Town of Innisfil Stormwater Management Master Plan and Flooding Strategy

December 13, 2023

Introduction

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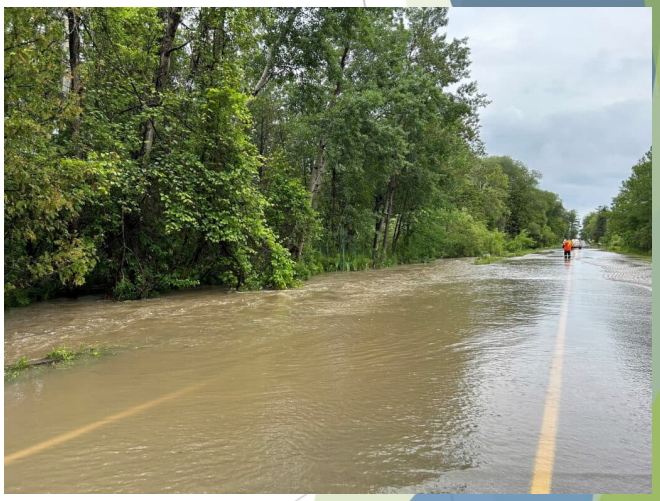
- Innisfil has had a Stormwater Management Master Plan since 2012; it was most recently updated in 2016.
- However, this is the Town's first Flooding Strategy;
  - Flood events occur in Innisfil regularly, causing property damage, reducing access, and causing sharp increases in customer service requests.
  - With climate change, flooding events are expected to become more common and cause more damage.

Introduction

- Recent example -June 27th, 2023 rain event - resulted in:
  - 30 locations where complaints were received from the public about flooding,
  - Staff were able to attend 10 locations on that day putting in place road closures, water pumping, clearing of blocked culverts, etc.
- Some of these were locations where the Town already had work planned (e.g. Belle Aire Creek), but others were not.

Introduction

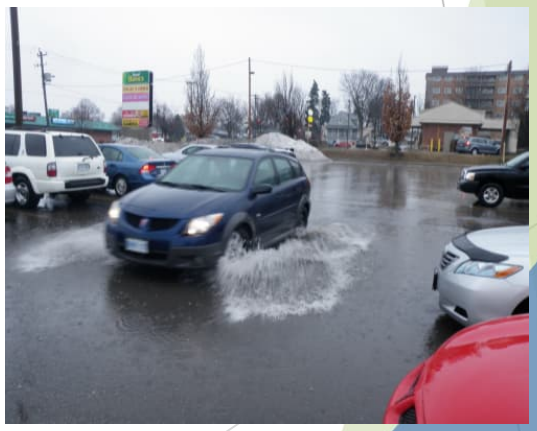
- The new Stormwater Management Master Plan and Flooding Strategy provides actionable, sustainable, and effective stormwater and flooding solutions.
- The new Stormwater Management Master Plan and Flooding Strategy will function as a living document, with recommendations reviewed, updated, and adjusted to address new information, new opportunities, and evolving perspectives.



Study Purpose and Background

Study Problem and Purpose

- Study Problem:
  - Existing land uses and proposed future development result in environmental challenges like flooding, erosion, water quality degradation, and changes to the water balance
- Study Purpose: To develop a long-term planning document which follows the Environmental Assessment Process and:
  - Develop a long-term plan for the effective management of stormwater runoff while improving and maintaining the Town's water resources (Stormwater Management Plan Update)
  - Identify and effectively prioritize areas of concern for flooding and create a plan for cost effective, environmentally sustainable and innovative solutions (Flooding Strategy)



Study Background

- **Stormwater Management Master Plan Update**
  - LSRCA requirement
  - Last completed in two parts (2012 and 2016)
  - Update needed for:
    - Compliance (e.g. CLI-ECA)
    - Accounting for changes since 2016
    - Re-prioritizing projects as needed
    - Support growth, planning, asset management, capital and operating budget development
- **Flooding Strategy**
  - Increased number of flood events due to upstream development and climate change
  - Many creeks and channels in close proximity to private property or are in confined areas

Stormwater Management Recommendations

Pollution Prevention, Operations, and Maintenance

- Pollution Prevention, Municipal Management and Operational Practices are important to prevent pollutants from impacting the environment.
- Continue existing practices:
  - Operation and maintenance of 5 Oil Grit Separator units
  - Curb/gutter and catch basin maintenance
  - SWM sewer system maintenance
  - Bridge and culvert maintenance
  - West Nile virus maintenance
  - Invasive species maintenance
  - Stormwater CCTV inspections
- New recommended practices:
  - LittaTraps annual maintenance
  - Low Impact Development maintenance

LittaTraps in Catchbasin

Source Control

- Source controls fall outside of the Municipal Class EA process
- Recommendations:
  - Develop an Low Impact Development (LID) Policy including:
    - Approvals process for private LIDs
    - LID tracking system for private and public LIDs
    - Protocols for oversight of private property LID features for LID best management practices

Green Roof

Soakaway Pit

Conveyance Infrastructure and Controls

- Expand annual ditch clean-outs
  - 5km urban clean-outs (complaint-based) per year
  - 5km rural clean-outs based on sediment accumulation per year
- Storm sewer capacity
  - Storm sewer model investigation recommended as part of next SWM-MP update
- Implement Low Impact Development (LID) in the road right-of-way
  - Update guidelines
  - Track installation, operations and maintenance

Typical urban ditch

Roadside bioretention facility

Stormwater Management Facilities

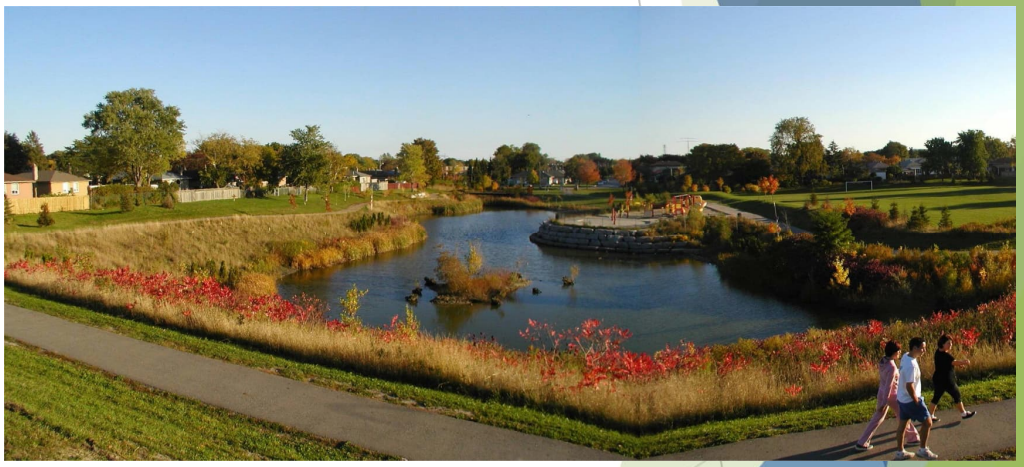
- **Future studies**
  - SWM Facility Quantity Control Level of Service Study
  - Reverse Engineering Missing Design Reports
  - Bathymetric and Topographic Surveys (started in 2020)
- **Sediment removal**
  - Accumulated sediment needs to periodically be removed to ensure long-term operational effectiveness of SWMFs
  - 22 facilities were recommended for sediment removal
- **Retrofits**
  - Examined the design and capability of 38 existing SWM facilities
  - 66% of identified facilities require improvements
  - Recommend retrofitting dry ponds to wet ponds where possible

Pond 4 (Dry Pond) Before

Pond 4 (Wet Pond) After

Stormwater Management Facilities – New Facilities

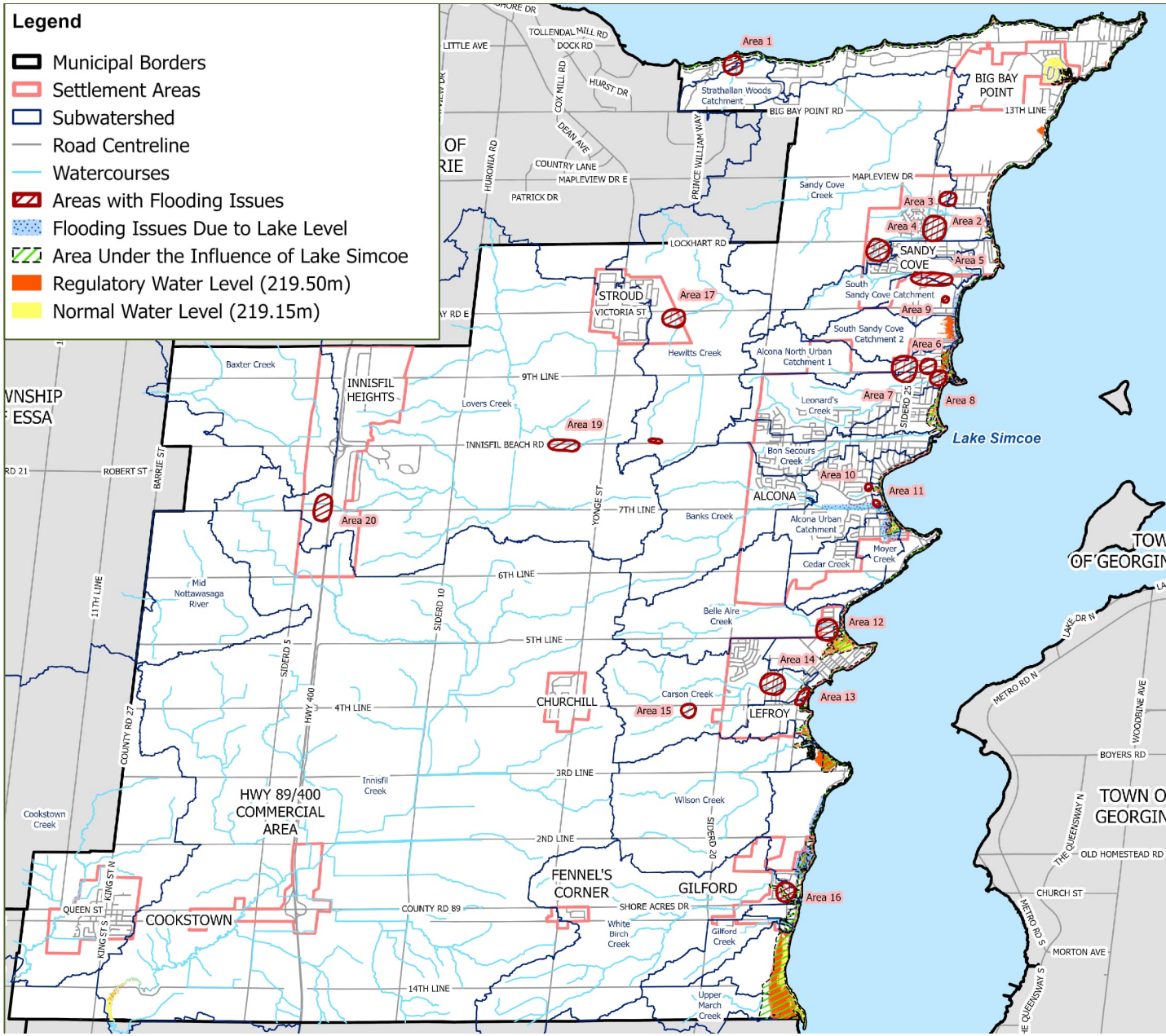
- 33% of the Town's urban area does not have water quality or quantity control
- Three (3) sites in Cookstown, Stroud, and Sandy Cove identified for new surface SWM facilities to improve water quality
  Opportunities for park integration with SWM facilities
- Schedule B project can proceed to design after SWM-MP & FS approved



Flood Mitigation Recommendations

High Flood Risk Locations

- 20 Locations selected based on the below criteria:
  - Flooded properties
  - Flooded buildings
  - Areas with specific interest for future developments
  - Impassable road network and private access
  - Frequency of impact by flooding
- Areas impacted by Lake Simcoe not selected
- Some areas cannot be addressed or cannot be fully addressed

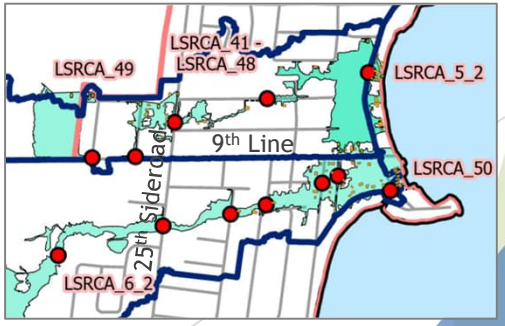


Municipal Drain Works

- New LiDAR identified significant discrepancies for two drains
  - New Section 78 reports recommended for Second Concession Drain and South Innisfil Drain Branch B
- To facilitate flood mitigation works, recommend a Section 4 petition for a new municipal drain branch of 8th Line Drain and Hewitt's Creek Drain
- Abandon Prokopchuk Drain and Roulston Drain
- Continue operations and maintenance activities

Other Flood Control Works and Additional Studies

- **Other Flood Control Works**
  - 116 other culverts require replacement due to capacity (111) or condition (5)
  - 80 culverts not inspected and should be evaluated
  - Flood Control Operations and Maintenance to manage emergency flood response
  - Private Property Drainage Program to investigate and relieve drainage issues not caused by watercourses
- **Additional Studies**
  - Monitoring of select watercourses to calibrate the Visual Otthymo model
  - Complete a rain gauge study and place more rain gauges around the Town
  - Complete local drainage studies
  - Complete a Shoreline Flooding Management Plan for mitigation of flood risks associated with Lake Simcoe



Implementation Considerations

Policy Recommendations

- Individual policy development includes the following:
  - **Work on Private Property Policy** – requirement for permanent easement or ownership of corridor prior to Town completing work on Private Property
  - **Cash-in-Lieu Study** – payment for offsite SWM if onsite requirements not met
  - **Low Impact Development Policy** – approvals, assumption protocols, oversight, O&M, and other guideline updates
  - **Tile Drain Study** – determine local influence of tile drains on flooding and develop policy if appropriate
  - **Lake Simcoe Policies** – coordinate with LSRCA regarding regulated area updates
  - **Managing Future Development in Flood Risk Areas** – screening protocol all new development (subdivisions, site plans, building permits etc.) for Town approvals in all flood risk areas.
    - Where downstream flooding was identified, upstream developments should provide overcontrol with cost-sharing with the Town
  - **Development Engineering Manual and Bylaw Updates** – to account for recommendations from the SWM-MP & FS

Monitoring Plan

- **Recommended Monitoring Plan**
  - Start by establishing baseline monitoring results (existing conditions) using three (3) autosamplers
  - Work up to use of a total of seven (7) autosamplers to be rotated between subwatersheds
  - Rotational water level monitoring in 10 wet stormwater ponds
  - CLI-ECA compliance monitoring
  - Other permit compliance monitoring as directed by the NVCA, LSRCA, MNRF, DFO, or MECP

Total Budget Implications (2024-2041)

	Recommended Approach	Cost Estimate ($ millions)
1	Stormwater Management	$82.70
2	Flood Mitigation	$135.02
3	Implementation	$2.43
4	Staffing	$6.5
	Total	**$226.65**
	Annualized Total	**$12.6**

Average annual allocations in 2024-2026 capital and operating budget = **$3.5 million**
Average Annual Deficit = **$9.1 million**

Stormwater Fee Study Recommendation

- Current stormwater funding allocated from general revenue at approximately $100/year per household
- Projected average annual deficit of $9.1 million to complete recommendations if no other funding available
- Stormwater Fee Study recommended to determine a sustainable funding rate to implement the projects and programs
- Becoming more common in other municipalities

Municipality	Small Residential SWM Fee	Medium Residential SWM Fee	Large Residential SWM Fee
Kitchener	$134.88	$225.12	$295.95
Waterloo	$123.36	$184.68	$252.12
Mississauga	$81.76	$116.80	$140.16

Next Steps

MCEA Closeout

- Master Plan fulfils Phases 1 (problem/opportunity)and 2 (alternative solutions) of the Municipal Class Environmental Assessment (MCEA) process
- For many low-impact projects, this plus public notification at the time of the project will fulfil MCEA obligations
- Higher-impact, more complex projects may require further MCEA studies
- Closeout of the MCEA component requires a 30-day public review period (ends February 21, 2024)

Ongoing Steps

- Make any revisions that come out of the review period
  - If any major changes occur, return to Council for re-adoption
- Incorporate project, policy, and program into Capital Budget and 10-year plan
  - This process includes prioritization and alignment with other master plans and needs assessments
  - Investigate potential funding options (Development Charges, grants) to help offset costs and address the funding shortfall
- Incorporate maintenance and sustainability recommendations into Operating Budget
- Research funding opportunities including a future Stormwater Utility Fee

Thank You

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