

the partnership for water sustainability in bc

Waterbucket eNews on November 7, 2023 https://waterbucket.ca/wscblog/

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Surrey's green infrastructure evolution: from pilot projects to watershed-based actions

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Note to Reader:

Waterbucket eNews¹ celebrates the leadership of individuals and organizations who are guided by the vision for Living Water Smart in British Columbia².

The edition published on November 7, 2023 featured Paul Ham, former General Manager of Engineering with the City of Surrey. A generation ago, his quiet and unassuming leadership behind the scenes made the green infrastructure movement possible in British Columbia. As chair, he provided the Green Infrastructure Partnership with early credibility.

The umbrella for Partnership initiatives and programs is the Water Sustainability Action Plan for British Columbia³. In turn, the Action Plan is nested within Living Water Smart, British Columbia's Water Plan.



Cover Image Credit: photo by City of Surrey

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

Paul Ham spent 34 years with the City of Surrey, retiring as General Manager of Engineering. Without Paul Ham's quiet and unassuming leadership behind the scenes, would the green infrastructure movement in BC have successfully launched a generation ago?

Somebody had to go first and establish the landmark precedent. That is what the City of Surrey did with the **East Clayton Sustainable Community**. Green infrastructure innovation at a community scale! It all started with East Clayton and an idea in 1998 on how to solve a multi-faceted problem.

Bringing a new way of doing business to fruition was hard work for all involved but the stars were in alignment. As so often is the case, it is about the **right people in the right place at the right time**.

North America's FIRST large-scale "sustainable" residential community...that is East Clayton's claim to fame! Success gave Surrey the confidence and the momentum to learn and adapt through a building blocks process <u>that continues to this day</u>. The precedent established with East Clayton also inspired other municipalities to take up the sustainability challenge.

A milestone in BC's environmental history

"The *paradigm-shift* that occurred during Paul Ham's watch far exceeds our original expectation that the Green Infrastructure Partnership would be a **catalyst for change**," stated Chuck Gale in a 2008 statement. "I am so proud of all those committed participants who have been instrumental in making this initiative an unqualified success in BC's environmental history."

"Three contemporary initiatives had an early influence on City of Surrey thinking. These were the UniverCity Sustainable Community on Burnaby Mountain, the Provincial Guidebook for stormwater planning, and the experience of the City of Chilliwack when it developed its Manual for Surface Water Management as a feedback loop for Guidebook development." - Paul Ham, 2006

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In 2005, Paul Ham succeeded Chuck Gale as chair of the newly formed Green Infrastructure Partnership. Paul provided the Green Infrastructure Partnership with enhanced credibility at the regional engineers table. Their support enabled the partnership to lead a "convening for action" initiative in the Lower Mainland region.

Upon incorporation of the Partnership for Water Sustainability as a legal entity in 2010, it assumed the responsibilities of the Green Infrastructure Partnership and is the keeper of the "green infrastructure legacy".

Editor's Perspective by Kim A Stephens

Green Infrastructure Genesis in British Columbia

Viewed through the green infrastructure lens, one word characterizes the 2000s. That word is **transformational**. Almost overnight, the term "green infrastructure" went <u>from novel idea to mainstream concept</u> in the Metro Vancouver region.

There was energy. There was a willingness to learn by doing. The **regional team approach** emerged as the new business as usual.

The past informs the future. It is about looking back to see ahead. What universal principles are timeless? How do we leverage what we know in order to continue advancing the **common good**? How do we pass that understanding on to inform the actions of successive generations?

In this edition of Waterbucket eNews, we weave a selection of quotable quotes from a conversation with Paul Ham to tell a short story about green infrastructure evolution in Surrey as it progressed <u>from pilot</u> projects to watershed-based actions.

Story of the Metro Vancouver region's Green Infrastructure Journey (1997-2023)

The complete conversation with Paul Ham is included as an appendix. It is a preview extract from Create Liveable Communities and Protect Stream Health in the Metro Vancouver Region: Moving Along the Green Infrastructure Continuum. This legacy resource will be published early in 2024.

Collaboration, Partnerships and Alignment: Success in advancing the green infrastructure mission during the 2000s under Paul Ham's watch is attributable to 10 cascading factors being in alignment within the City of Surrey as well as within the Metro Vancouver region. The ten are illustrated as a graphic on the next page. These are universal principles. They are timeless.

This top-to-bottom alignment enabled local government collaboration at the regional scale. **Paramount is political commitment**. Staff can only carry things so far. Only when someone who is elected takes the lead, and is the champion, does something happen.

When ALL these elements are in alignment, <u>transformational</u> changes are not only possible, but realistic:

Shared Vision – to make a difference for the common good Be Ready – to move into a vacuum (timing is everything) POLITICAL COMMITMENT – to take action

Champions within Local Government – to provide energy and organizational drive and to stimulate willingness to change

A Forum – to bring champions together to convene for action

Credibility, Respect and Trust – between individuals, and between levels of government

Collaborative Leadership – to make it happen **Learn by Doing** – being willing to take calculated risks and adapt

Funding – to do the job

The Organizer – to bring and hold everyone together

It is magic when *the right people are in the right place at the right time*, especially when this repeats <u>over time</u>.

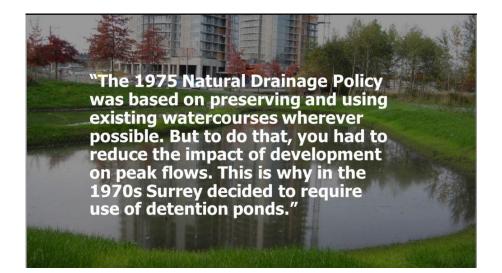
STORY BEHIND THE STORY:

Surrey's green infrastructure evolution from pilot projects to watershed-based actions

- a conversation with Paul Ham

"When I joined the City of Surrey in 1974, the municipality was looking at a way to deal with its stormwater drainage. The driver for action was the need to protect the agricultural lowlands from flooding caused by uplands urban development," recalls Paul Ham

"First came the Natural Drainage Policy in 1975. This led to the requirement that every development build a detention pond. The next evolution was the move to community ponds."



A short history of stormwater management evolution in the city of Surrey

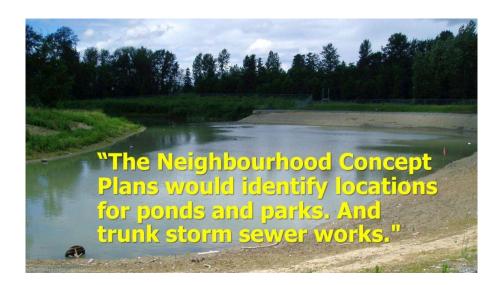
"Ponds were then done on a development-by-development basis. At the time, this approach was described by some people as chickenpox ponds because they were dotted all over the place. Small ponds are difficult to make attractive or be of benefit to the community for alternative purposes. This led to a re-think." "The move from there was to get developers to join together to build larger joint facilities. Eventually a **Development Cost Charge** was introduced where Surrey would take the lead in putting those facilities in, using parks space and soccer fields."

"After that, the next evolution was the introduction and use of wet ponds for water quality purposes."

"There was a gradual move in that direction and that tied in with the need for putting in **Master Drainage Plans** for different catchments and different communities."



"When different neighbourhoods wanted to move from rural to urbanized zoning, there was a requirement to come up with Neighbourhood Concept Plans and neighbourhood servicing plans. Those would include a drainage plan for the neighbourhood."





East Clayton Sustainable Community: Game changing for green infrastructure!

"By the mid-1990s, the need for change was clear. The **East Clayton Neighbourhood Concept Plan** provided the first large-scale opportunity to test a new approach advocated by UBC's Patrick Condon. Described by Patrick as *the future is the past*, the approach to drainage embodied a design with nature way-of-doing."

"It was 1999 when the City of Surrey entered into a precedent-setting partnership agreement with UBC's James Taylor Chair (Patrick Condon). Our shared vision was to create the Headwaters Project ⁴. Often it is referred to as the East Clayton Sustainable Community."

"Patrick Condon chaired the multi-constituent East Clayton Advisory Committee. It was uncharted territory for everyone involved."



East Clayton in Surrey stands out as the first large-scale "sustainable" residential community in North America based on use of green infrastructure concepts of land use. Capturing and retaining rainwater on site and protecting the hydrology was a priority.

A once-in-a-generation opportunity

"The 250-hectare East Clayton neighbourhood was designated as urban in 1996. This set the stage for an unprecedented plan to increase residential density, promote social cohesion and maximize affordability and walkability."

"Guided by Patrick Condon, the Headwaters Project was the first reallife demonstration in BC of how to implement sustainable development principles and performance standards at the neighbourhood scale."

⁴ https://www.jtc.sala.ubc.ca/projects/Headwaters.html

"The challenge we faced was to overcome fear and doubt that green infrastructure practices would protect watershed and stream health. It was Patrick Condon who said: *If we fail, it will be a generation before anyone will even have the opportunity to try again; so, we must not fail.*"

Surrey then evolved from pilot projects to setting watershed-based objectives and targets

"As years pass, we tend to forget or take the early innovation for granted. We learned a lot from our East Clayton experience, and we adapted our approach in subsequent Surrey neighbourhoods."

"The East Clayton experience gave us confidence to implement new green infrastructure objectives in the next two plans. Council made green infrastructure practices a condition of the **Campbell Heights Economic Development Plan** in 1999-2000, and the **Highway 99 Corridor Land Use Plan** in 2002."

"The Fergus Creek watershed plan followed. It was the inspiration for *going beyond the Stormwater Guidebook*⁵. Surrey provided core content for the seminar that launched the provincial initiative in 2007."



⁵ https://waterbucket.ca/cfa/category/on_the_ground_changes-in-british-

columbia/2007_beyond_the_guidebook_seminar_british_columbia_on_the_ground_changes/

"By the time I retired in 2008, Surrey was ready to move beyond pilot projects⁶. Council passed a bylaw which enables setting of watershed-specific performance targets for rainwater runoff volume and rate reduction at development sites."

"The bylaw is the tool for assessing what makes sense, meets multiple objectives, and results in net environmental benefits at a watershed scale. It all started with East Clayton."





⁶ https://www.waterbucket.ca/cfa/sites/wbccfa/documents/media/228.pdf

APPENDIX A

A window into the green infrastructure journey in the Metro Vancouver region:

A conversational interview with former Paul Ham provides context on early leadership and innovation



Green Infrastructure Champion East Clayton Sustainable Community: *Game changing for green infrastructure!*

A Team Effort in Surrey

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Reflections by Paul Ham, former General Manager, Engineering Department, City of Surrey (1974-2008)

Green Infrastructure Champion

Paul Ham joined the City of Surrey as a young engineer in 1974, retiring as General Manager in 2008. As GM, he led the Engineering Department during the decade when master drainage planning in Surrey evolved from drainage-centric to multi-objective outcomes.

Paul Ham concluded his local government career by chairing the Green Infrastructure Partnership (GIP) from 2005 through 2008. In this role, he enhanced the credibility of the GIP through his stature at the regional engineers table and his ability to make things happen.

Convening for green infrastructure action in the Metro Vancouver region

In 2005, the GIP organized the Green Infrastructure Consultation Workshop. Hosted by Surrey, the event launched a regional "convening for action" program under Paul Ham's leadership, with the flagship element being the Showcasing Green Infrastructure Innovation Series which then spawned the Beyond the Guidebook Initiative (2007) and the Course on the ISMP Course Correction (2011).

"Workshop success resulted from senior municipal leaders opening up and sharing their experiences. There was critical mass for moving forward with the design with nature vision. Pilot projects were scattered around the region, but innovators felt lonely. New approaches were needed to showcase, share, celebrate, adapt and leverage experience among practitioners. The GIP moved into a vacuum," recalls Paul Ham.

"Why were ISMPs the elephant in the room in 2008? In the 2001 LWMP, the commitment to master drainage plans by another name was not controversial. Commitment was at the planning stage, was sequential, and did not have a big price tag. Nobody foresaw the potential total cost implication because it was a series of little chunks. By 2008, the unfunded liability was a concern and the LWMP Reference Panel put the issue on the table."



Two members of the GIP Steering Committee, Susan Rutherford and Kim Stephens, were appointed by the Metro Vancouver Board to the advisory Liquid Waste Management Plan Reference Panel in 2008.



A short history of stormwater management evolution in Surrey

"When I joined Surrey in 1974, Surrey was looking at a way to deal with its stormwater drainage," states Paul Ham. "The driver for action was the need to protect the agricultural lowlands from flooding caused by uplands urban development. First came the Natural Drainage Policy. This led to the requirement that every development build a detention pond. The next evolution was the move to community ponds."



Surrey Overview

Surrey experience in drainage planning and leading by example has been evolving over fiveplus decades because of growth and changing nature of the community.

Some 30% of Surrey is reclaimed land in floodplains. These areas were diked in the late 1800's – early 1900's.

Surrey drains to 4 major rivers – the Serpentine, Nicomekl, Little Campbell and Fraser Rivers. Some smaller streams drain directly to Semiahmoo Bay. "Alan Stephens came up with the Natural Drainage Policy in 1975. It was based on preserving and using existing watercourses wherever possible. But to do that, you had to reduce the impact of development on peak flows. This is why in the 1970s Surrey decided to require use of detention ponds."

"Ponds were then done on a development-by-development basis. At the time, this approach was described by some people as *chickenpox ponds* because they were dotted all over the place. Small ponds are difficult to make attractive or be of benefit to the community for alternative purposes. This led to a re-think."

"The move from there was to get developers to join together to build larger joint facilities. Eventually a Development Cost Charge was introduced where Surrey would take the lead in putting those facilities in, using parks space and soccer fields. After that, the next evolution was the introduction and use of *wet ponds* for water quality purposes."

"There was a gradual move in that direction and that tied in with the need for putting in Master Drainage Plans for different catchments and different communities. And when different neighbourhoods wanted to move from rural to urbanized zoning, there was a requirement to come up with Neighbourhood Concept Plans and neighbourhood servicing plans. Those would include a drainage plan for the neighbourhood."

"The Neighbourhood Concept Plans would identify locations for ponds and parks. And trunk storm sewer works. For the Serpentine-Nicomekl lowlands system, we said we are going to do something and raise the dykes, put in fish-friendly pump stations, and pay for it by setting up a joint sewer and drainage utility in the late 1990s. In the 2000s, we phased that out and went to separate utilities."

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East Clayton Sustainable Community: Game changing for green infrastructure!

Through an MOU with the other agencies that cofunded the work of the East Clayton Advisory Committee, the Real Estate Foundation granted monies for expenditures that other agencies lacked the mandate to cover. The idea for this solution came from Tim Pringle.

"When asked about my contribution in making East Clayton happen, my response is that the neutral observer has a better perspective than someone who is actually in it. When you are in the trenches, you do not always see the advances that are being made." The 250-hectare neighbourhood of East Clayton in Surrey was designated as "urban" in 1996. This set the stage for an unprecedented new neighbourhood plan to increase residential density, promote social cohesion and maximize affordability and walkability.

In January 1999, Surrey entered into a precedent-setting partnership agreement with UBC's James Taylor Chair and a multi-constituent East Clayton Advisory Committee involving various levels of government to create the Headwaters Project.

The East Clayton area, shown on **Figure B1**, was the first real-life demonstration in BC of how to implement sustainable development principles and performance standards at the neighbourhood scale.

Surrey evolved from pilot projects to setting watershed-based objectives and targets

"By the mid-1990s, the need for change was clear. The East Clayton Neighbourhood Concept Plan provided the first large-scale opportunity to test a new approach advocated by UBC's Patrick Condon. Described by Patrick as *the future is the past*, the approach to drainage embodied a design with nature way-of-doing," explains Paul Ham.

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Figure B1 – East Clayton Sustainable Community



East Clayton in Surrey stands out as the first large-scale "sustainable" residential community in North America based on use of green infrastructure concepts of land use. Capturing and retaining rainwater on site and protecting the hydrology was a priority.

The Neighbourhood Concept Plan is unique in that it is guided by and applies 7 sustainable planning principles espoused by Patrick Condon, James Taylor Chair in Landscape and Livable Environments at the University of BC.

Landscape transformation from rural (above) to urban (below) between 2002 and 2009

Walkabout through East Clayton as part of the 2006 Showcasing Green Infrastructure event hosted by the City of Surrey





The rainwater management objective for East Clayton is capture and infiltrate 12 to 25mm of initial rainfall and 90% of the annual volume.

The City implemented a comprehensive monitoring program to evaluate rainwater system performance.

The evaluation included a side-by-side comparison of two subdivisions: one with on-lot infiltration; and the other with a conventional 'pipe-and-convey' system.

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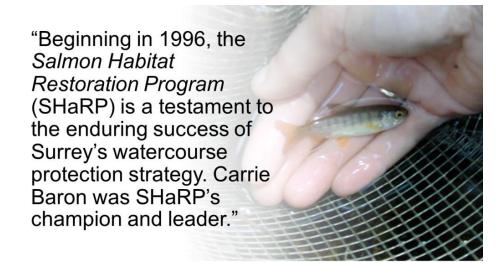
A Team Effort in Surrey

Perspective on career achievements

"When I look back, I am most proud of getting a bunch of things done, such as setting up the drainage utility to do big scale drainage works, and coming up with the cost-allocation formula for the regional sewage treatment plants." "Numerous individuals played important roles within a team structure during the first decade of the 2000s. This started with the hiring of Carrie Baron (1996) and continued when Vince Lalonde (1997), David Hislop (1998), Rémi Dubé (2002) and Jeannie Lee (2003) came on board. All of them were involved in some way that contributed to the success of the Green Infrastructure Partnership," recalls Paul Ham.

"Vince succeeded me as General Manager in 2008. Carrie and Rémi were both section managers. David Hislop and Jeannie Lee are examples of Surrey drainage staff who worked with the development industry and the city's design and construction group to deliver on the strategy for watercourse protection."

Conversational interviews with Carrie Baron and Rémi Dubé follow in this Part B. Their reflections also inform the storylines for Part C (1997-2005), Part D (2006-2011) and Part E (2012-2017).



Salmon Habitat and Restoration Program (SHaRP)

"In my day, the City was proud of what the Salmon Habitat and Restoration Program was accomplishing. The Drainage and Environment section was responsible for SHaRP. Program success followed from Carrie's strong leadership and her commitment."

"In her role as manager of Drainage and Environment, Carrie Baron. was also very involved with land use planning and 'on the ground' management of Surrey's natural watercourses. Her group also led the monitoring efforts associated with ISMPs."

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Showcasing Green Infrastructure Innovation

"The showcasing series was about who was doing what, and where. Everything that the Green Infrastructure Partnership did after that was spawned by the series. In 2006, East Clayton was the centrepiece of the first showcasing series. Rémi Dubé and David Hislop did the hard work to organize Surrey's day in the spotlight," states Paul Ham.

"In addition to design and construction issues, the City also learned some lessons from a site development perspective. An unintended consequence was the higher-than-expected percentage of *hardscape*. With a different approach to built-form, we could have had both higher density and substantially more green space."

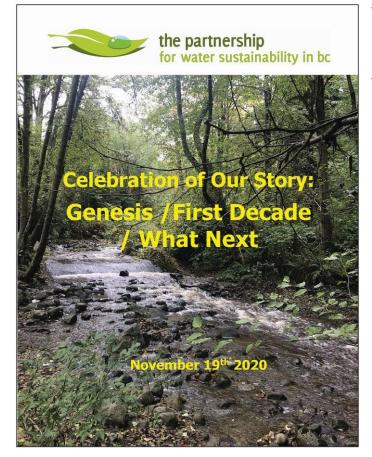
"A large-scale detention facility at the outlet from the East Clayton area established two precedents. As part of an agreement with the environmental agencies, it provided habitat compensation for the surrounding development area. And Development Cost Charges from both the Drainage and Parks functions funded construction." Rémi Dubé, 2006

"Reducing runoff volume in the East Clayton area is challenging because the area is underlain by clay and hydraulic conductivity is low. The monitoring results show, however, that topsoil depth and absorbent landscaping are particularly effective for rainfall capture in an area where the native soils are challenging." - David Hislop, 2006



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"When I was chair of the Green Infrastructure Partnership, the committee could always count on Surrey. Invariably it was Rémi Dubé who I would ask to follow through on my commitment. And every time Rémi would deliver a successful program."



TO LEARN MORE, VISIT: https://waterbucket.ca/about-us/

About the Partnership for Water Sustainability in British Columbia

Incorporation of the Partnership for Water Sustainability in British Columbia as a not-forprofit 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 intergenerational 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.

