Kitchener's Model: Watercourse Management and Habitat Banking

Natural Channels Conference, Session G

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Photo Credit: Stantec Consulting, Filsinger Park

Agenda

1. A Bit About Kitchener
2. Building the Foundation
   a) Stormwater Utility 101
   b) Asset Management
4. Watercourse Works
5. Habitat Banking
6. What's Next
7. Questions

A Bit About Kitchener

- Location:
  - 100km southwest of Toronto, an inland community in the Greater Golden Horseshoe
- Basics:
  - 310,000 People
  - 13,750 Hectares in size
  - 29 Creeks
- Economy:
  - Manufacturing, Technology, and Education
- Governance:
  - City and Regional Council in a 2-Tier structure

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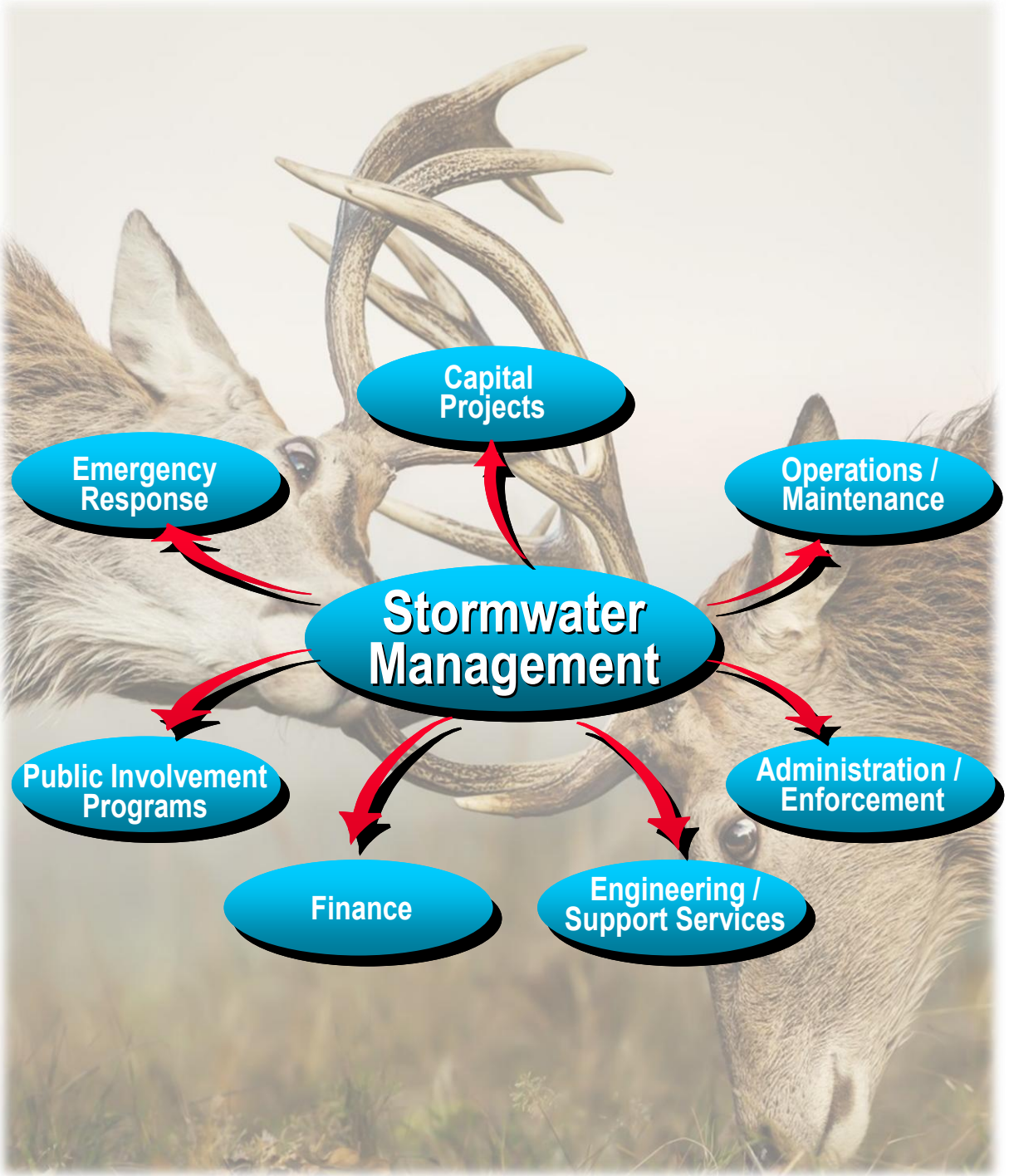

Stormwater Utility 101

- Municipalities compete for limited tax revenue across departments.
- Urban growth raises stormwater management demands, intensifying competition.
- Balancing urban expansion and environmental protection drives the need for funding solutions.

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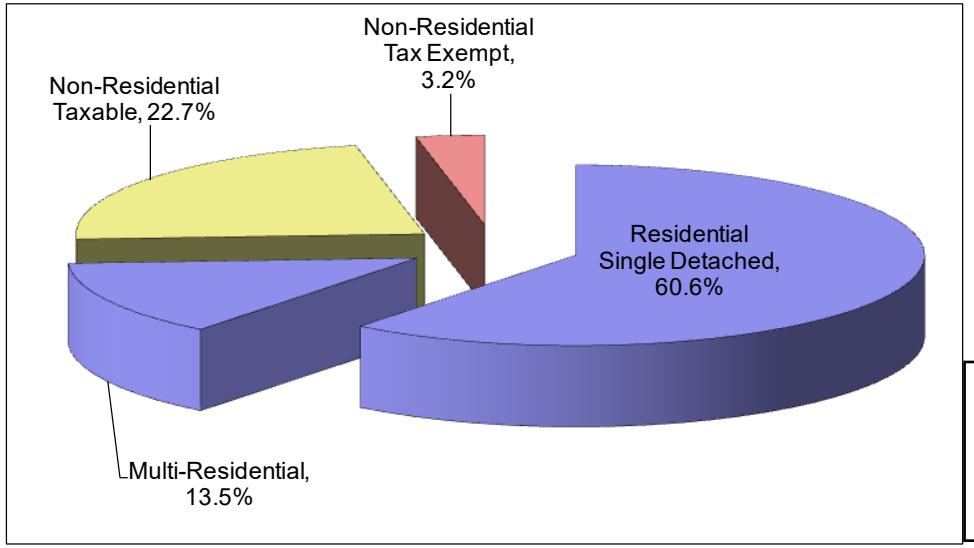
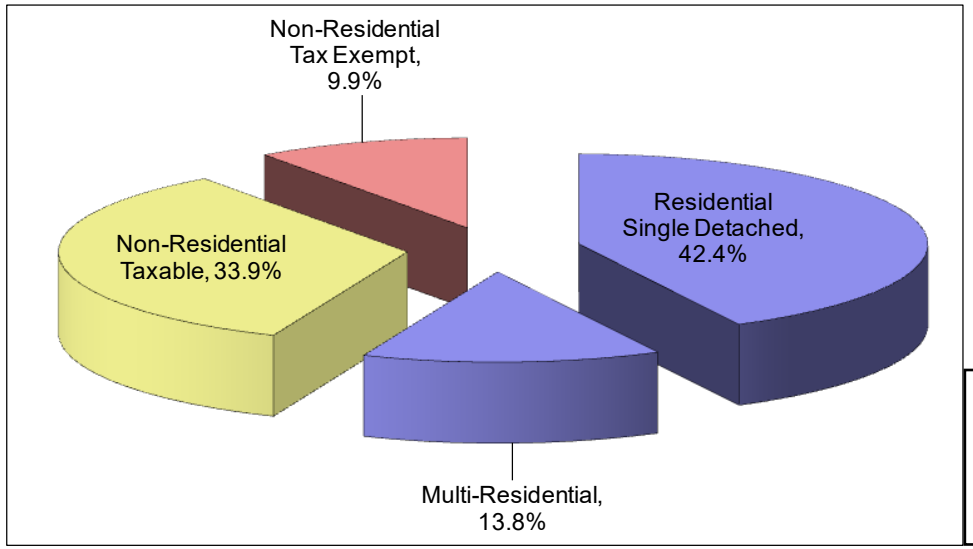
Funding Model Evolution

Funding Method	Dedicated Funding Source	Fair & Equitable Allocation	Tax Exempt Property Contribution	Incentives for On-Site Stormwater Controls	Effort to Administer	Accuracy
1. SWM Rate						
2. Dedicated Tax Levy						
3. SWM Flat Fee						
4. Status Quo						

Funding Model Evolution



Tax Model
25.9% Non-Residential
74.1% Residential

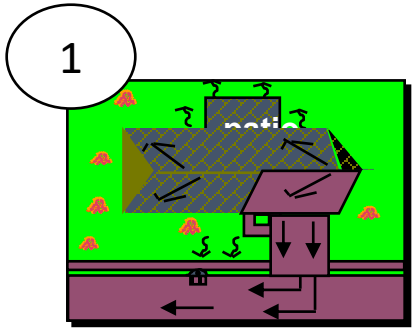


Rate Model (18% shift)
43.8% Non-Residential
56.2% Residential

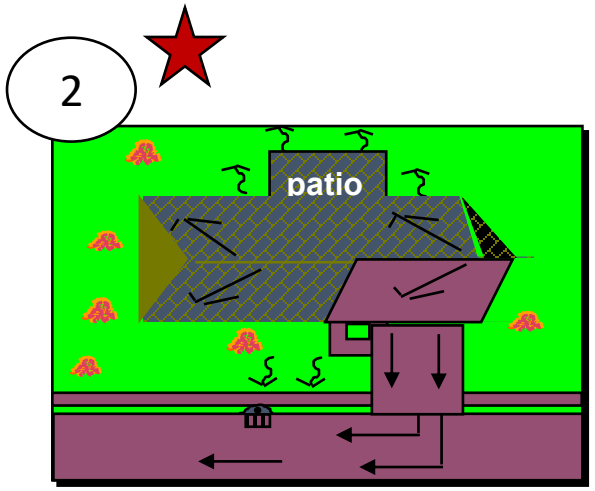
- Stormwater Management Feasibility Study was started in 2004.
  - Part 1 - Service Level Study - investigated current and future anticipated stormwater expenditures.
  - Part 2 - Funding Mechanism Review - an equitable, self-supporting, and dedicated funding mechanism

Tiered SFU Billing Method

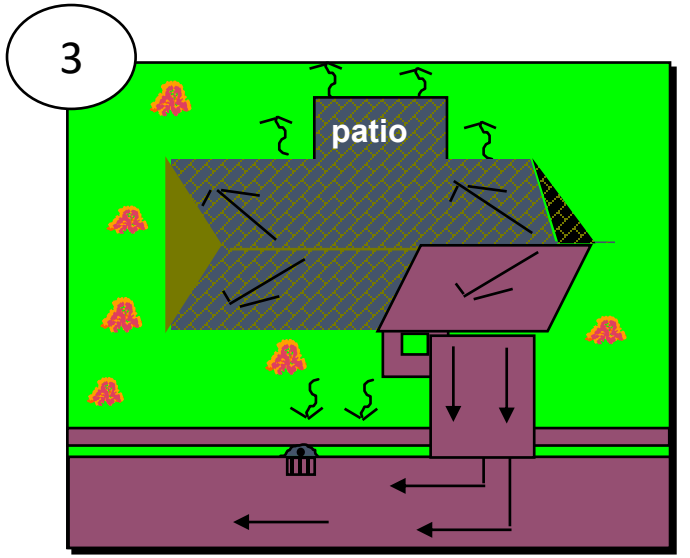
SFU = Single Family Unit



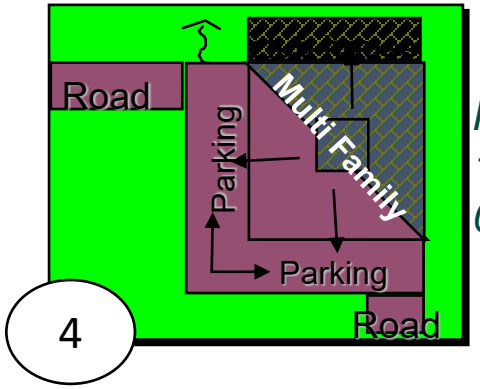
***Small** Single Detached*
168 m^2 = 0.6 SFU



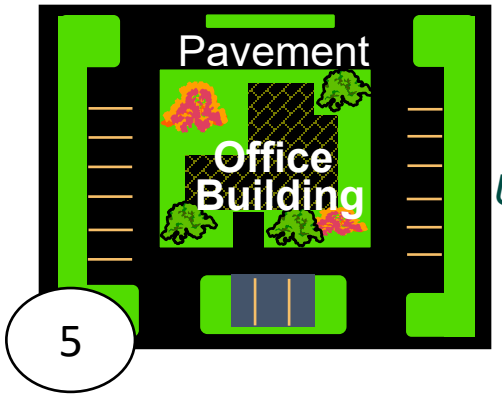
***Average** Single Detached*
259 m^2 = 1.0 SFU



***Large** Single Detached*
344 m^2 = 1.3 SFU



Multi-Unit Residential
1 Dwelling Unit =
0.2 - 1.0 SFU



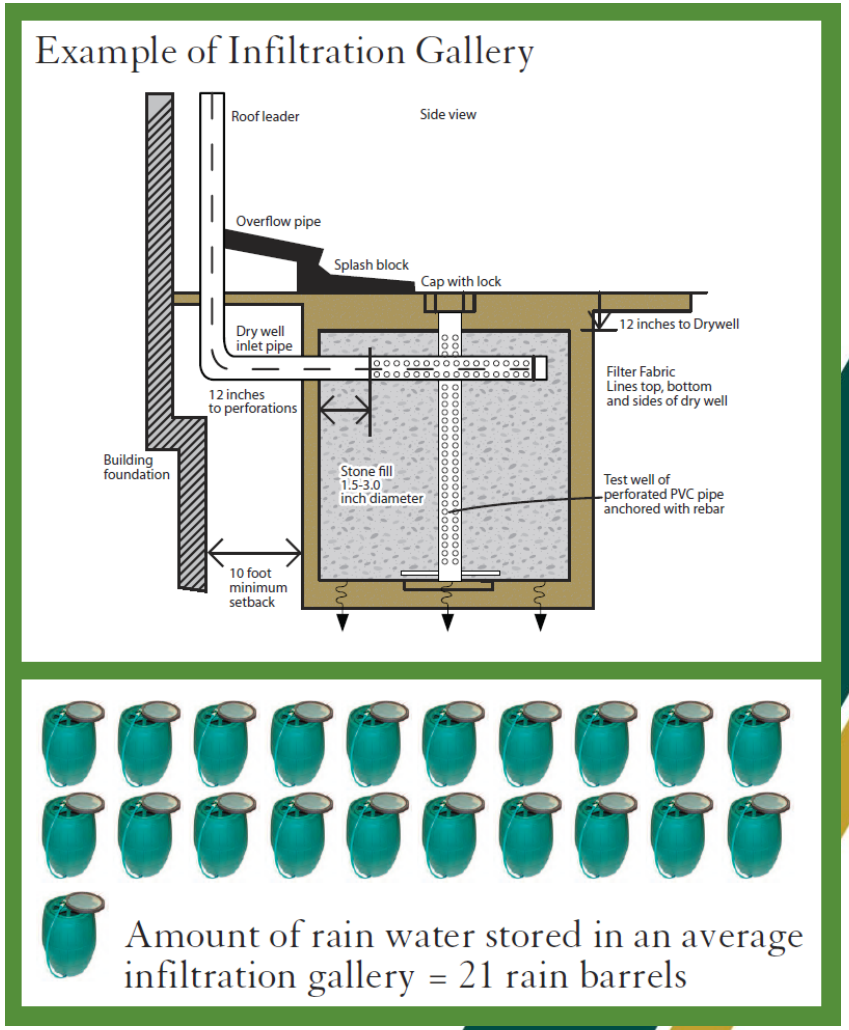
$$\text{Units} = \frac{\text{Non-Residential Impervious Area}}{\text{SFU Area}}$$

Current Rate Structure

Code	Property Classification	Basis for Charge	2026 Monthly Charge
1	Residential Single Detached Small	Detached homes with building footprint 105 m2 or less	$13.92
2	Residential Single Detached Medium	Detached homes with building footprint between 106-236 m2	$23.24
3	Residential Single Detached Large	Detached homes with building footprint 237 m2 or more	$30.54
4	Residential Townhouse/Semi-Detached	Per dwelling unit	$16.58
5	Residential Condominium	Per dwelling unit	$9.24
62	Multi-Residential duplex	Per building	$18.59
63	Multi-Residential triplex	Per building	$27.95
64	Multi-Residential four-plex	Per building	$37.15
65	Multi-Residential five-plex	Per building	$46.50
7	Multi-Residential (>5 units)	Per property (according to number of dwelling units)	$4.67
8	Non-Residential Smallest	26 – 1,051 m2 of impervious area	$44.45
9	Non-Residential Small	1,052 – 1,640 m2 of impervious area	$118.87
10	Non-Residential Medium-Low	1,641 – 7,676 m2 of impervious area	$311.44
11	Non-Residential Medium-High	7,677 – 16,324 m2 of impervious area	$909.13
12	Non-Residential Large	16,325 – 39,034 m2 of impervious area	$2,203.41
13	Non-Residential Largest	39,035 m2 or greater of impervious area	$4,730.22

Stormwater Credits

- Credits were introduced retroactively in 2012 for properties reducing runoff through infrastructure like infiltration galleries.
- Maintenance of such assets was enforced, aligning with water quality goals.
- For non-residential, credits were awarded based on flood prevention, pollution reduction, and education.
- All properties are eligible for a 45% reduction in the stormwater portion of their monthly utility bill if they have stormwater controls.



2026 Approved Budget

CITY OF KITCHENER
STORMWATER UTILITY
5 YEAR OPERATING BUDGET PROJECTION

(000's)	Budget 2025	Projected 2025	Budget 2026	Budget 2027	Budget 2028	Budget 2029	Budget 2030
Core Revenue	30,108	30,289	32,647	35,106	37,749	40,589	43,521
Other Revenue	956	924	991	1,049	1,112	1,181	1,250
REVENUE	31,064	31,213	33,638	36,155	38,861	41,770	44,771
Operating Expense	10,999	11,021	11,587	12,095	12,624	13,159	13,694
Transfer to Capital	18,341	18,341	25,627	18,759	22,843	25,512	26,789
EXPENSE	29,340	29,362	37,214	30,854	35,467	38,671	40,483
Net Revenue (Expense)	**1,724**	**1,851**	**(3,576)**	**5,301**	**3,394**	**3,099**	**4,288**
* Transfer (to)/from Stabilization Reserve	(1,724)	(1,851)	3,576	(5,301)	(3,394)	(3,099)	(4,288)
Overall Enterprise Result	-	-	-	-	-	-	-

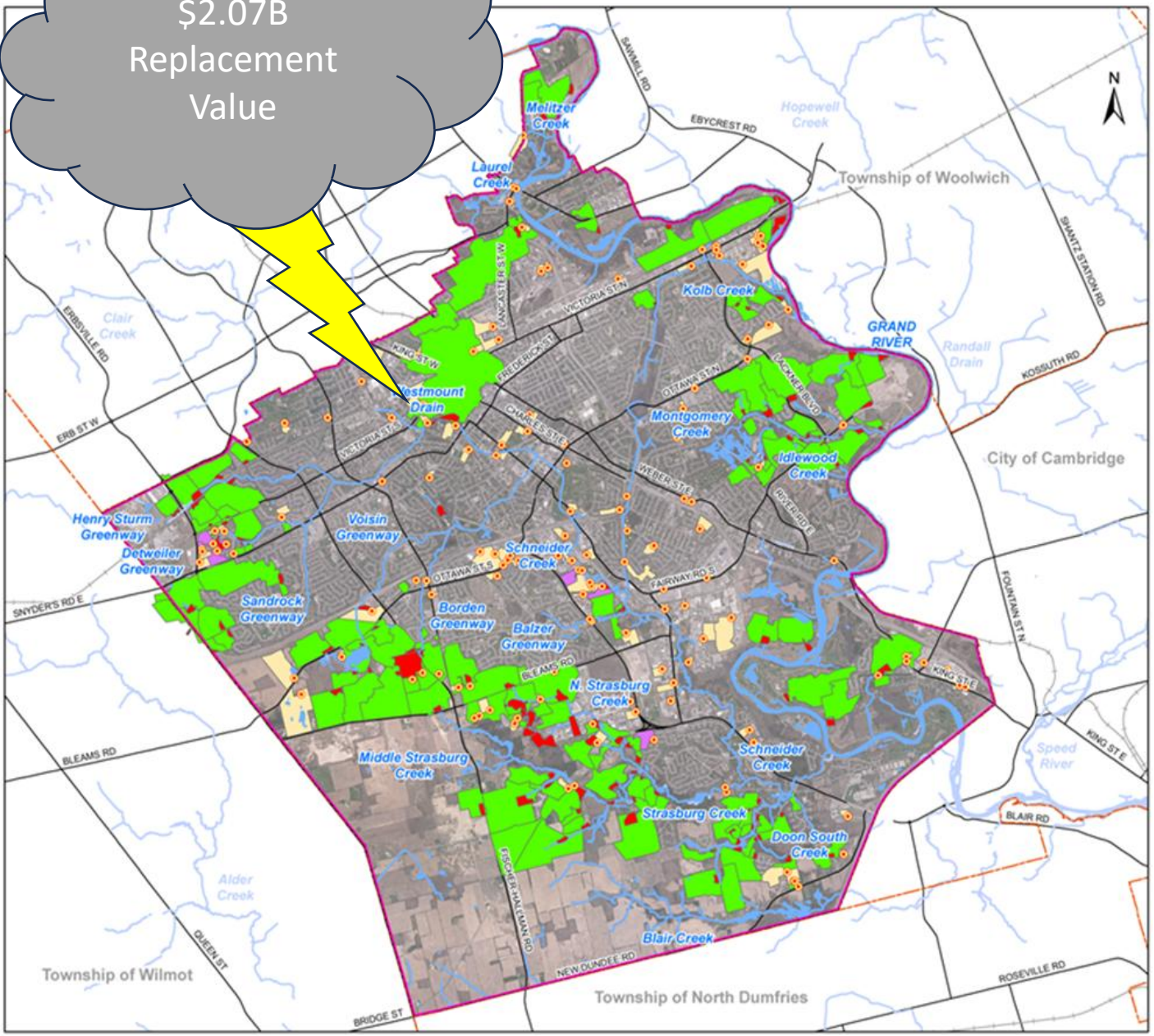
* When the Stormwater Utility was established in 2010, annual revenue was $13M

Asset Management

- O. Reg. 588/17, annual reporting on or before July 1st:
  - All municipalities must review their progress implementing Asset Management (AM) Plans,
  - Document factors preventing AM Plan implementation,
  - Document strategies to address these factors.

Asset Inventory and Condition

$2.07B Replacement Value



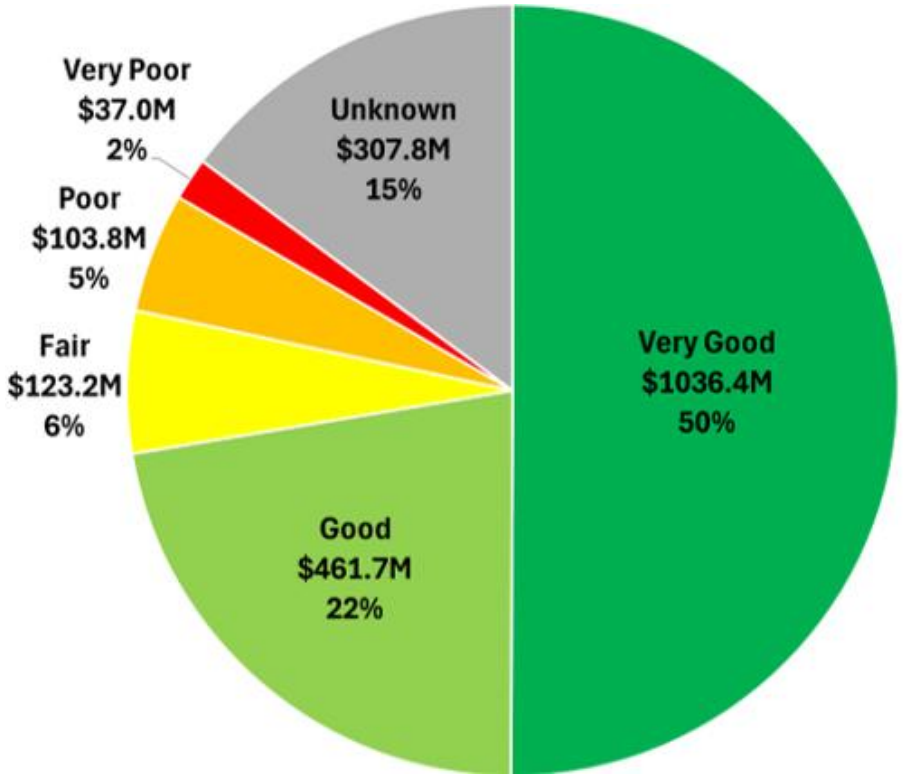
Legend

- Municipal Boundary
- Study Area
- Watercourses
- Stormwater OGS
- Stormwater Facility

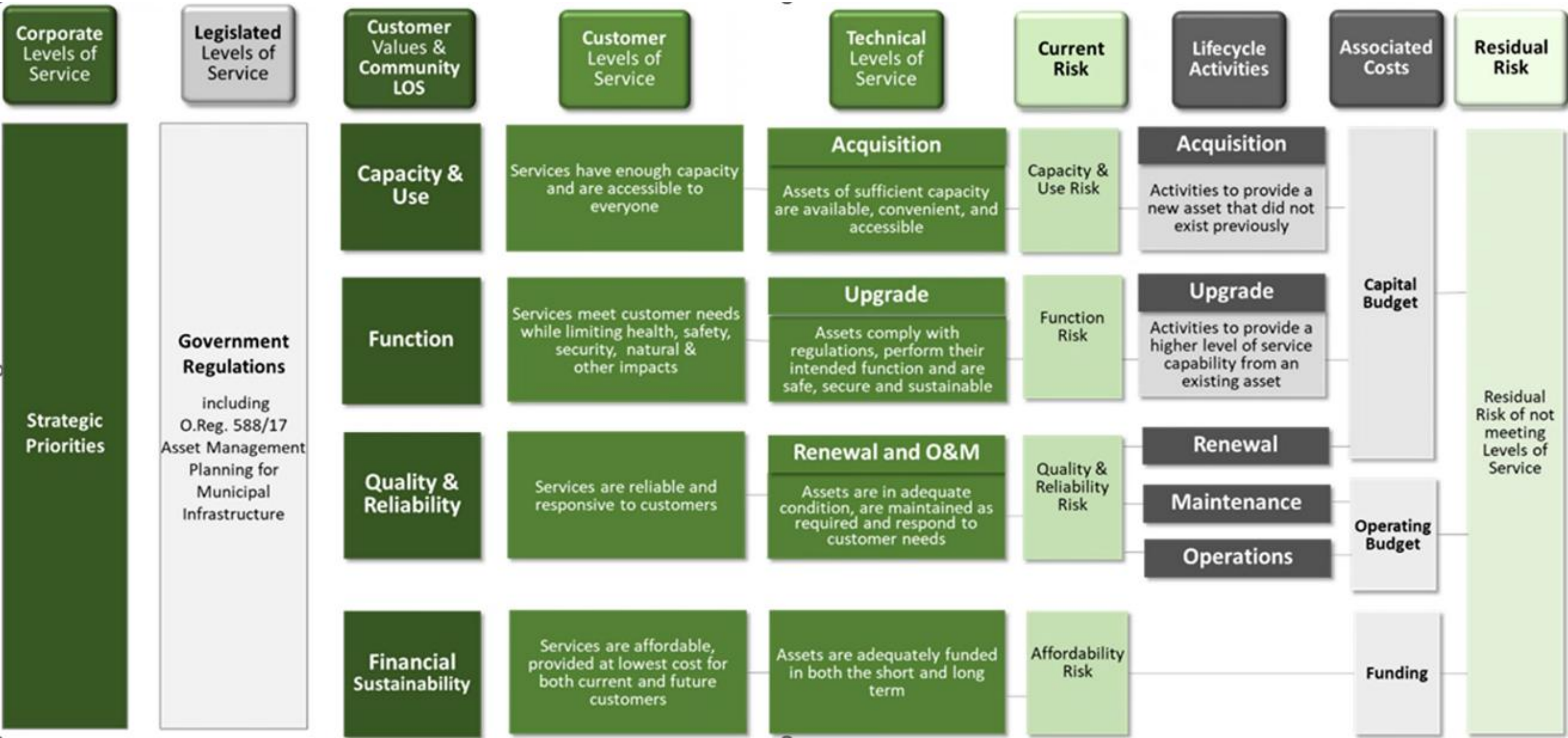
Stormwater Drainage Area

- OGS
- SWM Facility
- SWM Facility/OGS

- 29 subwatersheds
- 810 km storm sewers
- 15,250 maintenance holes
- 12,250 catch basins
- 140 oil-grit separators
- 114 stormwater ponds
- 126 km watercourses



Levels of Service



Natural Assets – Ongoing Discussion

- Current gap – Natural Assets
  - Difficulty quantifying the service level and service delivery capability
    - *Community level of service* examples – mental health, aesthetic, environmental value
      - Qualitative and subjective
      - Annual performance, what key metrics do we want to measure
    - *Technical level of service* – trunk sewer analogy – ability to move water
  - Is it a perception that natural assets don't have a quantifiable level of service?
      - With habitat credits, yes it is absolutely quantifiable - habitat bank
- Habitat credits, proof of concept of the intrinsic value of the creek projects
  - Financial sustainability component – not many assets have a way of generating fiscal value – rather than just keeping costs low, there is actually a fiscal value contribution by the asset (to be confirmed) * third-party banking?

Foundation Check

- Stormwater Utility (2010)
- Asset Management Plan (2013)
- Stormwater Master Plan (2016)
- Grant Funding (DMAF, BFF, etc. +)

Genesis of Watercourse Works

It started with Victoria Park Lake, the "crown jewel" of downtown Kitchener

- $11M Lake Restoration (2011), 70% of cost related to sediment removal
- 1400 ha upstream drainage area incl ~3km of concrete channel that funneled sediment
- Needed to protect investment and ensure longevity of the built solution
- Had to find a low/no maintenance upstream solution to protect the lake
- Identified historic concrete channels as an opportunity to reinstate natural sediment transport and retention function
- Significant co-benefit of creating new fish habitat in a degraded urban environment

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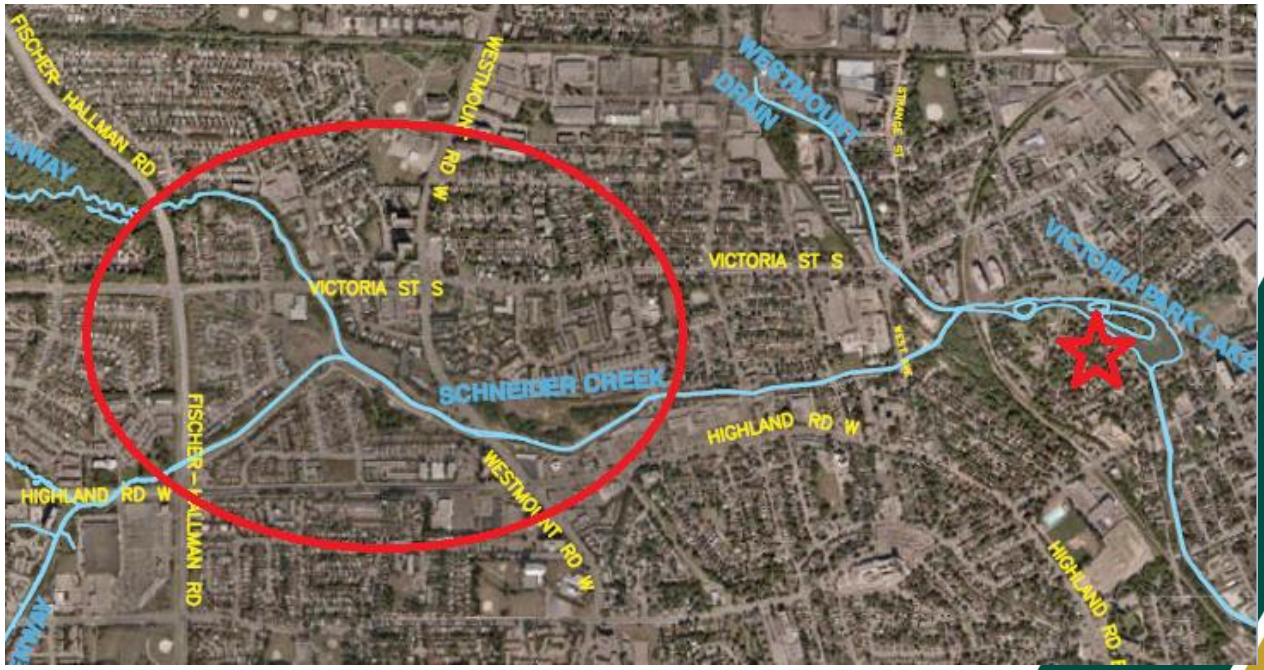
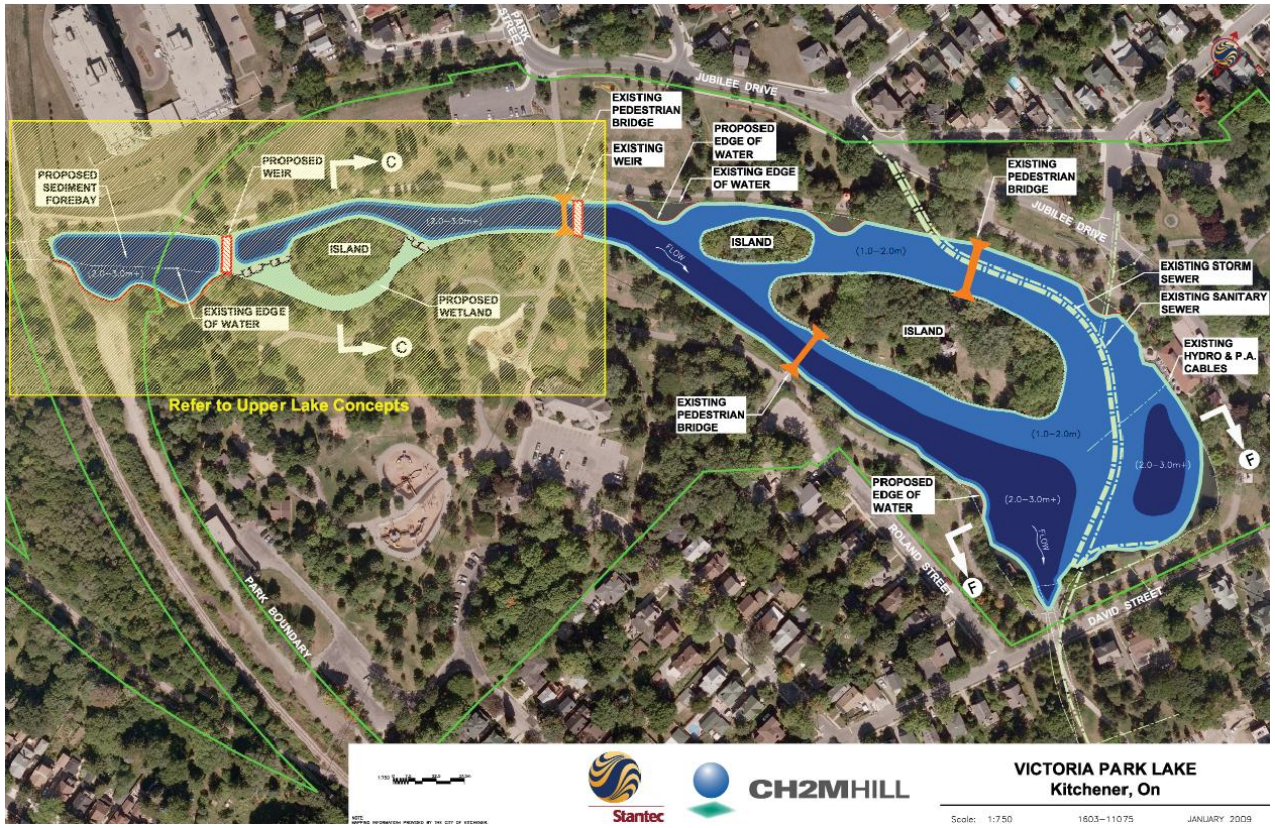
Victoria Park Lake

- Dredged in 1996 and 2011
- New design limits dredging to "forebay" every decade and the whole lake to a 50-year cycle. Significant savings to be realized.

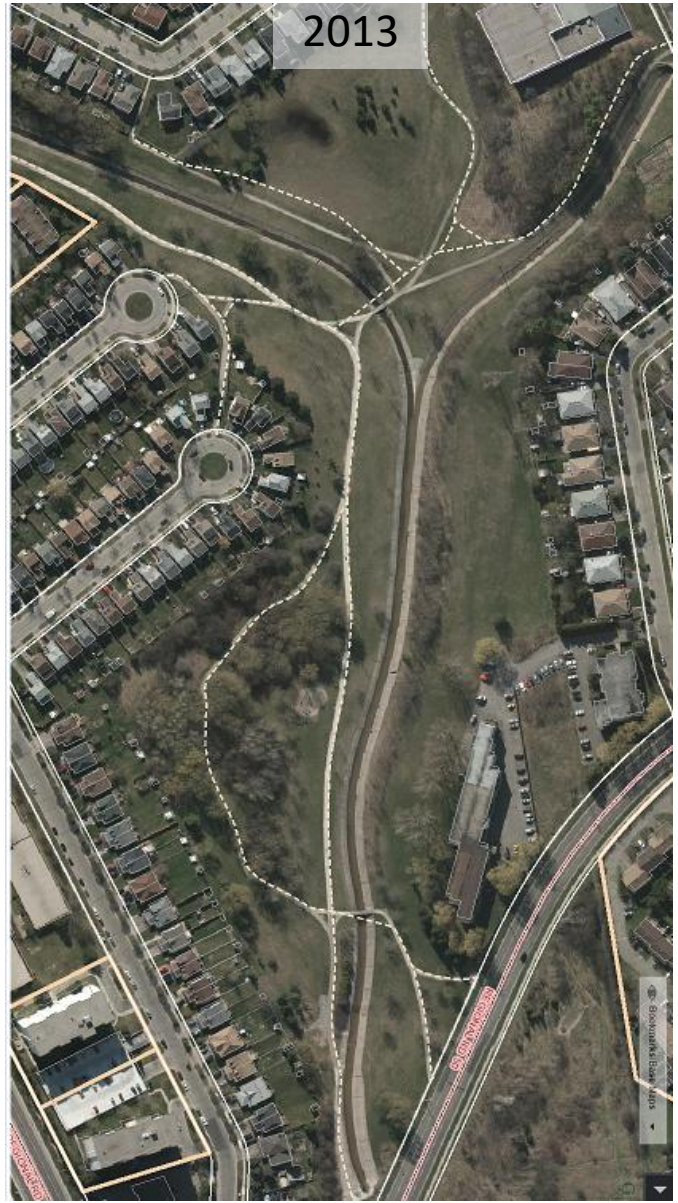


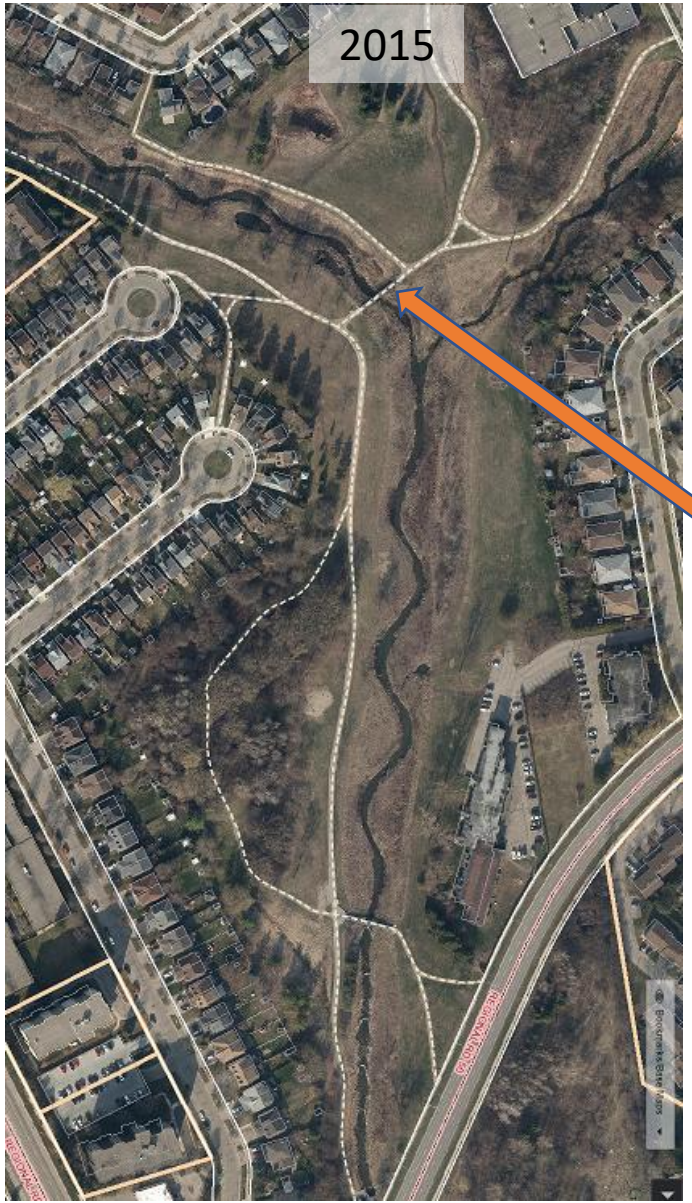


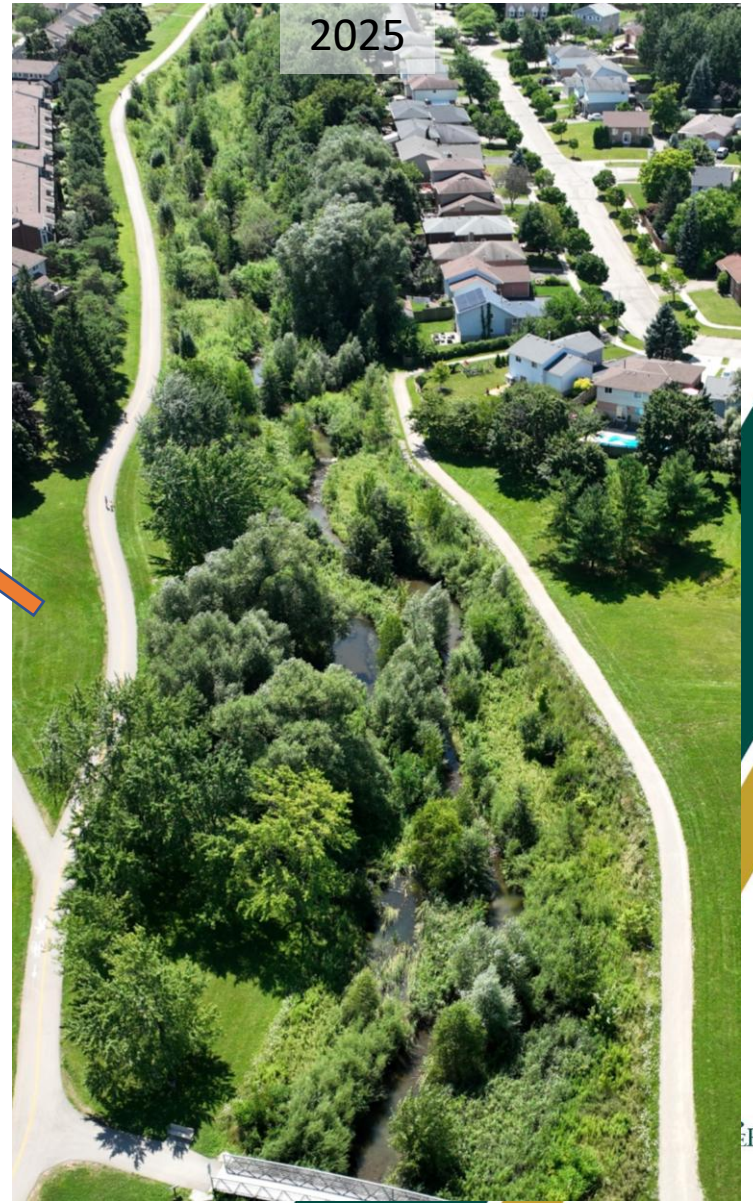
- Upstream concrete channels funnel sediment from uncontrolled urban runoff into the creek and ultimately Victoria Park Lake.
- Implementing creek naturalization as a NbS re-establishes sediment equilibrium.

Filsinger Park – Then and Now

Filsinger Park: Then and Now







Habitat Banking

- Project driver was the protection of the investment in restoring Victoria Park Lake
- The question was asked, “If you’re doing the work anyway, and there’s a chance the DFO will formally recognize it as a net fisheries benefit, why not formalize it?”
- Credit to the original team of Brad Fairley, Heather Amirault at Stantec, the City of Kitchener and DFO for collaboratively working together to formulate the arrangement and start us on this path

What is Fish Habitat Banking?

- Implementation of measures to offset by a proponent (as required for Authorizations), for **their own future use**, in **advance** of applying for an FA authorization
- Fish habitat bank: an amount of fish habitat that has been **restored, enhanced, or created** by the implementation of one or more conservation projects
- Proponents are still responsible for offsetting unavoidable serious harm to fish using appropriate measures
- A fish habitat bank can only be established, managed, and operated according to the **fish habitat bank arrangement**

A fish habitat bank arrangement provides a description of the administration, management, and general operation of the arrangement by the parties, including:

- a procedure for proposing a **conservation project** and an approval process;
- a habitat **credit certification process**;
- a process for **habitat credit evaluation** and any re-evaluation that may be required by the Minister;
- habitat credit **accounting** procedures respecting the habitat credit ledger;
- **progress reports** on the conservation project; and,
- any other relevant matters respecting the administration of the arrangement.

Principles of the arrangement:

1. A proponent may only use their habitat credits **within a pre-defined service area** to offset the adverse effects on fish or fish habitat.
2. Fish habitat bank arrangements are intended to cover **a proponent's habitat bank activities** within a single service area or for several service areas within a province or territory.
3. Proponents **generate fish habitat credits** by undertaking habitat creation, restoration and enhancement activities in advance, then **withdraw** the fish habitat credits against their own adverse effects on fish and fish habitat **at a later date**.
4. Adverse effects on a listed **aquatic species at risk**, or the destruction of any part of its critical habitat or residence requires the consideration of all reasonable alternatives.
5. A fish habitat bank **does not guarantee authorization** of future projects that result in a HADD.

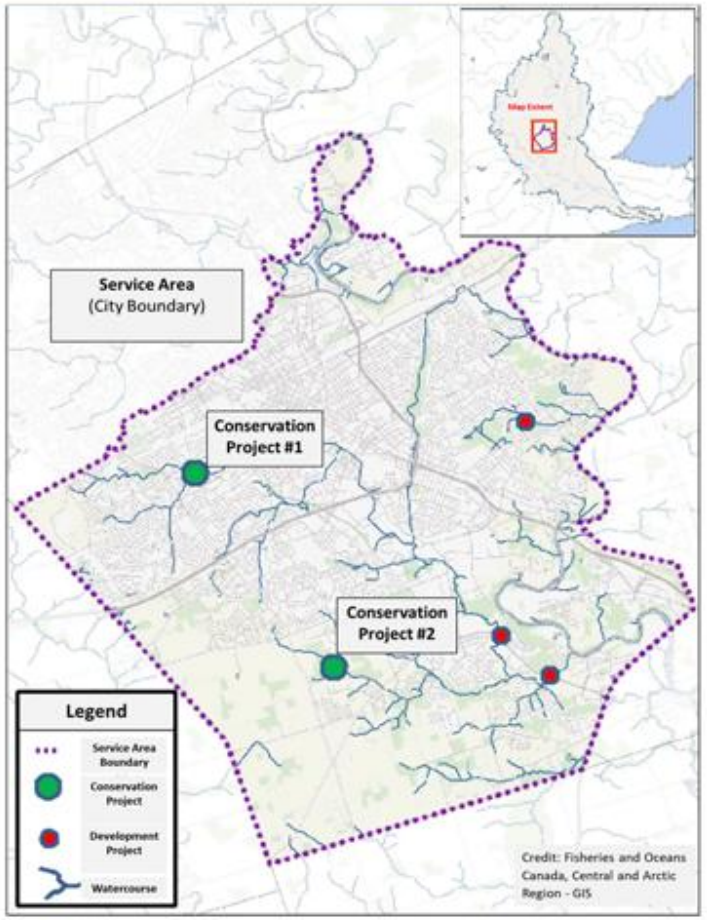
Service Area

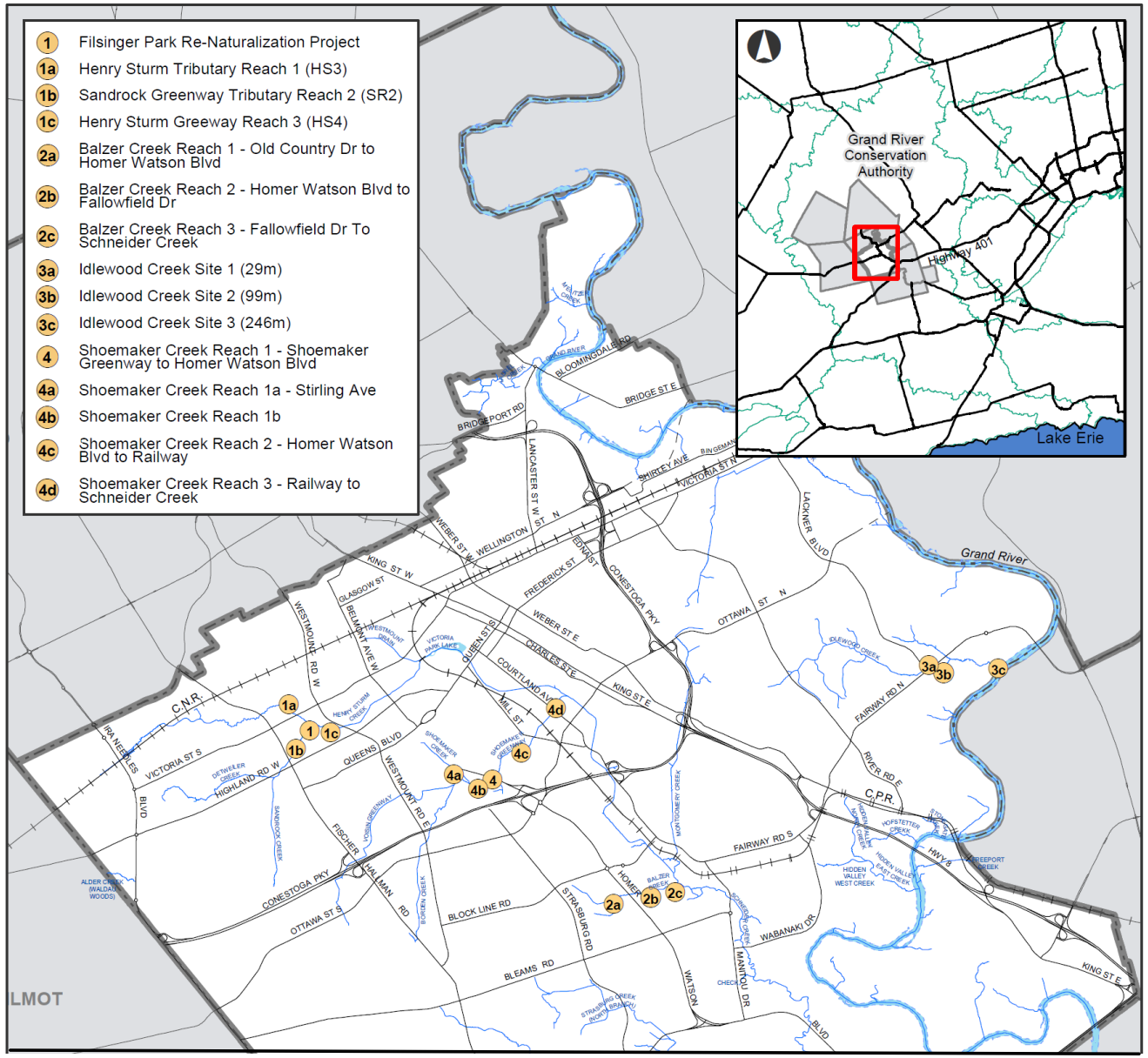
Encompasses the habitat bank's conservation project(s)

Geographical area or boundary

Expectation

Provides appropriate offsetting for the residual adverse effects from future HADDs





Existing Projects

Pending Projects

North Strasburg Creek

- 900m channel naturalization
- Naturally connecting 3 engineered ponds with wetland features
- Upstream of confirmed Brook Trout habitat

Shoemaker/Schneider Confluence

- 900m concrete channel naturalization
- Reshaping of 2-zone floodplain
- Flooding risk mitigation
- Fish passage from Schneider Creek to Shoemaker Creek headwaters in Lakeside Park

Kitchener's Credit Ledger

The currency of the Habitat Bank is **square meters of habitat created, classified by the thermal regime of the watercourse** in which the habitat is created.

Conservation Project Name	Credits (sq.m.)	Cumulative Credits (sq.m.)
Filsinger Park	8,729	8,729
Balzer Creek	536	9,265
Idlewood Creek	4,055	13,320
Shoemaker Creek	2,229	15,349
Strasburg Creek	TBD	TBD
Shoemaker & Schneider Confluence	TBD	TBD

"Credit Value":

- Construction unit cost for Filsinger Park was ~$2,750/m to naturalize the concrete channel.
- Construction estimate for the Shoemaker & Schneider Confluence is looking significantly higher.

* Without being able to access the monetary value of the established credits, we may not be able to do any more of these types of projects and may be forced strictly on a fiscally responsible basis to focus only on hard service delivery (pipes, facilities and legislated requirements).

Montgomery Creek 1960


Montgomery Creek
2024

Montgomery Creek
2024


Visit with Six Nations of the Grand River at Montgomery Creek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Please contact if you have any questions.
Kids
Area
What could
Meadowlane Park
look like in 10 years?
engagekitchener.ca
Coleman
Fourfill
ICE CREAM


NEXT: Schneider & Shoemaker
Creek (SSC) Naturalization

2-Zone Flood Policy Area

- Highest priority subwatershed: 2016 Stormwater Master Plan
- Extensive flood risks for properties immediately adjacent to the two creeks
- Channel constructed in early 1970's
- Infrastructure over 50 years old and in need of attention
- Channel flows through industrial area, but many residential properties nearby
- Area severely lacking green space
- Everything you see here is under ~1.5m of water in a significant storm
- Schedule C Municipal Class Environmental Assessment completed in 2024 to select preferred alternative

Demolition Work Underway

SSC Naturalization: Current

SSC Naturalization: after Phase 1

SSC Naturalization: Future Potential

Thank you!

Questions?

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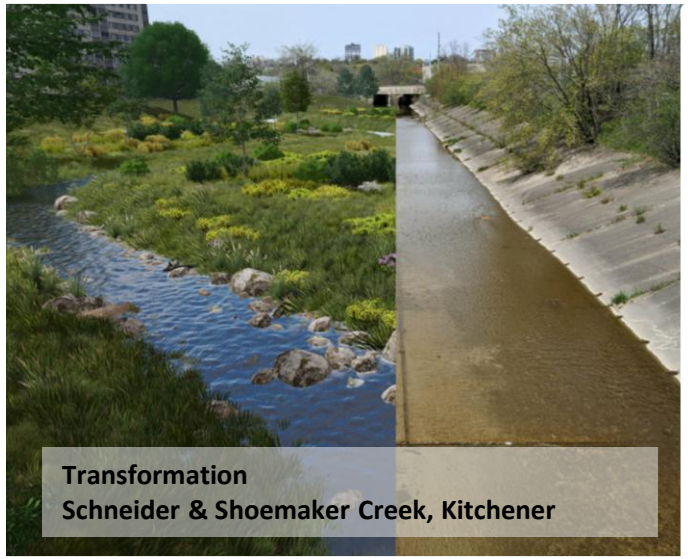
Stormwater Management Facility 65
North Strasburg Creek Re-alignment, Kitchener

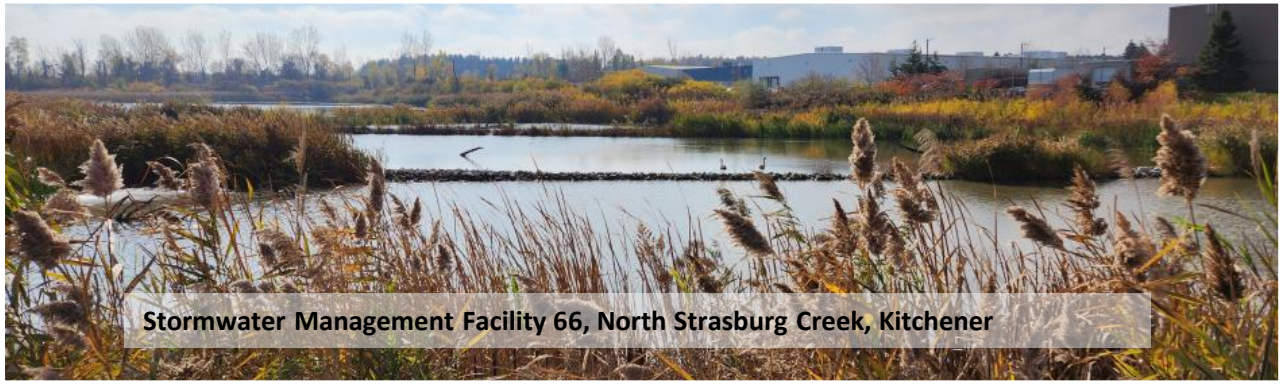


Transformation
Schneider & Shoemaker Creek, Kitchener

Idlewood Creek,
Kitchener

Shoemaker Creek, Kitchener

Seating and Lookout
Montgomery Creek, Kitchener



Stormwater Management Facility 66, North Strasburg Creek, Kitchener

Right's holder - Indigenous Engagement

Priorities

Environmental Assessment Changes