis was a key part of the work we undertook to “Operationalize” corporate-wide Asset Management at the City of Courtenay between 2013 and 2020.

If you take time to read this, you already understand that Operations & Maintenance (O&M) is a key factor in local government sustainable service delivery and can be particularly acute in small and medium-sized communities. This is considered in detail in “**The Role of Operations and Maintenance in Asset Management**”¹, one of a series of primers developed to expand upon concepts in “**Asset Management for Sustainable Service Delivery: A BC Framework**”.

Whether your community is growing or contracting, I offer you this method to identify and track imbalances that will negatively affect the lifecycle length and cost of the capital assets we are responsible to operate and maintain.

Staff “Capacity” has two components. The first is staff competencies: the skills to do the work. As we know, every department has specialized responsibilities, and their people require suitable skills and abilities (something we routinely practice). The second component of “capacity”

is staff numbers: the right amount and mix of people to do the work (changing that necessarily involves public interest and Council decision-making).

I believe every department plays an essential role in a well constituted Asset Management program. So, an analysis of the balance between community growth and staff capacity should be an organization-wide process. We undertook such an analysis that resulted in some important O&M and other successes, and it’s the methodology we used that I’d like to share.

We’ve generally delivered the same mix of local government services for quite some years. However, it became apparent about 6 years ago that the city had grown substantially and outpaced our ability to avoid the increasingly obvious consequences. For example, at that time our Public Works and Engineering Departments were forced to spend the bulk of their time reacting to in-service failures rather than proactively practicing long-term planning and preventive maintenance.

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¹ The Role of Operations and Maintenance in Asset Management - Sustainable Service Delivery Primer, 2019

This was not only a demoralizing set of circumstances, but intuitively very costly, both in terms of increasing service failures, and staff morale. Feelings and intuition are seldom convincing substantiation for a Staff Report to Council requesting a staff increase. So, the standard had to be providing inarguable information that council members could not only support, but willingly justify to the ratepayers.

THE METRICS:

The first step was to determine the period of the analysis. It seemed clear that the city grew substantially starting around 2000, but very little analysis had been done and the data was in disparate locations. After some searching it was determined we had decades of employment records and they had been digitized starting in the late 1990's. We also used GIS data for changes in several metrics used to demonstrate community growth and decided Statistics Canada data was appropriate for other metrics and consequently settled upon using the most recent four Census Periods (2001 to 2016 inclusive) for the analysis.

STAFF NUMBERS:

The next phase was conducting a detailed review of the number of regular full and part-time city employees throughout the period of analysis. Of course, the records themselves are confidential, but we readily concluded the corporate-wide totals (by department per year) were public information. This meant it would be available for and by Council in a future public forum and follow-on discussions.

During the Study Period the Total Change in Full and Part time Staff Numbers was: 99 to 126 or, +27.2%

The changes in total numbers were generally equivalent amongst union/exempt employee positions and across departments. Interestingly, this tends to align with the idea that sustainable service delivery must be supported by all departments and reinforces that the apparent organization-wide reactive approach was entrenched.

COMMUNITY GROWTH:

To identify changes to the extent of service provisioning (i.e., community size) versus available staff, we identified metrics that were both readily apparent by observation, but also quantifiable and provided by reliable sources.

The first metric chosen was the sum of community-wide water and sewer main lengths (i.e., what's under all the

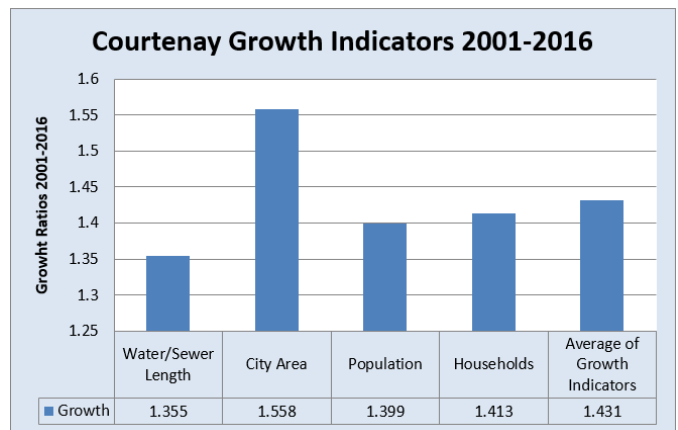
roads) at both the beginning and end of the study period. The second metric identified the total increase in City Area due to boundary extensions during the same period (of note, some boundary extensions led to the City taking on ownership of assets at or past their lifecycles, along with the related O&M and renewal liabilities). The next metric was change in population and the last, the change in number of total single and multi-family dwellings throughout the study.

The percentage change of each metric was calculated and is provided in Table 1 below. Next the average of percentages was summed and divided by the number of metrics to determine the overall average of change. This method provided a community growth figure of +43.1% during the four most recent census periods.

Table 1

Metric	Water/Sewer Length	City Area	Population	Households	Average of Growth Indicators
2001	126.5 + 113.1 = 239.6 km	2,165 ha.	18,304	7,995	
2016	170.5 + 154.1 = 324.6 km	3,372 ha.	25,599	11,295	
Rate of Change	1.355	1.558	1.399	1.413	5.725/4 = 1.431
Percent Growth	+35.5%	+55.8%	+39.9%	+41.3%	+43.1%
Source	City GIS	City GIS	Statistics Canada	Statistics Canada	

Expressed graphically, the same metrics are displayed by Percent Growth in the graph below.



CONCLUSIONS:

Table 2 below summarizes the results in a way easily recalled for discussion by council members, staff and the public: during the preceding three census periods the city grew by 43.1% and the people delivering the services only by 27%. This demonstrates the magnitude of the existing imbalance and is the very probable source of inefficiencies resulting in reactionary activities that existed at the end of the study period.

Table 2

Metric	Staff Growth (full & part time Employees)	Average of City Growth Indicators
Rate of Change	1.272	5.725/4 = 1.431
Percent Change During Sample Period	+27.2%	+43.1%
Source	City HR Historic Records Data	GIS/Stats Can

FINAL THOUGHTS:

What we did to address our discoveries is another part of the story for another time. It did indeed justify changes to our staffing levels and caused a shift to more efficient operations and proactive maintenance practices.

That said; whether your community is growing or contracting, I hope you find this method useful to help identify any similar imbalances you might have in your community.

Optimizing Operations and Maintenance with GIS to Improve Performance and Defer Capital Costs

Meryl Ditchburn Heinz, President, Public Works Association of BC, and Roads Management Specialist, City of Nanaimo

The importance of proper operations and maintenance in an asset management plan cannot be over emphasized. As a nation we are faced with deteriorating infrastructure, increased costs for operations and maintenance, an aging workforce, and increasing regulatory requirements. One way to address these issues is to have a detailed asset management plan.

Historically much of the work in Public Works has been reactive. Being equipped with suitable plans allows departments to anticipate needs and properly plan for maintenance. Focusing on operations and maintenance extends an assets’ useful life and prevent costly premature capital expenditures. Timely repairs can then be planned by being proactive and anticipating and budgeting for maintenance costs. Budget constraints often limits the amount of work that gets completed each year, allowing some assets to degrade beyond their useful life and replacement continues to be postponed. As part of the decision-making process, consequences of delaying work are weighed, and trade-offs evaluated in an effort to choose which project is of highest priority. Risks need to be identified, analyzed, and evaluated. Creation of a proper risk register helps to prioritize and make those difficult decisions.

Postponing projects creates a backlog in required work and leads to increased capital expenditure requirements. Neglecting maintenance by deferral is an easy solution in

the short term but creates false economy. Failure to maintain an asset in the beginning of its life is an oversight over the long term as emergency repairs are generally more costly than maintenance. Assets that have degraded beyond their useful life may end up requiring emergency servicing or some short-term fixes to limp them along until budgeting for replacement is possible.



These deferrals create a spike in required expenditures in year one of your asset register, indicating that your capital renewal and upgrade costs are significantly more than your planned budget. If there are insufficient funds to support your requirements, this has huge impacts to your level of service. Much of the inventory tracking and maintenance work history is documented in the minds of a soon to be retiring workforce, in non-standard formats, paper processes, excel spreadsheets, and third party and custom applications.

Inventory registry and condition assessment is necessary to get an asset management program running, a Geospatial Information System (GIS) is a great tool to track assets, maintain historical records and retain an accurate inventory. The growth of our GIS department has helped exponentially to log and tabulate our asset inventory. This allows for the optimization of maintenance through better tracking of activities and costs. Some municipalities are fortunate enough to make the costly but vital investment in GIS. Our GIS team has worked tirelessly with each department to ensure that all essential assets are logged in the database. The greatest asset (pun intended) of GIS is being able to access and share data. The GIS team has developed easy to use applications and mobile tools for field workers. Our GIS group works closely with public works staff to develop desktop and in-field tools to collect asset information. Staff are then able to capture condition assessments in the field and prioritize assets for the replacement plan. Gathering and entering of data can be done in the office on the desktop application or in the field. The database updates in real time so there’s no duplication and can accommodate multiple users at once. We have set up mobile applications to inventory retaining walls and sidewalks, as well as log the condition of our street light poles.

Our Pavement Management System is also linked to GIS where it displays the current pavement condition of our road segments. Our GIS inventory includes a variety of assets from water mains and roads to garbage cans and coal mines, sewer condition and urban trees. If it is something that we maintain, we need to identify it, track it, maintain it, and eventually replace it. The more we know about an asset the better we can budget to maintain it properly and replace it when its life is complete (and not before).



Organizations are moving towards Corporate Asset Management Systems (CAMS) for work orders and work history, during that process it is vital to have assets captured in GIS as the CAMS are generally GIS based platforms. Data can export directly from GIS into our asset management plan for inventory, condition assessments and replacement plans to ensure we budget accordingly for their replacement. Many municipalities are growing, and the added cost of increasing assets is not reflected in our operations and maintenance budgets. Council and Senior Management can get a better visual of the condition and cost of an organization's assets from a simple download. From there, we can identify the consequences of a shortfall in funding and it may be necessary to adjust our service levels.

The APWA has prepared an Asset Management Roadmap to help guide the public works sector on their asset management journey.

www.apwa.net/MyApwa/Apwa_Public/Tech_Cmtes/Asset_Mgmt/Asset_Management_Roadmap

World's Colliding: An Operator's View on Operations and Maintenance, and Asset Management

Anna Agnew, Level 4 Operator, Water and Wastewater Operations, Town of Gibsons

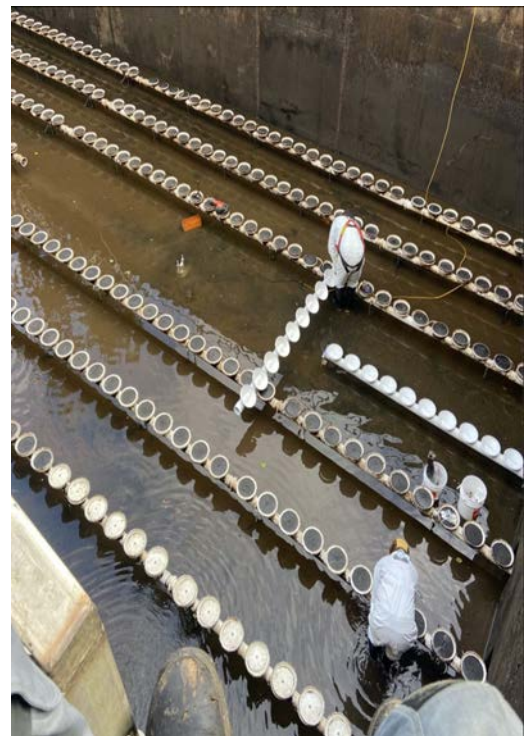
"Asset management reduces my risk and gives me confidence so I can focus on optimization, performance and efficiency at the Wastewater Treatment Plant."



Bringing operations on board for asset management has been a topic of conversation for years in the industry. The Town of Gibsons's level 4 lead operator for water and wastewater operations, Anna Agnew, shares about her asset management journey and the impact it's had on her work.

I know it's Important, but Who's Got the Time?

Imagine yourself as the lead water and wastewater operator at your organization. At the front lines of it all managing or preventing failures, one after the other. You know the system inside and out and have grown a professional pride and ownership over the system. However, potential mechanical failure or permit violation is always on your mind. You know you need a better system in place than you have. But when can you find the time?



Servicing the sequence batch reactor diffusers at the wastewater treatment plant is a big job with all hands-on deck. It's a preventative maintenance item we need to know months in advance to properly plan and execute.

Day after day you manage hundreds of pieces of equipment and infrastructure worth millions of dollars. You spend most of your time trying to keep your head above water and the service running. Mental schedules fly

around in real time in your head as you try to find a way to triage all that needs to be done. This week you have the lab tests, a report to write, a routine clean of the building, oil changes on some of the equipment, a consultant to schedule, a consultant to meet, a belt to replace, and a 3-person job scheduled for Wednesday.



Having the right people on board makes all the difference when building a preventative maintenance program, the ground up!

You see the pile ahead of documentation, data requirements, approvals, parts, and safety requirements that you know you'll need during the next planned or unplanned failure. You hope for a gasp for air to fit in the critical coordination, planning, inventory, or warranty management underway.

Then a SCADA alarm goes off. Your consultant arrives. An operator calls in sick. The newest project starts. Your focus has been shifted again. And again. And again. While focusing on today's emergency, you think about the overworked and tired pieces of equipment and wonder if it might hang in for another day.

Some days there's no time to create the to-do list, never mind complete it.

In the midst of this day in and day out, asset management felt overwhelming despite knowing. And I knew the value. I knew that a proactive maintenance program would extend the life of our infrastructure. I knew that a well set up software could create a more reliable system than my memory and sticky notes. All of this was to help me plan and communicate better, including communicating important business cases to management, not to mention spare parts inventory, corporate policies, and safety procedures.

I felt defeated thinking there was more I could be doing to proactively manage the potential failures.

Overcoming the Obstacles

Luckily, we weren't starting from zero. The inventory data collection was underway, we had a software that was capable of preventative maintenance program building, we had a supportive manager who wanted a formalized program, and most importantly we had a lot of players inside and out that understood the end goal. At the same time, the work was only just beginning, and it was hard to fit in the time for the next steps.

We had the right combination of the people on the team, the right support and tools at the right time, a clear road map we set up, leadership's support, and a stubbornness and commitment to the end goal. We started small by taking a close look at our existing and informal proactive processes before defining our roles and clear targets to meet throughout the process.

We also took all the help available to us. Our consultant acted as a positive external influence to help us articulate our goals, created and customized scheduling tools and templates, kept us on track, and highlighted our successes along the way to keep us motivated. Getting coached through the process by someone who understood and could bridge the gap between operations and asset management was integral. At some of our weekly meetings, we acknowledged we are still fighting fires and worked together to find a way to not put the project progress on the backburner. She also brought us candy.



Afternoon asset management meetings are always more bearable with candy and coffee.

Despite juggling the crew's summer schedules and mental blocks around the size of the task, within 3 short summer months we proudly produced our first documents and tools:

- Preventative maintenance program set up in the software including procedure notes, manual references, linked assets, and recommended.
- Custom Excel sheet for scheduling and coordinating with operators, management, other departments, and contractors.
- List of required lock out and confined space entry procedures and template for tracking quality and updates.
- A list of recommended spare parts to check and update inventory.
- A week-by-week visualization of routine tasks with duration, frequency, and roles which gives a visualization for hours required and a proactive look at potential volume of upcoming deferred maintenance.

I already see the benefits of the proactive program just a few short weeks after the wastewater treatment plant's program is set up and running. It makes a difference to have identified and labelled equipment, automated work orders, and a system to track all the work we do.

And of course, the process isn't over. We are still collecting the information to set up the water system with a preventative maintenance program. We have templates to populate and keep updated. We are still building skills and fine-tuning our tools with our consultant. And when all of that is done, we will never be finished improving the information and processes.



The team agrees that it's about the people and having a little bit of fun with it all.

Anna gives the project an A!

If you have questions about the Town of Gibsons asset management progress, reach out to Anna at aaqnew@gibsons.ca

or Gracelyn at gracelyn@persephoneconsulting.ca



What's in a word!!

An issue we have in communicating our message often seems to relate to the use and interpretation or misinterpretation of words or phrases. Too often we use technical terms within our own skill sets not appreciating that others may not know what we are really saying. I was given an example of a public meeting in a major urban area where the consultant talked about 'biodiversity ponds'. People had blank faces not understanding what he was talking about until someone in the audience said 'he means managing water with rain garden'...a sigh of relief.

Too often, in asset management and other areas, we use language different from what common language is that everyone understands, or specific disciplines understand a

word or phrase differently. I recall a meeting in Montreal of the National Asset Management Working Group where finance people were talking about 'deferred maintenance' shortly after PSAB 3150 came into effect. After some discussion, we discovered that the technical people in the room had a very different perspective of the term 'deferred maintenance'. The next hour was taken up learning to understand each other and come to a common ground.

Asset Management, itself, is an intimidating term. For decades we have managed assets. We took two words and turned them around to "Asset Management" and confused everyone. The process of asset management or 'managing assets, is not new. The process, as defined today just leads to better decisions across the entire organization for priority setting with limited budgets.

When PSAB 3150, accounting for your assets on the balance sheet evolved, the result was most local governments recorded what then was called an 'infrastructure deficit'. Our finance professionals quickly pointed out to the non-finance community our misuse of the word "deficit" as that word is a real number representing the difference between actual revenue and actual expenses when expenses exceed revenue. The 'infrastructure deficit' is an estimated number and does not meet these criteria. Today we, see the term "infrastructure gap" used to address any backlog as it is an estimated number, a much better and correct term.

See the article below from Water Sustainability addressing a deficit.

Do you have ideas or 'WORDS' to add to this column? Send them to W. Wells at info@assetmanagementbc.ca

Operationalizing EAP, the Ecological Accounting Process, within an Asset Management Plan

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.

The EAP program is the culmination of a 25-year journey that began with publication of seminal research by Chris May and Rich Horner in 1996. They correlated land use changes with impacts on stream condition. They also ranked the four limiting factors that provide a road map for science-based action. Their findings are embedded in "Stormwater Planning: A Guidebook for British Columbia"

and continue to guide the Beyond the Guidebook initiative.

EAP Methodology and Metrics for Integration of Natural Assets into Local Government Asset Management

EAP, the Ecological Accounting Process, bridges a gap. It provides local government with a methodology and metrics for integrating natural assets, notably stream corridor systems, into municipal infrastructure. EAP uses real numbers, not hypothetical assumptions, to establish the financial value of the stream corridor system.

Table 1 is a busy reader’s guide to understanding EAP. It is a mind-map that introduces a set of core ideas. Accordingly, the writers suggest that readers take several moments to reflect on Table 1 before continuing further.

Table 1

THE FINANCIAL CASE FOR A STREAM SYSTEM: A BUSY READER’S GUIDE TO UNDERSTANDING EAP, THE ECOLOGICAL ACCOUNTING PROCESS	
What is provincial context for EAP Demonstration Application Program?	The context is Asset Management for Sustainable Service Delivery , and a stream system is a Natural Commons Asset (NCA) . EAP is a 3-stage program to <i>Test, Refine, Mainstream</i> the methodology and metrics for “maintenance and management”, or M&M , of stream systems. The Partnership for Water Sustainability in BC is collaborating with multiple local governments in five regions within the Georgia Basin to determine how to operationalize EAP within an Asset Management Plan . The EAP program is co-funded by the Partnership, the Real Estate Foundation of BC, FCM, local governments, UBCM, and the Ministry of Municipal Affairs.
What is the driver behind EAP?	The driver for EAP is degradation of stream channels and streamside protection areas. EAP addresses the elephant in the room which is the unfunded cost (hence liability) to protect, remediate or enhance stream systems in urban and rural landscapes.
Why is EAP needed?	EAP bridges a gap. It provides local government with a methodology and metrics for integrating natural assets, notably stream corridor systems, into municipal infrastructure.
What are EAP core concepts?	A stream is a land use (defined in regulation; can assign a financial value). BC Assessment provides “real numbers” for a proxy financial value. The key metric is “ \$ per metre of channel length ” as a measure of NCA value. Community investment in M&M is a measure of “what the stream is worth”.
What would operationalizing of EAP achieve?	PURPOSE: Put M&M of stream corridor systems on an equal footing with constructed assets (municipal infrastructure). END GOAL: Establish an annual budget for stream corridor system M&M as a line item within an Asset Management Plan.
How is EAP a game-changer?	1. EAP interweaves financial, social, and ecological perspectives within a single number to establish the financial case for a stream corridor system. This aggregate number is the Natural Commons Asset (NCA) Value . 2. The NCA value is a measure of the Riparian Deficit . This is the environmental equivalent of the Infrastructure Liability (Deficit) for constructed assets such as underground utilities and buildings. 3. The NCA value provides environmental planners with a starting point for a <i>balanced conversation</i> with engineers and accountants about the services that natural and constructed assets both provide.
Why is EAP important?	EAP adds to the conceptual framework for a riparian area maintenance and management strategy with new insights about financial metrics.

In a nutshell, the EAP methodology and metrics recognize the importance of the stream system in the landscape. A stream is a land use because the stream corridor is defined in regulations and has a financial value.

The EAP methodology focuses on the historical and current land use practices that have changed landscapes, modified hydrology, and have led to present-day community perceptions of the worth of the stream or creekshed and the ecological services it provides. A whole-system understanding is the starting point for developing meaningful metrics.

In connecting the dots, the EAP program supports local governments adopting **an integrated approach to life-cycle maintenance and management, or M&M, of the drainage service**. The integrated approach recognizes that constructed infrastructure and stream systems are interconnected components of the drainage service. Effective M&M of stream systems requires local government commitment backed by line items in annual budgets.

Context for Integration of Stream Systems with Drainage Infrastructure:

The driver for EAP is degradation of stream channels and streamside protection areas. EAP addresses the **elephant in the room** which is the unfunded and growing cost (hence liability) to protect, remediate or enhance stream systems in urban and rural landscapes.

The provincial umbrella for EAP is **Asset Management for Sustainable Service Delivery: A BC Framework**. The BC Framework emphasizes the services that assets provide and the life-cycle costs. Over time, M&M represents 80% of the total life-cycle cost; the first 20% represents the initial capital investment.

In 2019, with release of the **Primer on Integrating Natural Assets into Asset Management**, UBCM and the Ministry of Municipal Affairs established an expectation that grant applicants would integrate natural assets into their asset management processes. EAP shows them how to do it for stream systems.

Released in November 2015, **Beyond the Guidebook 2015** introduced the vision for EAP, the Ecological Accounting Process. Figure 1 conceptualizes the **twin pillars** for integrating stream systems within an Asset Management Plan. One pillar is Ecological Accounting; the other is Water Balance Accounting.

The top two consequences of **changes in land use** are: 1) short-circuiting of water balance pathways; and 2) loss of riparian integrity. Thus, the life-cycle approach to M&M of the **drainage service** means manage the built and natural environments as **one system**. Effective M&M requires an understanding of how water balance pathways connect creekshed hydrology and stream ecology, how changes on the land disconnect them, and how green infrastructure design can reconnect them.

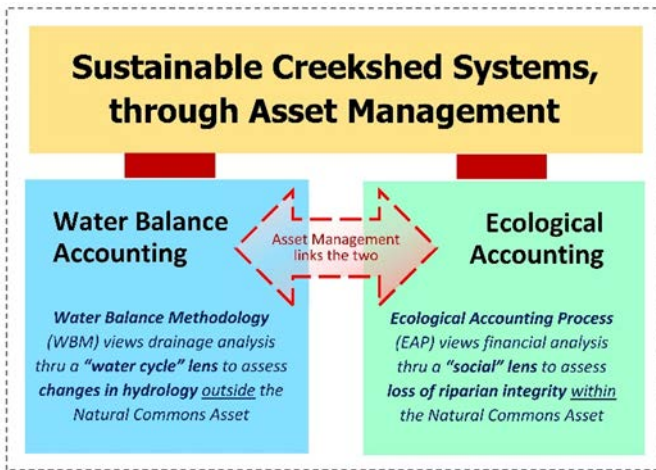


Figure 1

Evolution of EAP Methodology:

The leap forward explicit in the vision for “sustainable drainage service delivery” is striving for whole-system action on the landscape that would ensure stream system integrity.

Whether constructed or natural, an asset is an asset. And in the built environment, each asset type requires an annual budget for M&M. In the case of a stream corridor, M&M is defined as maintenance to prevent or avoid degradation of the stream channel and riparian setback zone, and management to improve their condition.

The goal would be to move from reactive remediation that is at best stopgap and of limited longevity, to stream restoration that is effective and lasting.

The Partnership’s EAP initiative is a 3-stage program for testing EAP in 2017-2018, refining it in 2019, and mainstreaming it in 2020 through 2022. Demonstration applications have been completed in five regions on the east coast of Vancouver Island and in the Lower Mainland.

Each case study yields key lessons and fresh insights. It has been a 6-year journey to evolve the methodology from concept to application.

It took a building blocks process to bridge from the starting point --- how EAP looks at the “stream as a whole-system” (rather than as an amorphous “natural asset”) --- to reach the destination, which is:

*A methodology plus meaningful metrics for measuring the **Riparian Deficit**, the environmental equivalent of the **Infrastructure Liability (Deficit)** for constructed assets; and establishing budgets for **Maintenance and Management**.*

This goal has been realized through a systematic process that is founded on EAP demonstration applications. Table 2 is a synopsis of “big ideas” that emerged during this journey and are at the heart of the EAP methodology and metrics.

Table 2

What We Have Learned through the EAP Program				
Region	Creek	Land Uses	Big Ideas	NCA Value
STAGE 1 – TEST THE EAP CONCEPT				
Cowichan Valley	Busy Place Creek - CVRD	Agricultural, residential, industrial	The EAP lens is the <i>Stream System Hydrology is the Engine that Powers Ecology</i>	\$1.2M per km
Comox Valley	Brooklyn Creek - Comox & Courtenay	Almost completely urbanized; some agricultural	BC Assessment Data is a proxy for <i>Financial Value of a Setback Zone</i> Investment in stream restoration is a measure of <i>Stream Worth</i> Package of <i>Ecological Services</i> is the range of community uses	\$2.7M per km
STAGE 2 - REFINE THE EAP METHODOLOGY				
Nanaimo Region	Shelly Creek - Parksville	Forest and agricultural areas (90%) drain to urban area	<i>Riparian Ecosystems</i> have been reduced to <i>Riparian Zones</i> M&M for <i>Maintenance (prevent) and Management (improve)</i>	\$1.4M per km
Metro Vancouver	Kilmer Creek - District of North Van	Forest mountainside drains to urban area	<i>A Stream is a Land Use</i> The concept of the <i>Natural Commons</i> underpins EAP From <i>Remediation to Restoration</i>	\$2.9M per km
STAGE 3 – MAINSTREAM EAP WITHIN AN ASSET MANAGEMENT PLAN				
Nanaimo Region	Millstone River - RDN & Nanaimo	Agricultural lands drain into urban area.	<i>NCA Metric</i> drives decision-making <i>Framework for Operationalizing EAP, as a Budget Line Item, within an Asset Management Plan</i>	\$9.6M per km in urban area \$1.4M per km in rural area
Capital Region	Bowker Creek - Saanich, Oak Bay, Victoria	Completely urbanized	EAP establishes the <i>Financial Case for a Stream</i> Streamside parcels have a <i>Blended Financial Value</i>	\$11M per km
Cowichan Valley	Bings/ Menzies Cr - N Cowichan	Forest, rural and urban zones	EAP addresses <i>Loss of Riparian Integrity</i> as a stream health factor <i>NCA Value</i> is a measure of the <i>Riparian Deficit</i>	\$2.1M per km
Comox Valley	Saratoga Beach	Rural	Work in Progress	
Metro Vancouver	Bertrand Creek - Langley Township	Uplands urban area drains to agricultural lowlands	Work in Progress	

Use the Ecological Accounting Process to Establish the ‘Financial Case for the Stream’

The end goal is to establish an annual budget for stream corridor system M&M as a line item within an Asset Management Plan. Use of EAP to make the ‘financial case for the stream’ would put M&M of stream corridor systems on an equal footing with constructed assets (municipal drainage infrastructure). This would be a giant step forward.

The stream is a land use because it has an area defined by regulation and therefore it has a financial value. If the stream did not exist, the land it occupies would be used for nearby development, residential or other.

EAP defines the regulatory setback zone as the **Natural Commons Asset**, or NCA for short. The NCA calculation is the foundation piece for EAP. It determines the financial value of the stream for all or any portion of its length. The NCA calculation uses BC Assessment data for the financial analysis.

Ecological Services are Core Services:

Utilities, roads, parks, and recreation are core services, take up the bulk of a local government budget, and are the traditional focus of asset management. Prior to release of the **Primer on Integrating Natural Assets with Asset Management by Asset Management BC** in 2019, ecological services were not typically part of the asset management mind-set.

At best, ecological services have been considered as an add-on. They are not intuitively understood by the public, elected representatives, and asset managers. To stimulate awareness and advance uptake of a 'whole-system approach' to asset management, **it helps to define ecological services in terms of drainage, recreation, habitat, and enjoyment of property uses.** This is plain language that everyone understands.

Once communities make the mental transition to view ecological services as core local government services, and then look at their budgets differently, the change in mind-set should lead to this question: how can we do things better? This shift in perspective logically leads to the next question:

How do we establish an annual budget for M&M that sustains the 'package of ecological services' in a stream system that humans depend upon for drainage, recreation, habitat, and enjoyment of property uses?

EAP interweaves financial, social, and ecological perspectives within a single number to establish the financial case for a stream corridor system. This aggregate number is the **Natural Commons Asset (NCA) value.** The NCA value provides environmental planners with a starting point for a balanced conversation with engineers and accountants about the services that natural and constructed assets both provide.

This alone is a game-changer.

AMBC Fall Conference – Registration OPEN

Asset Management BC will host an online conference on 3 Thursdays in November 2020, November 4, 18 and 25. The sessions will be online on ZOOM from 9:30 – 12:00 (PDT) each Thursday.

Registration is now OPEN on CivicInfo.

www.civicinfo.bc.ca/event/2021/UBCM-AssetManagement

Program details will be published shortly. You may register for individual sessions or take advantage of the savings by registering for all three sessions.

Questions? Send your request to

info@assetmanagementbc.ca



Asset Management BC

Conference 2021

November Webinar Series

Sustainable Service Delivery During and Post Pandemic

Looking forward while learning from the past – Understanding Sustainable Service Delivery from a 'Capital' perspective during and post pandemic.

Human Capital

November 4, 2021 - 9:30 am – Noon (PST)

Local government's most critical asset is its staff. The pandemic has resulted in added stress, challenges & opportunities. Hear presentations on the 4C's, Culture, Capacity, Collaboration, and Council plus issues with retention, recruitment and training.

Natural Capital

November 18, 2021 - 9:30 am – Noon (PST)

The pandemic has not stopped the need to address climate change and protect our environment. Hear from the Insurance Bureau of Canada on escalating claims and their impact, Municipal Insurance Association of BC It's time to double down and an approach to include natural assets in your asset management program.

Physical Capital

November 25, 2021 - 9:30 am – Noon (PST)

Improved Operations and Maintenance activities, by improving performance, making assets last longer and more reliable for sustainable service delivery can be the saviour of the capital works budget and service disruptions. Hear presentations on assessing O. & M. needs. Hear about the new guide published by Engineers and Geoscientist BC for Municipal Engineers for Asset Management.

Advancing our Asset Management Practices: You Asked, We Listened

Remember that last in-person AMBC conference in 2019? (Oh, how we miss those days!) In our plenary session, we asked for your input on what you needed to help you advance your asset management practices. As a result of what we heard, this year we hosted a series of free online workshops, thanks to continued funding and support from the **Municipal Asset Management Program (MAMP)**, delivered by the Federation of Canadian Municipalities (FCM) and funded by the Government of Canada and AMBC. These lively online webinars covered three key areas:

1. How to build awareness with Councils and Boards.
2. How to identify and work with Levels of Service.
3. How to identify and overcome the barriers to operationalizing asset management.

We're wrapping up the last of these and wanted to share our findings – what we did and what we learned – to help you advance your asset management practices.

Stay tuned for more info as we launch the next round of training opportunities. Watch our website, read our newsletters, and be sure to follow us on social media using:

Hashtag [#OurAssetsMatter](#)

Twitter <https://twitter.com/AssetMBC>

LinkedIn <https://www.linkedin.com/company/asset-management-bc/?viewAsMember=true>

So, top up your coffee and enjoy these next three insightful articles by the workshop hosts.



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MUNICIPALITIES

FÉDÉRATION
CANADIENNE DES
MUNICIPALITÉS



MAMP: Level of Service Workshop

Demystifying Levels of Service

*Colwyn Sunderland, consultant and workshop lead trainer,
KWL Consulting Engineers*

Levels of service are why municipalities, regional districts and First Nations own infrastructure. It's really that simple! These organizations exist to serve essential community needs, and most of the work they do involves the development and lifecycle management of built and natural assets needed to deliver services.

Unfortunately, defining and working with levels of service can be messy and complicated because the way we “measure” service depends on our perspective. Consider your drinking water system. Engineers and operators need to know very specific, quantitative properties like flow rates and pressures at times of peak usage. Regulators need to know sample results reliably fall within prescribed limits. Council needs to know that there will be enough water to allow new land developments to be approved and to avoid the need to ban lawn watering too often. The fire chief needs to know the hydrants will deliver the flow rate and volume needed to fight a structure fire. Finance staff need to know that the fees and taxes charged for the service will be sufficient to cover all the costs. Users of the service might take all these things for granted, but they expect their water to be safe to drink, to taste and smell good, and to flow satisfyingly from the tap every time they open it.

It's not easy keeping track of all these aspects of each of your services. Making matters worse, it can be difficult to understand how the engineering and operational parameters (technical levels of service) relate to the very subjective parameters that matter most to users and elected decision-makers (community levels of service). It takes real effort to map the relationships between community and technical levels of service, costs of service, risk or uncertainty, and how all these things change over time. For these reasons, levels of service are often largely overlooked in a community's first efforts to develop asset management plans and systems.

Enter the Asset Management BC Levels of Service Tool and workshops. Developed by Asset Management BC and similar organizations in Atlantic Canada and the Northwest Territories, and funded through the FCM Municipal Asset Management Program (MAMP), the Tool is built around a very simple and adaptable Excel-based matrix pre-populated with many examples that give users a solid head start in defining and assessing levels of service. Asset Management BC has hosted one full-day in-person training workshop and three cohorts of web-based training in the past two years, enabling over a hundred local government and First Nation staff to learn and practice using the Tool to define their levels of service, identify service delivery gaps and develop or document strategies to address them.

One of my favourite things about the Levels of Service workshops is the “aha” moments that often occur when CAOs, engineers, public works managers, accountants and information managers learn a common language for infrastructure services. Differences between big cities, tiny hamlets, regional districts and First Nations melt away as we discuss common issues and challenges. A finance manager with a large municipality found the plain, simple language of community levels of service to be refreshingly

useful for articulating the value delivered by the city's large, complex infrastructure systems and for prioritizing resources across service areas. Reflections like this remind me that we have much to learn from each other, and many of the problems we're solving through asset management practice cut across all sizes and shapes of organization.

[MAMP: Operationalizing Asset Management Workshop](#)

Moving forward with Asset Management

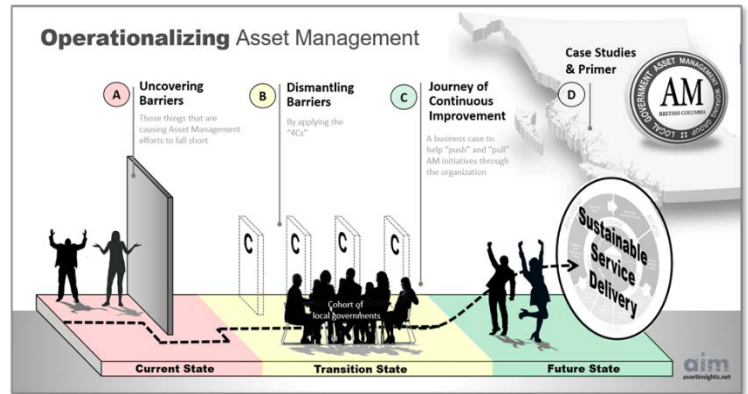
David Albrice, Consultant and trainer, Asset Insight Management Ltd (AIM)

Many local governments are muddling through their asset management journeys. Do any of the following scenarios sound familiar?

- » "Our asset management plan has been sitting on the shelf gathering dust."
- » "We have a risk framework but have not yet populated a risk register into it."
- » "We have had many meetings but have not been able to agree on how best to establish a level of service framework."
- » "When somebody retires their knowledge leaves with them. We need to develop processes to codify this knowledge."

What is the common thread in these scenarios? Is it simply that these organizations are resource constrained? It is likely more complicated than that. Indeed, the value of each asset management artifact (be it an Asset Management Plan, risk register, Level of Service Framework, or process maps) has not yet been fully realized on the organization's journey to sustainable service delivery for their community. In other words, they haven't **operationalized their asset management processes**.

In light of these challenges, AMBC arranged funding through the FCM MAMP program to support the development of a program to assist local governments in advancing their asset management practices. The program is designed to support local governments in obtaining a deeper understanding of their current state (how things are done today), their desired future state (how things could be done in the future) and their transition state (the roadmap into the future). By uncovering barriers to operationalizing asset management and developing a business case to dismantle these barriers, local governments can gain momentum on their journey of continuous improvement.



Since Fall 2020, fourteen local governments across BC -- a combination of municipalities, regional districts and First Nations -- have been participating in a structured, peer learning training program on operationalizing asset management. Delivered entirely on-line to accommodate pandemic protocols, the program begins by asking participants to select one asset management artifact that has not yet been effectively operationalized within their organization.

Through workshops, polling, and peer-to-peer conversations, participants are accompanied through a series of four exercises related to their artifact. These exercises help to determine: (1) the risk of failing to operationalize the artifact; (2) how best to apply the 4Cs approach – Collaboration, Culture, Capacity and Council/Board – to the artifact; (3) a method to help prioritize; and (4) a business case with three alternatives leading to the identification of a preferred approach.

The **Operationalizing Asset Management program** provides tools to make asset management everyday business! Many lessons have been learned by the first two cohorts: effective asset management elevates process over artifacts; operationalization sits at the intersection between asset management and change management; and knowing the right questions to trigger conversations is the catalyst needed in many cases.

Demand is high and AMBC is pleased to be offering the unique Operationalizing Asset Management program to additional cohorts beginning late Fall 2021.

[MAMP: Awareness of Asset Management Value](#)

So, why should I do Asset Management?

Christina Benty, Lead trainer, prior Mayor of Town of Golden and consultant, Strategic Leadership Solutions

Here's a thought. Imagine every decision made by local government was driven by a desire to be a good ancestor? Well maybe not every decision but more decisions. That is the legacy I am working to leave behind. As part of the UBCM/AMBC initiative to enhance asset management practices in British Columbia, I have had the privilege of delivering the Asset Management Awareness Building workshops for Elected Officials. These short presentations are being delivered online across the province and are designed to be Asset Management 101 for Boards and Councils. We briefly cover:

- » *What is asset management?*
- » *Why practice asset management?*
- » *Overview of Council's role and Staff's role*
- » *What you can do – call to action*
- » *Asset Management as a Decision-Making & Communications Tool*

Why does this matter?

Because local government has one purpose and one purpose only: to deliver services in a safe, sustainable, secure, predictable, cost-effective manner. Services require assets. Assets must be planned for, managed, and delivered very intentionally, strategically, and most importantly, sustainably to target limited resources, prioritize infrastructure investments, minimize risk, and avoid service disruptions. As a starting point, this makes asset management awareness vital to being a good ancestor.

Being a former elected official, I know that each and every Board and Council wants to leave a legacy of good decision making. To achieve this, a clear understanding of the asset management principles and processes is key. Before every presentation, I set an intention to either demystify or destigmatize or decontaminate asset management. I want every participant to see asset management as a way of thinking. Instead of being thought of as an activity or a plan or a project, asset management can be reframed as a philosophical lens through which all decisions can be made and an iterative process that ultimately leads to sustainability of the services local government delivers. That is what we all want isn't it?

Communities of all sizes have signed up to partake in this free, online presentation. Even though every community is somewhere different along the journey, the core principles remain relevant and applicable.

What can you do?

If you haven't signed up for an Asset Management Awareness Building workshop for your Council or Board, there is still time. These workshops will continue through the fall of 2021 and winter of 2022.

Regardless of who you are and where you are along the maturity continuum, here is my ongoing call to Action:

- Elevate asset management by keeping it on the radar and on the agenda, employ AM principles in every agenda item discussion
- Focus on services and service levels: choose to tell the truth about the true cost to provide services and the risk to future generations if the can is kicked further down the road and long-term systems thinking is ignored
- Be willing to engage in honest, brave, and uncomfortable conversations about your asset management data. Choose rational evidence-based investments over emotional short-term reactions.
- Commit to being a good ancestor

Asset Management BC will continue offering this series of workshops. We expect **registration to be open in November** for workshop starting in December and into 2022. Watch social media for announcements and registration.



#OurAssetsMatter

Contact: info@assetmanagementbc.ca for information on any of these AM BC MAMP projects.

FCM provides New Asset Management Resource Library

Are you searching for best-in-class asset management resources for municipalities? Do you want to discover information and tools to advance your asset management practice?

The Federation of Canadian Municipalities launched its new [Asset Management Resource Library](#) to help. This curated collection of links to guides, case studies and templates, are all aimed at helping you implement good asset management practices. [Visit the virtual library](#) to access over 100 resources organized by the most relevant asset management topics.

Be sure to bookmark www.fcm.ca/assetmanagement to access these resources often.



Asset Management – A Review of Consulting Best Practices

An Opinion from a retired Public Works Manager

*Joe McGowan, Manager, Public Works (retired),
City of Cranbrook*



Current State

The majority of consultant asset management (AM) related reports describe a catastrophic scenario where the municipality is in a crisis situation due to large portions of its infrastructure deemed to be past its useful life. The reports often communicate the need for

immediate replacement of assets at costs that are multiples, if not tens of multiples of the municipality's annual capital budget.

So, why is this occurring? Consultants providing AM services to local governments are not the 'Bad Guy'. However, most consultants have little to no operations and maintenance knowledge and experience as their primary role is as design consultants. Municipal governments are not providing outside consultants with clear direction as to the nature of the problem being explored and the specific details required by the client of any analysis. This client-consultant model is creating panic and information bottlenecks that are impeding implementation of asset management plans by local governments.

Experience with a great many consultants over the past 20 years reveals that in the absence of client stated clearly defined parameters, most consultants tend to default to cookie cutter report formats. The consultant's report summaries and recommendations are often supported by generic cookie cutter background data that the consultant purports will match the general nature of the problem they are commissioned to analyze and recommend a course of action. A key example includes using the estimated age of an asset as the primary indicator of when the asset needs replacement versus a physical inspection of the asset installation, **operation and** maintenance experience of the asset and actual condition.

The consulting industry faces similar recruitment and retention problems experienced by local governments when trying to hire and develop technical personnel. As with municipal governments, the consultant's project personnel often do not have hands-on experience with the many and varied facets of the problem site, process,

material, or service they are providing an opinion on. In the absence of real-life experience, consultants tend to rely on published data and metrics of what they determine to be similar circumstances to the one they are commissioned to examine. Although easy and cost effective for the consultant, this cookie-cutter approach does not well serve the long term unique geographic, social, financial, and political realities of individual communities.

Governments Role

A great deal of money is available from senior levels of government of address municipal asset upgrading and replacement. In the absence of consistent and clear direction from municipal clients, the consulting industry has generated business plans that suit their organizations. Without the actual operating or maintaining experience of municipal assets, the consultant's business plan provides services that the consultant is capable of delivering with its personnel.

As a result, consultant asset management reports tend to be heavy on construction estimates tied to the age of assets. Little, if any, attention is paid to proven and potential mitigation actions and early low hanging fruit applicable to the immediate needs of the municipality.

The Solution

Local Governments need to more clearly define exactly what they want and what they need from a consultant and clearly specify the deliverable and the scope of those, not leave it to the consultants' best guess. Too often, consultant services are procured through the engineering and purchasing side of the local government organization without any input from operations and maintenance. A better product will result if the scope of work for the consultant is better defined by the client using all their resources instead of just certain skills within their organization. The consultant response needs to indicate the limitations more clearly they bring to the project in meeting the terms of reference and scope of work plus show that they understand the scope of the project. If the consultant does not show a clear understanding of the client needs, the proposed work program and staffing for the project do not matter. This is a two-way street and both parties need to assess and refine their role at the engagement stage to get better and more meaningful results.

Our collective interest is having good working relations, maximizing the collective knowledge of the team, both client and consultant and get results that can be implemented within the framework of how local government operates.

AMBC honoured as a “Champion Supporter”

Asset Management BC has been recognized by the Partnership for Water Sustainability as a **CHAMPION SUPPORTER** of the partnership. The plaque was presented to Wally Wells, Executive Director, at a recent event. The text reads:

“Support by elected representatives and staff for programs delivered by the Partnership for Water Sustainability enables the Partnership to foster and support collaborative leadership that builds bridges of understanding through intergenerational collaboration. Accordingly, the Directors are pleased to honour Asset Management BC as a Champion Supporter of the Partnership.”

Champion Supporter is how the Partnership recognizes enduring commitment by our partners to a shared vision of ‘Living Water Smart in British Columbia’. BY pulling threads of understanding from the past through to the present and future, it would help communities achieve the vision for reconnecting people, fish, land, and water in altered landscapes.”



This is a great honour for AMBC. Thank you, Partnership for Water Sustainability.

UBCM announces Awards for Excellence in Asset Management

From the UBCM Press release

Vancouver, B.C. (September 14, 2021): The Union of British Columbia Municipalities presented its 2021 Community Excellence Awards during the UBCM virtual convention. UBCM has offered these awards since 2004.

The **Community Excellence Awards** recognize and celebrate UBCM member first nations, regional districts and municipalities that have implemented projects or

programs that go above and beyond in meeting the purposes of local government in BC. The awards are intended to showcase outstanding initiatives and share them with other members to implement in their own communities.

Asset Management – by developing comprehensive, integrated, innovative and effective approaches to the management of existing and new infrastructure in order to maximize benefits, reduce risk and provide satisfactory levels of service to the community in a sustainable manner;

WINNER: qathet Regional District

Natural Asset Solution for Stormwater Runoff

(The case study prepared in the Winter 2021 edition of the Asset Management BC Newsletter details this project)

Honourable Mention: District of Highlands

Sustainable Asset Management

(Watch for a case study on the project in the Winter 2022 edition of the Asset Management BC Newsletter)

A Global first: New resources for Engineering and Geoscience Professionals

Stuart Nash, P.Eng. | Manager, Professional Practice Development and Outreach, EGBC

Roy Brooke, Executive Director, Municipal Natural Assets Initiative (MNAI)

Engineering and geoscience professionals in B.C. who provide a range of services to local governments in the practice of asset management now have two new resources available to them.

1. **Engineers and Geoscientists BC (EGBC) Professional Practice Guidelines – Local Government Asset Management**

EGBC has formally released the professional practice guideline entitled “**Professional Practice Guidelines – Local Government Asset Management**” the latest set of professional practice guidelines from the provincial regulator. The guidelines provide a common approach for engineering and geoscience professionals who participate in and provide inputs into the asset management planning process for local governments in B.C., including municipalities, regional districts, special purpose districts, and local boards and agencies. In a global first, the guidelines include how engineering and geoscience

professionals should consider natural asset management through the asset management process. The guidelines also outline:

- Roles and responsibilities for the various professionals working on asset management
- Guidelines for engineering and geoscience professionals working through the asset management process
- Requirements for quality management, such as use of the professional seal
- Guidance on education, training, and professional registration

2. Municipal Natural Assets Initiative (MNAI): Natural Asset Management Considerations

A companion document MNAI's Considerations document, "**Natural Assets Management Considerations for Engineering and Geoscience Professionals**" which is developed for engineering and geoscience professionals to use together with the *Professional Practice Guidelines*. This companion document offers detailed guidance on how to integrate natural assets effectively into local governments' asset management.

"The 'Professional Practice Guidelines – Local Government Asset Management' will help standardize engineering and geoscience practice in asset management in B.C. and will help ensure that engineering and geoscience professionals are considering natural asset management in their planning and decision-making processes," said Heidi Yang, P.Eng., FEC, FGC (Hon.), Chief Executive Officer, Engineers and Geoscientists BC. "Along with MNAI's companion document, we believe this represents great progress on mainstreaming natural asset management in the engineering and geoscience fields in B.C."

"We have growing evidence that natural assets can sometimes do the same work as built infrastructure, last longer, are more resilient to climate change, and sometimes cost millions of dollars less," said Roy Brooke, Executive Director, Municipal Natural Assets Initiative. "Healthy, well-managed ecosystems and natural assets can also provide a variety of other vital services on which our communities and economies depend, including biodiversity and carbon storage, to name just two."

Having more and more local governments adopt natural asset management into their overall budgets and planning would accelerate Canada's efforts to build back better from the impacts of the COVID-19 pandemic, accelerate our response to climate change, and enable us to continue enjoying the core services that we all depend on for decades to come.

The launch of the Guidelines and Considerations documents, as a pair, helps ensure engineering and geoscience professionals practice according to a consistent, high standard that has passed rigorous testing.

"These guidelines show how integrating natural assets with local government infrastructure can support sustainable service delivery while benefiting the environment, our communities, and our health in the fight against climate change," said Josie Osborne, B.C.'s Minister of Municipal Affairs.

A group of subject-matter experts formed an advisory group, co-chaired by Engineers and Geoscientists BC and MNAI, to help develop both the Professional Practice Guidelines and the Natural Assets Management Considerations. The group comprised representatives from the engineering, geoscientists, landscape architecture, asset management, provincial government, and university fields. Asset Management BC was part of that group.

Both resources are available for download on the Engineers and Geoscientists BC website ([Professional Practice Guidelines](#)) and the MNAI website ([MNAI Natural Assets Management Considerations](#)).

Upcoming Events

Note: COVID-19

Due to the COVID-19 virus and the requirements for social distancing, most conferences in person have been cancelled for 2021. Most are moving to a 'virtual' conference. Check each Association website to confirm details.



Federation of Canadian Municipalities (FCM)

October 19 - 21, 2021
Sustainable Communities Conference (virtual)
fcm.ca

Asset Management BC (AMBC)

Thursday November 4, 18, and 25, 2021
Annual Asset Management Conference (virtual)
assetmanagementbc.ca

Municipal Insurance Association of BC

April 12 – 14, 2022
Annual Risk Management Conference
JW Marriot Parq Hotel, Vancouver BC
www.miabc.org

Recreation Facilities Association of BC

May 9 - 11, 2022

Annual Conference

Tigh Na Mara Resort, Parksville, BC

www.rfabc.com**BC Water and Waste Association**

May 15 - 17, 2022

Annual Conference and Trade show

Victoria Conference Centre, Victoria BC

www.bcwwa.org**Government Finance Officers of BC**

June 1-3, 2022

Annual Conference

Penticton Lakeside Resort, Penticton, BC

www.gfoabc.ca**Federation of Canadian Municipalities**

June 2 – 5, 2022

Annual Conference and Trade Show

Regina SK

www.fcm.ca**Local Government Management Association**

June 21 – 23, 2022

Annual Conference and Trade show

Penticton, BC

www.lgma.ca**Subscribe to Newsletter**

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