

REGULAR COUNCIL AGENDA

C-08/2023 Wednesday, April 19, 2023 9:00 AM Meridian Community Centre - Accursi A and B 100 Meridian Way Fonthill, ON LOS 1E6

The Town of Pelham is holding hybrid meetings of Council and Committee in accordance with Procedure By-law 4507(2022). Public access to meetings will be provided in-person at the location indicated on the agenda, via Livestream: www.youtube.com/townofpelham/live and subsequent publication to the Town's website at www.pelham.ca.

Pages

1. Call to Order and Declaration of Quorum

2. Land Recognition Statement

We begin this meeting by acknowledging the land on which we gather is the traditional territory of the Haudenosaunee and Anishinaabe peoples, many of whom continue to live and work here today. This territory is covered by the Upper Canada Treaties and is within the land protected by the Dish With One Spoon Wampum agreement. Today this gathering place is home to many First Nations, Metis, and Inuit peoples and acknowledging reminds us that our great standard of living is directly related to the resources and friendship of Indigenous people.

3. Approval of the Agenda

- 4. Disclosure of Pecuniary Interests and General Nature Thereof
- 5. Hearing of Presentation, Delegations, Regional Report
 - 5.1 Delegations
 - **5.1.1** Town of Pelham Recreation Master Plan, Monteith 7 186 Brown Planning Consultants

Steve Langlois, Principal Planner

5.1.2 Town of Pelham Drainage Study for the Farr, Webber 187 - 222 and River Road Area, AHYDTECH Geomorphic Ltd.

Timed item: 11:00 am.

Dr. Bahar, Managing Director Glenn Switzer, Senior Engineer

5.1.3 John and Joyce Sonneveld re: Town of Pelham Drainage 223 - 224 Study for the Farr, Webber and River Road Area

Timed item: Following Drainage Consultant at 11:00 am

- 6. Adoption of Council Minutes
 - 6.1 C-07/2023 Regular Council Meeting April 5 2023 225 238
- 7. Request(s) to Lift Consent Agenda Item(s) for Separate Consideration
- 8. Consent Agenda Items to be Considered in Block
 - 8.1 Staff Reports of a Routine Nature for Information or Action
 - 8.1.1 Q1 2023 Fire and By-law Department Quarterly Report, 239 246 2023-0102-Fire Dept
 - 8.1.2 Q1 2023 Public Works Department Quarterly Report, 247 255 2023-0101-Public Works
 - 8.1.3 Q1 2023 Clerk's Office Quarterly Report, 2023-0073- 256 259 Clerks
 - 8.1.4 Q1 2023 Corporate Service Department Quarterly 260 264

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Report, 2023-0051-Corporate Services

- 8.1.5 Q1 2023 RCW Quarterly Report, 2023-0104-Recreation 265 275
- 8.1.6 Q1 2023 Planning and Development Quarterly Report, 276 280 2023-0095-Planning
- 8.2 Action Correspondence of a Routine Nature
- 8.3 Information Correspondence
 - 8.3.1 City of Thorold Thank You Letter to Town of Pelham Fire 281 281 Department
- 9. Consent Agenda Item(s) Lifted for Separate Consideration, if any
- 10. Presentation and Consideration of Reports
 - 10.1 Members of Council Reports
 - 10.1.1 Councillor Olson Welland Pelham Chamber of Commence
 - 10.2 Staff Reports Requiring Action
 - 10.2.1 Drainage Study Farr, River and Webber Road, 2023- 282 453 0097-Planning

Timed item: Following Drainage Consultant and Delegations at 11:00 am

- **10.2.2 Lease Agreement with Fonthill Platform Tennis Club,** 454 463 **2023-0105-Town Solicitor**
- **10.2.3** Pelham Summerfest 2023, 2023-0098-Recreation 464 471
- 10.2.4 2023 Review of Delegation of Powers and Duties 472 491 Administrative Authority By-Law Update , 2023-0093-Clerks
- 10.2.52023 Updated Code of Conduct for Elected and492 519Appointed Officials, 2023-0099-Clerks

- 10.2.6 Sidewalk Patio Encroachment Policy Update and New 520 531 Approval Framework for Temporary Outdoor Patios, 2023-0094-Clerks
- 11. Unfinished Business
- 12. New Business

13. Presentation and Consideration of By-Laws532 - 543

1. By-law 26-2023 - Being a By-law to amend Zoning By-law 4481(2022), as amended, for lands located south of Port Robinson Road, east of Stella Street and west of the Steve Bauer Trail, legally described as Part of Lot 173, Geographic Township of Thorold, Now in the Town of Pelham, Regional Municipality of Niagara, from the Residential One (R1) and Environmental Protection (EP1) Zones to the site specific Residential Two – 156 (R2-156), Environmental Protection 1 (EP1) and Open Space (OS) zones. File No. AM-03-2020.

2. By-law 27-2023 - Being a By-law to Authorize the Execution of a Lease Agreement with Fonthill Platform Tennis Club for the lands and clubhouse facility at 1120 Haist Street.

14. Motions and Notices of Motion

14.1 Councillor Olson

Mover: Councillor Olson

Seconder: Councillor Hildebrandt

WHEREAS the Town of Pelham supports local businesses and the local economy which contribute to community development and growth;

AND WHEREAS emerging from the COVID-19 pandemic, supporting business resilience and growth is critical for Ontario's economic recovery;

AND WHEREAS businesses are still facing challenges in repaying funding received from repayable government support programs and navigating business operation in the absence of support programs; AND WHEREAS the special exemption provided by Council on June 15, 2020, to waive a maximum of six (6) parking space requirements for restaurants to operate pop-up parking lot patios was initially to provide relief to those businesses facing occupancy restrictions during the COVID-19 pandemic in 2020;

AND WHEREAS the permission of temporary pop-up restaurant patios situated in parking lots does not comply with the Town Zoning By-law;

AND WHEREAS Council provided two extensions to the special exemptions to permit temporary pop-up restaurant patios in parking lots in 2021 and 2022;

AND WHEREAS Council deems the economic recovery of restaurants and mobile food services to be still impacted by poor economic conditions;

NOW THEREFORE BE IT RESOLVED THAT Council for the Town of Pelham permit the temporary waiving of a maximum of six (6) parking spaces for restaurants to allow 'pop-up' parking lot patios for the remainder of 2023;

AND THAT food trucks/refreshment vehicles be and are hereby permitted to operate within the Specialty Agricultural and Agricultural Zones for the remainder of 2023, pending the acquisition of an Itinerant Sellers Licence.

15. Resolution to Move In Camera

BE IT RESOLVED THAT the next portion of the meeting be closed to the public in order to consider a matter under Section 239 (2) of the *Municipal Act*, as follows:

 (b) - personal matters about an identifiable individual, including municipal employees and (d) - labour relations or employee
 negotiations - 1 item (Consideration of Appointments to Advisory Committees)

16. Rise From In Camera

17. Appointments to Advisory Committees

18. Confirming By-Law

19. Adjournment



Draft Master Plan

Presentation to Town Council

April 19, 2023







Master Plan Overview

The Town of Pelham **Recreation, Culture and Parks Master Plan** will guide the provision of leisure, recreation and culture services, programs, facilities and park amenities for the next ten years.





Master Plan Overview

The Master Plan:

- serves as a guide for the municipality
- will be used to inform budgeting and long-term planning
- provides the community with a voice in shaping Pelham's future
- supports the Town in becoming "grantready"
- is a living document adaptable to changing trends, values, and growth





Building Blocks

Public and Stakeholder Input (to date)

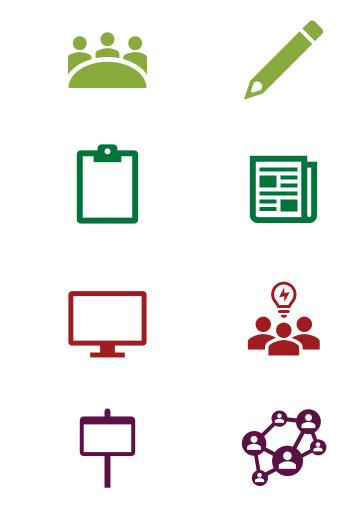
- Community survey 414 unique responses
- Stakeholder consultation 10 organizations
- Public input opportunities via pop-up consultation, project website, 2023 budget

Demographics and Community Growth

Participation and Sector Trends

Asset Inventories and Distribution

Supporting Documents and Initiatives (e.g., Strategic Plan, Official Plan, etc.)





Participation in Pelham

% of Households Participating since 2019; Source: Community Survey

Walking or Hiking for Leisure 71% Special Events in Parks 47% Cycling 43% Fitness, Yoga or Weight-training 42% Use of Playground Equipment 42% Swimming (recreational) 34% Hockey, Figure Skating, or Ice Sports (indoor) 30% Use of Splash Pad 30% Canoeing, Rowing, Kayaking or Paddleboarding 29% Soccer 26% Visiting a Theatre, Art Gallery or Museum 26% Running or Jogging 25% Dog Walking (off-leash park) 24% Swimming (lessons, aquafit, or training) 23% Basketball 18% Hockey, Figure Skating, or Ice Sports (outdoor) 17% Baseball or Softball 16% Town of Pelham Arts and Cultural Programs 16% Town of Pelham Recreation Programs or Camps 16% Use of Outdoor Fitness Equipment 15% BMX or Mountain Biking 14% Skateboarding or Scootering 14% Tennis 13% Volleyball (indoor) 11% Volleyball (beach) 11% Pickleball 9% 5% Football, Rugby or Field Lacrosse Disc Golf / Frisbee Golf 4% 4% Platform Tennis Lacrosse (box – indoor) 3% None of the above 3% Other (please specify) 11%



Support for Municipal Spending

Source: Community Survey

Nature Tra Park Washroor Fitness and Wellness Space Playgroun Paved Tra Parks for Special Even Space for Older Adul Swimming Pools (indoo Soccer and Multi-use Fiel Gymnasiur Outdoor Ice Rin Community Vegetable Garder Splash Pa Swimming Pools (outdoo Basketball Courts (outdoo Fitness Equipment (outdoo Performing Arts Space Aren Baseball or Softball Diamon Art Centres or Galleri Tennis Courts (outdoo BMX or Bike Par Off-Leash Dog Par Skateboard Par Beach Volleyball Cou Pickleball Courts (outdoo Disc Golf / Frisbee Go Other High Priorities (please specified

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rks	43%	
rks	42%	
irts	40%	
or)	33%	
Golf	24%	
ify)	40%	
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Demographics & Growth





2021: 18,192 residents (Census)

2031: 21,560 residents (projected), 16% growth

Projected housing growth (2018-2028): Fonthill (~70%) Fenwick (~25%) Rural (~5%)

Age Cohorts: The number of **seniors** (ages 70+) grew by 48% between 2011 and 2021 and is forecasted to increase 38% by 2031 across Niagara Region



Broad Trends & Considerations

- Popularity of Unstructured, Self-Directed, Outdoor Activities
- Emerging Recreational Activities and Evolving Arts & Culture Interests
- Pandemic Impacts on Sport, Programming and Resourcing
- Affordability, Accessibility & Equity
- Keeping Pace with Parkland Needs
- Environmental Design and Climate Change
- Multi-Use Spaces and Community Hubs
- Addressing Aging Infrastructure
- Declining Volunteerism
- The Necessity of Partnerships
- Data, Technology and Digital Transformation



Proposed Vision

"We facilitate fun, connect the community and enable participation by all."

Recreation, Culture and Parks Master Plan | Town of Pelham

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Master Plan Goals

- 1) Respond to Growth
- 2) Expand Activity Choices
- 3) Optimize our Facilities and Parks
- 4) Enhance Service & Capacity
- 5) Ensure Financial Sustainability



Achieving our Vision...



Recreation

Culture

Parks



Recreation Services & Programs Selected Recommendations





- Complete a review of program availability, capacity, and utilization
- Develop a Special Events Policy
- Create an Internal Staff Team to address increasing participation by marginalized populations
- Identify RCW's levels of service and corresponding policy, process, and resource requirements

Recreation & Park Facilities Selected Recommendations

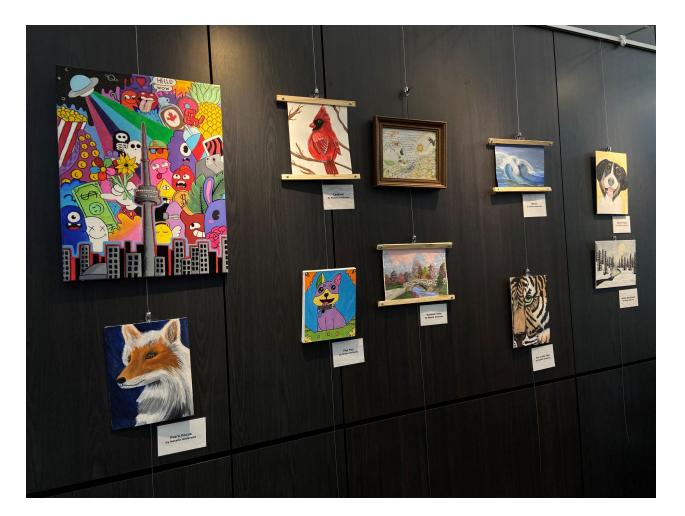




- Develop formalized operating plans for the Meridian Community Centre (KPMG Report)
- Seek out spaces in schools and other locations for additional programming
- Employ a variety of strategies to address soccer field needs (new field at Centennial Park, access to schools, conversion of softball diamond at Harold Black Park, etc.)
- Develop a multi-sport pad and pavilion at North Pelham Park
- Continue with plans to redevelop the Pelham Public Pool

Arts & Culture Selected Recommendations





- Review and update the 2013 Cultural Master Plan
- Examine opportunities for public art within all park and public space capital projects, as well as and temporary pop-up projects in underutilized civic spaces
- Seek opportunities to expand arts programming local partners

Parkland & Trails Selected Recommendations





- Maintain a minimum town-wide parkland provision rate of 2.2 hectares per 1,000 residents – secure 8 additional hectares by 2031
- Seek to secure a larger community park (3+ ha) to serve the Fonthill community; prepare a parkland acquisition strategy
- Update the Official Plan and Parkland Dedication Bylaw to align with Bill 23
- Develop a new organizational structure for management responsibilities of RCW and Public Works (KPMG Report)

Parkland & Trails Selected Recommendations



Park	Examples of Possible Improvements
Centennial Park	 Upgrade the washrooms (barrier-free) to improve service to the splash pad, playground and sports fields; full renovation or replacement of support building may be required, potentially as part of the proposed Fenwick Lions hall redevelopment Addition of 3rd full-size lighted soccer field at the rear (as identified in the 2003 Centennial Park Master Plan) Establish a support building (washrooms, storage) to serve the soccer complex in partnership with Pelham Soccer Club In the longer-term, establish a parks depot (building and works yard) to improve on-site maintenance and create efficiencies Improve parking in coordination with other park improvements, including consideration of secondary exit (through the firehall property) during special events
Marlene Stewart Streit Park	 Upgrade the washrooms (barrier-free) to improve service to the splash pad, playground and pool Replace outdoor pool (grant funding) by 2025/26 Expand parking, to degree possible Enhance safe access to site from Highway 20 – consider establishing egress roadway exiting to Elm Street
North Pelham Park	 Redevelop tennis court / basketball pad as a multi-use court for basketball and ball hockey Add a small pavilion Upgrades to Diamond 1 (fencing, dugouts, bleachers)
Rolling Meadows Park (former arena site)	 Connect platform tennis clubhouse to municipal water and address parking issues (will be resolved as adjacent residential lands are developed) Prepare a concept plan to guide the redevelopment of the former soccer field into alternative uses
Harold Black Park	 Improve soccer field drainage to degree possible Upgrade the washrooms (barrier-free) to improve service and universal accessibility Convert softball diamond to lit full size soccer field Relocate the play structure to a more accessible and prominent location in the park Add lights to hardball diamond if needed
Civic Square Project	 Prepare architectural designs to support future funding opportunities, grant applications, and the development of the Civic Square planned at the northeast corner of Meridian and Wellspring Way, across from the Meridian Community Centre

Implementation Strategy



The Draft Master Plan contains **59 recommendations**.

- Priority and timing have been identified for each
- They are supported by background research and consultation
- Many involve policies and practices (identified by the Framework for Recreation in Canada audit)
- Most do not have direct cost implications



Next Steps



- 1. The draft Master Plan will be posted on the **project website**
- We will host a **public open** house to gather feedback on the plan
- 3. We will return to **Council** to seek project approval





Thank you!

mbpc **Monteith** • Brown

planning consultants







DRAFT

Recreation, Culture & Parks Master Plan

April 2023











X



Recreation, Culture & Parks Master Plan

April 2023

Prepared by:







Acknowledgements

The Recreation, Culture & Parks Master Plan has been created with the assistance of hundreds of individuals whose diverse range of interests and viewpoints have helped to shape this important document. We wish to thank all members of the community that have contributed their time and input through the consultation process, as well as members of Town Council and Staff that provided critical oversight during the process. Your collective efforts are appreciated and we hope that the Master Plan results in meaningful change through continued enhancement of the facilities serving the parks and recreational needs of Pelham residents for years to come.

Town of Pelham Council (2022-26)

Mayor Marvin Junkin Councillor Kevin Ker (Ward 1) Councillor Wayne Olson (Ward 1) Councillor Brian Eckhardt (Ward 2) Councillor John Wink (Ward 2) Councillor Bob Hildebrandt (Ward 3) Councillor Shellee Niznik (Ward 3) Regional Councillor Diana Huson

Master Plan Steering Committee

Vickie vanRavenswaay – Director of Recreation, Culture and Wellness Halee Braun – Recreation Facilities Coordinator Brianna Harford – Administrative Assistant Brittany MacLeod – Active Living Programmer / Seniors Centre Lauren Phillips – Culture and Community Enhancement Programmer Bryan Secord – Supervisor of Recreational Programs and Facilities Jodi Shishkov – Special Events and Festivals Programmer

Project Consultants

Monteith Brown Planning Consultants Ltd. Tucker-Reid & Associates Wickens Greenspace Consultants

Land Acknowledgement

We acknowledge that the land on which the Town of Pelham is situated is the traditional territory of the Haudenosaunee and Anishinaabe peoples. This territory is covered by the Upper Canada Treaties and is within the land protected by the Dish With One Spoon Wampum agreement. Today this land is home to many First Nations, Metis, and Inuit peoples and acknowledging this reminds us that our great standard of living is directly related to the resources and friendship of Indigenous peoples.

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1. Introduction



1.1 Master Plan Overview

This Recreation, Culture and Parks Master Plan provides Town Council, Staff, community stakeholders and the public with meaningful guidance through a ten-year (2023-2032) outlook for municipal recreation, culture and parks facilities and services. In doing so, the Master Plan provides a long-range vision, strategic direction, and coordinated guidance for decision-making in areas vital to the local quality of life and identity.

The scope of the Master Plan includes:

- Indoor recreation facilities, such as arenas, gymnasiums and program space;
- Outdoor recreation facilities, such as sports fields and courts, playgrounds, and pools;
- Arts and cultural opportunities, such as special events and cultural appreciation;
- Parks and open spaces, including parkland acquisition and design; and
- Programs and service delivery, such as activities, policies, best practices and partnerships (note: the department's organizational structure and staffing levels are addressed in the Recreation, Culture and Wellness Organizational Review completed by KPMG in 2023).

This is the Town's first comprehensive plan for recreation, culture and parks. The Plan responds to several evolving characteristics in the town, such as:

- community needs and expectations;
- demographics, growth and urban structure;
- participation trends (including those influenced by the pandemic); and
- legislative and policy frameworks.

To address these and other factors, the Master Plan follows an approach that is communitydriven and responsive to current and future needs, with the goal of ensuring that the Town is positioned to be active and healthy, environmentally sustainable, culturally vibrant, economically strong, and engaged with residents and tourists.

1.2 Benefits of Recreation, Culture & Parks

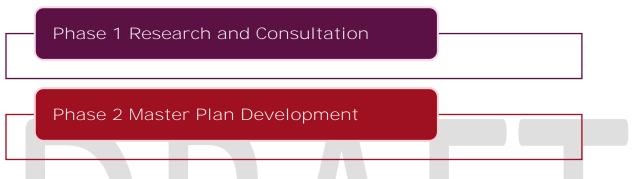
The Town of Pelham's recreation, culture and parks collectively contribute to the well-being of residents and to the municipality as a whole. The facilities and programs related to these community services provide Pelham's residents with several economic, environmental, health, psychological and physical benefits. These community services offer participants the benefits of a healthy lifestyle through physical and social opportunities, contributing to a vibrant community.

There is plentiful support for recreation, culture and parks at local, provincial and national levels. Supporting charters consist of Parks for All, the Framework for Recreation in Canada, and the Ontario Culture Strategy. This Recreation, Culture and Parks Master Plan (herein **referred to as "The Master Plan") identifies the Town's high**-level needs and priorities. This Master Plan will help the Town and its community partners provide for the needed programming and servicing for recreation, culture and parks to engage participants in meaningful physical and social opportunities.

1.3 Project Methodology

This Recreation, Culture and Parks Master Plan project began in the summer of 2022. A team led by Monteith Brown Planning Consultants Ltd. was retained to direct the development of this study with assistance and oversight from a Town Staff project team. The **Master Plan's** process entails two phases to achieve a community responsiveness plan, guided by a terms of reference prepared by the Town.





Phase 1 of the Master Plan consisted of addressing the current state and providing analysis, conducting public & stakeholder consultation through a variety of community engagement tactics, and identifying key findings & strategic direction.

Phase 2 builds upon the initial phase by developing a needs assessment & gap analysis. Recommendations were developed around key priorities. The Draft Master Plan was released for public review and comment prior to finalization.

2. Community Context



Meridian

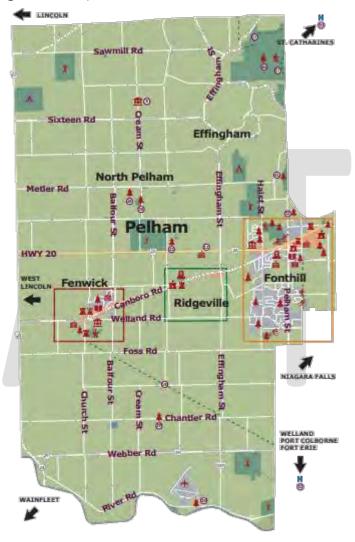
This section provides an overview of the Town of Pelham's community context, including a look at recreation, culture and park influences such as historical and trajectory of population growth, age cohorts, income, education, immigration, diversity and language.

2.1 About Pelham

The Town of Pelham is centrally located in Niagara Region and supports a population of 18,192 residents. The Town is comprised of a mixed rural and urban land structure, represented by the communities of Effingham, Fenwick, Fonthill, North Pelham and Ridgeville. The kame and topography in Pelham represent higher elevation throughout North Fonthill and east of Fenwick.

Both Pelham and Niagara Region are above the provincial and national growth rate, reflecting a need to align recreation, culture and park servicing with local demand. It is essential that the Master Plan demonstrates a comprehensive understanding of the community's context to effectively guide the Town in optimizing services and encouraging high levels of engagement. This section provides an extensive overview of the corporate frameworks, current trends, a demographic profile and population growth that represents the community.

Pelham has a large representation of seniors and its median age increased to 50.4 years in 2021. The community is a renowned retirement destination and has Figure 2: Map of the Town of Pelham



seen high levels of migration from other regions, which contributes to Pelham's aging population. Increasingly, however, the town is also beginning to attract younger families due to its high quality of life and growing housing options.

The Town supports a diversifying community profile and is a contributor to the vast growth occurring in Niagara Region. The Town's main areas of population growth and intensification consist of Fenwick and Fonthill, supported by the Regional and Town Official Plans, secondary plans, and provincial policy. The Town's diverse changes in its growing population are represented by different abilities, ages, cultural backgrounds, employment and incomes.

To ensure a locally-responsive approach, this Master Plan aligns with existing frameworks and prioritizes **the recreation, culture and park demands of Pelham's current and forecasted** demographic profile.

2.2 Recreation, Culture & Parks in Pelham

The Town's Recreation, Culture and Wellness (RCW) and Public Works Departments deliver recreation, culture, and parks services in Pelham. The RCW Department's non-unionized staff team provides and facilitates much of the programming within municipal facilities, while also maintaining indoor and outdoor sports facilities (i.e., field lines, sport amenities). The Public Works Department's unionized staff are responsible for a broader range of service items within parks (i.e., grass cutting, irrigation, trimming), in addition to maintaining the Town's roads/transportation system, water/wastewater system, fleet, facilities, etc.

The Town of Pelham has several facilities and parks that service individual users, organized programs and public events. Major municipal facilities and parks in Pelham include:

- Meridian Community Centre, which is a multi-use community hub consisting of two gymnasiums, two ice pads, walking track, **the Senior's Active Living Centre**, multi-purpose rooms, and more;
- Peace Park, a primary outdoor event venue in Pelham that contains a bandshell and hosts the farmers market, supper market and concerts on Thursday nights in the summertime;
- Centennial Park, which contains many of the town's sports fields and sport courts, as well as a new splash pad;
- Marlene Stewart Streit Park, home to the town's municipal outdoor pool, skateboard park, and new splash pad;
- North Pelham Park, located in the town's rural area and serving as a popular destination for baseball activities; and
- Harold Black Park, which provides several sports fields serving the Fonthill and broader community.

The Town provides a variety of programs for children, youth, adult and senior groups, often in partnership with volunteers and other providers. The Town takes pride in its ability to create positive and memorable experiences for residents and opportunities for them to connect and develop friendships. Services for all age groups continues to keep older members engaged with the community and support-life long relationships. The Town has adopted a strengths-based service provision model whereby the provider that is best suited to deliver a service takes the lead, with support from others. In many cases, the Town of Pelham is a direct service provider (e.g., camps, outdoor aquatics, registered and drop-in programming, major events, etc.), while other groups are responsible for rounding out the leisure offerings (e.g., minor sports, seniors programming, etc.). To ensure accessible and optimal service delivery, community input for programming is frequently collected and quarterly measurements and feedback are presented to the Town Council.

As the town grows, maintaining an active and engaged community remains central to **Pelham's identity. A comprehensive planning approach to recreation, cult**ure and parks will **continue to promote this and other local values, including the Town's strong reputation for** event hosting and community partnerships.

2.3 Recent Accomplishments

The Town of Pelham is well-known for delivering high quality and responsive recreation, culture and parks services to its residents. The Town's facilities, parks and special events are a major contributor the local quality of life for people of all ages. Pelham's small-town atmosphere is personified in its approach to customer service, while the community's ability to deliver a wide range of programs and events extends beyond the level of service seen in most communities of similar size.

The local hub for community and recreation activities is the 143,000 square foot Meridian Community Centre (MCC), which opened in late 2018. The MCC is **the Town's only** recreation centre and its many activity spaces makes it a true destination for residents and visitors. Notably, the centre is recognized as a Seniors Active Living Centre and its ice pads and gymnasiums are heavily used by local and regional sports teams. The facility contains:

- Two NHL sized arenas
- Two full-size gymnasiums
- Multi-purpose community rooms
- Indoor walking/running track
- Concession areas
- Change rooms & washrooms
- Atrium/lobby area
- Art displays
- Offices for the Recreation, Culture & Wellness Department

From a wide range of special events to age-**specific programs, the Town's recreation** services are progressive and responsive to community needs. For example, the Town provides camps for children and youth (including specialty camps, often in partnership with others), a wide range of swimming programming at the Pelham Community Swimming Pool, and drop-in programming at the Meridian Community Centre gyms and arenas (skating, pickleball, fitness, etc.). All ages from children to seniors are afforded opportunities to stay active. In addition, the Town is well known for its extensive special event programming, which includes (but is not limited to) Summerfest, Summer Chill Series, Canada Day, National Day for Truth and Reconciliation, and several other holiday events.

Furthermore, the Town has been very successful in recent years in securing senior government grants to support new and improved capital infrastructure, particularly within its parks system. Some of the more significant capital grants are identified in the table below.

Table 1 - Recent To	wn of Pelham Recreat	tion, Culture and Parks I	nvestments
	Will of I officially recorded		11000011101110

Location	Funding
Centennial Park	In 2022, the Town opened a new splash pad at Centennial Park in Fenwick. About one-third of the costs were provided through the Investing in Canada Plan (ICIP) and the COVID-19 Resilience Stream supported by the provincial and federal governments.
	The Town also received support through the Canada Community Revitalization Fund to assist with the revitalization of tennis courts in 2022. Another grant was received to install a batting cate in 2023.
	Additionally, funding was provided by the Government of Ontario's Community Building Fund to transform the Centennial Park multi- purpose court into a basketball and ball hockey court with the addition of six new dedicated pickleball courts in 2022.
Peace Park	In 2022, the Town received support from the Federal Economic Development Agency for Southern Ontario's Canada Community Revitalization Fund to support the addition of accessible washrooms and a community room adjacent to Peace Park.
Marlene Stewart Streit Park	In 2022, the Town opened a splash pad and pavilion with grant funding from the ICIP program. Additional grant funding is allocated to the replacement of the outdoor pool in 2026. Provincial and Federal funding total \$2.3 million, covering 73.33% of the project.
	Additionally, in 2014 the award-winning Isaac Riehl Memorial Skatepark was opened through generous community donations and the Aviva Community Fund.
Steve Bauer Trail	Pelham received a grant of just over \$75,000 through the Ontario Municipal Commuter Cycling (OMCC) grant program and \$21,250 through the 2021 Canada Summer Games that contributed to the paving of Steve Bauer Trail between Line Avenue and Port Robinson Road in 2020. This has improved cycling and walking connections with the neighbouring municipalities of Welland and Thorold, and provides linkages to the Meridian Community Centre, East Fonthill and Niagara College.

2.4 Existing Corporate Frameworks & Relevant Studies

The Town of Pelham is supported by corporate frameworks consisting of municipal and regional legislations and studies. These **assess the Town's planning approach** and guide the provision and service delivery of recreation, culture and parks in the community. Key documents are summarized in Appendix B, with a focus on those with relevance to recreation, culture and parks. The list includes:

- Strategic Plan (revised 2021-2022); a new Strategic Plan will be prepared in 2023
- Official Plan (2014)
- Recreation, Culture and Wellness Organizational Review (2023)
- Active Transportation Plan & Implementation Strategy (2016)
- Corporate Climate Change Adaptation Plan (2021)
- Cultural Master Plan (2013)

- Facilities Feasibility Study (2008)
- Heritage Master Plan (2012)
- Public Art Master Plan (2016)

2.5 Trends in Participation & Provision

This section identifies trends that are influencing the demand for and delivery of parks and recreation services in Canadian municipalities. Some of these trends have emerged as a result of the COVID-19 pandemic, while others have been affecting service provision for several years. We firmly believe that long-term planning and strategic investment are vital to support the significant role that the parks and recreation sector plays in our personal, social, and economic recovery and revitalization.

For continuity with leading sector resources, the trends are organized by the five goals of the Framework for Recreation in Canada (FRC). The FRC was developed in 2015 by a team led by the Canadian Parks and Recreation Association. It presents a renewed definition of recreation and supports coordinated policies and practices in recreation and related sectors in Canada. Its aim is to improve the wellbeing of individuals, communities, and the built and **natural environments. Part of the FRC's legacy is how it has created a common language for** recreation professionals, with its goals being used to align community priorities with initiatives in the sector.

ACTIVE LIVING CONNECTING CONNECTING PEOPLE & NATURE CONNECTING PEOPLE AND PEOP

Figure 3: Goals from the 2015 Framework for Recreation in Canada

FRC Goal	Trend
Active Living	 Parks and Recreation are Essential Services Combating High Levels of Physical Inactivity Popularity of Unstructured, Self-Directed Activities Encouraging Free Play Pandemic Impacts on Community Sport Pandemic Impacts on Programming Engaging the Aging Population in Healthy Activities Emerging Recreational Activities
Inclusion & Access	 Growing Concerns over Affordability Making Recreation Accessible for Persons with Disabilities Improving Gender Equity in Sports Using Parks and Recreation to Support Indigenous Reconciliation Safe Spaces for Marginalized and Displaced Populations

FRC Goal	Trend
Connecting People & Nature	 Rising Use of Parks and Outdoor Recreation Improving our Connections with Nature Supporting Active Transportation Keeping Pace with Parkland Needs in Growing Communities Increasing Focus on Environmental Design and Climate Change
Supportive Environments	 Multi-Use Recreation Facilities as Community Hubs Providing High Quality, Multi-functional and Flexible Facilities Rationalizing and Addressing Aging Infrastructure Designing Facilities to be Sport-Friendly
Recreation Capacity	 The Great Resignation - Significant Turnover in Recreation Programming Staff Declining Volunteerism Pandemic Challenges for Canadian Recreation Sport Organizations The Necessity of Partnerships Data, Technology and Digital Transformation Evolving Financial Challenges
Arts & Culture	 Culture can be Difficult to Define Arts & Culture Attendance and Participation is Growing and Evolving Pandemic Impacts on Arts and Culture Digital Transformation of Arts and Culture Theatre Audiences are Changing Racial Inequity in the Cultural Sector Demand for Local and Authentic Festivals and Events Looking to the Past and Documenting our Living Heritage Creative and Cultural Hubs are Important for Smaller Communities Rising Land Values are Impacting Cultural Venues Empowering the Community through Tactical Urbanism & Placemaking Targeted Support to the Cultural Sector

These trends are elaborated on further in Appendix C.

2.6 Demographic Profile

The Town of Pelham supports a growing community with a diverse demographic profile. The Town is represented by an aging population, and is growing at a faster rate than the province alongside the entirety of Niagara Region. As a result, the Town is experiencing changes in employment, income, and mobility. This section examines Pelham's demographic profile along with the potential implication's these changes may have on the Town's servicing of recreation, culture and parks.

Population and Growth

Over the past decade, Pelham has seen its population grow by 10%, reaching 18,192 persons in 2021. The entire Niagara Region experienced 5% growth over the same time period, indicating that Pelham's population is increasing at a faster rate. Collectively, both Pelham and Niagara Region have grown at a quicker pace than the province during this time.

Looking to the future, **Pelham's population is forecasted by** the Niagara 2041 Plan to reach 21,560 by the year 2031, representing a growth rate of 18.5% (Ontario population projections, 2022). **Furthermore, the Niagara Official Plan has forecasted Pelham's** population to reach 28,830 by 2051 (Niagara Official Plan, 2022).

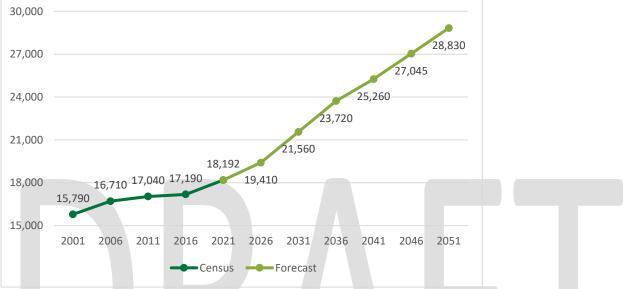


Figure 4 - Town of Pelham Historical and Forecasted Population

The majority of growth in Pelham under the Official Plan is directed to the urban settlements of East and South Fonthill (primarily) and Fenwick (to a lesser extent). The Town of **Pelham's Development Charge Background Study** from 2018 identifies the distribution of housing growth over a 20-year period to include:

- 70% of housing growth occurring in Fonthill;
- 25% of housing growth occurring in Fenwick; and
- 5% of housing growth occurring in rural areas.

Pelham's future growth will also be impacted by immigration and migration. Due to the impacts of COVID-19, many industries across Canada have permitted employees to work remotely which has contributed to many people moving from larger urban centres to smaller sized communities that have more affordable housing choices and a desired quality of life. Growth coupled with changing expectations means that demands are growing for culture, recreation, and park services within Pelham.

Age Profile

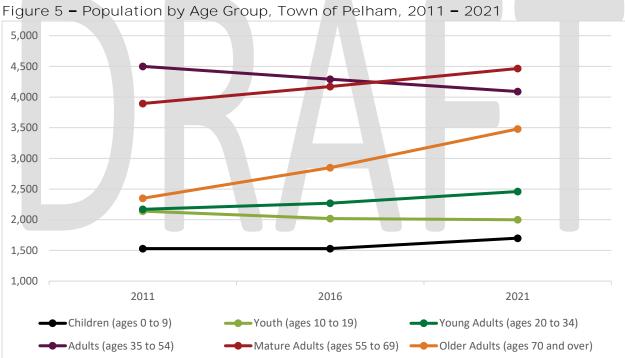
Pelham's population is substantially older in comparison to the Province and Niagara Region, and it continues to age although there is some evidence that this is slowing. In 2021, the **Town's population's median age was 50.4 years, which represents a** 2.9-year increase from the median age of 2011. Compared to the rest of Ontario, Pelham has higher rates of mature adults ages 55 to 69 (24.5% v. 19.8%) and ages 70 and over (15.6% v. 12.9%).

Source: Niagara 2041 – Niagara Region https://www.niagararegion.ca/2041/pdf/mcr-pic3-boards.pdf

Age Cohort	2011	2016	2021	Change from 2011-2021
Children (ages 0 to 9)	1,530	1,530	1,700	+11%
Youth (ages 10 to 19)	2,140	2,020	2,000	-7%
Young Adults (ages 20 to 34)	2,170	2,270	2,460	+13%
Mature Adults (ages 35 to 54)	4,500	4,290	4,090	-9%
Older Adults (ages 55 to 69)	3,895	4,170	4,465	+15%
Seniors (ages 70 and over)	2,350	2,850	3,480	+48%
Total	16,595	17,110	18,192	+10%
Median Age	47.5	49.5	50.4	+2.9 years

	Table 3 - Population	by Age Group,	Town of Pelham,	2011 - 2021
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Source: Statistics Canada, Census of Canada





Source: Statistics Canada, Census of Canada

Looking ahead, although there are currently no official age cohort-based population projections for the town, the projections prepared by the Ontario Ministry of Finance are reasonable indicators of anticipated age-based population changes across the entire Niagara Region. As shown in the following table, the greatest amount of growth is forecasted in the seniors age group (which is anticipated to increase by 38% by 2031), followed by young adults (23% growth by 2031). Most other age cohorts are expected to see more modest growth, though as major users of the parks system, it is notable that the number of children and youth are projected to increase at a slower rate than the overall population.

	5 0	
Census Year	Change (2021 - 2031)	Change (2021-2041)
Children (ages 0 to 9)	8%	24%
Youth (ages 10 to 19)	9%	19%
Young Adults (ages 20 to 34)	23%	36%
Mature Adults (ages 35 to 54)	9%	24%
Older Adults (ages 55 to 69)	-2%	-8%
Seniors (ages 70 and over)	38%	70%
Total Population	14%	26%

Table 4 - Niagara Region Population Forecast by Age Group (2021-2041)

Source: Ontario Ministry of Finance projections (Summer 2022); Reference Scenario

Income, Employment & Education

Research has found that income and education levels influence (or at least are an indicator of) participation levels in recreation, culture and parks opportunities. As indicated by the **2021 Census, the Town of Pelham's** median total income of households in 2020 was \$110,000, above the Niagara Region and provincial medians, and representing a 16% increase from 2015.

Table 5 – Median Total Income of Households (\$)				
	2016	2021		
Pelham	\$95,052	\$110,000		
Niagara Region	\$65,086	\$79,000		
Ontario	\$74,287	\$91,000		

Table 5 - Median Total Income of Households (\$)

Source: Statistics Canada, Census of Canada

The Town of Pelham also has a lower proportion of low-income residents, with (5%) living below the low-income measure (after tax) in 2021. By comparison, (10.4%) of residents within Niagara Region and (10.1%) of residents in the province live below the low-income measure (after tax). Collectively, the rates for Pelham, Niagara Region and Ontario decreased between 2016 and 2021.

Table 6 – Prevalence of low	income based on the	Low-income measure, af	ter tax

	2016	2021
Pelham	5.4%	5.0%
Niagara Region	14.5%	10.4%
Ontario	14.4%	10.1%

Source: Statistics Canada, Census of Canada

In addition, the proportion of residents in Pelham who have completed a post-secondary certificate, degree or diploma (62%) is higher compared to Niagara Region (51%) and Ontario (55.1%).

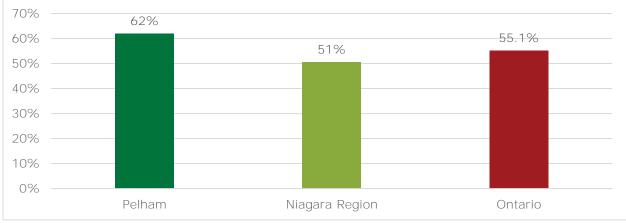


Table 7 – Post-secondary Certificate, Diploma or Degree

Source: Statistics Canada, 2016 Census of Canada

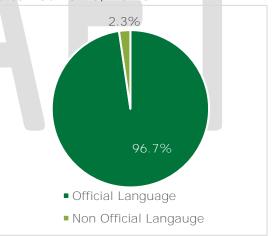
The Town's income and education profile suggests more residents may be able to pay user fees for culture, recreation and parks programs and services. The Town's provision of affordable culture, recreation and parks opportunities sees to it that all residents can participate.

Immigration & Language

The Town of Pelham's population has maintained a steadily declining rate of immigration over recent census periods, indicating that most of the town's growth has come from non-immigrants. Approximately 13% of Pelham's population was comprised of immigrants, representing 2,245 persons in 2021.

Furthermore, the distribution of official languages spoken most often at home are represented by 96.3% by English and 0.4% by French. Non-official languages mainly consist of a combination of Indo-European languages (1.6%), with the balancing 0.7% of this group represented by several language categories.

Figure 6 – Language spoken most often at home, Pelham



Source: Statistics Canada, 2021 Census of Canada



3.1 Consultation Overview

The Town of Pelham has involved residents through several community consultations to collect input pertaining to the enhancement of municipal parks and recreational services. Each consultation is designed to maximize participation to collect input representing demand and community expectations.





Engagement opportunities were promoted through the project website, media releases, social media, and email networks. The Recreation, Culture and Parks Master Plan project included a blend of in-person and virtual/online community engagement tactics in response to the COVID-19 pandemic, creating new opportunities for the public and stakeholders to become involved in the planning process.

<u>Note</u>: It is important to note that the information and suggestions presented in this section should not be interpreted as recommendations. Community input has not been altered even **in instances where comments may incorrectly reflect the Town's actual policies, practices or** level of provision.

3.2 Introducing the Plan to the Public

Pop-up Consultations

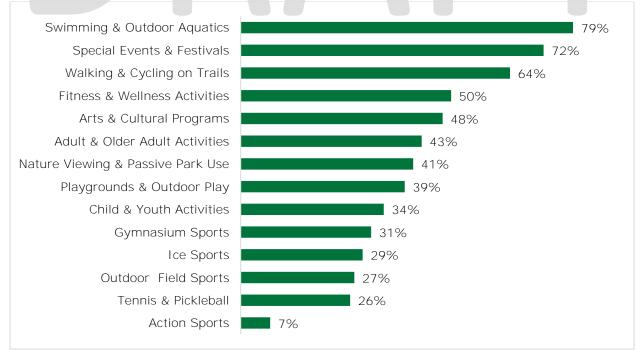
Two pop-up open houses were held to introduce the Master Plan project to the community. An evening pop-up was held on September 1, 2022 at Town Hall Park during a Summer Chill Series community gathering, and two morning and evening sessions on October 26, 2022 at the Meridian Community Centre. These events consisted of information boards detailing the study scope and process, as well as an interactive voting station to identify public priorities. Commenting stations were also available for gathering qualitative input regarding strengths, challenges and future needs. In **addition to joining these promoted events, both sessions were promoted through the Town's** website, Town committees, social media accounts, and traditional media. Between the three events, over 220 participants were engaged.



Through the interactive voting stations, respondents were provided five blocks to distribute amongst the recreation, culture and parks activities that they wanted to see more of. Top priorities included:

- Swimming & outdoor aquatics (79%)
- Special events & festivals (72%)
- Walking & cycling on trails (64%)

Figure 8 – Pop-up Consultations: What activities do you want more of in Pelham?



Additionally, display boards were provided for respondents to post suggestions for improving local recreation, culture and parks services. Common themes included:

- 25 respondents suggested improvements to recreation & culture activities & facilities that included the provision of several types of additional programming, an indoor pool, fitness equipment, improved accessibility and more parking.
- 19 respondents suggested improvements to parks & outdoor recreation activities & facilities that included the provision of additional sports fields, trail connections and maintenance, protecting outdoor greenspace, and the addition of additional park amenities.
- 14 respondents identified what they like most about recreation, culture and parks in Pelham, with the **Town's** summer festival concert series being the most common response, as well as **appreciation for the Town's** indoor walking track, Lincoln Pelham Public Library, splash pads and Steve Bauer trail.

Virtual Open House Session

A virtual open house was held on October 19, 2022 for residents to learn about the Master Plan and provide input on local needs and priorities. The Town provided a link for preregistration on their website and promoted the event through several platforms (e.g., Town committees, library, MCC programming instructors, the local high school, local businesses, seniors database, ad in the local paper, social media, etc.). Accommodations were made available for registrants upon request. A total of 12 participants attended the session.

When asked about what participants like most about recreation, culture and parks, participants indicated that the Town has a close-knit and engaged community supported by people who are willing to take the extra step to improve the experiences of others. The **Town's trails and their connection to other communities was also complemented.** The **Town's** parks and inventory of amenities was mentioned to be impressive for a municipality of its size. **Pelham's dog park** (operated by the Region) was also viewed as exceptional.

Suggested improvements to recreation and culture programming consisted of the provision of safe and welcoming spaces for younger residents and continuing to pursue strategies to engage new residents. Demand was suggested for additional seniors programming, especially opportunities for social interaction. The provision of an indoor pool **was a suggested improvement to the Town's recreation facilities, which could assist with** providing year-round affordable swim programming. It was indicated that the current availability of basketball courts was limited.

Suggested improvements to outdoor recreation activities and facilities included continuing to value outdoor recreational greenspace in new residential areas as parks are essential to community and individual health and well-being. The addition of water features in parks was suggested to be an improvement as there is a current a lack of these accessories (note: two splash pads were installed in Town parks in late 2022). Lastly, there was a request for indoor or outdoor bocce courts.

3.3 Community Online Survey

A community survey was prepared to support the Master Plan's development. It was available for ten (10) weeks beginning in August 2022 and extending through October 2022. The survey was extensively promoted by the Town (social and traditional media, email

networks, website, within municipal facilities, etc.). Community members could complete **the survey online through the Town's public engagement site or through hard copies** available at Town Hall and the Meridian Community Centre.

A total of 414 unique responses were received. Responses rates varied by questions as a reflection of the self-directed and voluntary survey structure.

The purpose of the community survey was to prompt residents needs for recreation, culture and parks. Questions were designed to gather information regarding:

- participation rates in organized and unorganized activities;
- barriers to activity;
- park and facility use;
- recommended improvements;
- support for investment; and
- opinion / agreement with various statements.

Furthermore, the survey helped to establish a profile of community participants by collecting relevant demographic information. Tabulated survey response data has been provided in Appendix A.

Participation in Recreation, Culture & Parks Activities

The following figure summarizes the five (5) most popular recreation, culture and parks activities respondents have participated in Pelham or elsewhere since 2019 (the period both before and since the onset of the COVID-19 pandemic). Interestingly, these suggest that casual, self-directed activities are among the most accessible for participants in the Town.

Figure 9 – Most Popular Recreation, Culture and Parks Activities in Pelham

71%	47%	43%	42%	42%
Walking or	Special events	Cycling	Fitness, Yoga	Use of
hiking for	in parks		or Weight-	Playground
leisure			training	Equipment

The following figure displays the full list of activities along with household participation data. In addition to the top five activities, the following pursuits were mentioned by at least one in four respondent households:

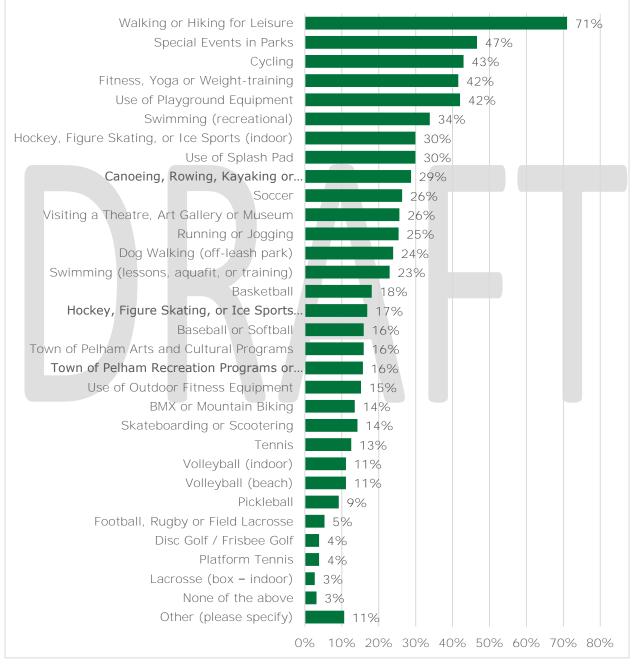
- swimming (recreational) (34%)
- hockey, figure skating, or ice sports (indoor) (30%)
- use of splash pad (30%)
- canoeing, rowing, kayaking or paddleboarding (29%)
- soccer (26%)
- visiting a theatre, art gallery or museum (26%)
- running or jogging (25%)

This suggests that there is a high demand for low to no cost outdoor activities and programming, with the exception of hockey, figure skating or ice sports (indoor).

Some of the most popular indoor recreation activities include fitness, yoga or weight training, swimming (recreational), hockey, figure skating, or ice sports (indoor). Lower

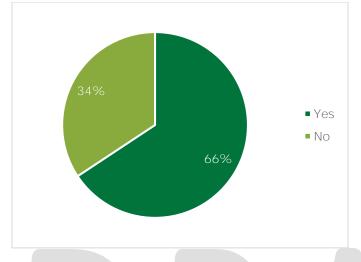
participation activities include lacrosse, platform tennis, disc golf, and football/rugby, which are all sports that have a more limited appeal often based on age or ability.

Figure 10 : Since 2019, in which of the following activities did you or anyone in your household participate, in Pelham or elsewhere? Participation refers to situations where you or a member of your household actively take part (not as a spectator), either at home or in public. (select all that apply) (n=414)



Respondents were asked if they are able to participate in recreation, culture and parks activities as often as they would like. Two-out-of-three (66%) indicated that they are able to participate as often as they would like, while one-out-of-three (34%) indicated that they are not.

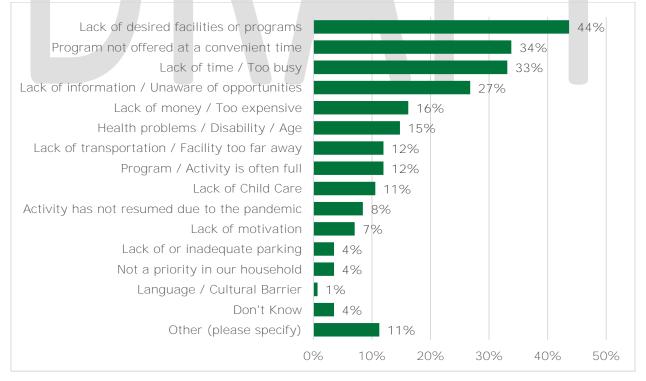
Figure 11 – Are you and members of your household able to participate in recreation, culture and parks activities as often as you would like? (n=414)



Amongst this group, top barriers to participation included:

- Lack of desired facilities or programs (44%)
- Program not offered at a convenient time (34%)
- Lack of personal time / too busy (33%)
- Lack of information /unaware of opportunities (27%)

Figure 12 : Why are you and members of your household not able to participate in parks and recreation activities as often as you would like? (n=142)



Importance and Satisfaction

Levels of importance and satisfaction with respect to specific categories of recreation, culture and parks facilities are illustrated through the two figures below. Amongst these categories:

- 94% indicated that parks for casual use, such as walking, picnicking and unstructured play were important to them, with 81% indicating that they were satisfied with this service area.
- 87% indicated that special events and festivals were important to them, with 84% indicating that they were satisfied with this service area.
- 86% indicated **indoor recreation facilities, such as arenas, pools and seniors'** centres were important to them, with 75% indicating that they were satisfied with this service area.
- 83% indicated that outdoor recreation facilities such as sports fields, tennis or pickleball courts, and skate parks were important to them, with 66% indicating that they were satisfied with this service area.
- 76% indicated that recreation and cultural programs (registered and drop-in) were important to them, with 56% indicating that they were satisfied with this service area.

While it is not unusual in surveys such as this to have higher stated levels of importance than levels of satisfaction, it is notable that the gap between these two measures is highest for recreation and cultural programs (registered and drop-in) and outdoor recreation facilities. This suggests that current levels of service may not be meeting many needs in these service areas (recreation/cultural programs and outdoor recreation facilities). Conversely, the was only a small gap between the importance and satisfaction ratings for special events and festivals, indicating that the Town is meeting expectations in this area.

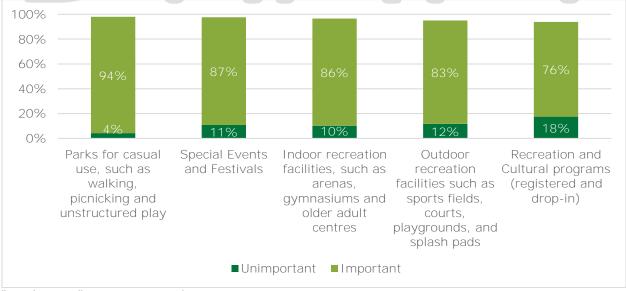
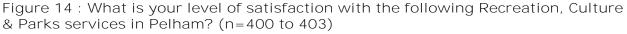
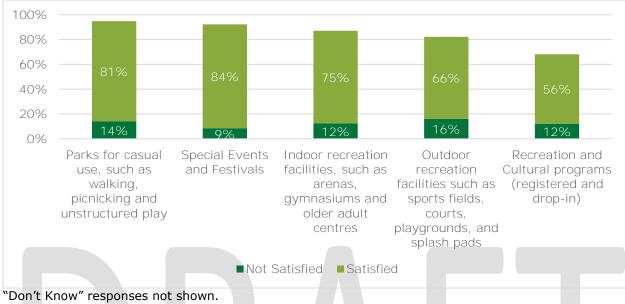


Figure 13 : In general, how important are the following items to your household? (n = 401 to 406)

"Don't Know" responses not shown.



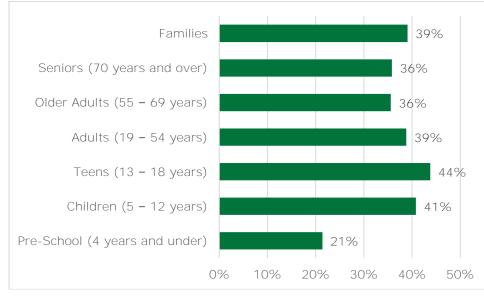


Programs Gaps and Facility Priorities

Respondents were asked to identify the age groups they felt should be a priority if the Town were to provide additional programs or activities. There was little difference between most age groups; however, the highest identified priority groups were:

- Teens aged 13 18 years (44%)
- Children aged 5 12 years (41%)
- Adults aged 19 54 years (39%)

Figure 15 : If the Town were to provide additional programs or activities, which age groups should be a priority? (select all that apply) (n=402)



Over one-half (56%) of respondents identified specific activities that are not currently available (or they were not aware are available) but would like to see offered in the Town of Pelham. The top ten open-ended responses are identified below, with and indoor pool / swim programming being the most common request.

Figure 16 – Are there any Recreation, Culture & Parks activities that you or members of your household would like to see offered in the Town of Pelham that are not currently available? (n = 407)

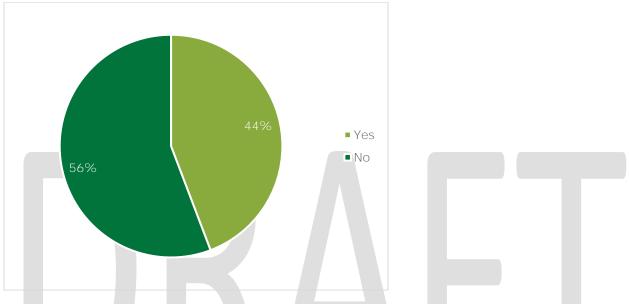
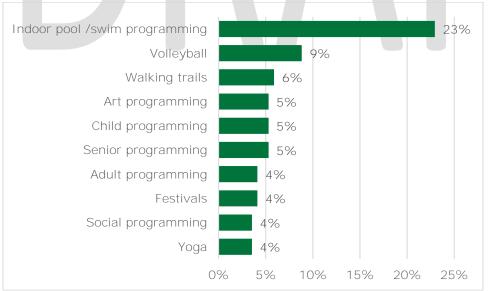


Figure 17: What Recreation, Culture & Parks activities would you like to see offered? (n = 170)



Note: percentages represent proportion of subset that requested additional activities and does not represent the full survey sample.

To guide municipal capital spending decisions, the survey asked about priorities for improving or developing a variety of indoor and outdoor facility types.

Figure 18 : To assist the Town in prioritizing spending, please indicate the level of priority that you feel should be placed on improving or developing each of the following facility types? (n=235 to 387)

Nature Trails	9	3%	4%	
Park Washrooms	91%		7%	
Fitness and Wellness Spaces	869	% 11	%	
Playgrounds	76%	15%	15%	
Paved Trails	75%	22%	22%	
Parks for Special Events	73%	22%		
Space for Older Adults	72%	19%		
Swimming Pools (indoor)	69%	22%		
Soccer and Multi-use Fields	68%	18%		
Gymnasiums	65%	25%		
Outdoor Ice Rinks	64%	26%		
Community Vegetable Gardens	61%	28%		
Splash Pads	60%	26%		
Swimming Pools (outdoor)	60%	30%		
Basketball Courts (outdoor)	56%	28%		
Fitness Equipment (outdoor)	55%	35%		
Performing Arts Spaces	55%	36%		
Arenas	52%	40%		
Baseball or Softball Diamonds	52%	32%		
Art Centres or Galleries	48%	42%		
Tennis Courts (outdoor)	46%	35%		
BMX or Bike Parks	45%	38%		
Off-Leash Dog Parks	43%	41%		
Skateboard Parks	42%	42%		
Beach Volleyball Courts	40%	42%		
Pickleball Courts (outdoor)	33%	45%		
Disc Golf / Frisbee Golf	24%	55%		
Other High Priorities (please specify)	40%	40%		
0%	6 20% 40%	60% 80%	100%	

"Don't know" responses are not shown.

The highest priorities for additional capital investment include:

- Nature trails (93%)
- Park washrooms (91%)
- Fitness and Wellness Spaces (86%)
- Playgrounds (76%)
- Paved trails (75%)

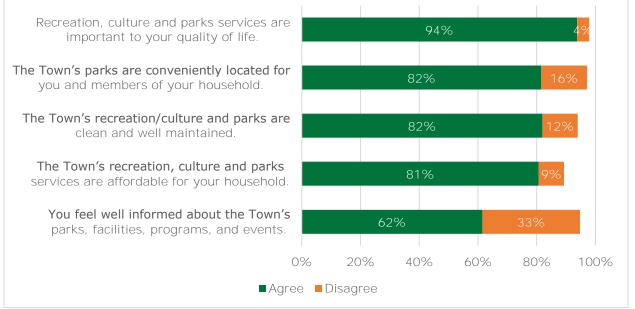
The findings generally reflect the activities that respondents like to participate in the most, with outdoor, casual use amenities being the highest priority for future investment. Other high priorities included parks for special events (73%), space for older adults (72%), swimming pools (indoor) (69%), and soccer and multi-use fields (68%). Lower priority facility types (such as disc golf, frisbee golf and pickleball courts) have a more limited appeal in the community or are currently well supplied.

Statements

Public opinion was tested for a series of key statements:

- 94% agree that "Recreation, culture and parks services are important to your quality of life."
- 82% agree that "The Town's parks are conveniently located for you and members of your household."
- 82% agree that "The Town's recreation/culture and parks are clean and well maintained."
- 81% agree that "The Town's recreation, culture and parks services are affordable for your household."
- 62% agree that "You feel well informed about the Town's parks, facilities, programs, and events." One-third (33%) disagreed with this statement, suggesting that additional marketing efforts would be well-received.

Figure 19 : Please indicate your level of agreement with the following statements (n=382 to 385)



"Don't Know" responses are not shown.

Comments

Nearly two-out-of-five (38%) of respondents provided additional open-ended input regarding recreation, culture and parks in the Town of Pelham. The following categories represent the top key themes from the comments provided:

- Requests for additional programming (18%)
- Greenspaces (13%)
- Accessibility (11%)
- Outreach (7%)
- Pool (7%)
- Park maintenance (5%)
- Splash pad (4%)
- Multi-use trails (4%)
- Sport Fields (4%)
- Bike lanes (3%)
- Playgrounds (3%)
- Tennis Courts (2%)
- Washrooms (2%)
- Fitness Centre (1%)
- Pickleball Courts (1%)

A sampling of typical comments from survey respondents regarding recreation, culture and parks in the Town of Pelham consist of:

- "Cannot emphasize enough how important recreational activities are to a community- especially for the very young and for seniors!"
- "We are extremely satisfied and grateful for the Recreation, Culture & Parks in the Town of Pelham."
- "Very well run, [I] saw this first hand with Summerfest!"
- "The addition of the Meridian Centre has been fantastic! I find there is a great community for recreation and culture in this town. I appreciate the effort that goes into it and am happy to enjoy it!"
- "Programming in local parks would be a great addition to the community, inviting local families to the parks closest to their homes."
- "I feel like I am well-informed about events and activities because I know where to look for that information. For Someone who isn't often on a computer, I'm not sure how they would know about recreational activities around Pelham."
- "Accessibility to all for aging population should be priority. Indoor Pool is overdue, especially with influx of new residents formerly from communities that have municipal indoor pools."

Profile of Survey Respondents

Key household characteristics of community survey respondents are noted below:

- The average household size was 3.1 persons, higher than the Town's average of 2.6 persons per private household (2021 Census).
- It is estimated that the survey represents the opinions of approximately 2.3% of Pelham's population. The response rate (414 surveys) is satisfactory and – when combined with other consultation tactics and inputs – provides a strong basis for future planning.

• The survey gathered input from residents of all ages. Compared to the Town's population, families with younger children were more likely to complete the survey – this is a common finding in these types of studies. Efforts were made to reach the older adult and **seniors'** population through hard copy surveys at the Meridian Community Centre and pop-up consultations.

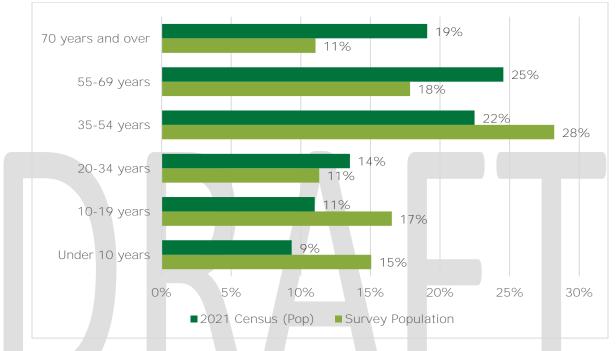
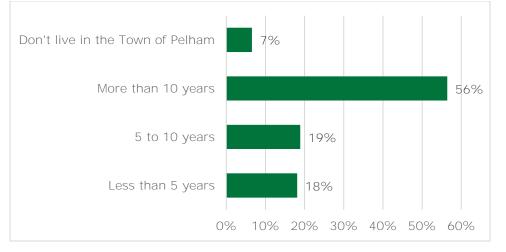


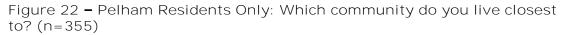
Figure 20: – Please indicate the total number of persons within your household that fall into the following age categories. (n = 374)

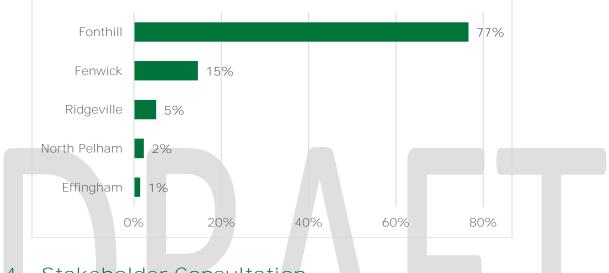
• Over half (56%) of survey respondents have lived in Pelham for more than 10 years, while 37% have moved to Pelham within the past ten years, indicating a number of new residents. Newer residents of Pelham (those moving to the community in the past 10 years) tended to be younger, use splash pads, and indicate an indoor swimming pool as a priority.





- 7% of respondents do not live in Pelham, but most use facilities and parks in the town. Nearly half (48%) of the non-residents live in Welland.
- Of those living in the Town of Pelham, 77% live closest to Fonthill and 15% live closest to Fenwick. The following graph illustrates all of the responses.





3.4 Stakeholder Consultation

Pelham is home to numerous service clubs, sports groups, community organizations, and committees that provide a wide variety of recreation, sport, event and community services to residents and visitors. Approximately 20 groups were invited to contribute input into this Master Plan through a stakeholder workshop on December 1, 2022.

The following ten (10) groups attended the session and/or provided submissions relating to the Master Plan process:

- Fenwick Lions Club & Fenwick Lionettes
- Fonthill Lions Club & Fonthill Lionettes
- Fonthill Platform Tennis Club
- Joint Accessibility Advisory Committee
- Kinsmen Club of Fonthill
- Pelham Pickleball Volunteers
- Pelham Tennis Club
- Pelham Soccer Club
- Rotary Club of Fonthill
- Summerfest Committee

Stakeholder input is summarized below.

Strengths of recreation, culture and parks in Pelham

Stakeholders identified the following as being core strengths of the local leisure system:

• Several groups commented that Town staff provide exceptional service and park maintenance and are responsive to requests from local organizations.

- There is a strong volunteer commitment in Pelham, including many service clubs that contribute to community improvement projects.
- The Meridian Community Centre is a large, modern facility that is the envy of much larger communities. The facility and has helped basketball grow in Pelham.
- Other recreation facilities such as the Pelham outdoor pool, playgrounds, tennis courts, and trails were also recognized as vital amenities in the community.
- Groups were thankful for recent facility improvements, such as new splash pads, resurfaced tennis courts and new pickleball courts.
- Local trails were identified as a strength, particularly the paved portions of the Steve Bauer Trail and the **Town's commitment to snow removal.**

Trends and barriers to participation

The Town of Pelham's organizations are influenced by several trends, some of which contribute to barriers to participation. Stakeholders identified:

- **Pelham's** evolving demographics were noted by some groups, including the aging population and a growing number of newcomers to the town (which tend to be younger and more culturally diverse).
- It was suggested that parking availability at the MCC and many parks (e.g., Centennial Park, Peace Park, Marlene Stewart Streit Park, etc.) can be limiting for events (and associated fundraising) and a deterrent to participation. Additional accessible parking spaces at the MCC were requested.
- Safety concerns relating to access to Marlene Stewart Streit Park were raised. Access consists of one (narrow) entrance off a busy highway.
- Park washrooms are not accessible for all users, and at times may not open (e.g., Centennial Park, Marlene Stewart Streit Park, etc.).
- Soccer programming in Pelham has seen substantial growth (30+% increase over last three years), resulting in a lack of training opportunities and overused fields. It was suggested that additional fields are needed to address population growth and increased participation.
- Improved accessibility of trails was requested, possibly through additional signage and improved surfacing. One example was the Gerry Berkhout Trail, recognizing that consideration needs to be given to all trail users, including cross-country skiing in the winter months. Additional trail development (and trailheads) was also suggested for the Lathrop Nature Preserve (owned by the Nature Conservancy of Canada).
- Some groups expressed challenges with attracting and retaining volunteers.

Park, facility and service needs

Existing parks, facilities and services meet each organization's needs on different levels.

- Stakeholders provided several suggestions, ranging from general to site-specific:
 - In addition to improved parking, the following suggestions were identified for the Meridian Community Centre and/or other indoor facilities:
 - Demand for gymnasium time is significant, particularly for pickleball.
 Modifications to how the Town allocates gym time to activities and groups were suggested, including moving fitness activities to the Accursi Room,

reducing rentals to non-residents and introducing a non-resident surcharge, and offering additional online booking options.

- Improved audio/video capabilities within the Accursi Multi-purpose Community Room
- There was a suggestion for a splash pad near the MCC.
- Some suggested that there is a need for additional accessible (first floor) dedicated space for seniors, similar to seniors' centres in Welland or St. Catharines. A desire was expressed for more social activities and amenities geared toward seniors, such as coffee, shuffleboard, card games, etc.
- The sale of a portion of the former Pelham Arena site and subsequent delay in residential construction has impacted two specific user groups:
 - The clubhouse for the Fonthill Platform Tennis (approximately 100 members) does not currently have running water (there is one portable washroom) and the re-establishment of this connection has been affected by construction delays. Accessible parking at this location was also requested.
 - The site also has two small soccer fields (5v5 and 7v7) that cannot be permitted due to the lack of public parking. The Pelham Soccer Club has indicated that they have struggled with finding additional field times to support current programming demands. The Club indicated that a plan is needed to replace these fields, develop new fields, and add lighting to fields.
- Groups were pleased with recent improvements to Centennial Park, but noted the following future considerations:
 - The addition of a practice wall was suggested for the tennis complex.
 - The Pelham Soccer Club supports adding an additional full-size lit soccer field at this park and indicated a willingness to assist in providing an accessible clubhouse.
 - The single park access can create challenges relating to accessibility and safety. Use of the secondary exit at the rear (through the firehall property) was requested during special event times.
 - It was noted that the Fenwick Lions have a 5-year plan to redevelop their building that is adjacent to Centennial Park. The goal is to create a community hall with a capacity of 150 persons.
- The following suggestions were noted for Harold Black Park:
 - o Improved soccer field drainage.
 - Moving the play structure closer to the parking lot to improve access and usage.

3.5 Internal Consultation

Consultation was undertaken with municipal staff involved in the management, operation and maintenance of recreation, culture and parks facilities and services. Input from these sources was wide-ranging and has been used to inform the Master Plan.

3.6 Summary of Key Themes from Consultations

Key findings of the initial public engagement and research phase are summarized below. These themes have been assessed along with community profiles, usage data, and **promising practices from other communities to inform the Master Plan's recommendations.**

- 1. Recreation, culture, and parks services are very important to Pelham residents. **The Town's recent investments in the MCC and its parks and trails** system are paying dividends as 94% of survey respondents agree that these services are important to their quality of life. Long-term planning and strategic investment are vital to support the significant role that the recreation, culture and parks play in our personal, social, and economic recovery and revitalization.
- Pelham has an older population, and accessible spaces and services are very important to the community. Pelham's population is significantly older than most other communities (the median age is 50 years). With an aging population comes greater demand for accessible opportunities, not just for seniors but also for persons with disabilities of all ages. There is also evidence that more younger families and residents are moving to the community, generating additional demand for parks and facilities such as the MCC.
- 3. Pelham is growing and those coming from larger urban centres often have different expectations around service levels. The town is projected to add 3,660 persons by 2031, for an annual growth rate of 1.9%. This will place upward pressure on existing resources and infrastructure. As the town grows, it can also expect to become more culturally diverse. This suggests growing demand for activities that appeal to a broader range of interests, abilities, and age groups. Requests for amenities that are not financially viable for most small towns (such as indoor pools) can be expected, as well as growing interest in cultural services and civic spaces.
- 4. The pandemic has highlighted the vital role of parks, trails and outdoor recreation opportunities in staying active and connected. Unstructured park and trail use has increased during the pandemic and these spaces have become more important to supporting resident health and wellness. Accessible washrooms in parks and public spaces are also required to support these uses. There is also great potential in creating an active transportation link between Fonthill and Fenwick, as well as establishing partnerships to manage community access to public open spaces.
- 5. Recent park improvements help to support the growing demand for unstructured activities for all ages. The survey found that the most popular activities in Pelham are those that appeal to all ages and abilities, such as use of parks, walking/hiking, special events, cycling, fitness, swimming, and drop-in programs. The Town has responded to these and other self-directed pursuits through recent investments (often supported by senior government grants) in splash pads, trails, and sport courts. A grant has also been secured to assist with the replacement of the aging Pelham outdoor pool.
- 6. Customer service is responsive and special events are highly valued. The Town offers more and larger community events (e.g., Summerfest, Summer Chill, etc.) than most communities its size. These events help to keep people connected, support local fundraising, and also attract tourists to Pelham. Many events are also supported by local organizations, some of which expressed challenges with recruiting

and retaining volunteers. It was frequently noted how Town staff go above and beyond to work with groups and address resident concerns.

- 7. The Meridian Community Centre is a tremendous asset that has untapped potential to serve as a true community hub. Opening in late 2018, operation of the MCC was interrupted by the pandemic and the Town is only now just able to continue its roll-out of new programs and services. Extended use of the gymnasiums, arenas and multi-use rooms can be expected over time as demand grows. Additional staff resources, partnerships, and updated policies and practices may be needed to assist in maximizing community access and participation for all ages.
- 8. **The Town's parks are largely built**-out with little ability to accommodate new amenities or more parking, and parkland provision standards are declining. This will place more pressure on existing parks and amenities and will require greater emphasis on capital maintenance and pedestrian connections to parks. Population growth and community expectations suggest a need for additional parkland; however, the legislation governing parkland conveyance is changing, making it more difficult to secure parks of adequate size and location.

4. Our Strategic Framework



This section identifies the strategic framework that will guide the Ma**ster Plan's development** and implementation.

4.1 Vision

Based on local research and public input, the following vision has been established to lead the development and implementation of this Master Plan. This strategy reflects the values and aspirations articulated by the Town and the community as a whole, while also having regard to the Framework for Recreation in Canada, the guiding document for public recreation providers nationwide.

Setting a "vision" for the Town in the delivery of recreation, culture and parks services is the initial step in setting a strategic path forward. A strategic vision depicts how the Town wants to be viewed in the future and compels Council, staff, and the community to work together to achieve their collective goals over time.

The following vision statement is proposed:



4.2 Master Plan Goals

The Master Plan's development and implementation are also guided by a series of goals that have been designed to reflect the expectations articulated by community and the Town's overall commitment moving forward. Together, these goals describe the core objectives that the Town of Pelham and community partners should strive to achieve over time.

Goal #1: Respond to Growth

• The community is growing and becoming more diverse. We will maintain our high quality of life and small-town character by proactively planning for the future, monitoring needs, and aligning investment with growth.

Goal #2: Expand Activity Choices

• As the town grows and new interests emerge, a wider variety of programs will be necessary. We will support an expanded range of activities in collaboration with others in order to foster active lifestyles, skill development, and social connections for residents of all ages and abilities.

Goal #3: Optimize our Facilities and Parks

• Parks and recreation facilities provide safe places to gather, stay active, and connect with nature. We will improve public enjoyment of our assets through equitable access, welcoming and barrier-free spaces, and high standards of maintenance and sustainability.

Goal #4: Enhance Service & Capacity

• Services bring people together and help to build strong, caring communities. We will show leadership, strive to eliminate barriers to participation, strengthen community engagement, and work together to support volunteers.

Goal #5: Ensure Financial Sustainability

• The community expects high quality municipal services, administered efficiently and effectively. We will offer value to taxpayers through a coordinated approach to service delivery, innovative management, and the pursuit of partnerships and external funding.

5. Recreation Services & Programs



This section examines the Town's service delivery model, including a review of program offerings and services intended to strengthen organizational capacity in Pelham.

5.1 Recreation Service Delivery Goals

Pelham's Role in the Delivery of Recreation Services

It is important to clarify the responsibility of the Town in engaging residents in building and maintaining healthy lifestyles. This will serve to inform the relationships with other service providers and not-for-profit groups as they define the work of Pelham staff. The Town has a strong commitment to its residents in promoting all opportunities, providing support to not-for-profit groups, and coordinating a wide range of services through partnerships and third-party providers.

Specifically, the role of the Recreation, Culture and Wellness Department includes consideration of the following:

- a) Pelham will be clear about what its core recreation, culture and wellness services are and how these services will be delivered.
- All residents will be provided either by the Town or another provider a range of choices including active, sports, creative, STEM (Science, Technology, Environmental and Mathematics) general interest opportunities, and special events.
- c) Opportunities must be available for residents of all ages, abilities, and backgrounds.
- d) Intentional efforts will be undertaken to include underrepresented communities and/or individuals through policy and deliberate actions.
- e) Priority allocation and supports will be offered to not-for-profit and volunteer community groups (especially those serving children). A broader range of opportunities can be offered through these community groups and volunteerism is recognized as the backbone of the sport and recreation delivery system.
- f) Regardless of the service delivery methodology, staff must be able to report participation numbers by age group and include the capacity, utilization, and fill rates per age group. This will assist in determining the participation levels by age group.
- g) Staff will work to ensure quality assurance, safety, and legislative compliance in the delivery of service regardless of who is providing the program or service.
- h) Pelham will identify gaps in service and will address these gaps directly should there not be a community-driven service provider
- i) A range of service price points should include free universal programs, low-cost opportunities, and enhanced service levels to include all residents.
- j) The Town will measure its effectiveness in the delivery of recreation, culture and wellness services and set performance targets to demonstrate increased participation, transparency, evidenced-based decision making, and quality assurance.

Service Delivery Model

The Town of Pelham's current Service Delivery Model is designed to engage as many community groups and organizations as possible in the delivery of service. The advantage is that more residents can be engaged and included in recreation, culture and wellness services. The clear aim of contemporary departments in Canada is to increase participation year over year so that residents can lead healthier lives.

The key is to provide the right infrastructure and program mix. Communities respond well when there is a blend of safe and enjoyable opportunities including active, creative, general interest and STEM programming. Providing a full range of programs allows residents and visitors to expand their knowledge, gain skill mastery, and have choice. Engagement in these pursuits is the way to ensure that individuals, families, and the community is achieving a positive state of health and wellness.

The evidence is strong – an active and engaged community is healthier overall, is cohesive, and demonstrates community pride. Active individuals and families have better life outcomes. All efforts of Council, the community, and staff must be directed at providing and enabling quality recreation, cultural, and wellness pursuits.

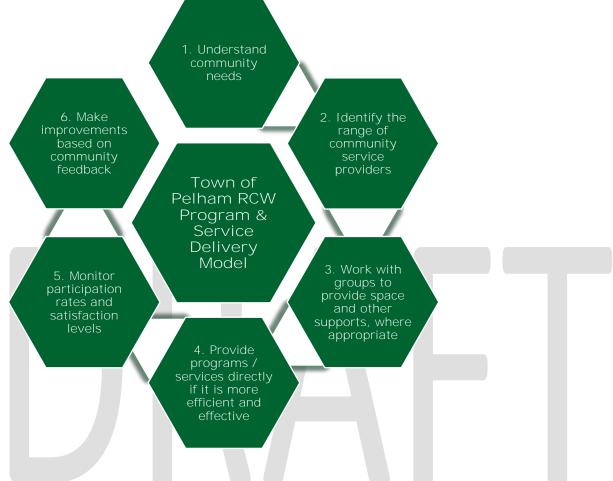
The goal is to provide and assist in delivering a range of choices for all ages and abilities and to include all residents and visitors regardless of their background. The four main methods of providing and enabling services include: (1) direct provision by the municipality; (2) community development practices in supporting community-based groups; (3) promoting other providers (e.g., not-for-profit and for-profit services); (4) and contracting third-party providers. This takes a holistic approach and the key driver is to provide services efficiently and effectively. Consideration is given to ensure all age groups are included, to engage and hear the citizens voices and include underrepresented residents.

Municipal staff in Pelham tend to provide opportunities directly in aquatics, programs, Summer, March/Holiday break and PA Day camps (including many special interest camps), and generally where there are not other local providers.

Support is offered to local community groups who provide sport, recreation, and cultural experiences by providing spaces (often at reduced rental rates) as well as grants for **initiatives that meet the Town's criteria. The Town m**eets regularly with service clubs and sport organizations to discuss upcoming initiatives, discuss challenges, and share information.

The Town of Pelham Recreation, Culture and Wellness Department follows best practices in the delivery of programs and services. The following illustration depicts the process that staff follow in providing/enabling programs and services. Staff first identify needs and the most likely provider. If the program or service is already provided locally, discussions would centre on what supports the municipality could provide. Partnerships are formed whereby the municipality may provide space or promotion and other support. If there is not a community-based provider, the municipality will look to provide the program or service directly. In all cases, staff will promote all opportunities, monitor participation and the quality of the service, and address any improvements that are needed.





5.2 Programs, Physical Activity & Special Events

Overview of Programs and Services

One of the baseline evaluation methodologies for recreation programs and services is to assess what opportunities exist for each age group. This is to ensure that each age cohort has barrier free access to a wide range of programs and services (at a minimum: aquatics, drop-in opportunities, active/sport, general interest, creative and STEM programs). The value in this exercise is to look at any gaps in the delivery of service and to ensure that programming addresses emerging demographic groups (such as the growth of young people and families moving to the Niagara Region). Further assessments will include compliance with legislative and industry standards, quality assurance mechanisms, levels of satisfaction, and more.

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			OTEM	General
Age Grouping	Active/Sport	Creative	STEM	Interest
Pre-School	Public Skate Stick & Puck Swim Lessons Playgrounds/ Splashpad Parks & Trails	Arts & Cultural Programs		
Children	Public Skate Stick & Puck Bike Camp Tennis Camp Tennis lessons Swim Lessons Swim Team Parks & Trails Playgrounds Splashpad Various Sports	Art & Theatre camp Arts & Cultural Programs	STEM Camps Artificial Intelligence for Change Innovative Mobile Applications Virtual Reality Worlds	March & Winter Break Camp Animal Adventure Camp Junior Firefighter Camp
Youth	Public Skate Stick & Puck Youth Volleyball Swim Lessons Swim Team Leadership Training Spin Classes Parks & Trails Various Sports	Arts & Cultural Programs		
Adults	Public Skate Fitness/Yoga Aqua Zumba Spin Classes Parks & Trails	Arts & Cultural Programs		
Older Adults/Seniors	Public Skate Fitness Classes (Brock U) Aqua Zumba Spin Classes Parks & Trails	Arts & Cultural Programs		
Families	Public swim Public skate Parks and trails			

Potential program gaps to further explore include STEM, wellness, drop-in, and general interest programming for pre-school, youth, adults, older adults, and families. With the Meridian Community Centre being used to near capacity at times, opportunities to offer

more programming in parks and outdoor settings, as well as through local schools, churches, and in collaboration with local organizations, should be explored.

Increasing Physical Activity Levels

Governments continue to emphasize the health of Canadians through the continued promotion of increasing physical activity levels. Canada has made very little progress over the last few decades – the Physical Activity Report Card for 2022 gave adults a C and children an overall D. These rating continue to be unacceptable and require focused effort. Recreation, Culture and Wellness staff need to continue to work with partners in aligned sectors such as health promotion, education, and more to address this inactivity issue in Pelham.

Canada's 24-Hour Movement Guidelines

Canada's 24-Hour Movement Guidelines have replaced the Physical Activity Guidelines. The new guidelines were introduced in 2020 and depict the amount of time various age groups **should "Sweat, Step, Sleep and Sit" in a 24**-hour timeframe. For example, in each day children between 5 and 17 years should achieve the following.

Table 9 – Canada's 24-Hour Movement Guidelines

Activity	Time / Day
Sweat	60 minutes of moderate to vigorous physical activity
Step	Several hours of moderate physical activity
Sleep	9-11 hours for 5 - 13-year-olds
	8-10 hours for 14 - 17-year-olds
Sit	Limit sitting for extended periods
	No more than 2 hours of recreational screen time per day
Source: http	os: //csepquidelines.ca/quidelines/children-vouth/

These new guidelines have been developed for all age cohorts and should be communicated and promoted to the public within facilities, online, and in promotional materials. Opportunities to co-develop and promote activities alongside community partners should be pursued, including efforts to track community progress.

Physical Literacy

One approach to increasing physical activity is to ensure that community members have the basic physical skills to participate in active opportunities. The Canadian Sport for Life Movement has developed a Physical Literacy program for all age groups to ensure that they can run, throw, catch, etc. Physical literacy can be taught in existing programs and environments such as in daycares, seniors centres, schools, sport clubs, etc. Once people are comfortable with the skills to be more active, it is hoped that some barriers to their participation in physical activities will be alleviated.

ParticipACTION Active App

ParticipACTION has developed and released a free App that serves to motivate and incentivize Canadians to be more active. As an initial approach, the Recreation, Culture and Wellness Department could make efforts to promote its use. The App includes daily quick

tips, articles, videos, can connect to tracking devices and provides weekly, monthly, and yearly rewards. The App will also remind users to be active at pre-set times and continues to include upgrades. This is another opportunity for Pelham to continue to promote physical activity without utilizing significant staff or financial resources.

The Canadian Community Health Survey

Statistics Canada administers the Canadian Community Health Survey which is a national survey that collects health data and distributes it by Health Region. The survey is voluntary and is confidential for those who choose to participate. As well as behaviours related to physical activity, the survey collects information on physical and mental health status, chronic health conditions, smoking, alcohol consumption, and fruits and vegetable consumption. Data is also collected on socio-economic backgrounds to decipher behaviours by region, age, and socio-economic status. This is valuable information that can be used to inform physical activity plans and strategies at the local level. It is suggested that staff use this data to better inform plans to increase physical activity levels.

Special Events

Pelham hosts and enables a wide variety of special events for residents on an annual basis. The Town recognizes that special events bring residents and visitors together and result in strengthened community pride and cohesion. The events promote the attributes and uniqueness of the community and bring an economic spin off to local businesses.

Nearly one-half (47%) of the Community Survey respondents indicated that they participated and attended outdoor festivals and special events. A sample of annual events include:

- Summerfest
- Summer Chill Series
- Canada Day
- National Day for Truth and Reconciliation
- Christmas in Pelham

As the population grows and requests for special events increase, the Town should be prepared to allocate staff and resources to the events with the highest community benefit. A Special Events Policy will serve to categorize events and provide an equitable level of funding based on whether the event is sponsored by the Town of Pelham, a community-based group, or a commercial venture. Measuring the return on the investment can be done from a financial perspective, such as taking the total municipal costs for the event and dividing it by the number of attendees to arrive at a cost per participant. This can also be achieved by identifying spending patterns per attendee. Quantifying the success of an event would be completed by asking participants their satisfaction levels, monitoring social media activity, and sponsor recognition. Both qualitative and quantitative measures should be undertaken to ensure the best use of public funding.

Selected Observations for Pelham

Selected observations are offered from an analysis of the participation data provided by Pelham staff, considering current trends and social issues as well predominant themes captured from community and staff inputs.

Recreation Programs are Important to Pelham Residents and Require Review

The Master **Plan Community Survey indicates residents' thoughts on both the importance** and satisfaction levels of each program/service type (recreation, culture, parks, etc.). There is an average importance level of 85% for unstructured play, special events, indoor and outdoor facilities, and programs, while there is an average satisfaction level of 72% for the same services. These questions about importance and satisfaction determine if there are any appreciable gaps in expectations – one would like to see both indicators at high levels, which would be a measure of a successful program and delivery. Municipalities should strive to achieve scores of 80% or more. In Pelham, there was an appreciable gap between importance (76%) and satisfaction levels (56%) when it came to recreation programs, with many respondents indicating that there is a lack of programs available. Some spoke to needing more social/casual program offerings for older adults (men in particular), while the recent KPMG Review noted potential demand for more "wellness" activities for all age groups. Staff will need to further consult with participants within each age cohort as to how they can increase satisfaction levels in programs and respond accordingly to meet the recommended targets.

A preliminary review of Town and community-based offerings found a variety of program types for all age cohorts including pre-school, school-aged children, youth, adults, and older adults. Opportunities in active and sport, creative, general interest and STEM type programming were assessed. The apparent gaps include greater opportunities for youth, adults, and older adults in STEM and general interest programs. Any new program ideas would need to engage these age groups to test their level of interest.

Drop-In Opportunities Continue to be Popular

There is an overall trend nationwide to move from registered program offerings toward casual drop-in type recreational opportunities. Many communities have witnessed a decrease in participation in registered programs and an increase in drop-in or more casual opportunities. Continued monitoring of both the capacity and utilization of registered and drop-in programs require monitoring to ensuring the maximization of use of public spaces. There is pent-up demand for primetime which is currently utilized by licensees. Maximizing utilization of spaces based on community need will need to be addressed as these agreements come due for renegotiation.

What Percentage of the Population Participate in all Activities?

The role of the Recreation, Culture and Wellness Department is to ensure that there are ample and varied opportunities. Further work is required to determine the number of unique clients (number of residents participating). For example, what percentage of the varying age cohort is participating and what percentage is not? Determining an approximate penetration rate and addressing where most registrants are coming from (using postal codes from the registration system) would assist staff with analysing further. The identification of geographical gaps is critical in focusing on barriers or specific interests and will assist in increasing participation.

Pelham is Nimble and Responds to New Trends and Interests

A successful recreation program model is nimble enough to respond to new trends and interest in each age group. Having the ability to try new programs and free up space to do so is a sign of innovative and responsive staff members. Currently in Pelham, there is little to no leeway in enabling staff to fund new programs and experiences without proposing these as part of the annual budget process. It is suggested that a small amount be placed in the budget to try new programs and services.

Continue to Support Youth in Pelham

Efforts are currently taken to keep youth engaged within the community and recreation pursuits to be a community that supports their voice and self-governing endeavours. Youth engagement and empowerment requires continued attention to provide friendly and safe environments where youth can decide what leisure opportunities interest them. The Department must remain nimble and responsive to the needs of this age cohort.

The Playworks Partnership has Valuable Quality Assurance Criteria

Ontario's Playworks Partnership for Active and Engaged Youth is comprised of a group of

youth-serving organizations. This community has researched, defined, and promoted a wellrecognized quality assurance framework that articulates what must exist in a community to demonstrate support for youth. Youth Friendly Communities work to increase the commitment and interest in increasing recreation services for youth. Communities work with partners to address ten criteria within the community to establish and validate a real commitment toward youth. Communities are awarded Youth Friendly status at varying levels by demonstrating their provision of services and youth engagement efforts. Using these criteria in Pelham will ensure quality experiences for youth.

The ten criteria include:

- 1. Youth have options for play.
- 2. Youth are formally connected community wide.
- 3. It is easy for youth to find information about activities in the community.
- 4. The community recognizes and celebrates youth.
- 5. The community formally commits funding for youth play.
- 6. The community supports positive youth development.
- 7. Youth feel valued by their community.
- 8. Schools and school boards support the youth friendly application.
- 9. Play is accessible to youth.
- 10. Play is socially inclusive.

While Playworks as an organization is currently experiencing some operational challenges, the research stands and communities should still strive to meet the quality assurance criteria.

Older Adults and Seniors Make Up 44% of the Pelham Population

Older adults and seniors (those over 55 years) currently make up 44% of the population of Pelham and, as the community grows over the next ten years, this percentage may increase. This is a significant portion of the community, and every effort must be taken to engage and empower older adults in program development and provision.

Interest was expressed in adding more social/casual programming to augment the active pursuits available currently. There are trends for older adults to join adult programs and for elders to self-organize their own social, creative, general interest and physical activities. Ensuring that there are adequate opportunities for this growing population will require working in partnership with older adult serving organizations and elders themselves. Older adults do exemplary work to self-organize and the municipality should only look to provide

and enable programs and services where there are gaps, and the community is unable to **respond through volunteerism. Use of the Meridian Centre for seniors' programs has proved** to be a central location for older adults to participate. An analysis of potential program choices should be posed to older adults as well as possible space allocation during desirable times to provide a full range of desirable program opportunities.

The Principles of Healthy Aging Ensure Quality Experiences for Older Adults

Parks and Recreation Ontario has developed a quality assurance program in the offering of recreation programs and services to older adults and seniors. The course offers staff an insight into the unique requirements of service delivery and engagement with the older population. It builds on the Principles of Healthy Child development for children and **strengthens staff's ability to plan programs, respect what elders face with ageism, physical** literacy, social connectedness, and overall enhancements to the quality of life for older adults. This is a suggested requirement for any full or part time staff working with older adults and seniors.

Outdoor Aquatics a Well Appreciated Asset in Pelham

Swimming is a popular activity in Pelham – recreational swimming is within the top six leisure activities that residents enjoy the most. The outdoor pool is well utilized for swim lessons, aquafit classes and drop-in activities.

The role of the municipality in providing aquatic experiences is primarily to ensure that residents can be safe in and around water. Drowning prevention is a key goal in offering learn to swim lessons and water survival. The National Drowning Report produced by the Lifesaving Society of Canada indicates that 1.2 people in every 100,000 population drown in Ontario annually. Drowning is considered a preventable accidental death and knowledge and swimming skills can assist in drowning prevention. As the community grows, staff will need to maximize the use of the outdoor pool for lessons and drop-in opportunities.

The Aquatic Safety Management Program is a Strong Preventative Measure

The Lifesaving Society – Ontario Branch has developed an Aquatic Safety Management Program to ensure that pool operators and aquatic service providers can comply with legislative requirements and industry standards. This is critical from a liability and quality assurance standpoint and another measure in preventing the possibility of water incidents. The Society offers an audit service to review all aspects of safety in and around water at pools and waterfronts. An Aquatic Safety Accreditation Program demonstrates levels of compliance. The Pelham outdoor pool is not accredited at this time.

Special Events Build Community Pride and Cohesion

The Town of Pelham invests resources to both host and support special events throughout the year. These events benefit the community in terms of strengthening pride and cohesion and as offering a return to local businesses and in supporting tourism efforts. 87% of the respondents to the community survey felt that special events are important while 84% of indicated that they participated and are satisfied with special events in Pelham. This is an excellent benchmark and requires little change to the way special events are organized and executed.

As the need and requests for special events increase, the Town should be prepared to allocate staff and resources to the events with the highest community benefit. A Special

Events Policy will serve to categorize events and provide an equitable level of funding and support to the events that most require them. Quantifying the success of a special events in terms of local spending and satisfaction levels are ways of measuring the effectiveness of the event choices on an annual basis.

Recommendations

- #1 Regularly solicit requests for program offerings and complete a review of program availability, capacity, and utilization to ensure that public spaces is maximized and all age groups (e.g., pre-school, children, youth, adults, older adults and families) have access to a range of physical activity and sport, creative opportunities, general interest and STEM programming.
- #2 Promote the Canadian 24-Hour Movement Guidelines and the use of **ParticipACTION'S Physical Activity App within facilities and the "Life in Pelham" Community Guide. Consider applying to become Canada's Most Active Community through ParticipACTION once pre-pandemic service recovery levels are achieved.**
- #3 **Develop a Special Events Policy to clarify the Town's role in providing** special events, identify resource requirements, and establish the municipal supports provided to external event providers.

5.3 Including all Residents is Job One

The Town of Pelham strives to include all residents in recreation, culture and wellness services. A standard approach is taken of developing programs and services based on resident interests and ensuring these services are refined based on participant input. Most residents can navigate the system of seeking out and registering for opportunities; however, some residents may face barriers to participation. Pelham has specific policies and approaches to include some residents who face barriers, specifically those who are experiencing low income and those with disabilities. This section explores approaches to better serve other groups that may be marginalized. Recreation Departments across Canada are recognizing the importance of ensuring all residents can participate and are working to reduce barriers for marginalized or underrepresented groups .

The Role of the Recreation, Culture and Wellness Department in **Providing "Access for All"**

Municipalities in Ontario are unique and different from each other, and the provision of services must respect and celebrate these differences. Recreation programs and services become more meaningful by knowing the make up of the community and by engaging residents in the determining their needs and addressing any apparent barriers. Formerly, municipalities made accommodations for persons with disabilities and residents experiencing low income and that was the extent of reducing barriers for underrepresented populations. Human Rights legislation ensures that services are open to everyone and requires more proactive efforts.

Many municipal public-facing departments are now developing policies and procedures aimed at increasing participation in programs and services by diverse populations. One key

guiding principle is to "engage the population that you are serving" to ensure that policies, procedures, and programs are meaningful.

The following actions are provided to best inform the Town of Pelham's actions in better serving marginalized populations.

- Understand the demographics and socio-economics of the community and strengthen dialogue with support organizations of marginalized populations.
- Develop a Policy to identify the Town's Commitment to inclusion and what actions will be taken.
- Take intentional actions to improve access to increase participation among marginalized and underrepresented populations.
- Assess and monitor affordable access to programs and services.
- Develop opportunities with Indigenous Peoples, including those organizations that promote Truth and Reconciliation through the recreation and parks system.
- Develop or adhere to legislation, policies and promising practices that speak to including marginalized residents within services and develop resource materials for staff.
- Form partnerships in providing leisure programs and services to provide spaces.
- Ensure that staff are trained to reach out and welcome marginalized/ underrepresented populations.
- Create a sense of belonging and to create safe and welcoming community spaces.
- Work with partners to increase participation of persons identifying as female in recreational pursuits.
- Create welcoming and safe environments for the LGBTQ2S+ community through training and demonstrating compliance with best practices.
- Work to ensure that staff and volunteers reflect the makeup of the community.
- Measure participation and the effectiveness of reaching out and including marginalized populations.

Selected Observations for Pelham

The Town of Pelham, as a public institution, is clear about its obligation to include all residents. Specific and intentional approaches must be taken to welcome residents who may have differing needs and/or face barriers to participation. No longer can municipalities offer generalized programs and services in the hope that marginalized residents will participate – any barriers should be identified and addressed as the program is developed or in the evaluation phase. Staff need to identify who might face barriers within Pelham and become more intentional about including diverse and underrepresented populations by better understanding their needs. This can only be done by connecting and listening to diverse and underrepresented populations.

Both staff and volunteers need to be trained in being competent in inclusion strategies and in creating welcoming and safe environments. The makeup of staff and volunteers should represent the population that they serve. Ongoing discussions should be facilitated to continue to work together to reflect the community within recreation programs, services, staff, and volunteers.

Pelham enjoys an increasingly diverse population and has employed varying methods to better include all residents. The approach with the most promising results is the building and strengthening of relationships with the diverse and underrepresented groups that are active in the community. Initial discussions centre on understanding recreation and sport participation needs, how to provide access, and navigate Municipal government. Programrelated initiatives include the introduction of traditional Canadian sports and activities and introducing all residents to diverse activities and leisure pursuits.

Overall, the Town of Pelham continues to be responsive to community needs and demonstrates proactive practices to include persons with disabilities and residents experiencing low income, as well as to recognize the contributions of Indigenous Peoples. As described below, further work is required to touch base with marginalized communities, **intentionally welcome the LGBTQ2S+ community, and work to increase girls and women's** participation in sport and recreation.

Persons Experiencing Low Income Face Financial Barriers to Participation

Pelham RCW staff recognize that 5% of its population (approximately 900 residents) are experiencing low income and staff attempt to include as many as possible. Leading edge work in this area of service measures participation rates and targets participation to be at the same rate as the general population. , Universally free special events and access to public spaces is offered to all residents to reduce any stigmas attached to participation and low-cost programming is offered in the mix of program opportunities. Promoting free opportunities and offering equipment lending libraries to provide equipment have also been successful in engaging more residents experiencing low income.

To encourage greater levels of participants, the Youth Sport & Recreation subsidy provided through Pelham Cares offers financial assistance for families who qualify to participate in sports, recreation, and educational activities. Additionally, Pelham Cares also provides support for qualifying residents through its food and hygiene bank, holiday hampers, transportation to medical appointments, back to school backpacks, birthday program, information and referrals, and emergency response, which plays a significant importance in removing potential barriers to participation in the community. It would be helpful for the Town to monitor uptake in this program to ensure persons experiencing low income feel welcomed to utilize this offering.

Determining the Recreation and Sport System Capacity for All Residents

Further work should be undertaken every three years to determine the full capacity of directly offered programs, drop-in opportunities, and activities offered by community groups. The objective is to ensure that there are ample opportunities to accommodate a growing diverse community and that spaces and activities are allocated equitably. Working collectively with community groups and agencies representing marginalized residents to address identified gaps, gender equity, participation by marginalized populations, and participation by community (at a minimum) is recommended.

Persons with Disabilities Require Modified Approaches to Participate

Pelham staff work with the Accessibility Committee to ensure that physical access and customer service meets the legislative requirements. Pelham RCW staff employ methodologies to ensure that persons with disabilities can enjoy participating in programs and services through understanding individual needs and making meaningful accommodations. Caregivers are welcomed to assist participants in accessing programs and drop-in opportunities at no additional entrance fee. More discussions with support organizations for persons with disabilities is needed to address increasing participation in recreation and wellness programs and services, especially since as the population ages more recreational opportunities will need to be offered to address therapeutic needs.

Newcomers may Need Assistance in Navigating Systems

Nearly one in seven Pelham residents (13% or 2,245 persons) are **immigrants. Canada's** immigration policy proposes a significant increase in newcomers in the years to come, creating conditions where all municipalities may welcome more recent immigrants to their communities. For many newcomers, their initial priorities are likely to focus on finding sustainable employment and housing. Research shows that engaging in sport and recreation encourages newcomers to feel connected to their new communities and address settlement issues with less stress. Recreation and sport are often complex systems to navigate to register and understand the requirements in a new country. Working with settlement agencies to encourage newcomers to participate and utilize trails and parks systems will results in greater knowledge and participation.

Proving Safe Spaces/ Positive Spaces Better Includes the LGBTQ2S+ Community

The Lesbian, Gay, Bisexual, Transsexual, Questioning, and Two-Spirited (LGBTQ2S+) community often experience exclusionary behaviours. With the recognition that 13% of the Canadian population identifies as LGBTQ2S+, which could equate to approximately 2,365 Pelham residents. More intentional efforts are needed to provide welcoming recreational **environments to this community. The introduction of "Safe Spaces' is one way of welcoming** this community to public places. Safe Spaces was developed by Safe Spaces Canada whereby signage on the front entrance of a community space indicates that staff have been trained in reducing homophobic and transphobic gestures and slurs and in creating welcoming environments.

Discussions and Cooperative Efforts with Indigenous Peoples Prove Successful

All communities have a role to play in recognizing the land that Indigenous Peoples lived on before land settlements and development and in being inclusive of this population. Pelham is located on the traditional territories of the Haudenosaunee and Anishinaabe peoples and is covered by the Upper Canada Treaties and is within the land protected by the Dish with One Spoon Wampum Agreement. Staff are making efforts to meet with Indigenous Peoples and groups to best represent them within the provision of recreation, cultural and wellness services.

The Truth and Reconciliation Report (2015) and the Parks for All Report (2017) speak to the role that Canadians have in reconciling with Indigenous Peoples over past history. The following excerpt from the Truth and Reconciliation Report articulates the call to action through sport.

Truth and Reconciliation Commission of Canada Calls to Action (2015) – Sports and Reconciliation (all levels of government):

87. We call upon all levels of government, in collaboration with Aboriginal peoples, sports halls of fame, and other relevant organizations, to provide public education that tells the national story of Aboriginal athletes in history.

88. We call upon all levels of government to take action to ensure long-term Aboriginal athlete development and growth, and continued support for the North American Indigenous Games, including funding to host the games and for provincial and territorial team preparation and travel.

Before Council meetings Pelham offers a Land Recognition Statement to recognize the Indigenous Peoples that inhabited the land in and around the municipality. The Town also hosts a special event to recognize National Day for Truth and Recognition. Communities and organizations are emphasizing the role of Indigenous Peoples through education, arts, sports, parks amenities, and interpretation. For example, with greater awareness being raised regarding Indigenous Peoples and the Federal government's focus towards Truth and Reconciliation, municipalities are showcasing Indigenous history through public art in community centres and parks along with exploring programs reflective of First Nations sports and culture. Leading practices in addressing Truth and Recognition include municipalities hosting discussions with Indigenous Peoples and organizations that represent them to discuss meaningful ways to introduce and educate Indigenous sport and recreation within communities.

Female Participation in Sport and Recreation is at Canada's Lowest Levels

Participation in sport and recreation by girls and women is on a downward trend in Canada. Canadian Women in Sport in concert with the Canadian Tire Jumpstart Charities released a national report in June 2020 regarding sport participation for girls aged six to 18. The **findings noted that girl's participation in sport is much lower than boys the same age and** that girls experience a significant drop-out rate by late adolescence. One in three girls leave sport as compared to one in ten boys. Among the barriers cited, girls stated low levels of confidence, low body image, lack of skills, and feeling unwelcomed in a sport environment.

In 1992, over half of females over 15 participated in sport. By 2019, 28% of females participated in sport while 62% do not. Current studies are demonstrating that one in four girls are not committed to returning to sport after the pandemic. This declining participation rate is alarming, yet the Federal government has declared that we will achieve gender equity in sport by 2035 in Canada. The Canadian Women in Sport (CWS) supports and enables girls, women, and gender diverse people in pursuing sport and active lifestyles, keeping women actively engaged in building community capacity. CWS's priority and focus is to develop and support sustainable models where women are trained to lead and promote active opportunities in concert with community partners such as municipalities, universities, and not-for-profit organizations. They have many resources that are readily available to audit policies and practices and build capacity within the organization. Female participation in community-driven sport and recreation has not been prioritized specifically in Pelham. This is a national priority and Pelham should utilize tools provided by CSW and audit which interventions and inclusionary efforts are required.

Recommendations

- #4 Create an Internal Staff Team to address increasing participation in recreation, culture, and wellness activities by marginalized populations. Preliminary actions should include (but not be limited to):
 - a. Develop an Access and Inclusion Policy which identifies the underrepresented populations in Pelham and the efforts that will be made to be more inclusive in recreation, wellness, and culture. Consult organizations representing marginalized populations in its development.
 - Provide training and professional development opportunities for staff and volunteers with respect to better including marginalized populations in the delivery of service.

- c. Complete visual audits of facilities and public spaces to ensure that recreational use reflects the full citizenry of Pelham. Identify the people who are not regularly utilizing public spaces and engage them to understand any barriers.
- d. Complete a top line analysis of the number of females and those identifying as females participating in recreation and sport pursuits by age group. Address gaps through community discussions with females and those who identify as female to address barriers to participation. Work with regional, provincial, and national organizations to increase female participation in active and sport pursuits.
- e. Meet with groups representing persons with disabilities and persons experiencing low income to develop programs and approaches to increase participation in recreation programs and services.
- f. Ensure that all public spaces and facilities are safe and welcoming spaces for the LGBTQ2S+ community.
- g. Continue to engage with the Indigenous community to best understand how to better include and represent Indigenous Peoples in sport and recreation.

5.4 Strengthening Internal Capacity

The willingness and ability of the Town, community groups, organizations, and volunteers to work toward the same goal of increased participation is imperative and will continue to be so as Pelham grows in population. The Town of Pelham has many internal strengths in leading and managing a strong recreation, wellness, and cultural network of opportunities. **It is in the Town's best interests to ensure that departmental policies and processes** exemplify best practices in organizational effectiveness.

Some promising practices in strengthening internal capacity for Pelham to consider include:

- a) Ensure that Recreation, Culture and Wellness receives an approved mandate through comprehensive Policies and Standards.
- b) Demonstrate compliance with legislative requirements and industry standards.
- c) Strengthen community engagement and enhance services through volunteerism.
- d) Promote opportunities through comprehensive marketing and communications.
- e) Utilize technology to streamline operations, produce efficiencies, and form a relationship with residents and visitors.
- f) Increase the number of meaningful community partnerships that serve to engage more residents in leisure opportunities.
- g) Seek out alternate revenues through sponsorships and grants.
- h) Understand the cost of providing services in the development of a fair-minded fee structure.
- i) Demonstrate a strong organizational culture and responsive structure.
- j) Provide continuous staff development and training opportunities.
- k) Set targets, measure, and report out on Departmental performance.

Selected Observations for Pelham

Legislative Compliance is Imperative

Reviewing adherence to legislative and industry standards ensures that operations are compliant and embrace the highest standards. Compliance should be tested on an annual basis at a minimum. Each discipline has indicated that they feel that they are compliant for the most part but have not completed an audit to ensure that they are implementing changes to legislation. Legislative compliance is required and must be demonstrated in operations and the delivery of service.

Policies Set Clear Expectations and Offer Guidance

The Department continues to develop new policies that are relevant to their current operations. A Special Events Policy and an Access and Inclusion Policy (discussed in previous sections) are recommended. This section recommends a Sponsorship and Partnership Policy to look to alternate revenues to fund recreation and other services. Staff are now administering the Rink Board Advertising Program and an evaluation of the staff effort in costs versus the revenues as compared to the net gain in revenues would be appropriate. A review of the Allocation Policy is also required to ensure that facilities and spaces are allocated equitably and according to needs rather than historical precedent (which may or may not be defensible). Each policy that is developed should engage the public and relevant stakeholders to understand their priorities and how certain policy statements may impact their ability to operate groups or access services. Staff should develop a system for automatically reviewing policies on a consistent basis.

Setting Levels of Service

While levels of service are mostly understood, they are undocumented and it is important to articulate and have levels of service approved by Council. Each discipline (aquatics, programs, camps, maintenance, etc.) will list their services, the frequency, duration, and the staff effort that it takes to offer/ enable these programs and services. This effort **confirms the Town's commitment to the public and identifies what it takes to deliver the** service. Costs can then be tracked and alternate methods of achieving the same level of service can be addressed. Articulating levels of service gains commitment from the public and approval from Council. Further, the resources for any service expansions due to growth or demand can be identified.

Volunteerism Enhances Service Provision

During the community consultation to support the development of the Master Plan, some community stakeholder groups indicated that they were having issues with the recruitment and retention of volunteers. It would be prudent to meet with community groups to discuss volunteer promotion, a common and central location to list opportunities, and a streamlined approach to matching volunteers with opportunities. Pelham lists all volunteer opportunities on its website which helps to promote the scope of opportunities available. Interested volunteers are directed to the respective department for selection, training, and orientation. Most volunteerism occurs in special events and within community sport groups. The Town recognizes volunteers on an annual basis.

One current best practice in volunteerism involves the use of online software. Pelham lists volunteer opportunities and encourages online applications which assists in streamlining the process and making it easier for volunteers to match their skills with current opportunities.

Many municipalities have implemented an online system to match volunteers with volunteer needs and the department will list their opportunities with this organization as well as recruitment using other mechanisms. It would be prudent to investigate more comprehensive online systems that serve not only to recruit but track hours, and train volunteers in standard practices. This may save staff many hours of repeated training time.

Volunteer Canada's Code for Volunteer Involvement and other resources can also assist in strengthening volunteerism in Pelham.

Costing of Services in Setting Fair Minded Fees is Defensible

Pelham partially offsets the financial costs of providing recreation and cultural services through several revenue streams, most notably user fees, entrance fees, taxation and, to a lesser extent, sponsorships/grants/partnerships. The Department also accepts that there are non-financial and intangible benefits that offset fiscal expenditures by way of increased physical and social health among residents, contributions to community vibrancy and cohesion, etc. Therefore, the degree to which quantifiable costs are "recovered" is dictated by Town's philosophy surrounding the "value" of the service that it provides to residents and the community. The first step in setting fair minded fees and cost recovery levels is understanding the cost to provide the service. This is a first step and an arduous task and will involve guidance and assistance from the Finance Department (to set corporate guidelines) and allocate costs fairly.

Once costs are known (e.g., to produce an hour of ice), the current cost recovery levels can be ascertained by understanding the percentage of the costs that are recovered through the current fee structure. A comparison to the market rate is usually undertaken to determine if fees can be modified. Setting of fees can be developed by determining which age groups or types of programs should receive greater subsidies. Costing of services provides transparency in setting of fees.

Community Partnerships and Sponsorships Expand Service Provision

The Recreation, Culture and Wellness Department works with partners to provide the highest level of service to the public. As partnerships are a key tactic used by the Town in **the Master Plan's implementation, an analysis of the Town's approach to partnerships and** sponsorships is contained in Section 9.3.

Organizational Effectiveness and Structural Considerations Strengthen Staff Capacity

Strong employee engagement and satisfaction levels were observed within the Recreation, Culture and Wellness work team. Leadership has worked to empower staff to readily suggest improvements for their respective disciplines. There is a sense of dedication and a belief in the value of the services in strengthening the health of the community. This common vision has served to engage staff and create a strong Departmental culture. The culture, values, and respective behaviours are evident but not captured in writing and agreed to by departmental staff. This would be a worthwhile undertaking to create a charter of engagement for current staff and volunteers.

KPMG and the Refined Organizational Structure in Recreation, Culture and Wellness

In 2022, KPMG was contracted to complete an overview of the organizational effectiveness and structure of the Recreation, Culture and Wellness Department. The scope of the

exercise included considerations surrounding the following key result areas and operational processes:

- Governance and Strategy;
- Service Standards;
- Process and Service Delivery Model;
- Data and Technology, and
- People.

Seventeen recommendations and considerations were offered by KPMG and received by Council. Many of the recommendations are aligned with the findings of the current master planning undertaking. The analysis within this Master Plan supports the findings and recommendations housed in the Organizational Review. The scope of this Master Plan supports the implementation of the primary findings in the KPMG report, including key performance indicators, programming, and standard operating procedures.

The KPMG report also examined the Department's organizational structure with the goal of

creating greater efficiencies and effectiveness in service delivery. This review allows the Department to rethink the allocation of staff and continue to place like functions and serve like customer objectives together. KPMG found that there is currently an absence of a middle management layer of staff to oversee the development of policies, refine processes, and ensure that that there are standard levels of service and operating procedures. Further, the turnover in part-time Customer Service staff is placing pressures in recruitment, selection, training, and onboarding. KPMG recommends the consideration of replacing the equivalent part-time customer service positions with one full-time position. The intent is to lessen the administrative burden and allow for consistent service with less turnover. At the time of writing, the Department has been directed by Council to bring back a follow-up report on implementation and consider alternate models of structuring the Department.

Measuring Performance Strengthens Accountability and Improves Services

Performance measures hold staff accountable for their work and provide valuable information in comparing performance against intended service targets. This information provides baseline data on which to refine performance year over year. This approach to enhance service delivery provides a vehicle to analyze what is important and allows staff to change course if refinements are warranted. The objective is to align measures with the goals and objectives of the department(s) through Key Performance Indicators. For example, if the goal is to increase participation and utilize facilities to their maximum capacity with high levels of satisfaction, then measures will centre around increasing participation from the previous year, communicating the capacity and utilization of public facilities, and testing public satisfaction levels. Measures need not be complex – they just need to tell a story, praise a job well done, and influence future actions.

Measuring performance allows an organization to quantify various elements of service delivery and to demonstrate if progress is being made toward intended targets. For example, if hypothetical public satisfaction rests at 70% in camps in year one, the target for the next year would be set at 75% with a long-term target of 90% or more. Staff would test satisfaction levels and address participant concerns toward improving service delivery. This data provides the information needed to complete an annual report or program end analysis and to ensure that program decisions are knowledge-based. This data must also be utilized to compare participation and utilization levels year-to-year.

A framework for measuring performance is suggested and implemented in each discipline. The KPMG Organizational Review noted and recommended that Key Performance Indicators be developed. Data to support these measures is most likely being collected currently. Annual reporting should also be a simple illustration that staff and the public can glean and determine if targets are being met or have been exceeded.

A typical performance measurement framework for Recreation, Culture and Wellness includes capturing the inputs (resources approved to deliver service), outputs (what was achieved within the approved resources, such as number of participants, pool attendance, square metres of facilities tended, etc.), efficiencies (the unit costs to deliver each service) and effectiveness (public and user satisfaction levels).

Performance Measure Type	Answers These Questions	Suggested Measures
Inputs	What resources are allotted to Recreation, Culture and Wellness (staff, financial and physical spaces)	Full time equivalents (FTEs) in staff FTEs per service area Budget for key service areas Asset inventory Volunteerism in annual hours
Outputs	What did the Department achieve with the resources provided? Were there increases/decreases in certain areas? How did these outputs compare to previous years and program related targets?	Levels of service achieved Performance against targets Participation in programs and drop-in opportunities Results compared to the previous year or the average of the previous three years Identify pent up demands
Efficiencies	What are the high-level unit costs and have any been reduced by increased participation/ productivity?	Impact on unit costs (increased participation might result in a reduction of unit costs over all) Efficiencies achieved Cost savings realized through partnerships and grants or alternate revenue streams
Effectiveness	How do users and public rate services? Have there been satisfaction level improvements in targeted areas?	Overall public and satisfaction levels Number of complaints Comparison to previous year ratings as compared to the average of the last three years

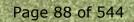
Table 10 -	Sample	Performance	Measures	for RCW
	Sample	1 CHOIMANCC	measures	

Recommendations

#5 Identify RCW's levels of service and corresponding policy, process, and resource requirements for each discipline within the Department for Council's approval. Identify the operational resources required to implement the recommendations in the Recreation, Culture and Wellness Master Plan for annual approval as part of the budget deliberation process.

- #6 Complete an audit of current legislation affecting the delivery of Recreation, Culture, and Wellness services and ensure that the Town of Pelham is compliant with these requirements.
- #7 Investigate the efficiencies created through a standard online App to recruit, train, track hours, and serve to recognize volunteers supporting Recreation, Culture and Wellness services.
- #8 Apply a consistent methodology to better understand the costs to provide **RCW's** various services and to determine current cost recovery levels. Develop a fair minded and transparent Pricing Policy to ensure that fees are equitable and respect the value that the program/service provides to the community.
- #9 Develop a meaningful set of performance measures for the Recreation, Culture and Wellness Department that describe the inputs, outputs, efficiencies, and effectiveness measures employed in each discipline.

6. Recreation & Park Facilities



Recreation facilities and outdoor amenities play an important role in the daily life of Pelham residents. The Town invests in infrastructure to promote physical activity, healthy lifestyles, skill development, athletic competition, community building, and economic growth. These **assets have positive impacts on residents and contribute to the community's wellbeing.**

This section identifies needs and considerations for the indoor and outdoor recreation and parks facilities in Pelham.

6.1 Current Inventory of Recreation & Park Facilities

A summary of notable community facilities and amenities owned and/or operated by the Town of Pelham is shown in the table below.

Facility Type	Number	Location	
Community Centres	1	Meridian Community Centre	
Community Halls	1	Old Pelham Town Hall Note: The Town also owns the Quaker Meeting House, which is leased to a third-party	
Ice Pads	2	Meridian Community Centre: Accipiter Arena and Duliban Insurance Arena	
Gymnasiums	2	Meridian Community Centre	
Rectangular Fields Full-size (lit) Mini	7 3 4*	Centennial Park (2 full lit), Glynn. A. Green Public School* (4 mini), Harold Black Park (1 full lit)	
Ball Diamonds Hardball – Lit Hardball – Unlit Softball – Lit Softball – Unlit	7 1 3 2	Centennial Park (1 Lit Hardball, 2 Lit Softball), Harold Black Park (1 Lit Softball, 1 Unlit Hardball), North Pelham Park (2 Unlit Softball, one senior and one junior) Note: Gordon Klager Lions Park also contains one lit softball diamond.	
Tennis Courts	6	Centennial Park (5), North Pelham Park (1)	
Platform Tennis Courts	2	Rolling Meadows Park (2)	
Pickleball Courts	6	Centennial Park	
Outdoor Basketball Courts	2	Centennial Park (full court), North Pelham Park (full court)	
Skateboard Parks	1	Isaac Riehl Memorial Skatepark (Marlene Stewart Streit Park)	
Outdoor Pools	1	Marlene Stewart Streit Park	
Splash Pads	2	Centennial Park, Marlene Stewart Streit Park	
Cool Misters	1	River Estates Park	
Off-Leash Dog Parks	1	Centre Street - Leash Free Park (Region of Niagara)	

Table 11 - Summary of Municipal Recreation Facilities in the Town of Pelham

Facility Type	Number	Location
Playgrounds	12	Centennial Park, Cherry Ridge Park, Harold Black Park, Hurleston Park, Lookout Park, Marlene Stewart Streit Park, North Pelham Park, Pelham Corners Park, River Estates Park, Rolling Meadows Park, Weiland Heights Park, Woodstream Park

* These fields are used by groups under agreement with local schools.

In addition to these municipal facilities, the community also has access to amenities owned and managed by other providers (note: some may have limited access). These include:

- Schools such as E.L Crossley Secondary School and several elementary schools that offer gymnasiums, playgrounds, outdoor courts and fields.
- Conservation Areas consist of Comfort Maple Conservation Area, E.C. Brown Conservation Area, and St. Johns Conservation Area, which are maintained by the Niagara Peninsula Conservation Authority. Short Hills Provincial Park also borders Pelham. The Lathrop Nature Preserve is located in Fonthill and is owned by the Nature Conservancy of Canada.
- Non-profit providers such local churches and the Fonthill and Fenwick Lions Club which maintain halls for community use, among other amenities (e.g., lit ball diamond and outdoor ball hockey rink at Gordon L Klager Fonthill Lions Park).
- For-profit providers include local golf courses, fitness operators, dance and martial arts studies, etc.
- Adjacent Municipalities provide several recreation, culture and parks facilities that may be available to Pelham residents. For example:
 - The City of Welland has Main Arena and Jack Ballantyne Memorial Youth Arena, which are home to Jr. B Hockey, Welland Minor Hockey Association and the Niagara Centre Skating Club. The City has three outdoor large pools and two wading pools amongst its parks. The Welland Community Centre also provides a gymnasium, theatre, three multipurpose rooms, and therapeutic pool. In addition, the membership-based Niagara Centre YMCA contains a five-lane lap pool, a leisure pool, a fitness centre, a gymnasium and an indoor walking track.
 - The Town of West Lincoln is home to the West Lincoln Arena Community Centre, that includes a regulation sized single ice pad with 450 seating capacity, a gymnasium, an indoor walking track and three multi-purpose community rooms. This recreational hub is also adjacent to skateboard park and splash pad. In addition, the Town's Leisureplex Township Park provides fourteen different sized soccer fields.
 - The City of Thorold has a community arena with two ice pads, an outdoor community pool and three type A sport fields that possess lights, changerooms and washrooms. The City is also home to Canada Games Park, that includes two ice pads, a para sport gymnasium with four courts, a health and wellbeing centre, and a 200m indoor track. The Park's outdoor amenities consist of six beach volleyball courts, a cycling centre, an outdoor storage area, and a track-and-field facility including a full 400m track and areas for jumps and throw disciplines.

- The City of St Catharines is home to the indoor Kiwanis Aquatics Centre, three Older Adult Centres, and seven total ice pads amongst four arenas (including the Meridian Centre event venue). In addition, the City's outdoor recreation facility inventory is highlighted by 32 rectangular fields, 28 tennis courts and 22 multi-use courts.
- The Town of Lincoln is home to two arenas with two total ice pads, as well as two outdoor pools. Other notable facilities include a Seniors Club and the Lincoln Museum and Culture Centre.
- Additionally, the athletic facilities at Brock University such as the Walker Centre pool – provide access for many residents in the region. This also includes the Walker Sports and Abilities Centre, a legacy of the 2022 Canada Summer Games that is operated in partnership with the University, City of St. Catharines, and City of Thorold. This facility contains a twin pad arena, fitness centre and sport performance centre, indoor track, gymnasiums, sports fields and courts, outdoor track, and more.

6.2 Community Centres, Halls & Gymnasiums

The Meridian Community Centre (MCC) has been serving Pelham since it opened in late 2018, addressing a wide range of recreation and culture needs. As a large multi-use facility, the MCC serves both a local and regional audience and accounts for the majority of the RCW **Department's budget. The facility's operations have been continuously evolving and** maturing during this time, including throughout the pandemic. The Town took out a long-term debenture to fund the facility's construction.

The MCC contains two full-sized gymnasiums, facilitating a variety of activities including basketball, volleyball, pickleball, badminton, martial arts, fitness, and dance classes. **Basketball is one of Pelham's most popular sports with a la**rge number of participants, and Pelham Minor Basketball has an agreement for access to the gymnasiums. Also located on the main level are two arenas (discussed separately in this plan) as well as a concession lounge near the **building's north entrance**.

There are several rentable community rooms on **the MCC's second floor,** including the Dr. Gary and Mall Accursi community room (3708 sq ft, including a catering kitchen) and the Kinsmen community room (1334 sq ft, divisible space). The second floor also features: a two-lane walking track that is open seven days a week and free for the public to use; a flex space between the two pads that is currently being used as a spin bike studio; food service concession; art gallery displays; and offices for the RCW department.

The Town also owns Old Pelham Town Hall in Ridgeville, which features a large 150person capacity hall, small activity room, and kitchen. The 1888 Victorian style build possesses heritage status, and is generally used for small weddings, meetings, receptions, family gatherings and bridal or baby showers.

Town facilities are well used by many sports groups, community organizations, and service clubs. Based on current trends and the evolution of municipal programming, there may be a need for additional program space in the longer-term; community partnerships for access to non-municipal spaces (e.g., schools, churches, etc.) should be explored as appropriate.

More immediately, with a key focus toward the optimization of facility space, the KPMG Organizational Review for the RCW Department recommends that the Town develop formalized operating plans for the MCC to guide its programming and performance.

Recommendations

- #10 Continue to support programming, rentals, and partnerships that optimize utilization of the Meridian Community Centre and Old Pelham Town Hall. Develop formalized operating plans for the MCC to guide programming and performance in keeping with the recommendations of the 2023 KPMG Report.
- #11 Seek out spaces in schools and other appropriate locations for additional programming to augment programs offered at the Meridian Community Centre.

6.3 Arenas

The Accipiter Arena (premier rink) and the Duliban Insurance Arena are located at the Meridian Community Centre. Both are NHL-sized surfaces and are heavily used by the Pelham Minor Hockey Association, Pelham Panthers Jr B, Pelham Figure Skating Club, and Southern Tier AAA Admirals, among others. These pads have replaced the single pad at **Town's** former Pelham Arena, which was recently demolished.

Competitive and organized sports in general require access to "competition-ready" specialized facilities. The MCC's possesses the amenities essential to hosting tournaments and arena events of large capacities, a broad trend that many communities are encouraging for economic benefit of sport-tourism opportunities.

Ice time is offered within the Duliban Insurance Area year-round, while the Accipiter Arena offers ice time from mid-August through to the end of March, and used is for lacrosse during the summer (serving as the home of Raiders Lacrosse, Youth/Service Club and Adult rental groups). Additionally, the pads are used for ceremonies, concerts, and trade shows, amongst other events. These arenas have had success with ice rentals, servicing both local **and regional demand guided by an ice allocation policy. Amongst the MCC's approximate 49** pledge agreements, many five-year licensing agreements are set to expire in 2023.

The two ice pads were built **to meet the Town's long**-term needs. Hockey, figure skating, and ice sports are among the most popular indoor activities in Pelham, with 30% of households participating. In order to monitor longer-term needs, the Town is encouraged to collect registration data from its core user groups. As a rule of thumb, typical capacities area approximately 400 to 450 youth participants per municipal ice pad, assuming that youth have preferred access to prime time ice. **If and when Pelham's ice pads approach** these thresholds, changes to the ice allocation policy may be required to ensure fair access for priority groups such as local organizations and residents.

Recommendations

#12 Monitor ice usage trends and collect registration data to inform a review of the Ice Allocation Policy (at minimum every five years), with the goal of ensuring fair access for priority groups such as local organizations and residents.

6.4 Indoor Pools

There are no public indoor swimming pools in Pelham. Residents seeking indoor swimming opportunities are likely to facilities in nearby municipalities (e.g., Niagara Centre YMCA in Welland, Brock Aquatics Centre in St. Catharines, the Kiwanis Aquatics Centre in St. Catharines, etc.). During the summer months the outdoor pool at Marlene Stewart Streit Park offers instructional, fitness, and recreational swimming opportunities to residents.

Nevertheless, resident interest in an indoor pool is high. The community survey found that 69% of respondents identified an indoor swimming pool as a high priority for Pelham. These requests are common in smaller communities that do not provide indoor pools as swimming is an activity that appeals to people of all ages and abilities, and an indoor aquatic centre provides access during the colder months when the outdoor pool is closed. The option of building an indoor pool in Pelham was considered prior to the Meridian Community Centre **being built and was not supported at that time due to the town's small** population and high associated capital and operating costs.

Indoor pools are more commonly provided in communities with larger populations (typically 30,000 or more) or those without ready-access to other pools beyond their community. Pelham is not expected to achieve this population level until beyond 2051.

The decision to provide an indoor aquatic centre is heavily influenced by cost, as municipal indoor pools are highly subsidized facilities that require approximately in the range of \$750,000 of tax support annually (this would be equivalent to a 4.5% **of the Town's 2022** tax levy). Further, construction costs tend to range from \$12 to \$20 million, which can be difficult for smaller communities to afford. While partnerships, grant opportunities, and more minimalistic designs may help to mitigate some costs, sustainable funding strategies are needed to ensure a viable operation.

The Town should continue to encourage the use of the indoor aquatic facilities in adjacent municipalities as there is insufficient demand to warrant the development of an indoor aquatic centre in Pelham over the planning period. Should a public-private partnership opportunity arise for the development and/or operation of an indoor aquatic facility, the Town may evaluate the proposal and consider low-risk participation in such an initiative.

6.5 Soccer Fields

Pelham's user groups make use of seven (7) local soccer fields (3 municipal and 4 school fields used under agreement), including full-size fields at Centennial Park (2) and Harold Black Park (1). All three Town fields will have lights for evening play when Centennial Park's current unlit field is upgraded in 2023 (offset by grant funding). Additionally, groups currently use four mini fields at Glynn A. Green Public School to accommodate demand. The Town also will occasionally permit ball diamond outfields at North Pelham Park for soccer when necessary (though not ideal).

The Pelham Soccer Club (minor soccer) indicates **that the Town's current inventory** does not adequately support their registration levels and potential future growth. Input from the community survey finds that one-in-four households participate in soccer, and 68% of respondents identify soccer and multi-use fields to be a high priority investment (ranking 9th our of 27 facility types). The loss of an intermediate and mini field at the recently reconfigured Rolling Meadows Park / Former Pelham Arena (which now lacks the parking

required to support soccer) has impacted Pelham's user groups. Furthermore, Pelham's usage of Concordia School for overflow is not viewed as a sustainable long-term option.

A provision target of one soccer field per 90 participants is recommended to assess current and future demand. **The Town's inventory** offers an equivalent of 8.5 unlit fields (1 lit field is equivalent to 1.5 unlit fields). There are currently 920 participants enrolled in the Pelham Soccer Club (nearly one out of every three children), for an average of one unlit equivalent field per 108 players, indicating that the Town is not achieving the provision target. The following table forecasts the number of youth participants **using the Town's projected** growth rate. If the number of youth participants experience this future growth, an additional 3.7 unlit field equivalents would be required in Pelham by 2031.

Table 12	Forocastod	Domand for	Soccer Fields
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	2022	2031	2041
Youth Participants (ages 5-19), based on 31% participation rate	920 (Actual)	1,095 (+19%)	1,270 (28%)
Provision Target	One soccer field (ULE) per 90 registered participants		
Number of Fields Required	10.2	12.2	14.1
Number of Fields Currently Provided	8.5 ULE (unlit equivalents)		
Deficit - Additional Fields Needed (ULE)	1.7	3.7	5.6

To meet Pelham's provision target for soccer fields, it is recommended that the Town

employ a variety of strategies including field upgrades and conversions to increase capacity, formalizing agreements with schools for community access, and developing additional fields in future park sites.

Recommendations

- #13 Employ a variety of strategies to address current and future needs for community soccer fields, including:
 - a. working with rectangular field users to ensure optimal access to existing fields, coupled with appropriate maintenance practices to support usage levels;
 - b. formalizing agreements to continue to use soccer fields at Glynn A.
 Green PS and expanding these agreements to appropriate fields at other school locations, such as E. L. Crossley Secondary School;
 - c. converting the softball diamond at Harold Black Park to a lit full size soccer field;
 - d. creating another lit full size soccer field at Centennial Park (as outlined in the 2003 park master plan);
 - e. designing new mini fields into new neighbourhood parks, where appropriate; and
 - f. seeking to secure a future community park site to serve long-term needs, capable of accommodating 2 or more soccer fields and other needed recreational amenities.

6.6 Ball Diamonds

Pelham has a total of seven (7) ball diamonds located at Centennial Park (one lit hardball, two lit softball), Harold Black Park (one lit hardball, one unlit hardball), and North Pelham Park (two unlit softball). Centennial Park had lighting recently installed on the hardball diamond, and will be adding a batting cage this year. Additionally, there is a lit softball diamond owned and operated by the Fonthill Lions Club that is not part of the municipal inventory.

One-half (52%) of survey respondents indicated that they feel that improving or developing baseball and softball diamonds should be a priority, ranking 19th out of 27 facility types. This suggests that the current supply is generally meeting needs and that improvements are a lower priority.

To inform long-term diamond needs, registration data may be collected and applied using a participant-based target of one ball diamond per 80-100 participants. There are 240 **participants in Pelham's minor baseball user groups**; however, data on all user groups is not currently available. Broader trends suggest baseball participation in many communities has been growing as organizations emphasize skill development and build more competitive streams of play.

There would appear to be ample capacity within the current inventory to accommodate future demand. To address more pressing needs for soccer, it is recommended that the softball diamond at Harold Back Park be converted to a soccer field to create a two-field complex at this site. It is also recommended that the Town continue to work with user groups to ensure that localized diamond conditions continue to respond to their more pressing needs.

Recommendations

- #14 Continue to maintain the existing inventory of ball diamonds (with the exception of the softball diamond at Harold Black Park, which is proposed for conversion to a soccer field).
- #15 Consider installing lights on the hardball diamond at Harold Black Park should demand warrant.

6.7 Tennis & Pickleball Courts

Pelham has a total of six (6) tennis courts with five (5) located at Centennial Park and one (1) located at North Pelham Park. **Centennial Park's tennis courts are run by the town with** key fob access, primarily used by members with limited access by instructors and the public. Six (6) pickleball courts were recently built at Centennial Park through a grant (which also supported the resurfacing of the tennis courts at this park).

In addition, two (2) platform tennis courts are open year-round at the former Pelham Arena Park adjacent to Rolling Meadows Park, managed by the Fonthill Platform Tennis Club. This Club has between 400 and 500 members and offers several leagues. Services to the clubhouse were connected to the former Pelham Arena, which has resulted in no running water and portable washrooms. The Town and Club are working to update their agreement to ensure that these items and future responsibilities are clarified.

Input from the community survey found that 13% of households have played tennis recently, with 46% support additional investment in tennis courts (ranking 21st out of 27 facility options). Slightly fewer households have played pickleball (9%), though this may have been a function of having no outdoor venues until late in 2022. With the new pickleball complex at Centennial Park, only 33% felt that additional investment was required in outdoor pickleball courts (ranking 26th out of 27 options). At the open house vents, requests were also received for the provision of tennis courts in Fonthill and the addition of a tennis wall in Centennial Park.

The recommended provision target for outdoor tennis is one court per 5,000 residents, indicating the Town is well supplied **(the town's current ratio is 1: 3,640 persons)**. Tennis is a well-established sport and is maintaining its popularity through provision of accessible outdoor recreation in neighbourhood parks. To address future demand for tennis and improve geographic access, it is recommended that the Town consider establishing a two-court complex in a future park in Fonthill. Additionally, the tennis court at North Pelham Park is aging and is recommended to be reconfigured as a multi-sport pad once it has reached its end of life, removing tennis as a primary use.

There is no industry standard for the provision of pickleball courts, but most Ontario municipalities are quickly adopting strategies to accommodate the sport, both indoors and outdoors. Demand for the sport has increased rapidly in Pelham, with the MCC gymnasiums being a primary venue for play in a controlled environment year-round. Trends indicate that pickleball has become an emerging activity and social sport, accessible to people of all ages **and growing in popularity amongst Canada's aging population.** As a result, the Town should monitor usage of the new Centennial Park courts and consider establishing a multi-court pickleball complex in an appropriate location in Fonthill should demand materialize; due to the need for supporting infrastructure (e.g., parking, washrooms, etc.) and distancing from residential uses to reduce noise impacts, community parks are the preferred location for pickleball courts; this Master Plan recommends land acquisition to support a future community park in Fonthill.

Recommendations

- #16 Work with the Fonthill Platform Tennis Club to establish a new agreement pertaining to their use of the courts and clubhouse in Rolling Meadows Park.
- #17 I dentify a location within a future neighbourhood park in Fonthill for tennis courts (2).
- #18 Monitor the demand for outdoor pickleball in Fonthill and consider a multicourt complex in a future community park, if required.

6.8 Outdoor Basketball Courts

Pelham has two full-sized basketball courts, located at Centennial Park and North Pelham **Park. Centennial Park's** court was recently developed, while the court at North Pelham Park is approaching the end of its functional life. The Fonthill community is currently without a public court (some hoops may be available at local schools after hours) and input from the community has indicated that the current availability of public basketball courts is limited.

Basketball is an established sport that is very popular in Pelham, with close to 900 registrants enrolled in the Pelham Minor Basketball Association. From the community survey, 18% of respondent households participate in basketball, and 56% identified outdoor basketball courts as a high priority for investment (ranking 15th out of 27 facility types). The **sport's popularity amongst youth suggests that the distribution** of courts should consider proximity to residential areas.

One municipal basketball court per 1,000 youth residents between the ages of 10 and 19 is a common target. Pelham's two courts align with this provision target. However, having the Town's distribution of courts extend into the Fonthill community would make courts more accessible to this community; the Town should look to establish half courts in two future neighbourhood parks in Fonthill. Further, it is recommended that the existing basketball / tennis pad at North Pelham Park is redeveloped into a multi-use sport court, along with the addition of a small pavilion to support broader use of the site.

Recommendations

- #19 Redevelop the existing basketball / tennis pad at North Pelham Park into a multi-use sport court for basketball and ball hockey. Add a small pavilion to support the site.
- #20 Establish half basketball courts in two (2) new neighbourhood parks in Fonthill to improve access for local youth.

6.9 Skate & Bike Parks

Pelham is home to the Isaac Riehl Memorial Skatepark located at Marlene Stewart Streit Park. This concrete skate park has been in the community since 2014, serving as Pelham's sole all-wheels location (used by skateboards, scooters, and bikes). Input from the community survey identified BMX or Bike Parks (45%) and skateboard parks (42%) to be a high priority, ranking 22nd and 24th amongst 27 facility types. The Town's input and level of demand for skate and bike parks suggest that Pelham's current provision levels are sufficient, and no additional facilities are recommended at this time.

Increasingly communities are considering smaller-scale amenities such as "skate spots" or "bicycle playgrounds" to provide younger children and those residing in the community with accessible opportunities to learn how to skate, bike, etc. These are strategies that could considered to respond to future demands, should they materialize.

6.10 Splash Pads

Pelham has two splash pads located at Centennial Park and Marlene Stewart Streit Park, as well as a misting pole at River Estates Park. The Town received grants to develop the two splash pads in 2022, and they have been well received by the community. Input from the community survey indicated that 30% of households have used splash pads, and this **number that will likely increase once Pelham's splash pads have been open for a full season.** Additionally, 60% of respondents indicated improving or developing splash pads should be a high priority, ranking 13th out of 27 facility types.

In smaller municipalities like Pelham, provision targets are typically one per community, **suggesting that the Town's current provi**sion is sufficient. In the longer-term, the Town may

benefit from incorporating misting poles in community parks and/or a splash pad in east or south Fonthill to improve geographic distribution (such as in a future community park).

Recommendations

#21 Consider installing a splash pad in a future community park if the location enhances access for residents in Fonthill (east or south).

6.11 Outdoor Pools

Pelham's sole outdoor pool is about 60-years old, consisting of a 6-lane 25 metre tank with a bathhouse at Marlene Stewart Streit Park. The Town received a grant to replace this pool, scheduled to take place between 2025 and 2026. The pool at Marlene Stewart Streit Park is well used, although it is supported by limited parking and has a limited window for use (8 to 10 weeks per year).

Outdoor pools are desired public amenities during the summer months and provide a lowcost recreational opportunity, particularly in areas where private backyard pools are not common. **Pelham's Public Pool supports swim lessons (617 regist**rants in 2022 – a 25% increase over 2019, indicating a desire amongst many residents to catch-up for time lost during the pandemic), aquatic fitness, recreational swimming, and a swim team. One-third (34%) of survey respondents have recently participated in outdoor swimming (not specifically at the Pelham Public Pool) and 60% of households support investment in this facility type (ranking 14th out of 27 options).

The planned reconstruction of the Pelham Public Pool will substantially extend the life of the facility and address barrier-free accessibility through a modern pool design that also considers upgraded change rooms and washrooms. The regulatory and footprint constraints **of the site may limit the range of potential design options, but the community's** long-time support for this site is strong and this investment will retain local swimming options in Pelham for years to come.

Recommendations

#22 Continue with plans to redevelop the Pelham Public Pool at Marlene Stewart Streit Park, with consideration of barrier-free access to the pool and bathhouse (change rooms, washrooms, etc.).

6.12 Off-Leash Dog Parks

There is one off-leash dog park in Pelham – the Centre Street Leash Free Park, managed by the Region of Niagara. Featuring two fenced areas for small and large dogs, parking, a pavilion, picnic areas, and public trails and paths, the park is well used by the community.

Input from the community survey indicated that 24% of respondent households participated in dog walking (off-leash park). Additionally, more than two-fifths (43%) of survey respondents placed a high priority on improving or developing dog walking (off-leash park), ranking 23rd amongst 27 facility types.

Some suggestions were made for a dog park in the Fonthill urban area, but the addition of another off-leash dog park would be very challenging as there are no existing parks that

would be capable of sufficiently accommodating this type of facility (which requires approximately 2 acres of land and sufficient setbacks from residential uses). The establishment of another off-leash dog park is not a priority at this time.

6.13 Playgrounds

Pelham has 12 playgrounds located throughout the town. Most playgrounds have artificial turf surfacing and are well maintained, with many structures being newly replaced through a grant received by the Township. Many playgrounds also include outdoor fitness equipment for use by adults and seniors.

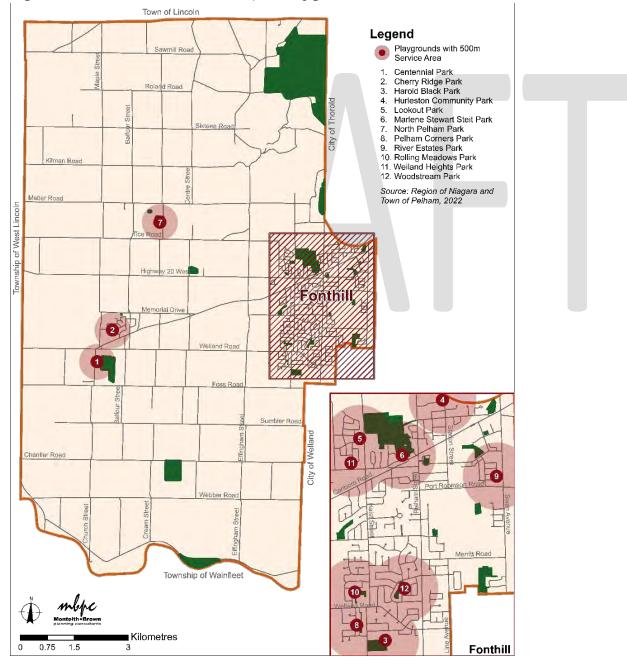


Figure 24: Distribution of Municipal Playgrounds

Input from the community survey indicated that 42% respondent households participated in use of playground equipment, and was an important activity to 76% of respondents, ranking 4th out of 27 facility types. It is common to see strong support for playgrounds and **other children's services in surveys of this nature.**

To ensure accessibility, playgrounds should be located within 500 metres of residential neighbourhoods (excluding rural areas). New playgrounds will need to be constructed in new residential areas (e.g., East Fonthill) to meet this target. In central Fonthill, there is a gap in playground distribution between Haist Street and Pelham Street in the vicinity of Pancake Lane. This is an area that is already developed, but would benefit from the provision of a playground to meet the intent of 500-metre distribution target. Furthermore, despite not being a municipal facility, the playground at Gordon L. Klager Park is very old and should be considered for replacement.

Recommendations

- #23 Establish a target of providing playgrounds within 500-metres of all urban residential areas. Where necessary, install playgrounds in new subdivisions (e.g., East Fonthill, East Fenwick) and seek opportunities to address gaps (e.g., central Fonthill).
- #24 Work with the Fonthill Lions Club to advance the replacement of the playground equipment at Gordon L. Klager Park.

6.14 Outdoor Skating Rinks

Pelham currently has one outdoor skating rink, consisting of a flooded space next to Fire Station #3 in North Pelham. Improving or developing outdoor ice rinks was identifies as a high priority for 64% of community survey respondents, ranking 11th out of 27 facility types. Ice skating is one of several outdoor activities that has grown in interest during the pandemic as people sought safe outdoor places to recreate.

While recreational skating is a Canadian tradition, the ability to maintain natural outdoor ice rinks has become increasingly difficult due to climate change. Natural outdoor rinks are more affordable to build and operate than refrigerated pads, although they can be unreliable when temperatures are near or above freezing. The Town should explore safe and cost-effective ways to facilitate public outdoor ice skating on a demand-driven basis. For example, the Town may facilitate community-supported volunteer rinks within appropriate park types; this requires access to nearby parking, water connections, and consideration of washroom facilities.

Recommendations

#25 Consider opportunities to support outdoor skating through park development and redevelopment projects, including volunteer-led rinks in appropriate park sites.

6.15 Other Recreation Facilities

The Town occasionally provides other recreation facilities within its parks system that are not specifically addressed within this Master Plan (e.g., bocce courts, etc.). There are no service targets for these types of facilities as there are several factors that need to be considered including, but not limited to, park context, geography, market demand, alternate providers, partnership opportunities, and/or available resources.

Requests for municipal participation in capital projects not identified in this Plan can be expected. In the interest of providing facilities and recreation options that support healthy, active lifestyles for residents, the Town should be open to exploring and discussing opportunities for new and emerging activities. The Town may consider low-risk participation in projects that address unmet demands, make use of underutilized resources, promote healthy living/physical activity, encourage public access, and support other municipal objectives. The Master Plan may be used as a starting point in determining if a proposal serves a priority need in the community.

More specifically, the evaluation of potential capital partnerships should require the proponent to provide information to the satisfaction of the Town, such as (but not limited to):

- a comprehensive business plan, including a needs analysis and operating and capital costs;
- **the organization's financial capacity** (including fundraising commitments) and a demonstration of the sustainability of the project;
- detailed evidence of community benefits; and
- full risk analysis.

Recommendations

#26 Municipal provision of recreation facilities not explicitly addressed within this Master Plan will generally not be made a priority, but may be considered in partnership with local organizations where demonstrated demand exists. A standardized partnership framework should be used to evaluate and respond to such requests.

7. Arts & Culture

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Like many small municipalities, Pelham is home to an active arts and cultural community consisting of business owners, artisans, and other organizations that are dedicated to enriching the lives of others through visual, performing, and creative arts.

This section examines municipal arts and cultural assets, policies and programs. For the purposes of this Plan, "culture" is broadly defined as the arts, cultural industries and heritage resources. It includes (but is not limited to) the following opportunities and assets:

- artistic talent and expression (music, theatre, dance, visual art, film, media arts and literature);
- built heritage;
- natural heritage landscapes;
- museums and archives; and
- events, festivals and tourism.

A Brief History of Pelham

The following summary provides valuable context for understanding Pelham's local history and cultures. The reader is encouraged to refer to the Town of Pelham's 2012 Heritage Master Plan and 2013 Cultural Master Plan for more detail.

Pelham is situated on the traditional territory of the Haudenosaunee and Anishinaabe peoples. While Pelham was likely occupied for thousands of years by hunter gatherer groups, no permanent agricultural villages have been found.

The area was settled mainly by Quakers and Mennonites as early as 1790, with many fleeing persecution in the United Stats for their political or religious beliefs. Being the highest point on the Niagara peninsula, the area is defined by its geography, with the northern part being quite hilly, the interior being comprised of gently rolling hills, and the southern portion near the Welland River being predominately flat. This terrain, **combined with the area's rich soils and warm climate, allowed agriculture to thrive for** many decades. The rural-agricultural environment includes the Short Hills, vineyards, orchards, sand quarries on the Fonthill Kame, and Canada's oldest sugar maple tree.

Pelham incorporated as a town in 1970; the area is an amalgamation of the five historical communities of Fonthill, North Pelham, Ridgeville, Effingham and Fenwick. Today, thoroughfares and scenic routes through the town continue to offer travelers a glimpse of the town's past. The location of the town presents a unique opportunity with respect to the preservation of local culture. Pelham's geographical centrality in the Region has allowed the town to benefit from Niagara's industrial development yet is distant enough to maintain its small town charm, a characteristic that continues to attract new residents to the municipality.

7.1 Cultural Spaces & Amenities

There is a limited base of cultural facilities in Pelham. One of the **Town's most prominent** assets is the bandshell in Peace Park, which is the host site for the Summer Chill concert series and several other well-attended events. Public libraries are also provided in Fonthill and Fenwick.

The Town does not operate any art galleries, theatres, museums or archives, although the Town does accommodate theatre groups and manages an art exhibit space within the Meridian Community Centre, in addition to multi-use spaces than can be used for various activities (e.g., Old Town Hall). Pelham is also home to a variety of historic sites and heritage buildings maintained by private interests and other sectors.

Many creative and visual arts take place in home-based or private studios, area churches and schools, or spaces outside of the Pelham. For example, the nearby City of Welland is home to several notable cultural spaces that may also serve Pelham residents to a degree, such as the Welland Museum, Welland Community Wellness Complex performance theatre (385-person capacity), and Merritt Park Floating Stage and Amphitheatre (750-person capacity).

Cultural Master Plan

Municipal policies and investments provide the foundation through which the arts and cultural community can grow. For example, the Town encourages the preservation and **maintenance of the Town's historic assets through its Official Plan, Heritage Master Plan,** and related strategic plans and policies.

Additionally, a Cultural Master Plan (see Appendix B for a summary) is in place, but is nearing the end of its 10-year horizon. Developed in 2013, this strategic planning document provides a framework of action to direct, sustain and leverage cultural investment in **Pelham, founded on the following vision: "Where** people, arts, history, and creativity **connect". The Plan focuses on inter**-generational and inter-community participation, local and regional partnership opportunities for cultural tourism and heritage celebration, and **celebrates the Town's heritage identity**.

Based on increasing attendance at events and an increasing array of arts-related programs at the Meridian Community Centre, the Town has been effective at implementing many of the recommendations from the Cultural Master Plan. This includes growth in cultural programming and partnerships, new and expanded promotional tactics, event support and expansion, and more.

In the short-term, the Town is encouraged to update the Cultural Master Plan to re-examine facility needs given the recent development of the Meridian Community Centre, as well as to explore how Pelham can further strengthen relationships and promote growing opportunities. There is also value in reviewing leading trends in the arts and culture sector (e.g., creative cultural hubs, interactive and participatory experiences, placemaking, etc.) and to assess their applicability to the local community.

Cultural Hub

In terms of facilities, the 2013 Cultural Master Plan supports a three-fold approach to the provision of cultural spaces:

- 1. Developing new spaces and partnerships for new spaces: The Cultural Plan recommended that an infrastructure needs analysis be prepared to guide the design and functional programming for a future cultural facility (this has not been completed). Further, the Plan recommends the development of a new cultural complex and hub in partnership with others, potentially housing art/gallery space, small classrooms/public studio spaces (potentially a community theatre/performance space), conference and meeting rooms.
- 2. Optimizing existing space: The Cultural Plan speaks to using future recreation spaces (e.g., Meridian Community Centre) for cultural gatherings, education, participation, and public art.
- 3. Adaptive re-use of spaces for cultural activity (e.g., restoration of heritagesignificant buildings to accommodate multiple uses): The Cultural Plan suggestions restoring heritage-significant buildings (e.g., Old Town Hall) to accommodate multiple uses, including the potential for a creative hub.

To date, the need for an arts centre has not been fully demonstrated. Demand for arts space was not identified as a strong priority through the Master Plan survey, with performing arts spaces and art centres ranking 17th and 20th respectively amongst 27 types of parks, recreation and cultural facility types. While only 26% of survey respondents indicated that they have visited theatres, art galleries or museums since 2019, 47% have attended special events in parks and 73% want to see more events in parks.

It was indicated that they community lacks archival space (formerly housed in the basement of the Fonthill library) and broader trends in the sector suggest that there is growing interest in cultural gathering spaces and teaching/programming spaces that encourage collaboration, innovation, and creation. Additional consultation with the arts and cultural sector, as well as the broader public, is needed to establish a deeper understanding of potential gaps and interests. Space needs should be explored further through an update to the **Town's** Cultural Master Plan, and possibly through a subsequent business plan. One option for the Town to consider is repurposing surplus municipal buildings for arts and cultural uses prior to disposal.

Furthermore, where possible, new public spaces – such as the proposed civic square – **should consider designs that are "arts and culture-friendly" and that can accommodate** performances, events, public art, and more.

Public Library

The Town's 2008 Facilities Feasibility Study established a long-term goal of redeveloping the Fonthill library branch as part the facility that would become the Meridian Community Centre, with the intent of consolidating both facilities into a single building. In September 2022, it was announced that the Town of Pelham received \$5.4 million in federal funding for the construction of a new 18,000 square foot library in Fonthill, to be located adjacent to the Meridian Community Centre. However, due to rising capital cost estimates, the new library is no longer being pursued. Rather, the Town will be focusing on renovations to the existing public library building at 43 Pelham Town Square.

Despite the library project not going forward at the Meridian Community Centre, there is merit in pursuing greater coordination between Lincoln Pelham Public Library and the Town to collaboratively plan and deliver community programs using municipal indoor and outdoor spaces. For example, there are many areas of programming (e.g., STEM classes, educational workshops, social events, arts classes, etc.) that may be considered to limit duplication of effort and enhance sharing of resources, including promotion and use of space. This may require the establishment of additional program and cultural space within the library as part of its future renovation. A service level agreement may be established to guide the respective roles and responsibilities of the Town and Library in this regard, giving recognition to the different audiences, mandates, resources, and cost recovery targets of the two parties.

Public Art

Public art in Pelham currently takes the form of murals and temporary outdoor art installations structured around special events. Additionally, the Pelham arches in downtown Fonthill were originally built as a temporary structure for Pelham Summerfest, but recently reinstalled as a permanent feature. The Town has also taken steps to establish a public art installation at the East Fonthill gateway to the Town and art and/or water features are being contemplated for the future Pelham Civic Square project.

To guide these and other projects, the Town prepared a Public Art Master Plan in 2016 and has established a Public Art Advisory Committee to oversee the Plan's implementation and generally to advise Council on the advancement of arts and culture in Pelham.

Increasingly, municipalities are establishing public art programs, embedding policies within the Official Plans, and funding installations through the development approvals process (e.g., community benefits charges, voluntary contributions, etc.). The Town of Pelham's Official Plan supports the establishment of public art in parks, gateways and at the terminus of view corridors in the downtown (Section B1.2.5) and public art is also supported in the Downtown Master Plan for Fenwick and Fonthill. Funding to implement public art can also be secured by allocating a percentage (1%) of the capital cost of municipal projects, such as new civic buildings, parks, trails, etc. Additional policies requiring cash contributions for public art and integrating the recommendations within the Public Art Master Plan should be considered when the Town prepares its next Official Plan review.

Public art is often a symbol of a progressive municipality, showcasing a level of maturity and inspiration that appeals to prospective residents and employers. Parks and civic facilities **provide linkages to Pelham's natural heritage and facilitate healthy lifestyles; thus these public** spaces provide ideal opportunities for public art installations. Such features may provoke reflection on environmental issues, provide interactive elements to engage with children and families, be integrated with the design of the park such as benches, paving and pedestrian **bridges and celebrate the community's past, present, and future, and more.**

The Public Art Master Plan provides provide direction to the municipality with respect to the location, selection and management of public art, as well as maintaining a reserve fund to assist with development and maintenance. The Town should continue to take a proactive **approach that demonstrates Pelham's commitment to recognizing local artisans, supporting** arts and culture in the community, and creating inviting public spaces that are welcoming of **all residents.** As a part of the Town's review of its Cultural Master Plan, consideration should be given to further exploring strategies to encourage and guide public art in Pelham, as well as how public art can be integrated within indoor and outdoor public spaces to increase awareness and appreciation for the history, heritage and stories that are unique to Pelham.

Recommendations

- #27 **Review the Town's 2013 Cultural Master Plan to update strategies for** promoting and supporting local arts and culture endeavours, including the assessment of programming and space requirements. Revisit the recommendation to develop an Arts and Culture Community Hub, with a focus on partnerships that may support third-party operation within an adaptive re-use building.
- #28 Consider creating a service level agreement to support greater collaboration between the Recreation, Culture & Wellness Department and the Lincoln Pelham Public Library regarding program delivery and promotion.
- #29 Examine opportunities for public art within all park and public space capital projects, as well as and temporary pop-up projects in underutilized civic spaces. Explore approaches to funding public art through the land development process and consider implementing policies through the next Official Plan review.

7.2 Cultural Programming & Events

At its core, culture is about the shared experiences between people that connect a community. The Town recognizes that the availability of arts and culture opportunities is very desirable, fostering vibrant and liveable neighbourhoods, contributing to local knowledge, and supporting the local economy. The arts and cultural community in Pelham provides several benefits, such as:

- Creating a sense of local pride through community building, placemaking, and providing quality experiences;
- Working together as a loose collective to promote the arts and support a growing creative class (artists, architects, designers, chefs, etc.); and
- Generating tourism/cultural tourism benefits through unique cultural events and talents.

With the support of Council, the Town of Pelham invests in its arts and cultural system primarily through an extensive schedule of events, programs, and community development **opportunities. Led by the RCW Department's** Culture and Community Enhancement Programmer, the Town has actively developed partnerships with local businesses and volunteer groups that support festivals and special events, as well as the display of local **artists' works at the Meridian Community Centre**. The Town of Pelham is also working to create a local online artist directory to serve both the cultural community and the general public in discover local artisans, performers, teachers, art, music, photography, etc.

The provision of arts and cultural programs is important for people of all ages, but is particularly critical for younger children and older adults – two key demographic groups I Pelham. Involvement in the arts facilitates self-expression, which in turn can develop feelings of confidence and self-worth for children and youth. Participation in the arts at an early age can lead to life-long involvement, something that is also important during older adulthood to minimize cognitive deterioration, dementia, and social isolation.

Examples of cultural and special events organized or sponsored by the Town Pelham include (not a complete list):

- Ballroom Dance Social
- Big Band Dance Night
- Canada Day Parade & Canada Day in the Park
- Comedy Shows
- Culture Days
- Fenwick Lions Spring Parade
- Lincoln Pelham Public Library programming and resources (various)
- National Indigenous People's Day, workshops and flag raising
- Pelham Art Festival (Southern Ontario's premier spring art exhibition)
- Santa Claus Parade
- SAY IT on Stage (Seniors and Youth Intergenerational Theatre on Stage)
- Summer Chill (live music, farmer's market, etc.)
- Summerfest
- Theatre Series
- Youth Theatre and Summer Camps (Cabar-EH)

Through the consultation process, suggestions were made with respect to expanding arts programming in Pelham, such as art, dance and music classes for younger children, as well as events that celebrate culture and food. Finding qualified instructors will be an important step to deliver the arts and cultural programs that the community desires, which underscores the importance of forming strong partnerships to meet these needs. For example, the Town may wish to bring in local artists to share their craft through registered programming.

Festivals and events are a defining aspect of life in Pelham and were consistently identified as an area that the Town meets or exceeds resident expectations. The Town recognizes the positive impact that festivals and events have on residents, the local business community, and cultural tourism and has established a level of service that would rival that of a much larger municipality. Event planning, coordination, promotion, and implementation are notable strengths of the **Town's staff** team. Further, many of these events take place in parks (in addition to the Bandshell, the Town has a portable stage), animating these public spaces and drawing in visitors.

The trends research (see Appendix C) suggests that event attendance is growing along with the appreciation for arts and culture across the country. Residents' value authentic experiences and the unique attributes of communities. People are also experiencing and appreciating arts and culture in less traditional ways and have increasing expectations for programs and events. With Ontario's population becoming increasingly culturally diverse, a broadening of arts and cultural activities and interests can be expected in the region.

Recommendations

- #30 Seek opportunities to expand arts programming and build relationships with local partners that bolster participation and optimize under-utilized spaces.
- #31 Collect cultural asset and participation data (e.g., event attendance, revenues, sponsorships, programs, etc.) to assist in measuring growth in the cultural sector.

8. Parks & Trails



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Public parks are important places for sporting events, casual leisure activities, special events, building a sense of community, and social belonging. To ensure that the Town keeps pace with land-**based demands, this section examines Pelham's parks and open space** system, along with future requirements and policy considerations.

8.1 Parkland Form & Function

Parkland Classification and Inventory

Most municipalities use parkland classification systems to guide park development, design and level of service (including maintenance). By identifying intended uses, size, form, function and/or level of amenity, a parkland classification system allows the public to understand what a park may include and positions parkland to be compatible with adjacent land uses.

At present, the Town lacks a formal classification system to define the function, permitted uses, and maintenance levels of each type of park. While Pelham's Official Plan includes reference to various park types, it lacks definition and consistency.

To establish a consistent and town-wide approach that reflects the evolving role of parks in the Town – including a greater emphasis on events, active uses, passive uses and accessibility – an approach for classifying parks is recommended herein. This model blends the effective elements of past approaches with one that is based on park functions and experiences, where all parks have a clear purpose and work together as a system to complement each other and reduce duplication. This will enable the Town to direct its financial and operational resources where they are needed most.

Moving forward, it is recommended that the Town consider the following proposed parkland and open space classification system:

- 1. Parkland: refers to all lands owned, leased and/or managed by the Town and classified as Community Parks, Neighbourhood Parks, and Village Squares. Parkland typically consists of tableland suitable for the development or installation of built recreational or civic amenities (such as sports fields, playgrounds, courts, gardens, etc.) that may be used for both organized and unorganized activities, although these parks may also incorporate natural features.
- 2. Open Space: refers to all lands owned, leased and/or managed by the Town (and sometimes other public entities) and classified as Natural Areas and Open Space Linkages. These sites generally have no to low development potential and are primarily designated for purposes such as environmental protection/conservation, stormwater management, buffers, etc. The Town may choose to assume open space lands, they should not generally be accepted as part of the parkland dedication requirements.

More detail on the proposed classification system is presented in the tables on the following pages.

Classification	General Description / Function / Design	Service Area	Current Town- wide Provision	Target Park Size
PARKLAND				
Community Park	Community Parks are used by groups of residents and tourists for community events, festivals and active recreation. They may contain athletic amenities for organized recreation (such as sports fields, support buildings, and community-wide recreation amenities), as well as pathways, pavilions and/or unique elements that make the park a "destination" . Full services (water, sanitary, etc.) are generally required. <i>Example: Centennial Park</i>	Town-wide and beyond	1.79 hectares per 1,000 population	3.0 hectares or more
Neighbourhood Park	Neighbourhood Parks primarily support children's play activities and are often situated within residential areas to promote walkability. Neighbourhood Parks contain playgrounds, local-level play features and activity areas, seating, and/or passive open space intended to serve the immediate area. Unlike community parks, most do not have off-street parking, although they may be coordinated with school sites. These parks may be referred to as "parkettes in the residential neighbourhoods" within the East Fonthill Secondary Plan. <i>Example: Woodstream Park</i>	Surrounding neighbourhood (500-metre radius)	0.73 hectares per 1,000 population	0.4 to 3.0 hectares
Village Square	Village Squares are publicly-owned lands that are located in highly visible and accessible locations, typically in gateways, commercial areas. or higher density mixed use areas. They serve to support the Town's social and cultural fabric and create a sense of place for pedestrians. They are typically characterized by hardscaped areas for events and gatherings, public art, seating areas, related civic uses, etc. These parks may be referred to as "parkettes in the commercial/ employment centre" within the East Fonthill Secondary Plan. <i>Example: Proposed Civic Square</i>	Localized	0.02 hectares per 1,000 population	Less than 0.4 hectares
OPEN SPACE				
Natural Area	Natural Areas are municipal open space and natural properties used for conservation and/or passive recreational activities (e.g., walking, nature appreciation, education). These lands will be largely undeveloped and contain open space or natural heritage features such as woodlots, wetlands, conservation habitat, etc. <i>Example: Bradshaw Memorial Park</i>	Variable	Not applicable	Variable
Open Space Linkage	Open Space Linkages – typically comprised of trails, linear parks or open space parcels – provide connections within the open space system (for habitat) and between local points of interest (for pedestrians and/or cyclists). They consist largely of unimproved open space and/or trail infrastructure. They may be Town-owned or controlled (e.g., easement, agreement, etc.). <i>Example: Portions of the Steve Bauer Trail</i>	Variable	Not applicable	Variable (minimum 7.5 metre width)

Table 13: Proposed Parkland and Open Space Classification Hierarchy

		Parkland		Оре	n Space
Facility/Amenity	Community Parks	Neighbourhood Parks	Village Squares	Natural Areas	Open Space Linkages
Recreation Facilities					
Ball Diamond	•				
Basketball / Multi-use Court	•	•			
Community Garden Plot	•)		•	
Off-Leash Dog Park				-	
Outdoor Rink					
Pavilion / Shelter				•	
Pickleball Court	•				
Playground	•	•		•	
Recreational Trail	•	•	Þ	•	•
Skateboard / Bike Park	•				
Soccer Field – full size	•				
Soccer Field – mini	•	•			
Splash Pad	•				
Spray Mister		D	Þ		
Tennis Court	•	•			
Park Amenities					
Bike Rack	•				
Casual Play Area / Open Space	•	\bullet			
Naturalized Areas	•			•)
Parking Lot	•				
Potable Water Source	•				
Seating (fixed or portable)	•	•	•	Þ	
Washrooms	•				

Table 14:	Suitability	of Potential	Amenities	by Park	Tvpe
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 \bullet = Permitted; \blacktriangleright = Conditional/Limited

Note: This table identifies potentially suitable uses by park type and is to be used as a guideline only. Site-specific analysis is required to inform park planning and design.

The Town of Pelham's parks system consists of 17 sites accounting for 46.5 hectares (39.5 hectares, excluding woodlots) of municipally-owned and managed active parkland; this includes the Gordon L. Klager Lions Park which is privately owned but serves an important public function. "Active parkland" refers to municipal lands that are suitable for the development or installation of built recreational amenities (such as sports fields, playgrounds, courts, etc.) and may be used for both organized and unorganized activities, although these parks may also incorporate natural features. Active parkland is the focus of parkland dedication under the Planning Act.

Name	Hectares	Classification	Community	
Centennial Park*	16.29	Community	Fenwick	
Cherry Ridge Park	1.02	Neighbourhood	Fonthill	
Civic Square (undeveloped)	0.44	Village Square	Fonthill	
East Fonthill Park (undeveloped)	2.73	Neighbourhood	Fonthill	
Gordon L. Klager Park (private, Fonthill Lions)	2.16	Community	Fonthill	
Harold Black Park	4.77	Community	Fonthill	
Hurleston Community Park	0.27	Neighbourhood**	Fonthill	
Lookout Park	1.07	Neighbourhood	Fonthill	
Marlene Stewart Streit Park*	4.73	Community	Fonthill	
North Pelham Park	3.76	Community	North Pelham	
Peace Park	0.93	Community	Fonthill	
Pelham Corners Park	1.13	Neighbourhood**	Fonthill	
River Estates Park	0.20	Neighbourhood	Fonthill	
Rolling Meadows Park	2.03	Neighbourhood	Fonthill	
Saffron Meadows Park	1.5	Neighbourhood	Fonthill	
Weiland Heights Park	0.68	Neighbourhood	Fonthill	
Woodstream Park	2.83	Neighbourhood**	Fonthill	
Total Active Parks	46.53			
Active Parkland per 1,000 residents (2021)	2.55 ha/1000			
Active Parkland per 1,000 residents, less woodlots (2021)	2.17 ha/1000			

Table 15 - Inventory of Parks (Active Parks only)

Source: Town of Pelham and Region of Niagara GIS, 2022

Per capita ratios are based on a 2021 population of 18,192 persons.

* These parks contain sizable woodlots that may be deducted from their overall size to arrive at a more accurate calculation of active parkland. For Centennial Park, the woodlot is 4.7 hectares (remaining active parkland is 11.59 hectares). For Marlene Stewart Streit Park, the woodlot is 2.36 hectares (remaining active parkland is 2.37 hectares).

** These parks are classified as "Community Parks" in the Town's Official Plan.

The map on the following page illustrates the location of these active parks and open space sites.

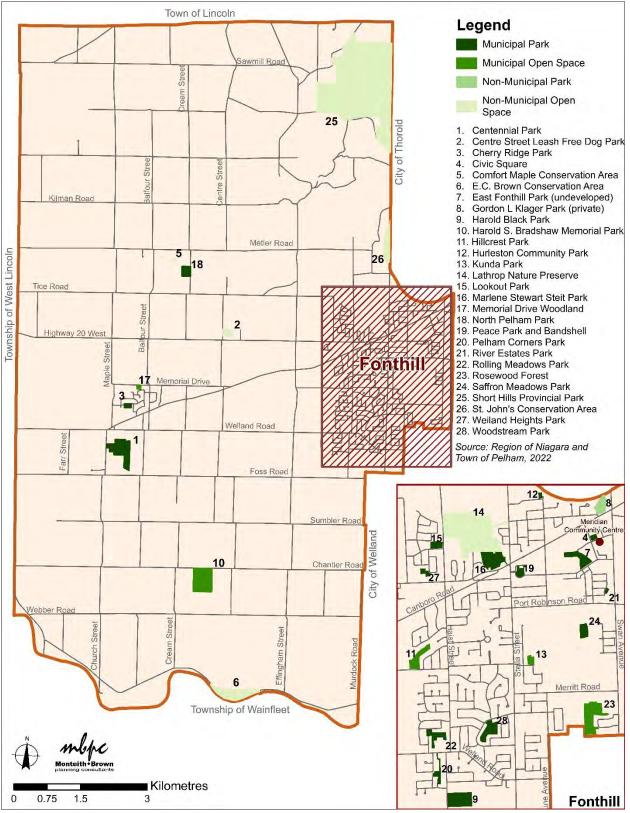


Figure 25: Parks and Open Space Inventory, Town of Pelham

The previous map also shows six municipally-owned and/or managed open space properties totalling 32.7 hectares. This includes the Centre Street Leash Free Park which is owned by the Region of Niagara, but excludes other open space lands owned by the **province and conservation authorities.** "Open space lands" refers to sites with no to low development potential and are primarily designated for purposes such as environmental protection and conservation, stormwater management, buffers, etc. Open space lands are not a direct focus of this plan.

Name	Hectares	Classification	Community
Centre Street - Leash Free Park (Region)	2.27	n/a	Rural
Harold S. Bradshaw Memorial Park	20.44	Natural Area**	Rural
Hillcrest Park	2.61	Natural Area**	Fonthill
Kunda Park	0.77	Natural Area	Fonthill
Memorial Drive Woodland	0.48	Natural Area	Fenwick
Rosewood Forest	6.1	Natural Area	Fonthill
Total Open Spaces	32.67		

Table 16: Inventory of Municipal Open Spaces

Source: Town of Pelham and Region of Niagara GIS, 2022

** These parks are classified as "Community Parks" in the Town's Official Plan.

Unless otherwise noted, this inventory excludes the following open space lands owned and/or managed by non-municipal agencies, including:

- Comfort Maple Conservation Area (Niagara Peninsula Conservation Authority), 0.1 ha
- E.C. Brown Conservation Area (Niagara Peninsula Conservation Authority), 15.13 ha
- Lathrop Nature Preserve (Nature Conservancy of Canada), 26.0 ha
- Short Hills Provincial Park (Ontario Parks), 251.3 ha
- St. Johns Conservation Area (Niagara Peninsula Conservation Authority), 32.4 ha (7.4 ha in Pelham and 25.0 ha in Thorold)

Recommendations

- #32 Use the Master Plan's parkland classification hierarchy to guide the development or redevelopment of parks and open spaces according to park type, size, service level and the amenities that they provide. Incorporate the parkland classification hierarchy within the Town's next Official Plan Review.
- #33 Update the parks and open space inventory database and mapping regularly to assist in the assessment of land requirements.

Parkland Design

The size, use and location of each park is will generally define its function and value. Some of **a park's** key roles can include accommodating special events, athletics, passive recreation, open space buffers, green space and habitat conservation, beautification and more.

Through recent investment, the Town has been expanding the range of recreation opportunities available within its parks system, with consideration of emerging amenities

such as splash pads, pickleball courts, and more. Although new parkland will be required to serve future residents and interests, a focus should be placed on making the best use of existing park sites, keeping parks relevant considering changing demographics, and improving connectivity within the Town.

Designing parks requires a strong understanding of community needs, contemporary design practices, operational requirements, and programmatic considerations. From our observations, **the Town's parks system is well maintained, but some older parks contain** aging buildings (e.g., washrooms) and equipment, lack sufficient parking, lack barrier-free features, and lack potential for expansion. Park renewal and new park development projects provide opportunities to address these some of these shortcomings.

Most of **Pelham's** parks are in good condition and the Town has recently invested in improvements at several locations with assistance from senior government grants. However, strategic improvements and enhancements will help the Town to respond to growth pressures, changing demographics, asset management, community priorities, etc.

Aside from initiatives that improve health, safety and environmental protection, park renewal projects should focus on those sites that receive the heaviest use. This means an emphasis on Community Parks. The possibilities for parkland renewal are limitless, but may include enhanced landscaping, provision of shade structures and other comfort amenities, improved parking, facility upgrades and more.

Some initial ideas received through the public input process are presented in the following table. The implementation of these and other parkland renewal and redevelopment projects should be accompanied by public consultation, park-specific master plans, and facility fit diagrams to obtain accurate costing associated with any capital works. The timing of these projects will be influenced by needs determined through consultation, demand indicators, coordination of works, and the availability of funding.

Park	Examples of Possible Improvements
Centennial Park	 Upgrade the washrooms (barrier-free) to improve service to the splash pad, playground and sports fields; full renovation or replacement of support building may be required, potentially as part of the proposed Fenwick Lions hall redevelopment Addition of 3rd full-size lighted soccer field at the rear (as identified in the 2003 Centennial Park Master Plan) Establish a support building (washrooms, storage) to serve the soccer complex in partnership with Pelham Soccer Club In the longer-term, establish a parks depot (building and works yard) to improve on-site maintenance and create efficiencies Improve parking in coordination with other park improvements, including consideration of secondary exit (through the firehall property) during special events

Table 17: P	In a line in a m		a far		~	no o no to	+ ~	Cal	00+0	Dorde	C_{+}
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Park	Examples of Possible Improvements
Marlene Stewart Streit Park	 Upgrade the washrooms (barrier-free) to improve service to the splash pad, playground and pool Replace outdoor pool (grant funding) by 2025/26 Expand parking, to degree possible Enhance safe access to site from Highway 20 - consider establishing egress roadway exiting to Elm Street
North Pelham Park	 Redevelop tennis court / basketball pad as a multi-use court for basketball and ball hockey Add a small pavilion Upgrades to Diamond 1 (fencing, dugouts, bleachers)
Rolling Meadows Park (former arena site)	 Connect platform tennis clubhouse to municipal water and address parking issues (will be resolved as adjacent residential lands are developed) Prepare a concept plan to guide the redevelopment of the former soccer field into alternative uses
Harold Black Park	 Improve soccer field drainage to degree possible Upgrade the washrooms (barrier-free) to improve service and universal accessibility Convert softball diamond to lit full size soccer field Relocate the play structure to a more accessible and prominent location in the park Add lights to hardball diamond if needed
Civic Square Project	• Prepare architectural designs to support future funding opportunities, grant applications, and the development of the Civic Square planned at the northeast corner of Meridian and Wellspring Way, across from the Meridian Community Centre

The following are best practices that the Town may adopt in designing new or redeveloped parks.

- a) Promote universal accessibility in all parks, such as wheelchair access, pathways and ramps to play structure areas, etc.
- b) Provide both junior and senior play opportunities in parks with playgrounds. Use artificial turf surfacing for play structures, where possible. Ensure appropriate sight lines to play areas.
- c) Consider activities and programming for the growing older adult population, including increased daytime use and emerging activities such as pickleball.
- d) Unstructured space within a park that allows for a wide variety of active and passive uses throughout all seasons is considered an asset.
- e) Locate shade structures and trees central to amenities to protect users from the harmful effects of the sun. Consideration may be given to shade pavilions, shade structures over playground equipment and tree planting.
- f) Provide informal seating opportunities. Locate seating in shaded areas, along accessible routes, and in proximity to active amenities.

- g) Maintained pathways should be a minimum of 3.0m wide, unless otherwise required. Provide clearance along pathways (waste receptacles, benches, trees, bike racks, etc.) for maintenance vehicles.
- h) Locate waste and recycle receptacles close to park entrances to facilitate maintenance. This includes pet waste receptables in selected parks and trailhead areas.
- i) Select materials and equipment (e.g., park furniture) that are not easily vandalized and can be easily sourced for repair and/or replacement.
- j) Provide consistent branded signage at all public parks identifying the park name, address and current municipal branding. Additional signage should include emergency contact information and regulatory requirements (e.g., non-permitted uses, park hours, etc.).
- k) Encourage public art within appropriate park locations and in keeping with relevant municipal guidelines and in consultation with the Public Art Advisory Committee.
- Adding community vegetable garden plots (with access to a water source and parking) and orchards to expand urban agriculture opportunities and local food security.
- m) Use non-invasive native species in all plantings.
- n) Follow CPTED (Crime Prevention through Environmental Design) principles to enhance community security and safety features.
- Include buffer space between pathways and adjacent lot lines (minimum of 5.0 metres when abutting a residential property and 2.0 metres when abutting other land uses), as well as high-activity zones and residential lot lines.
- p) Provide naturalized buffers adjacent to natural features. Where appropriate, consider the piloting of naturalization initiatives and pollinator gardens in underutilized portions of parks to support habitat creation and other environmental objectives.

Additionally, parks help us achieve many of our environmental goals through their ability to mitigate flooding, reduce our carbon footprint, cool urban areas, and build more resilient public spaces. A well-connected and equitably distributed parks system can also reduce vehicle travel and promote active forms of transportation and leisure (cycling, walking, cross-country skiing, etc.). The Town is encouraged to explore ways in which the parks system can contribute to its environmental goals.

Recommendations

- #34 Maintain a commitment to universal accessibility, safety and comfort within **the Town's parks system. Regularly consult with the Joint** Accessibility Advisory Committee and ensure compliance with the Accessibility for Ontarians with Disabilities Act (AODA). Emphasize the provision of amenities such as benches/seating areas, bike racks, shade (structures, tree canopy, etc.), and barrier-free washrooms in appropriate park types to address the needs of all age groups
- #35 Undertake park amenity condition assessments on a regular basis to **inform the Town's asset management plan and long**-term capital plan.

- #36 I dentify and plan for additional park renewal and redevelopment projects that address aging infrastructure and capital improvements. Candidates for consideration in the short-term include Centennial Park (e.g., washrooms, support building, new soccer field, etc.), Marlene Stewart Streit Park (e.g., access/egress improvements, washrooms, etc.), and Rolling Meadows Park (concept plan development). Engage stakeholders and the public when designing new and redeveloped parks.
- #37 Prepare design plans for the Pelham Civic Square to support potential **funding opportunities (e.g., grant applications) and the site's future** development.
- #38 Establish consistent and high quality signage at all municipal facilities, parks and trailheads to enhance branding and wayfinding.
- #39 To guide the design of developer-**built parks, formalize the Town's** requirements for parkland design and development through a Park and Trail Design and Development Manual.

8.2 Parkland Needs

An appropriate level and equitable distribution of parkland is critical to ensuring a high quality of life and maximizing accessibility to services and amenities that achieve community objectives. Further, there is a growing need for more parkland to serve the increasing number of residents.

Most municipalities use population-based targets to calculate and plan parkland supply. A parkland target is particularly important because it is becoming more complex and costly to secure quality parcels for parkland within new higher density forms of development.

The Town's current parkland provision rate is 2.17 hectares per 1,000 residents, excluding open space parcels and woodlots within community parks. Comparable urban/rural municipalities typically strive to achieve provision rates in the range of 2 to 3 hectares per 1,000 residents to meet their active recreational needs associated with sports fields, playgrounds, courts and more. Actual provision rates are often much higher, sometimes exceeding 5 hectares per 1,000 residents. Pelham is near the bottom end of this recommended range.

A 2019 report examining large parks in Ontario's Golden Horseshoe found that Niagara

Region ranked second lowest (behind Toronto) of the seven Greater Golden Horseshoe regions in parkland space per resident¹. Niagara Region's parkland provision rate was approximately 3 hectares of parkland per 1000 residents. The following chart illustrates the parkland provision rates of other municipalities in the region with approved parks plans.

¹ Toronto Region Conservation Authority and Credit Valley Conservation Authority. The State of Large **Parks in Ontario's Golden Horseshoe**.

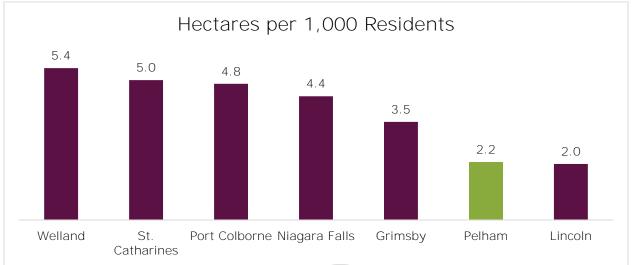


Figure 26: Parkland Provision Rates in Regional Municipalities

Source: Council-approved Master Plans (2015-2022). Published data for Fort Erie, Niagara-on-the-Lake, Thorold, Wainfleet, West Lincoln was not available. Note: some figures may include open space lands as these were not separately itemized in the reports.

Most of Pelham's larger parks were acquired decades ago. For many years, the parkland dedication tools within the Planning Act existed to respond primarily to the needs of communities that grew through lower density subdivision and greenfield site development. This served Pelham well, however, as the cost of land and residential densities rise, changes to the Planning Act (most recently through Bill 23) have reduced parkland requirements. While the Town's recent park improvements have gone a long way toward meeting current needs, Pelham's parkland supply is not keeping pace with growth.

Park demand is influenced by several factors, such as distribution and proximity to residential areas, non-municipal providers, urban density, population composition, amenity needs, existing park types, community objectives, and public input. For example, **Pelham's** population has a high proportion of older adults; thus, the demand for land-intensive park amenities such as sports fields may be lower, suggesting that a conservative provision target is in order. Conversely, community input indicates that the parks system is highly valued by residents and efforts should be made to ensure that provision levels remain appropriate – 94% of survey respondents indicated that parks for casual use, such as walking, picnicking and unstructured play were important to them.

Our observation of the Town's parks system is that most sites – especially Community Parks – are fully developed. The only significant park with even modest expansion potential is Centennial Park, which has land for one additional soccer field (although this would necessitate the removal of a portion of an existing woodlot). As Pelham grows, these parks could be subject to overuse which may lead to an accelerated need for renewal or redesign. In addition, most parks have little to no opportunity to add additional amenities as new demands emerge.

Further, as equity and accessibility are key elements of any parks system, it is recommended that the Town continue to strive to provide parkland in populated areas that are void of any park facilities. A review of parkland distribution **finds that the Town's parks** system provides good geographic coverage in **Pelham's** populated areas, although a notable gap exists in central Fonthill (generally in the vicinity of Pancake Lane between

Haist Street and Pelham Street). Although this is largely a mature residential area, infill opportunities or development within nearby secondary plan areas may offer potential to partially resolve the shortfall.

On the basis of the previous analysis, a minimum Town-wide target of 2.2 hectares of parkland per 1,000 residents (excluding open space lands) is recommended. This target should be **included in the Town's Official Plan and** used to guide development applications and other planning exercises.

As shown in the following table, there is a current shortfall of 0.5 hectares of parkland (excluding open space), growing to 8.0 hectares by 2031 (for a total of 47.5 hectares). New parklands should include a mixture of active park types, including a larger community park (3 hectares or larger) to serve the Fonthill community, most likely in South Fonthill.

Current Needs (2021)	
Current Population	18,192 persons
Current Parkland Supply, excluding open spaces and woodlots	39.5 ha
Current Parkland Needs, based on 2.2 ha/1000	40.0 ha
Current Parkland Shortfall (2021)	0.5 ha
Future Needs (2031)	
Forecasted Population	21,560 persons
Future Parkland Needs, based on 2.2 ha/1000	47.5 ha
Future Parkland Shortfall (2031)	8.0 ha

Some of these needs will be addressed through the development process as there is an estimated 0.8+ hectares of parkland anticipated to be conveyed to the Town through draft plans of subdivision in East Fonthill and East Fenwick. At this time, the Town anticipates that parkland will be dedicated in the short-term from development in the following locations:

- Forest Park (0.74 ha neighbourhood park), East Fonthill
- Tanner Subdivision (0.05 ha park), East Fonthill
- 3 neighbourhood parks (size tbd), East Fenwick

Recommendations

#40 Maintain a minimum town-wide parkland provision rate of 2.2 hectares per 1,000 residents; this target excludes passive open space lands and woodlots. Approximately 8.0 additional hectares of parkland should be secured by 2031 to address gaps and meet growth-related needs. This should include a mixture of park types, including a larger community park (minimum 3 hectares) to serve the Fonthill community. Alterative acquisition strategies may be required to address the entirety of these needs.

8.3 Parkland Dedication & Acquisition Guidelines

Parkland Dedication Policies

There are several provincial and municipal regulations, policies and guidelines governing the acquisition and location of parkland. Key documents include:

- Planning Act: Sections 42, 51.1 and 53 of the Ontario Planning Act establish the authority for the dedication of parkland and alternatives. The amount of parkland may vary depending on the application and project type. Further, the Town may require parkland or cash-in-lieu of parkland from development and redevelopment projects.
- Official Plan: The Town's Official Plan implements the Planning Act by setting out objectives for public parkland, along with policies for dedication and development.
- Parkland Dedication By-law: The Town's Parkland Dedication By-law contains additional guidelines associated with parkland dedication and cash-in-lieu.

A note about changing Provincial planning legislation

In November 2022, the More Homes Built Faster Act, 2022 (Bill 23) partially received Royal Assent, impacting several provisions of the Planning Act and other pieces of legislation. The changes are significant and will impact how municipalities manage growth through implementation of the official plan and how they provide essential infrastructure and community services. Notable to this Master Plan, Bill 23 introduced changes that will reduce development charges revenue, community benefits charges, and parkland dedication requirements.

The changes to the Planning Act are significant and will reduce the amount of parkland the Town can receive as part of the development approval process.

Specific to parkland dedication, a summary of some of the recent changes introduced by Bill 23 include:

- The maximum alternative dedication rate has been reduced to 1 ha/600 units for parkland and 1 ha/1000 units for cash in lieu. Further, the legislation caps the maximum alternative dedication rates at 10% of the land for sites under 5 ha and at 15% for sites greater than 5 ha. This will dramatically reduce parkland dedication and cash-in-lieu for applications under Section 42 (development and redevelopment outside of plans of subdivision).
- Affordable residential units, attainable residential units, inclusionary zoning residential units, non-profit housing and additional residential unit developments are exempt from parkland dedication requirements. This will also reduce parkland dedication and cash-in-lieu amounts, possibly increasing the financial burden on taxpayers and/or leading to reduced levels of park service.
- Parkland rates are frozen as of the date that a zoning-by law or site plan application is filed. The freeze is effective for two years after approval. This will reduce cash-in-lieu payments to the Town.

- To take effect at a future date, developers will be able to identify the land they intend to convey to the municipality for parkland. These lands may include encumbered lands and privately-owned public space (POPs). If agreement cannot be reached, the municipality or the landowner can appeal to the Ontario Land Tribunal. This may result in less suitable lands being accepted as parkland dedication.
- There is a new requirement for municipalities to spend or allocate at least 60% of the monies in their parkland reserve account at the beginning of each year.
- Municipalities are required to develop a parks plan prior to passing a parkland bylaw. Previously, this requirement applied only to those municipalities that authorized use of the Section 42 alternative rate, but now includes those that include the standard rate (e.g., 5% of lands as per Section 51.1).

The full impact of these modifications will continue to be assessed for the months to come and will be considered by the Town through a future Official Plan review. Reduced levels of service are possible if funding is reduced to growth-related services as is anticipated. This Master Plan reflects the legislative framework that is in place at the time of approval.

The Town's Official Plan and Parkland Dedication By-law include several policies that provide guidance on parkland dedication rates (including the alternative parkland requirement), parkland exemptions or reductions, suitable lands, privately-owned public spaces, cash-in-lieu of parkland, parkland acquisition tools, parkland siting and design, land valuation, reserve funds, and more. These policies are comprehensive, but do not reflect the legislative changes brought about by Bill 23 and will need to be updated at the appropriate time.

Further, in order to apply the alternative rate, an update to the Parkland Dedication By-law is required, as is a Parks Plan. This Master Plan can be used as the basis for a Parks Plan² that supports the development of a new parkland dedication by-law, as well as updates to the **Town's Official Plan when it is brought into conformity with Provincial Policy and** legislation.

Given Pelham's low ratio of parkland to population, it is recommended that the Town adopt a "parkland-first" approach that directs staff to prioritize the dedication of land in appropriate locations rather than cash-in-lieu of parkland during the development review process. This means that:

- Policies and practices that support on-site parkland dedication and encourage frontend acquisition of parkland should be encouraged.
- Parkland will be required when development will result in a park block that: (i) is at least 0.4 hectares in size; or (ii) expands an existing park site.
- The Town may still accept cash-in-lieu of parkland when it is determined to be more beneficial, especially for development projects that would not meet the minimum requirements. For example, cash-in-lieu may be considered for higher density development or redevelopment sites that cannot physically accommodate a typical

² Municipalities are required to develop a parks plan prior to passing a parkland dedication by-law. It is a requirement of the Planning Act that the municipality shall consult with every school board that has local jurisdiction.

park block (including village squares less than 0.4 hectares). In addition, privatelyowned public spaces (POPS) may be permitted, subject to the execution of an agreement acceptable to the Town.

• All lands to be dedicated for park purposes must be to the Town's satisfaction and will not include restricted lands such as Environmental Protection designated lands, hazard lands, steep slopes, contaminated lands, easements, stormwater ponds, etc.

Parkland Acquisition Alternatives

Some of the Town's future parkland requirements will be addressed through the conveyance of lands through the land development process. However, the recent changes to Planning Act will reduce the amount of land and/or funding available for parkland dedication, making it more difficult to achieve the Town's targets. To address local needs, the Town may need to consider methods beyond the land development process.

The following alternative strategies are the most likely options for addressing parkland gaps and shortfalls, generally listed in order of priority:

- 1) On an ongoing basis, evaluate proposed development applications for future park dedication and connectivity opportunities (e.g., sidewalks, trails, etc.).
- 2) Evaluate other municipal or public lands (not currently designated as parks) within these areas for their ability to be used as parkland or at a minimum accommodate a public playground.
- 3) Consider improvements to parks to enhance active and passive recreational opportunities in the vicinity of the growth area.
- 4) Encourage voluntary conveyance, dentations, gifts and bequests from individuals or corporations.
- 5) Monitor real estate opportunities and seek to purchase (or swap) one or more properties that could be developed as a municipal park. This may be the highest cost option and would require additional resources.

Recommendations

- #41 Seek to maximize parkland dedication through development and redevelopment applications, as well as alternative parkland acquisition strategies. **Update the Town's Official Plan and Parkland Dedication By**-law to align with amendments to the Ontario Planning Act and Bill 23, as well as the recommendations in this Master Plan. This Master Plan can be used as the basis for a parks plan that satisfies the legislative requirements.
- #42 Adopt a "Parkland First" approach that prioritizes parkland conveyance over cash-in-lieu of parkland in order to address parkland deficits. Parkland conveyances should: (a) be acceptable to the Town; (b) not include restricted lands; and (c) result in blocks that are at least 0.4 hectares in size (village squares may be smaller) or expand an existing park site.
- #43 Prepare a parkland acquisition strategy to enhance current and future community access to parks, with consideration of alternative acquisition tools (e.g., reallocation of surplus municipal lands, purchase/lease, land exchanges, partnerships, etc.). Where applicable, work with area school

boards and other service providers to maximize community access to quality outdoor parks and recreation amenities on non-municipal sites.

8.4 Trails System

Pelham's recreational trail system connects users through active transportation means such as walking, cycling, snowshoeing, and more. Recent initiatives have established off-road recreational trails connecting Pelham to adjacent municipalities, while enhancing opportunities for the community to stay active throughout all seasons.

Further, the Town is designated as a Bicycle Friendly Community, the first community of its size to achieve the silver award level. This program encourages the development of attractive, safe, convenient and practical multi-use trails, sidewalks, and amenities that connect neighborhoods to civic destinations and that make walking or cycling viable options for residents.

The most notable recreational trail systems in the Town of Pelham include:

- 1. Steve Bauer Trail This trail connects Pelham to Thorold in the north and Welland in the south, while offering several looped trail opportunities that connect parks and destinations within Fonthill. Most of the recreational trail was built on a former rail bed, although portions of the trail remain on-road and other portions link neighbourhoods via off-road trails. A six-kilometre segment running from Fonthill to Welland was recently paved and is cleared of snow to promote winter use.
- 2. Gerry Berkhout Trail This trail runs from Centennial Park in Fenwick to Murdoch Road in Welland. It was established on a former rail bed and consists of a gravel path.
- 3. John Nemy Trail This trail is within the Lathrop Nature Preserve (owned by the Nature Conservancy of Canada) and can also be accessed from Marlene Stewart Streit Park.

These aforementioned trails are publicized on the Town's website, including links to maps and rules of etiquette. In addition, there are several smaller trails and pathways within subdivisions, as well as new trails being established in growth areas (e.g., Rice Road Multipurpose Trail, East Fonthill Trail, etc.).

Pelham residents strongly support their trail system and the paved section of the Steve Bauer Trail and other paved trails has been particularly well received by the community. The Master Plan survey found that nature trails and paved trails were among the highest priorities for future capital investment (ranking 1st and 5th respectively).

Strategies for developing cycling and trails routes are guided by the Pelham Active Transportation Committee, with reference to the **Pelham's 2016 Active Transportation** (AT) Plan & Implementation Strategy. Some key priority off-road recreational trail projects recommended in the AT Plan include:

- Establishing pedestrian and cycling networks within East Fonthill, including connections to the Steve Bauer Trail;
- Upgrading specific sections of the Steve Bauer Trail surface to asphalt (completed);
- Completing gaps within the Steve Bauer Trail; and
- Formalizing the connection to Lathrop Nature Preserve from Pelham Street.

In addition, the AT Plan identifies several desired connections that represent long-term projects, such as the use of unopened road allowances, improving winter maintenance, improving wayfinding and signage, etc.

Through the **Master Plan's** consultation process, there were also suggestions for creating a **trail connection between Fonthill and Fenwick. Pelham's AT Plan proposes to achieve this** through the use of paved shoulders within the road network.

With a strong network of trail routes and future plans already in place, the Town and its partners are in a position to continue to enhance the trail network over time. Initiatives that promote walkable and bike-friendly designs, destinations and businesses – including year-round opportunities – should continue to be supported by the Town.

Recommendations

- #44 Assign high priority to the continued maintenance and expansion of the recreational trails system. Work with the Active Transportation Committee to establish a list of priority projects and work plans.
- #45 Establish and/or expand partnerships that promote public access to and nature-based programming within non-municipal trails and natural areas (e.g., Short Hills Provincial Park, Lathrop Nature Preserve, E.C. Brown Conservation Area, etc.).

8.5 Parks & Trails Maintenance

This section provides an assessment of the parks, trails and outdoor amenities maintenance standards for properties owned and managed by the Town, with reference to benchmarks and practices used by peer municipalities and projected future needs for the Town.

For example, there are several trends and best practices related to municipal parks and trails that may impact maintenance and service levels, including:

- greater diversity and changes in Pelham's demographics, including an increase in older age groups and young families;
- more demand for accessible parks and trails (and greater regulatory obligations for accessibility);
- increased use of parks and trails, in particular for unstructured, self-directed activities such as hiking, walking and cycling;
- year-round use of parks and trails; and
- a demand for increased provision of park washrooms, shade (trees and structures), benches, and other park furniture.

Additionally, some notable best practices include:

- formal standards for, and tracking of, maintenance (through recording of service requests and work carried out);
- connection of trails wherever possible; surfacing and width of trails appropriate to usage types and levels;
- provision of natural shade, or shade structures and park furniture to accommodate older adults, children and those with mobility issues;
- provision of year-round washroom access, especially in heavily used parks and trails;
- availability of water fountains and filling stations;

- source separation of waste in parks through the provision of receptacles for recycling;
- installation of pet waste receptacles at selected parks and trailheads;
- winter maintenance of selected trails to facilitate year-round walking, cycling, running and other self-propelled activities; and
- regular inspections of all parks and trails recording of any needed repairs, maintenance issues or safety concerns; monthly, documented inspections of all municipally owned play structures.

In addition to looking at trends and best practices, general industry standards for parks and open space maintenance and benchmarks for maintenance standards in peer municipalities have been reviewed. This information has been incorporated in the development of standards later in this section.

General Assessment of Parks and Trails Maintenance in Pelham

Based on site visits to the Town's parks and input from the public through Phase 1 of this study, parks and park amenities in the Town seem, in general, to be well maintained and elicit a high degree of public satisfaction. The Town has worked to meet the needs of current park users and the results show in the variety and good condition of park assets. Parkland turf is well maintained, there was no litter evident in parks during site visits, and playgrounds, splash pads, park furniture and other amenities are generally in good repair. A variety of outdoor sports facilities are provided by the Town including soccer and ball fields, tennis, basketball, pickleball and multi-use courts, and a skate park. These are also generally in good condition. Weekly park inspections and evening park patrols ensure parks are managed on an ongoing basis and that issues or problems are identified in a timely way.

Despite the current high level of satisfaction with Pelham's parks and the satisfactory level of maintenance within those parks, the Town is growing and will grow further in the future. In addition, the population is shifting in terms of both age profile and cultural preferences.

Over the past several years, the Town of Pelham has experienced an influx of new residents, many of whom have come from larger urban centres. This has been partially a reaction to the pandemic with individuals and families seeking a less crowded environment which is perceived as safer. In addition, semi-rural municipalities such as Pelham are experiencing new subdivision development, as the population of Ontario grows, and people seek more affordable housing.

Pelham staff are already hearing requests for new and different municipal park and recreation services and higher levels of maintenance on a year-round basis. These are related to greater diversity and higher expectations given what newcomers may have been used to elsewhere.

Concerns related to service levels, amenities and maintenance in parks identified through our assessments include:

- Service levels for maintenance not being met at busy times, especially during the spring growing season.
- Inadequate, aging public washrooms which are too small for demand, difficult to keep clean and not fully accessible; not enough washrooms in parks.
- An insufficient number of soccer fields to meet demand.
- No clearing of snow and ice on some trails and walkways during the winter months.
- A lack of year-round spaces for gathering and casual play in parks and safe spaces for young people to gather.

- The need for additional dog parks and leash-free areas.
- Difficulties with the quality of contracted maintenance work.
- Inconsistent or inadequate tree maintenance in parks (mulching, pruning, dead tree removal, removal of "suckers").

The trail sections visited were generally well maintained in terms of litter control, maintenance of a safe surface, cutting of vegetation along trail edges to improve sight lines and management of erosion and washouts where applicable. The Town has provided trail connectivity where opportunities present themselves and has taken advantage of road rights of way, an abandoned railway and parkland to develop its trail network.

There were some issues with the Town's trails noted through site inspections and feedback from users and staff. These include a need for consistent and easy to follow wayfinding and signage, and consistency and regular maintenance of trail surfaces. Trails surfaces and widths vary, and wayfinding is inconsistent and not adequate for users to navigate. There was also a suggestion to remove the rumble strips along the shoulder of Canboro Road to improve active transportation connections between Fenwick and Fonthill. Many of these issues would be alleviated through the continued implementation of the trail design standards identified in the Town's 2016 Active Transportation (AT) Plan & Implementation Strategy.

It should be noted that there was a Wayfinding and Signage Workshop carried out by the Town in 2014, and a report from this session was completed. It would appear that the recommendations of this workshop have not as yet, been implemented. Also, as noted in **the Town's 2016 AT Plan, year**-round maintenance of selected trails based on established criteria remains desirable.

Staff Structure, Responsibilities and Resources

A few concerns related to the current organizational structure for the delivery of maintenance for outdoor spaces and facilities have been noted by staff, and in the recent organizational review for Recreation, Culture and Wellness (RCW) carried out by KPMG.

Parkland, trails, open spaces and outdoor facilities are operated and maintained primarily by Public Works (Works) under the Supervisor of Beautification. Works staff include:

- Supervisor of Beautification;
- Grounds Maintenance Operator;
- Student Parks Labourer (May 1 to September);
- 2 Seasonal Parks Operators (April 1 to Nov 30);
- Horticultural Technician; and
- Arborist.

While these staff address the bulk of parks and trails maintenance, staff indicate that preventative maintenance is a gap. Further, RCW staff have taken on specialized maintenance of outdoor facilities including lining of sports fields and ball diamond infield grooming. This arrangement is informal in nature and requires a high degree of coordination and communication between staff in the two units. Staff are also moved around frequently to carry out priority tasks and feel they do not have adequate cross-training to carry out all of the activities they are requested to do.

In terms of resources, the Public Works and RCW Departments share equipment and vehicles. These units are generally located where there is space to store them rather than

where is most convenient for the work being done. This leads to inefficiencies, such as time spent picking up and moving equipment and equipment not being available when needed to complete critical tasks.

In consulting with staff, concerns were also heard related to inadequate numbers of staff and vehicles and equipment to meet existing service level standards. These issues have been driven by budget constraints and have been exacerbated by new park development and addition of park amenities. In addition, replacement of aging vehicles and equipment has not been done in a timely or systematic way, and a there is not a proactive fleet maintenance program, leading to equipment breakdown and the need for regular emergency repairs. Issues related to inadequate resources will only increase as the Town continues to grow.

Public Works currently operates from a single depot and yard which is located on Tice Road in the western half of the Town of Pelham. Travel time to maintain parks and trails and to pick up needed equipment from storage is an ongoing issue. In the Public Works Operational Review commissioned 2020, some of the limitations of the existing Public Works yard and depot were noted in this study; however, the report did not specifically address the unique needs required for parks maintenance.

The various issues with staffing and resources identified in the previous section, have their roots in not enough full-time staff and physical resources, the need to better organize staff and equipment resources, and the need to clarify roles and responsibilities. As mentioned previously, these issues were noted both in the Public Works Operational Review (2020) and the Recreation, Culture and Wellness Organizational Review (2022). These reviews offered a number of suggestions and recommendations; implementing these and other needed changes will require a coordinated and cooperative approach involving both Public Works and RCW.

Parks & Trails Maintenance Standards and Implementation

Public Works has developed Parks Maintenance Levels of Service as part of their overall operational standards. Current Levels of Service for "Beautification" in the Town of Pelham are classified under:

- Turf: Sports Fields; Winter Restoration; General Parkland; Contracted Grass Cutting; Trails – Flail Mower
- Horticulture
- Artificial Turf (playgrounds)
- General Maintenance: Repairs Benches, Picnic Tables, Fencing; Litter; Graffiti removal
- Forestry
- Trails: Inspection; Grooming

In order to meet the Town's needs for parks management and maintenance for the future, it is important that Pelham implement a systematic approach, which can be adjusted to address future growth, changes in usage levels, and the inclusion of new activities and **amenities. Experiences in other small municipalities suggests that Pelham's current informal** determination and documentation of maintenance priorities and practices, while adequate in the past will become overwhelmed by a growing resident population and increased expectations of parks and open space users.

The recommended parks and trails maintenance levels of service are contained in Appendix B.

At present the Town of Pelham does not formally track costs and resources used to carry out maintenance of the various park and open space-related spaces and amenities under its care. If the implementation of Levels of Service is to be successful, it is important for the Town to know whether the standards are being met, what resources are being used, and where deficiencies (or areas where service exceeds standards) are.

Public Works has indicated that it plans on implementing an integrated work order and management system in 2023. Ideally the new system should allow the tracking for each of the activities outlined in the Levels of Service including:

- Frequency (dates) of scheduled maintenance;
- Response time for demand maintenance;
- Location of maintenance;
- Person-hours involved, including cost;
- Equipment time, including operating cost; and
- Ideally, any material costs.

Once a full cycle or more of records has been compiled, it will be possible to determine whether Levels of Service are being met and where additional resources, or a shift or resources, are required.

Over time, circumstances, user needs and preferences in Pelham are likely to change. In addition, analysis of information generated by the new system will highlight where Levels of Service are being met, and possibly where these are being exceeded. With this in mind, it is recommended that the proposed Levels of Service be reviewed at least every two years, **and adjustments be made to ensure consistency of service and the Town's ability to meet** the needs of park users. System information will also help to determine areas where service is deficient due to a lack of resources, or where resources need to be reallocated.

Recommendations

- #46 Move forward with a plan to ensure that Public Works has access to adequate yard and operational space to accommodate the growth of the Town over the next decade. Examine the possibility and value of satellite locations for Parks staff and parks-related vehicles and equipment to reduce travel time and improve efficiency.
- #47 Develop (or have a specialist consultant develop) a fleet and equipment management system to ensure that all units are properly maintained and are retired when repair costs and down-time justify replacement. This system should include a financial structure to ensure there are adequate capital funds in place to replace units when required.
- #48 Implement a budget protocol whereby new capital development of parks, park amenities, or trails triggers additional operating funds for staff and materials to maintain new assets.
- #49 Work cooperatively to develop a new organizational structure including staff job descriptions and responsibilities using the recommendations of the Public Works and RCW Organizational Reviews. This should include

formal agreements addressing responsibilities, staff sharing or temporary transfer, reporting relationships, budgeting, etc.

#50 Establish classifications for sports fields with appropriate levels of service based on maintenance standards.



9. Implementation Strategy



Active implementation of the Recreation, Culture and Parks Master Plan is fundamental to its success. This requires coordinated efforts and a commitment from Council, staff, stakeholders, and the public, as well as a variety of funding options to implement certain aspects of the Plan. This section provides guidance on the Master Plan's implementation.

9.1 Monitoring & Updating the Plan

The Town should regularly review and assess, and periodically revise, the recommendations of this Master Plan to ensure that they continue to reflect local conditions and that they are responsive to the changing needs of the community. This will require monitoring activity trends, tracking user satisfaction levels, coordinating with community organizations and the public, reporting on progress, and undertaking a comprehensive ten-year update to the Plan. Through these strategies – or as a result of other internal or external factors – adjustment of resource allocations and priorities identified in this Plan may be required.

The Plan should be reviewed annually as part of **the Town's budget** cycle. The following steps may be used to conduct an annual review of the Master Plan:

- a. Review of the past year (recommendations implemented, capital projects undertaken, success/failure of new and existing initiatives, changes in participation levels, issues arising from the public and community groups, etc.);
- b. Identification of issues impacting the coming year (anticipated financial and operational constraints, emerging opportunities, etc.);
- c. Cursory review of the Plan for direction regarding its recommendations;
- d. Preparation of a staff report to indicate prioritization of short-term projects and determination of which projects should be implemented in the following year based on criteria established by staff (e.g., financial limitations, community input, partnership/funding potential, etc.);
- e. Communication to staff and Council regarding the status of projects, criteria used to prioritize projects and projects to be implemented in the following year; and
- f. Budget requests/revisions as necessary.

Recommendations

- #51 Develop a system for the regular monitoring and reporting on the progress of the Master Plan, which should include tracking of activity patterns, facility usage, activity levels, trends and completed recommendations to provide status reports to Council and the community.
- #52 Establish annual work plans that provide focus on Master Plan recommendations that staff will seek to implement within the coming year. Work plans should identify departmental leads, partners, funding requirements and sources, and other logistics required to implement the priority recommendations.
- #53 Undertake a comprehensive review and update of the Recreation, Culture and Parks Master Plan to begin no later than 2032. Timing may be adjusted based on the pace of implementation and changes within the community.

9.2 Financial Considerations

The Master Plan calls for continued financial investment and outlines a series of planning priorities for the provision of new and existing recreation, culture, and parks infrastructure for the next ten years. To assist the Town in establishing a financial strategy for the Master Plan, several assumptions have been highlighted. These assumptions provide direction towards the various opportunities and constraints that must be considered when budgeting for the Plan's implementation.

In the future, it is expected that:

- Increases in costs to develop, revitalize, and maintain recreation, culture and parks facilities will be greater than the rate of inflation because of rising land costs, increasingly complex projects, the general public's heightened quality expectations, legislated building, and accessibility standards, etc.
- The Town will be expected to adhere to fiscally-responsible revenue generation policies and practices, along with the allocation of sufficient capital and operating resources to fund core priorities.
- The magnitude of investments required to achieve and maintain facilities in acceptable condition will grow in proportion to an expanding volume of assets and the increasingly aged stock of facilities.
- The range of new types of parks and recreation infrastructure will continue to expand, which will increase the funding requirements to address a growing inventory.
- The need for sufficient, stable, and predictable infrastructure funding streams will be increasingly important to support sound and proactive facility planning.
- The need for creative infrastructure funding solutions will be greatest in periods of low-growth and where aging facilities need to be revitalized or replaced.
- Working collaboratively with the community, developers, and other partners will be important to successfully keeping pace with escalating needs for more and better amenities.
- It will take time and continued investment to assist the recreation, culture, and parks sector to recover from the COVID-19 pandemic.

The Town has limited resources and cannot afford to do everything that the community desires; underscoring the importance for undertaking the Master Plan in the first place. Although Pelham may experience various challenges in providing the applicable financial **and human resources to achieve the Master Plan's recommendations,** it is expected that the Town will make every effort to implement these strategies through appropriate means.

Full implementation of the Master Plan will require the use of numerous funding sources, including (but not limited to):

- Development Charges and Community Benefits Charges (if applicable)
- Parkland Cash-in-Lieu for land purchases
- Municipal Taxation and Reserves
- Fundraising, Donations and Sponsorships
- User Fees and Surcharges

- Debenture Financing
- One-Time Grants
- Ongoing Government Programs, such as Provincial Gas Tax Revenues (for active transportation projects)
- Partnerships and Sponsorships

Recommendations

- #54 Where appropriate and consistent with Town policies and priorities, consider alternative funding and cost-sharing approaches such as (but not limited to) fundraising, grants, private-public partnerships, sponsorships, surcharges, capital reserve contributions, and various forms of collaboration to provide the best value to residents.
- #55 **Use this Master Plan as a resource in establishing the Town's annual** budget documents, Development Charges, and other related studies.
- #56 Phase in a capital reserve to fund the repair and replacement of major capital infrastructure. This reserve should be an annual line item in the budget that could be linked to objectives in the Asset Management Plan.
- #57 Conduct feasibility studies and business plans (with input from the public) prior to undertaking major capital projects to ensure that projects are aligned with community needs, partnership opportunities, and financial capabilities.

9.3 Community Partnerships & Sponsorships

The Town works with community partners to provide the highest level of service to the public while maximizing resources. Examples of successful partnerships include strategic alliances with local service clubs for fundraising and facility operation (e.g., Fonthill and Fenwick Lions, etc.), rental agreements with sports groups (e.g., minor basketball, minor hockey, figure skating, etc.), and service agreements with program providers (e.g., STEM camps, etc.).

From time to time, the Town may consider various arrangements with the private sector, non-profit sector, or other levels of government to develop and/or operate various facilities and services to achieve the desired community and municipal benefits. The goal is to **maximize the community's assets and increase service levels while sharing an appropriate** balance of costs and risks.

Relationships with outside groups may considered when:

- the Town does not have capacity or budget for direct program delivery or facility management;
- there is an established provider/partner already working with the Town;
- the provider fills or augments service gaps that are a priority to the Town; and/or
- the provider is the preferred/specialist for program delivery.

In all partnership arrangements, specifications and requirements must ensure that the partner respects and aligns with the Town's key goals and objectives. The value in seeking out and formalizing partnerships provides a net benefit to both organizations and reduce

costs to the municipality. Where possible, the Town is encouraged to work with community partners and in coordination with other public entities to implement recommendations contained in this Master Plan that would benefit from shared roles, responsibilities, and resources. It is recommended that staff develop written agreements with community partners who may share public spaces or work collectively to offer programs and services.

To assist the Town in evaluating current and future partnerships, the following criteria may be considered:

- The outcome of the partnership should be aligned with municipal values, mandate, and priorities.
- There should be an articulated need for the proposed program or service in the community.
- The financial and liability risks to the Town should be shared or reduced.
- The partner should be equipped and qualified to co-deliver the service through identified efficiencies, with the ability to reach an identified segment of the population.
- The quality of the program or service provided through the partnership should meet municipal quality assurance and risk management requirements and complies with legislation.
- Unsolicited for-profit partnership proposals should be dealt with transparently and through a competitive process as identified in a procurement process.
- Accountabilities and responsibilities should be clearly defined and complied with.
- Annual reporting requirements should capture participation numbers, expenditure reduction or revenue enhancement, and are clearly aligned with departmental objectives.

The Town does not employ a standard approach for developing arrangements with outside groups or for responding to unsolicited proposals, especially propositions arising from the private sector or involving non-traditional facility types. A standardized approach to partnership development would assist the Town to be consistent in its dealings with **individuals or organizations at arm's length to the municipality. Additional detail on the** requirement for a proponent-led business plan when assessing unsolicited proposals is included in Section 6.14 of this report.

Furthermore, the Town will want to ensure that all partnership agreements granting access to space at the Meridian Community Centre are equitable and maximize the use of publicly funded spaces. This is especially pertinent as there are pent up demands for spaces, such as municipal programming and drop-in opportunities. An audit of space utilization and alternative use options should be completed before agreements are developed or renewed.

Recommendations

- #58 Develop a Partnership and Sponsorship Policy to seek out alternate revenue sources to offset the cost to provide Recreation, Culture and Wellness services. Prepare a standardized partnership and/or sponsorship agreement to apply to various partnership types and to standardize municipal and partner expectations.
- #59 To inform the development and renewal of agreements, conduct an audit of community spaces covered by licensee agreements to ensure that spaces are effectively and equitably utilized given emerging needs and opportunities.

9.4 Summary of Recommendations – Priority and Timing

This section contains a summary of recommendations contained within the Master Plan. By approving this Plan, the Town is not bound to implementing every recommendation or providing facilities/services in the order, amount or timing indicated; rather, this Plan provides guidance on community priorities and sets a general course for meeting the needs as they are presently defined.

The timing of the recommendations proposed in this Master Plan recognizes the need for phased implementation and/or outside funding sources as some recommendations are based upon what is needed and not necessarily what may be financially achievable at the present time. As part of the annual budget process, this Plan will be reviewed to identify areas where the availability of resources may affect the timing of implementation. Analysis of implementation options and budget implications should be undertaken prior to approving major projects. The full implementation of this Plan will require the use of various funding sources and partnerships with others.

Determining priorities is an exercise that should be revisited each year prior to the **Town's capital and operating budget development exercise. It is expected that the** Town will make decisions on individual projects and funding sources annually through the budget process.

In addition to funding availability, factors that might change priorities year to year may include:

- capital lifecycle and considerations of safety;
- legislation and mandated requirements;
- changes to service standards;
- public input and community interests;
- emerging trends and changes in participation rates;
- availability of alternate providers; and
- socio-demographic changes and growth forecasts.

Priorities have been determined based on an assessment of need, as identified throughout the planning process (including public engagement, trend and demographic analysis, assessments of amenities and services, etc.). Municipalities generally seek to address the widest range of needs and achieve maximum community benefit through the efficient use of resources. Priority is often aligned with timing, except for those recommendations that are tied to population thresholds.

Within the tables that follow, the priority, timing, and high-level costing of the recommendations are organized into the following categories:

<u>Priority</u>

- High Priority: Immediate attention is strongly suggested during the timeframe recommended.
- Medium Priority: Attention is required when high priority recommendations have been initiated or completed, or when suitable partners have been identified for funding.
- Lower Priority: Attention is required when high and medium priority recommendations have been initiated/completed.

<u>Timing</u>

- Short-term: 2023 to 2025
- Medium-term: 2026 to 2028
- Longer-term: 2029 and beyond
- Ongoing: Guidelines and practices to be followed on a continual basis

Potential Cost Impacts

(note: all cost estimates are preliminary and to be confirmed through future study)

- Minor (\$): estimated at \$100,000 or less
- Moderate (\$\$): estimated to be between \$100,000 and \$500,000
- Major (\$\$\$): estimated at \$500,000 or more

Table 19: Summary of Recommendations – Priority and Timing

ID.	Recommendation	Priority	Timing	Costs / Comments
Sect	ion 5: Recreation Services & Programs			
#1	Regularly solicit requests for program offerings and complete a review of program availability, capacity, and utilization to ensure that public space is maximized and all age groups (e.g., pre-school, children, youth, adults, older adults and families) have access to a range of physical activity and sport, creative opportunities, general interest and STEM programming.	High	Ongoing	
#2	Promote the Canadian 24-Hour Movement Guidelines and the use of ParticipACTION'S Physical Activity App within facilities and the "Life in Pelham" Community Guide. Consider applying to become Canada's Most Active Community through ParticipACTION once pre-pandemic service recovery levels are achieved.	Medium	Medium- term	
#3	Develop a Special Events Policy to clarify the Town's role in providing special events, identify resource requirements, and establish the municipal supports provided to external event providers.	High	Short- term	
#4	 Create an Internal Staff Team to address increasing participation in recreation, culture, and wellness activities by marginalized populations. Preliminary actions should include (but not be limited to): a. Develop an Access and Inclusion Policy which identifies the underrepresented populations in Pelham and the efforts that will be made to be more inclusive in recreation, wellness, and culture. Consult organizations representing marginalized populations in its development. b. Provide training and professional development opportunities for staff and volunteers with respect to better including marginalized populations in the delivery of service. c. Complete visual audits of facilities and public spaces to ensure that recreational use reflects the full citizenry of Pelham. Identify the people who are not regularly utilizing public spaces and engage them to understand any barriers. 	High	Short- term and Ongoing	

ID.	Recommendation	Priority	Timing	Costs / Comments
	 d. Complete a top line analysis of the number of females and those identifying as females participating in recreation and sport pursuits by age group. Address gaps through community discussions with females and those who identify as female to address barriers to participation. Work with regional, provincial, and national organizations to increase female participation in active and sport pursuits. e. Meet with groups representing persons with disabilities and persons experiencing low income to develop programs and approaches to increase participation in recreation programs and services. f. Ensure that all public spaces and facilities are safe and welcoming spaces for the LGBTQ2S + community. g. Continue to engage with the Indigenous community to best understand how to better include and represent Indigenous Peoples in sport and recreation. 			
#5	Identify RCW's levels of service and corresponding policy, process, and resource requirements for each discipline within the Department for Council's approval. Identify the operational resources required to implement the recommendations in the Recreation, Culture and Wellness Master Plan for annual approval as part of the budget deliberation process.	High	Short- term	
#6	Complete an audit of current legislation affecting the delivery of Recreation, Culture, and Wellness services and ensure that the Town of Pelham is compliant with these requirements.	High	Short- term	
#7	Investigate the efficiencies created through a standard online App to recruit, train, track hours, and serve to recognize volunteers supporting Recreation, Culture and Wellness services.	Medium	Short- term	
#8	Apply a consistent methodology to better understand the costs to provide RCW's various services and to determine current cost recovery levels. Develop a fair minded and transparent Pricing Policy to ensure that fees are equitable and respect the value that the program/service provides to the community.	Medium	Medium- term	\$ (<\$100,000)

ID.	Recommendation	Priority	Timing	Costs / Comments
#9	Develop a meaningful set of performance measures for the Recreation, Culture and Wellness Department that describe the inputs, outputs, efficiencies, and effectiveness measures employed in each discipline.	Medium	Short- term	
Secti	on 6: Recreation & Park Facilities			
#10	Continue to support programming, rentals, and partnerships that optimize utilization of the Meridian Community Centre and Old Pelham Town Hall. Develop formalized operating plans for the MCC to guide programming and performance in keeping with the recommendations of the 2023 KPMG Report.	High	Short- term	Supported by the RCW Organizational Review
#11	Seek out spaces in schools and other appropriate locations for additional programming to augment programs offered at the Meridian Community Centre.	High	Ongoing	
#12	Monitor ice usage trends and collect registration data to inform a review of the Ice Allocation Policy (at minimum every five years), with the goal of ensuring fair access for priority groups such as local organizations and residents.	Medium	Medium- term	
#13	 Employ a variety of strategies to address current and future needs for community soccer fields, including: a. working with rectangular field users to ensure optimal access to existing fields, coupled with appropriate maintenance practices to support usage levels; b. converting the softball diamond at Harold Black Park to a lit full size soccer field; c. creating another lit full size soccer field at Centennial Park (as outlined in the 2003 park master plan); d. formalizing agreements to continue to use soccer fields at Glynn A. Green PS and expanding these agreements to appropriate fields at other school locations, such as E. L. Crossley Secondary School; e. designing new mini fields into new neighbourhood parks, where appropriate; and f. seeking to secure a future community park site to serve long-term needs, capable of accommodating 2 or more soccer fields and other needed recreational amenities. 	High	Ongoing	\$\$\$ (>\$500,000); dependent upon strategies chosen

ID.	Recommendation	Priority	Timing	Costs / Comments
#14	Continue to maintain the existing inventory of ball diamonds (with the exception of the softball diamond at Harold Black Park, which is proposed for conversion to a soccer field).	Medium	Ongoing	
#15	Consider installing lights on the hardball diamond at Harold Black Park should demand warrant.	Lower	Longer- term	
#16	Work with the Fonthill Platform Tennis Club to establish a new agreement pertaining to their use of the courts and clubhouse in Rolling Meadows Park.	High	Short- term	
#17	Identify a location within a future neighbourhood park in Fonthill for tennis courts (2).	Medium	Medium- to Longer- term	\$\$ (\$100,000 to \$500,000)
#18	Monitor the demand for outdoor pickleball in Fonthill and consider a multi-court complex in a future community park, if required.	Medium	Medium- to Longer- term	\$\$ (\$100,000 to \$500,000)
#19	Redevelop the existing basketball / tennis pad at North Pelham Park into a multi-use sport court for basketball and ball hockey. Add a small pavilion to support the site.	Medium	Medium- term	\$\$ (\$100,000 to \$500,000)
#20	Establish half basketball courts in two (2) new neighbourhood parks in Fonthill to improve access for local youth.	Medium	Medium- to Longer- term	\$ (<\$100,000)
#21	Consider installing a splash pad in a future community park if the location enhances access for residents in Fonthill (east or south).	Lower	Longer- term	\$\$ (\$100,000 to \$500,000)
#22	Continue with plans to redevelop the Pelham Public Pool at Marlene Stewart Streit Park, with consideration of barrier-free access to the pool and bathhouse (change rooms, washrooms, etc.).	High	Short- term	\$\$\$ (>\$500,000); grant has been secured to offset funding

ID.	Recommendation	Priority	Timing	Costs / Comments
#23	Establish a target of providing playgrounds within 500-metres of all urban residential areas. Where necessary, install playgrounds in new subdivisions (e.g., East Fonthill, East Fenwick) and seek opportunities to address gaps (e.g., central Fonthill).	High	Ongoing	Costs tbd (site- specific)
#24	Work with the Fonthill Lions Club to advance the replacement of the playground equipment at Gordon L. Klager Park.	High	Short- term	
#25	Consider opportunities to support outdoor skating through park development and redevelopment projects, including volunteer-led rinks in appropriate park sites.	Medium	Ongoing	
#26	Municipal provision of recreation facilities not explicitly addressed within this Master Plan will generally not be made a priority, but may be considered in partnership with local organizations where demonstrated demand exists. A standardized partnership framework should be used to evaluate and respond to such requests.	Lower	Ongoing	See also recommendation #58
Secti	on 7: Arts & Culture			
#27	Review the Town's 2013 Cultural Master Plan to update strategies for promoting and supporting local arts and culture endeavours, including the assessment of programming and space requirements. Revisit the recommendation to develop an Arts and Culture Community Hub, with a focus on partnerships that may support third-party operation within an adaptive re-use building.	Medium	Short- term	\$ (<\$100,000)
#28	Consider creating a service level agreement to support greater collaboration between the Recreation, Culture & Wellness Department and the Lincoln Pelham Public Library regarding program delivery and promotion.	Lower	Short- term	Coordinate with Lincoln Pelham Public Library
#29	Examine opportunities for public art within all park and public space capital projects, as well as and temporary pop-up projects in underutilized civic spaces. Explore approaches to funding public art through the land development process and consider implementing policies through the next Official Plan review.	Medium	Ongoing	Costs tbd (site- specific)

ID.	Recommendation	Priority	Timing	Costs / Comments
#30	Seek opportunities to expand arts programming and build relationships with local partners that bolster participation and optimize under-utilized spaces.	High	Short- to Medium- term	
#31	Collect cultural asset and participation data (e.g., event attendance, revenues, sponsorships, programs, etc.) to assist in measuring growth in the cultural sector.	Lower	Ongoing	
Secti	on 8: Parks & Trails			
#32	Use the Master Plan's parkland classification hierarchy to guide the development or redevelopment of parks and open spaces according to park type, size, service level and the amenities that they provide. Incorporate the parkland classification hierarchy within the Town's next Official Plan Review.	Medium	Ongoing	Coordinate with Planning & Development Dept.
#33	Update the parks and open space inventory database and mapping regularly to assist in the assessment of land requirements.	Medium	Short- term	
#34	Maintain a commitment to universal accessibility, safety and comfort within the Town's parks system. Regularly consult with the Joint Accessibility Advisory Committee and ensure compliance with the Accessibility for Ontarians with Disabilities Act (AODA). Emphasize the provision of amenities such as benches/seating areas, bike racks, shade (structures, tree canopy, etc.), and barrier-free washrooms in appropriate park types to address the needs of all age groups.	High	Ongoing	Costs tbd (site- specific)
#35	Undertake park amenity condition assessments on a regular basis to inform the Town's asset management plan and long-term capital plan.	Medium	Ongoing	\$ (<\$100,000)
#36	Identify and plan for additional park renewal and redevelopment projects that address aging infrastructure and capital improvements. Candidates for consideration in the short-term include Centennial Park (e.g., washrooms, support building, new soccer field, etc.), Marlene Stewart Streit Park (e.g., access/egress improvements, washrooms, etc.), and Rolling Meadows Park (concept plan development). Engage stakeholders and the public when designing new and redeveloped parks.	High	Ongoing	\$\$\$ (>\$500,000); Additional consultation and designs required to determine options, costs, and timing

ID.	Recommendation	Priority	Timing	Costs / Comments
#37	Prepare design plans for the Pelham Civic Square to support potential funding opportunities (e.g., grant applications) and the site's future development.	High	Short- term	\$ (<\$100,000)
#38	Establish consistent and high quality signage at all municipal facilities, parks and trailheads to enhance branding and wayfinding.	Lower	Short- term	\$ (<\$100,000)
#39	To guide the design of developer- built parks, formalize the Town's requirements for parkland design and development through a Park and Trail Design and Development Manual.	Medium	Short- term	\$ (<\$100,000)
#40	Maintain a minimum town-wide parkland provision rate of 2.2 hectares per 1,000 residents; this target excludes passive open space lands and woodlots. Approximately 8.0 additional hectares of parkland should be secured by 2031 to address gaps and meet growth-related needs. This should include a mixture of park types, including a larger community park (minimum 3 hectares) to serve the Fonthill community. Alterative acquisition strategies may be required to address the entirety of these needs.	High	Ongoing	See also recommendation #43
#41	Seek to maximize parkland dedication through development and redevelopment applications, as well as alternative parkland acquisition strategies. Update the Town's Official Plan and Parkland Dedication By -law to align with amendments to the Ontario Planning Act and Bill 23, as well as the recommendations in this Master Plan. This Master Plan can be used as the basis for a parks plan that satisfies the legislative requirements.	High	Short- term	Coordinate with Planning & Development Dept.
#42	Adopt a "Parkland First" approach that prioritizes parkland conveyance over cash-in-lieu of parkland in order to address parkland deficits. Parkland conveyances should: (a) be acceptable to the Town; (b) not include restricted lands; and (c) result in blocks that are at least 0.4 hectares in size (village squares may be smaller) or expand an existing park site.	High	Ongoing	

ID.	Recommendation	Priority	Timing	Costs / Comments
#43	Prepare a parkland acquisition strategy to enhance current and future community access to parks, with consideration of alternative acquisition tools (e.g., reallocation of surplus municipal lands, purchase/lease, land exchanges, partnerships, etc.). Where applicable, work with area school boards and other service providers to maximize community access to quality outdoor parks and recreation amenities on non-municipal sites.	High	Short- term	Costs tbd through further study See also recommendation #40
#44	Assign high priority to the continued maintenance and expansion of the recreational trails system. Work with the Active Transportation Committee to establish a list of priority projects and work plans.	High	Ongoing	
#45	Establish and/or expand partnerships that promote public access to and nature-based programming within non-municipal trails and natural areas (e.g., Short Hills Provincial Park, Lathrop Nature Preserve, E.C. Brown Conservation Area, etc.).	Medium	Ongoing	
#46	Move forward with a plan to ensure that Public Works has access to adequate yard and operational space to accommodate the growth of the Town over the next decade. Examine the possibility and value of satellite locations for Parks staff and parks-related vehicles and equipment to reduce travel time and improve efficiency.	Medium	Longer- term	Costs tbd through further study
#47	Develop (or have a specialist consultant develop) a fleet and equipment management system to ensure that all units are properly maintained and are retired when repair costs and down-time justify replacement. This system should include a financial structure to ensure there are adequate capital funds in place to replace units when required.	High	Short- term	\$ (<\$100,000)
#48	Implement a budget protocol whereby new capital development of parks, park amenities, or trails triggers additional operating funds for staff and materials to maintain new assets.	High	Short- term	
#49	Work cooperatively to develop a new organizational structure including staff job descriptions and responsibilities using the recommendations of the Public Works and RCW Organizational Reviews. This should include formal agreements addressing responsibilities, staff sharing or temporary transfer, reporting relationships, budgeting, etc.	High	Short- term	Supported by the RCW Organizational Review

ID.	Recommendation	Priority	Timing	Costs / Comments
#50	Establish classifications for sports fields with appropriate levels of service based on maintenance standards.	Medium	Short- term	
Secti	on 9: Implementation Strategy			
#51	Develop a system for the regular monitoring and reporting on the progress of the Master Plan, which should include tracking of activity patterns, facility usage, activity levels, trends and completed recommendations to provide status reports to Council and the community.	High	Short- term	
#52	Establish annual work plans that provide focus on Master Plan recommendations that staff will seek to implement within the coming year. Work plans should identify departmental leads, partners, funding requirements and sources, and other logistics required to implement the priority recommendations.	High	Ongoing	
#53	Undertake a comprehensive review and update of the Recreation, Culture and Parks Master Plan to begin no later than 2032. Timing may be adjusted based on the pace of implementation and changes within the community.	High	Longer- term	\$ (<\$100,000)
#54	Where appropriate and consistent with Town policies and priorities, consider alternative funding and cost-sharing approaches such as (but not limited to) fundraising, grants, private-public partnerships, sponsorships, surcharges, capital reserve contributions, and various forms of collaboration to provide the best value to residents.	High	Ongoing	
#55	Use this Master Plan as a resource in establishing the Town's annual budget documents, Development Charges, and other related studies.	High	Ongoing	
#56	Phase in a capital reserve to fund the repair and replacement of major capital infrastructure. This reserve should be an annual line item in the budget that could be linked to objectives in the Asset Management Plan.	High	Ongoing	Costs tbd through further study
#57	Conduct feasibility studies and business plans (with input from the public) prior to undertaking major capital projects to ensure that projects are aligned with community needs, partnership opportunities, and financial capabilities.	High	Ongoing	

ID.	Recommendation	Priority	Timing	Costs / Comments
#58	Develop a Partnership and Sponsorship Policy to seek out alternate revenue sources to offset the cost to provide Recreation, Culture and Wellness services. Prepare a standardized partnership and/or sponsorship agreement to apply to various partnership types and to standardize municipal and partner expectations.	Medium	Short- term	See also recommendation #26
#59	To inform the development and renewal of agreements, conduct an audit of community spaces covered by licensee agreements to ensure that spaces are effectively and equitably utilized given emerging needs and opportunities.	High	Short- term	



Appendix A: Record of Public Input

See following pages.



Participation in Recreation, Culture & Parks Activities

1) Since 2019, in which of the following activities did you or anyone in your household participate, in Pelham or elsewhere? Participation refers to situations where you or a member of your household actively take part (not as a spectator), either at home or in public. (select all that apply)

4

4

2 2

	#	%	
Baseball or Softball	66	16%	
Basketball	75	18%	
BMX or Mountain Biking	56	14%	
Canoeing, Rowing, Kayaking or Paddleboarding	119	29%	
Cycling	178	43%	
Disc Golf / Frisbee Golf	16	4%	
Dog Walking (off-leash park)	99	24%	
Fitness, Yoga or Weight-training	172	42%	
Football, Rugby or Field Lacrosse	22	5%	
Hockey, Figure Skating, or Ice Sports (indoor)	124	30%	
Hockey, Figure Skating, or Ice Sports (outdoor)	70	17%	
Lacrosse (box – indoor)	11	3%	
Pickleball	38	9%	
Platform Tennis	16	4%	
Running or Jogging	105	25%	
Skateboarding or Scootering	59	14%	
Soccer	109	26%	
Special Events in Parks	193	47%	
Swimming (recreational)	140	34%	
Swimming (lessons, aquafit, or training)	95	23%	
Tennis	52	13%	
Town of Pelham Recreation Programs or Camps	65	16%	Other (top responses)
Town of Pelham Arts and Cultural Programs	66	16%	Dance Lessons
Use of Outdoor Fitness Equipment	63	15%	Golf
Use of Playground Equipment	174	42%	Community Events
Use of Splash Pad	124	30%	Walking
Visiting a Theatre, Art Gallery or Museum	106	26%	Rollerblading
Volleyball (beach)	46	11%	Dirt Biking
Volleyball (indoor)	46	11%	Karate / Tai Chi Classes
Walking or Hiking for Leisure	294	71%	Curling
None of the above	13	3%	Art
Other (please specify)	44	11%	Snow Activities
answered question	414		

2) Are you and members of your household able to participate in Recreation, Culture & Parks activities as often as you would like?

		#	%
Yes		272	66%
No		142	34%
	answered question	414	100%

3) Why are you and members of your household not able to participate Recreation, Culture & Parks activities as often as you would like? (select up to 3 responses)

	#	%
Activity has not resumed due to the pandemic	12	8%
Health problems / Disability / Age	21	15%
Lack of Child Care	15	11%
Lack of desired facilities or programs	62	44%
Lack of information / Unaware of opportunities	38	27%
Lack of money / Too expensive	23	16%
Lack of motivation	10	7%
Lack of or inadequate parking	5	4%
Lack of time / Too busy	47	33%
_ack of transportation / Facility too far away	17	12%
Language / Cultural Barrier	1	1%
Not a priority in our household	5	4%
Program / Activity is often full	17	12%
Program not offered at a convenient time	48	34%
Don't Know	5	4%
Other (please specify)	16	11%
answered question	142	

skipped question 272

Other (top responses)	#
COVID	4
Not Available	3
Lack of Child Programming	2

Importance and Satisfaction

4) In general, how important are the following items to your household?

	Not at all important		Not at all important Somewhat		Somewhat Important		Very Important		Don't Know / Don't Use		Answered		Skipped
	#	%	#	%	#	%	#	%	#	%	#	%	#
Indoor recreation facilities, such as arenas, gymnasiums and older adult centres	8	2%	33	8%	130	32%	219	54%	14	3%	404	100%	10
Outdoor recreation facilities such as sports fields, courts, playgrounds, and splash pads	18	4%	29	7%	106	26%	228	57%	20	5%	401	100%	13
Parks for casual use, such as walking, picnicking and unstructured play	8	2%	9	2%	88	22%	293	72%	8	2%	406	100%	8
Recreation and Cultural programs (registered and drop-in)	22	5%	49	12%	158	39%	150	37%	25	6%	404	100%	10
Special Events and Festivals	11	3%	33	8%	160	39%	192	47%	10	2%	406	100%	8

5) What is your level of satisfaction with the following Recreation, Culture & Parks services in Pelham?

	Not at all	Satisified	Som	ewhat	Somewha	t Satisfied	Very Sa	atisfied	Don't Know	/ Don't Use	Ansv	wered	Skipped
	#	%	#	%	#	%	#	%	#	%	#	%	#
Indoor recreation facilities, such as arenas, gymnasiums and older adult centres	9	2%	41	10%	170	42%	130	32%	52	13%	402	100%	12
Outdoor recreation facilities such as sports fields, courts, playgrounds, and splash pads	3	1%	62	15%	159	39%	107	27%	72	18%	403	100%	11
Parks for casual use, such as walking, picnicking and unstructured play	6	1%	50	12%	181	45%	143	36%	21	5%	401	100%	13
Recreation and Cultural programs (registered and drop-in)	7	2%	42	10%	169	42%	56	14%	128	32%	402	100%	12
Special Events and Festivals	3	1%	31	8%	165	41%	170	43%	31	8%	400	100%	14

Program Gaps and Facility Priorities

6) If the Town were to provide additional programs or activities, which age groups should be a priority? (select all that apply)

		#	%
Pre-School (4 years and under)		86	21%
Children (5 – 12 years)		164	41%
Teens (13 – 18 years)		176	44%
Adults (19 – 54 years)		156	39%
Older Adults (55 – 69 years)		143	36%
Seniors (70 years and over)		144	36%
Families		157	39%
an	swered question	402	
	skipped question	12	

7) Are there any Recreation, Culture & Parks activities that you or members of your household would like to see offered in the Town of Pelham that are not currently available?

		#	%
Yes		180	44%
No		227	56%
	answered question	407	100%
	skipped question	7	

8) What Recreation, Culture & Parks activities would you like to see offered?

	#	%
answered question	170	70%
skipped question	244	60%

Open-ended (top responses)	#
Indoor pool /swim programming	39
Volleyball	15
Walking trails	10
Art programming	9
Child programming	9
Senior programming	9
Adult programming	7
Festivals	7
Social programming	6
Yoga	6

9) To assist the Town in prioritizing spending, please indicate the level of priority that you feel should be placed on improving or developing each of the following facility types?

	Not a	Priority	Low F	riority	Medium	Priority	High P	riority	Don't Knov	v / Don't Use	Ans	wered	Skipped
	#	%	#	%	#	%	#	%	#	%	#	%	#
Arenas	64	17%	89	23%	118	31%	82	22%	28	7%	381	100%	33
Art Centres or Galleries	64	17%	96	25%	128	34%	55	15%	36	9%	379	100%	35
Baseball or Softball Diamonds	38	10%	83	22%	148	39%	51	13%	60	16%	380	100%	34
Basketball Courts (outdoor)	36	10%	71	19%	136	36%	75	20%	59	16%	377	100%	37
Beach Volleyball Courts	68	18%	92	24%	101	27%	50	13%	68	18%	379	100%	35
BMX or Bike Parks	56	15%	88	23%	112	29%	58	15%	67	18%	381	100%	33
Community Vegetable Gardens	47	12%	60	16%	119	31%	113	30%	40	11%	379	100%	35
Disc Golf / Frisbee Golf	102	27%	105	28%	73	19%	19	5%	78	21%	377	100%	37
Fitness and Wellness Spaces	11	3%	30	8%	145	37%	188	49%	13	3%	387	100%	27
Fitness Equipment (outdoor)	48	13%	85	22%	114	30%	93	25%	39	10%	379	100%	35
Gymnasiums	25	7%	71	19%	135	36%	110	29%	38	10%	379	100%	35
Nature Trails	2	1%	14	4%	80	21%	278	72%	12	3%	386	100%	28
Off-Leash Dog Parks	66	17%	88	23%	96	25%	67	18%	61	16%	378	100%	36
Outdoor Ice Rinks	35	9%	62	16%	103	27%	141	37%	38	10%	379	100%	35
Parks for Special Events	22	6%	61	16%	143	37%	136	36%	20	5%	382	100%	32
Park Washrooms	5	1%	21	5%	119	31%	233	60%	9	2%	387	100%	27
Paved Trails	25	6%	60	16%	141	37%	147	38%	12	3%	385	100%	29
Performing Arts Spaces	49	13%	87	23%	129	34%	77	20%	34	9%	376	100%	38
Pickleball Courts (outdoor)	72	19%	99	26%	78	21%	47	12%	82	22%	378	100%	36
Playgrounds	22	6%	34	9%	118	31%	173	45%	34	9%	381	100%	33
Skateboard Parks	66	17%	93	24%	102	27%	59	15%	62	16%	382	100%	32
Space for Older Adults	26	7%	46	12%	126	33%	149	39%	37	10%	384	100%	30
Swimming Pools (indoor)	44	11%	41	11%	101	26%	166	43%	34	9%	386	100%	28
Swimming Pools (outdoor)	39	10%	76	20%	129	34%	99	26%	37	10%	380	100%	34
Soccer and Multi-use Fields	29	8%	40	11%	131	34%	128	34%	52	14%	380	100%	34
Splash Pads	42	11%	58	15%	100	26%	128	34%	50	13%	378	100%	36
Tennis Courts (outdoor)	41	11%	89	24%	107	29%	63	17%	73	20%	373	100%	41
Other High Priorities (please specify)	47	20%	47	20%	47	20%	47	20%	47	20%	235	100%	179

Statements

10) Please indicate your level of agreement with the following statements.

	Strongly	Disagree	Disa	gree	Ag	ree	Strongly	/ Agree	Don't	Know	Ans	wered	Skipped
	#	%	#	%	#	%	#	%	#	%	#	%	#
Recreation, culture and parks services are important to your quality of life.	7	2%	9	2%	120	31%	241	63%	8	2%	385	100%	29
The Town's parks are conveniently located for you and members of your household.	10	3%	50	13%	202	52%	112	29%	11	3%	385	100%	29
The Town's recreation/culture and parks are clean and well maintained.	5	1%	41	11%	212	55%	101	26%	23	6%	382	100%	32
The Town's recreation, culture and parks services are affordable for your household.	4	1%	29	8%	217	57%	92	24%	41	11%	383	100%	31
You feel well informed about the Town's parks, <u>facilities</u> , programs, and events.	21	5%	106	28%	183	48%	52	14%	20	5%	382	100%	32

Comments

11) Please provide any additional comments you may have regarding Recreation, Culture & Parks in the Town of Pelham. (Maximum 100 words)

	#	%
answered question	158	38%
skipped question	256	62%

Demographic Information

12) How many people, including yourself, live in your household?

		#	%
1		30	8%
2		114	32%
3		63	17%
4		95	26%
5		46	13%
6		9	2%
7		3	1%
8+		1	0%
á	answered question	361	100%
	skipped question	53	
Total Persons		1,140	
Average Person per Household		3.2	

13) Please indicate the total number of persons within your household that fall into the following age categories.

	# of House- holds	% of House- holds	# of People	% of People	2021 Census (Pop)
Under 10 years	103	25%	173	15%	9%
10-19 years	115	28%	190	17%	11%
20-34 years	92	22%	130	11%	14%
35-54 years	195	47%	324	28%	22%
55-69 years	132	32%	205	18%	25%
70 years and over	88	21%	127	11%	19%
answered question	on 374		1,149	100%	100%
persons per househo	old 3.1				

14) How long have you lived in the Town of Pelham?

	#	%
Less than 5 years	69	18%
5 to 10 years	72	19%
More than 10 years	215	56%
Don't live in the Town of Pelham	25	7%
answered question	381	100%
skipped question	33	

15) Which community do you live closest to?

		#	%
Effingham		5	1%
Fenwick		52	15%
Fonthill		272	77%
North Pelham		8	2%
Ridgeville		18	5%
	answered question	355	100%
	skipped question	59	

16) If you do not live in the Town of Pelham. In which municipality do you reside?

		#	%
Welland		10	48%
Thorold		4	19%
St. Catharines		2	10%
Wainfleet		2	10%
Grimsby		1	5%
Niagara Falls		1	5%
Port Colborne		1	5%
	answered question	21	100%
	skipped question	4	

Appendix B: Summary of Supporting Documents

Key municipal studies and reports related to recreation, culture and parks are summarized below.

Strategic Plan (revised 2021-2022)

The vision established for Town of Pelham's is "Working together with the community to strengthen trust, enhance the quality of life and economic well-being for today and for the future." The strategic priorities – which define what the Town will focus on during the planning period – are as follows:

- 1. Support a strong organization;
- 2. Ensure financial sustainability;
- 3. Enhance communication and engagement;
- 4. Build strong communities and cultural assets;
- 5. Develop a risk management framework to prioritize decisions
- 6. Grow revenue by promoting our cultural assets while protecting our environmental assets.

In 2020, Town Council completed a comprehensive review of the 2019-2022 Strategic Plan that ultimately revised the actions presented in 2019 to reflect new issues and priorities. The completion of a Parks and Recreation Review was one of the stated priorities. a new Strategic Plan will be prepared in 2023.

Official Plan (2014)

The Town's Official Plan is the guiding document for the Town of Pelham and the primary tool for managing growth. It identifies a vision for the future and goals, strategic directions, and policies to achieve this vision through land use designations and the development process.

The Plan supports recreation, culture and parks in the community to keep members engaged, and as a tool to encourage tourism and attract residents seeking an active recreational community as a lifestyle or retirement choice. The Town encourages these uses to be designated in areas undergoing intensification, and to provide opportunities in proximity to residential areas.

The Official Plan provides the policy framework for parkland dedication via the development process. This includes guidance on parkland requirements, classifications, acceptability, and more. Recent changes to the Planning Act through Bill 23 may necessitate an updating to some of these policies.

The Official Plan is supported by other planning studies, including the East Fonthill Secondary Plan and a Community Improvement Plan for Downtown Fonthill.

Recreation, Culture and Wellness Organizational Review (2023)

The review was completed by KPMG and examines the organizational structure of the Recreation, Culture and Wellness Department, as well as the optimization of facility space at the Meridian Community Centre. Selected recommendations with relevance to this Master Plan include:

- Develop formalized operating plans
- Develop Key Performance Indicators
- Improve cross-departmental communication
- Clarify roles and responsibilities with Public Works
- Re-evaluate programming and explore collaboration with local organizations (e.g., library)
- Define key service delivery tasks and activities
- Optimize advertisement revenue
- Develop standard operating procedures
- Streamline process for late applications for programming
- Update Asset Management plan
- Update job descriptions/titles
- Address middle management gap
- Address concerns with part time employment

Active Transportation Plan & Implementation Strategy (2016)

The Pelham Active Transportation Master Plan was developed as a cycling and trails blueprint for staff, stakeholders and the public. Recommendations for recreation include:

- providing recreation to surrounding areas to increase the quality of life of local residents;
- providing existing linear trails to provide both recreational and commuter walking and cycling opportunities found in hydro corridors and along abandoned rail corridors;
- providing off-road opportunities for more recreational trips;
- providing cycling networks intended to be used for commuters within the community or for fitness and recreation;
- providing recreational and touring cycling routes that include off-road linkages and secondary connections which provide access to the areas of natural and cultural significance and local neighbourhoods.

Corporate Climate Change Adaptation Plan (2021)

The Town's Corporate Climate Change Adaptation Plan (CCAP) addresses 8 goals to become more resilient and adaptive towards climate change. These include:

- protecting community members and outdoor workers from potential health risks related to climate change;
- building awareness of climate change impacts and risks among Town's staff and community members;
- developing a comprehensive strategy to manage extreme weather events and emergencies;
- foster adaptive capacity in the design, construction, and maintenance of Townowned infrastructure;
- cultivating resiliency to heavy rainfall and flooding events;
- streamlining Town services to provide sustained support to Pelham community.

These goals can be supported by recreational facilities and park spaces being designed to manage higher levels of rainfall,

Cultural Master Plan (2013)

The Pelham Cultural Master Plan has served as a strategic guide to ensure that the Town continues to thrive, the Town's local heritage and culture is preserved and celebrated, and new opportunities for cultural expression are explored in a sustainable and fiscally-sound manner. The roadmap for cultural development's strategic directions consists of:

- 1) Cultivate community cultural awareness, knowledge-sharing and participation in culture;
- 2) Foster creative industry development, growth and attraction;
- 3) Develop and enhance of cultural spaces and places;
- 4) Expand and enhance cultural products and experiences;
- 5) Investment and development of culture through Town Planning; and
- 6) Strengthen cultural tourism and regional presence.

Actions and recommendations of the Master Plan support the enhancement of the Town's

role as a facilitator of culture via a comprehensive and holistic approach to support the development of the sector in a manner which further addresses the need for creative industry development and business attraction, cultural product, service, programming and tourism development. This includes the development of a new cultural centre in a single location (Fonthill) as representing the most viable opportunity to add space for cultural uses to the Town. The full list of actions and recommendations are noted in the following table.

Table 20 –Roadmap for Cultural Development (Town of Pelham 2013 Cultural Plan)

Strategic Direction 1: Cultivate community cultural awareness, knowledge-sharing and participation in culture

- 1. Identify and explore partnerships with local schools/Schools Boards to raise exposure and awareness of culture to youth in the Town.
- 2. Develop Cultural Asset Database and Resource Maps into an Accessible Neighbourhood Resource and Information Tool.
- 3. Develop a Community Web Space/Portal for Culture on Municipal Website.
- 4. Support for Growth in Cultural Programming.
- 5. Establish a Pelham Cultural Committee/Roundtable.

Strategic Direction 2: Foster creative industry development, growth and attraction

- 1. Encourage Small Business Growth and Development
- 2. Partner with Regional Colleges for Talent Recruitment
- 3. Expand Community Improvement Plan (CIP) to support Culture
- 4. Assess Economic Impact of Cultural Sector Growth and Investment

Strategic Direction 3: Develop and Enhance of Cultural Spaces and Places

- 1. Undertake an Infrastructure Needs Analysis for Cultural Facilities
- 2. Medium-term Plan for Recreation Complex
- 3. Develop a New Cultural Complex and Hub
- 4. Invest in the Adaptive Reuse of Existing Spaces and Places

- 5. Develop Linked Cultural Nodes along Heritage Routes
- 6. Develop a Public Art Strategy

Strategic Direction 4: Expand and Enhance Cultural Products and Experiences

- 1. Establish and Develop Cultural Heritage Routes
- 2. Further local food links to Niagara Culinary Trail
- 3. Continue to Support Growth & Market Draw of Local festivals & Events
- 4. Develop Doors Open Cultural Program
- 5. Collaboratively Expand & Develop Pelham Culture Days

Strategic Direction 5: Investment and Development of Culture through Town Planning

- 1. Establish Clear Commitment to Arts, Heritage and Cultural Preservation, Development, Promotion and Tourism within Municipal Corporate Priorities
- 2. Appoint a Municipal Cultural Officer within the Town's RCW Department
- 3. Leverage Opportunities for Funding and Investment from Upper-levels of Government to Support Cultural Development
- 4. Develop an Integrated Implementation Plan for **the Town's Heritage and Cultural** Master Plans
- 5. Merge Existing Culture and Heritage Asset Databases
- 6. Develop a protocol for expanding, updating and maintaining the cultural asset database
- 7. Develop a Communication Plan for Culture
- 8. Ensure Cultural Planning Occurs Across Municipal Departments

Strategic Direction 6: Strength Cultural Tourism and Regional Presence

- 1. Undertake Tourism Strategy
- 2. Launch Stand-Alone Cultural Tourism Website
- 3. Partnerships for the Co-Marketing of Events and Activities
- 4. Collaboration for Regional Cultural Exchange

Facilities Feasibility Study (2008)

The Town of Pelham commissioned a 10-year feasibility study to determine the community's needs for facilities and administration. The study proceeded previous studies for sports and recreation facility assessment. In addition to a community profile and trends, inventory, programming, stakeholders and comments were identified for several facilities in this study:

- Twin Pad Arena
- Community Space
- Office space for Leisure Services Staff
- Fire Halls (3)
- Maple Acre Branch Library addition
- Consolidated Library
- Administrative Building

Recommendations were provided for each of the discussed recreation and culture facilities, **including several that supported the development of the Town'**s current Meridian Community Centre.

Aren	a Recommendations
A1	Short-term development of a twin pad arena on a new site large enough to accommodate future expansion of arena space as well as other community space;
A2	Continue to investigate partnership options with both the City of Welland and Niagara College for the development of a multi-pad ice facility;
А3	investigate options to build and operate the arena in partnership with the private sector, and/or the City of Welland, and/or Niagara College;
A4	Decommission the existing Pelham arena as an ice rink and consider repurposing it for use as an indoor facility to accommodate indoor soccer, roller hockey, indoor tennis etc.;
Multi	-Purpose Space Recommendations
MP1	In the short term develop up to 5,000 square feet of community space as a component of arena;
MP2	In the short term develop a portion of the community space to accommodate; informal/unstructured social space that can be scheduled for use by both youth and seniors. In partnership with groups such as the library and local businesses, investigate opportunities to incorporate a supervised computer area;
Civic	Centre Recommendations
C1	Short-term develop appropriate space for Town recreation staff, including space for program registration and administrative space for the Recreation Department within the new arena.
C2	In the short term prepare a site master plan for Pelham Town Square. This master plan should identify opportunities to consolidate the existing library and civic centre within a single building that provides: strong presentation of civic features, strong connection to other businesses and residential components of the site, and excellent opportunities to accommodate civic events, parking and traffic flow.
C3	In the short to medium-term confirm the most appropriate location for a new Civic Centre and Library.
C4	In the long-term redevelop the Civic Building and Fonthill Branch of the Pelham Library into a single facility.

Table 21 – Facilities Feasibility Study Recommendations (2008)

Heritage Master Plan (2012)

The Heritage Master Plan recognizes Short Hills Park and Marlene Stewart Streit Park as cultural assets with historical association. The Plan recognizes that the region is becoming a major tourism attraction and a desirable to place to live and work. The plan provides an **extensive overview of the Town's history and supports the unique cultural services that** have been a major attraction for tourists and new community members.

Public Art Master Plan (2016)

As important recreational destinations, parks and open spaces play a significant role in the daily lives of residents. These spaces host community events and public gatherings and also play a role in connecting residents of all ages to the surrounding community. In particular, **greenspaces provide linkages to Pelham's natural heritage and facilitate healthy lifestyles.** These public spaces provide opportunities for public art installations which can provoke

reflection on environmental issues, provide interactive elements to engage with children and families, be integrated with the design of the park such as benches, paving and pedestrian **bridges and celebrate the community's past,** present and future.

Funding to implement public art is typically secured by allocating a percentage (1%) of the capital cost of municipal projects – new community centres, recreation buildings, civic buildings, streets, parks, trails, etc.

While all departments are encouraged to participate, the recommended lead on the public art program is the Recreation, Culture and Wellness Department.

DRAFT

Appendix C: Trends in Participation & Provision

Identified below are trends that are influencing the demand for and delivery of recreation, culture and parks services in Canadian municipalities. For continuity with leading sector resources, the trends are organized by the five goals of the Framework for Recreation in Canada (FRC).

Active Living

Parks and Recreation are Essential Services

The evidence is clear – communities are increasingly viewing recreation and parks as essential services and believe that these spaces and services will be a critical contributor to our recovery from the COVID-19 pandemic. The large majority (82%) of Canadians said that parks and outdoor spaces have become more important to their mental health during COVID-19 and 70% indicated that their appreciation for parks and green spaces had increased during the pandemic³. Access to public spaces and programs is a fundamental service for Canadians and we are living in a time where we need more public space, not less.

Combating High Levels of Physical Inactivity

Physical inactivity rates remain alarmingly high. The 2021 ParticipACTION report card on physical activity graded overall **physical activity levels a "D"**⁴ **for children and youth and "F"** for adults, reflecting a decline from prior years as activity levels dropped during the COVID-19 pandemic. The Canadian Community Health Survey found that the percentage of youth meeting the Canadian physical activity recommendation dropped from 51% in the fall of 2018 to 37% in the fall of 2020.⁵ Further, 42% of adults described their level of vigorous physical activity to be somewhat or much less in March 2021 compared to the pre-pandemic period⁶.

For many, municipal parks and recreation services provide critical supports to maintain personal health and physical literacy by addressing inactivity levels, social isolation, stress and anxiety. Access to outdoor spaces, active transportation, and affordable, accessible leisure activities are key determinants in engaging people in active recreation. Proximity to parks and facilities is also correlated with higher levels of physical activity and there is

³ Park People. COVID-19 and Parks Survey. July 2020. <u>https://parkpeople.ca/2020/07/16/covid-19-and-parks-highlights-from-our-national-surveys</u>

⁴ <u>The ParticipACTION Report Card on Physical Activity for Adults (2021) and Children and Youth</u> (2022). <u>https://www.participaction.com</u>

⁵ Statistics Canada. Catalogue no. 82-003-X. <u>The unequal impact of the COVID-19 pandemic on the physical activity habits of Canadians</u>. <u>https://doi.org.10.25318/82-003-x202200500003-eng</u> ⁶ CFLRI. 2020-2021 Impact of COVID-19 on Physical Activity Survey.

evidence that larger parks have a more direct impact on physical activity as they have the space to accommodate a wider variety of amenities and experiences.⁷

Reliance on automobiles (as opposed to walking or biking) has contributed to this culture of physical inactivity, while sedentary activities further exacerbate this trend. Education initiatives can focus on both raising awareness of the importance of increasing physical activity and reducing sedentary behaviours. Piloting new programs that fit physical activity **into peoples' daily lives shou**ld also be encouraged, including participation in outdoor activities such as walking, wheeling or cycling along safe streets and trails.

Popularity of Unstructured, Self-Directed Activities

With increasingly busy lifestyles, participation is gradually shifting away from structured programs and set schedules as people are demonstrating a desire for more drop-in, unstructured and self-directed participation options. This is compounded by changes in demand for prime-time access – more adults and seniors are seeking activities during the evening, a shift from traditional daytime or late-evening provision. Participation in adult recreational activities is also growing at the same time that municipalities seek new ways to engage youth in meaningful activities.

There is also a growing desire for innovative programming and space for unstructured activities. Municipalities that have traditionally just been "facility providers" are evolving into "activity enablers", sometimes through partnerships with other service providers. Increasingly, this is leading to opportunities that go beyond traditional activities and by creating "experiences" often linked to broader interests in community life, the arts, and more.

Encouraging Free Play

Play is critical to the holistic social and physical development of children. A majority (57%) of Canadian parents believe that children these days spend too much time in organized activities, and not enough time just playing. ⁸ According to some, the erosion of play has become a silent emerg**ency across the world, with 1 in 5 children saying they are 'too busy'** to play.⁹ Lifestyles are also changing, with a growing prevalence of insecurity and parental risk aversion, the increasing prevalence of technology in our lives, and a recurring time-scarcity problem, each of which impact children's play experiences.

Play is often seen as an activity confined to playgrounds or schools, but communities are working to design public spaces to better support play and learning opportunities for children, such as the use of more natural play features and loose toys/tools for imaginative play. Everyday activities such as walking and cycling can also support a physically active population.

⁷ Urban Institute. <u>The Health Benefits of Parks and their Economic Impacts: A Review of Literature</u>. February 2022.

⁸ Ipsos. <u>One in Three (32%) Families Going into Debt to Fund their Childre**n's Extra**-Curricular Activities, Up 5 Points from Last Year. 2018. <u>https://www.ipsos.com/en-ca/news-polls/back-to-school-</u> 2018</u>

⁹ Real Play Coalition. <u>Reclaiming Play in Cities</u>. 2020. <u>https://www.arup.com/perspectives/publications/research/section/reclaiming-play-in-cities</u>.

Pandemic Impacts on Community Sport

Prior to the pandemic, about 75% of Canadian children age 5 to 17 years participated in organized sport¹⁰ and participation increased from 2005 to 2016¹¹. Rates of sport participation are largely the same for girls and boys, but participation decreases with age.¹² Further, participation is consistently lowest in lower-income and other marginalized groups, indicating that more can be done to include all persons in affordable and accessible sport opportunities.

Amongst adults, just over one-quarter (27%) participate in sport, a figure that has varied little over the years. Men are nearly twice as likely to participate in sport as women, and participation generally declines with age (from 44% of people aged 18 to 24 years, to 16% of adults aged 65 years or older). Those with higher levels of income and educational attainment are also significantly more likely to participate in sport.¹³

More recently, sport participation has been greatly impacted by the COVID-19 pandemic due to public health restrictions and facility closures. A report from 2022 indicates that one-half (49%) of parents say the number of organized sports their child participates in has declined and 45% say that their child is no longer playing sports.¹⁴ This is having adverse effects on children. 74% of Canadian parents indicated that their children feel isolated and lonely, 69% indicated that their children are showing signs of decreased physical fitness, and 64% said their children are finding it difficult to reduce their stress and anxiety.¹⁵ A return to activity is critical for children and youth to once again achieve the many positive benefits of participation.

Pandemic Impacts on Programming

The COVID-19 pandemic significantly impacted municipal programming as a result of facility closures and capacity restrictions. From 2020 until the beginning of 2022, public participation in organized activities plummeted. During this time, close-to-home recreation and at-home fitness became common, with one-third (33%) of Canadian gym-goers streaming exercise videos at home¹⁶. While virtual programming will provide municipalities with an additional tool by which to deliver their services in the future, it is less accessible for many vulnerable populations and does not offer nearly the same revenue potential as traditional models.

https://cflri.ca/sites/default/files/node/1671/files/CPLY%202014-2016%20Bulletin%202%20-%20Organized_EN.pdf

¹⁵ Canadian Tire Jumpstart Charities. <u>Jumpstart State of Sport Report</u>. 2021.

¹⁰ Canadian Heritage. (2013). <u>Sport Participation 2010</u>. Ottawa, Canada: Her Majesty the Queen in Right of Canada.

¹¹ Barnes, J. D. & Tremblay, M. S. <u>Changes in indicators of child and youth physical activity in Canada</u>, 2005–2016. Can. J. Public Health Rev. Can. Santé Publique 107, e586–e589 (2016).

¹² Canadian Fitness & Lifestyle Research Institute. Kid<u>s CAN PLAY! Bulletin 2: Participation in</u> organized physical activity and sport. 2018.

¹³ CFLRI. <u>2019-2021 Physical Activity Monitor</u>.

¹⁴ Canadian Tire Jumpstart Charities. <u>Jumpstart State of Sport Report</u>. 2022.

https://cdn.shopify.com/s/files/1/0122/8124/9892/files/Jumpstart_State_of_Sport_Report_March_20_21.pdf?v=1616793836

¹⁶ IHRSA. <u>The COVID Era Fitness Consumer</u>. IHRSA, Oct. 2020, <u>https://www.ihrsa.org/publications/the-covid-era-fitness-consumer</u>.

With public health restrictions now lifted, more recent trends indicate that programming is beginning to rebound to pre-pandemic levels for a number of different activities such as youth sports leagues, childcare and camps, adult fitness classes, older adult programming and holiday events/festivals. The recovery is likely to be quicker for certain programs (such as outdoor sport and arena activities) due to the established volunteer network and a lower reliance on municipal program staff; though it is worth noting that many community organizations are dealing with a loss of volunteers, underscoring the need to engage the younger generation to sustain these services moving forward. For other services that rely on leadership and certification programs (most notably aquatics, camps and specialized programs) it will take longer to attain past registration levels.

Engaging the Aging Population in Healthy Activities

Canada's population has been getting older for many decades. In 2021, its median age was 41.6 years, an increase of four years since 2001 (37.6 years). Aging is a significant driver of increased health care costs and is also significantly influencing parks and recreation opportunities. For example, an aging population may mean demand for activities that support social connections and healthy active aging, including more daytime services.

In response, providers are offering an increased variety of older adult programs for those wishing to remain active as they age, including those seeking lifelong learning opportunities, persons managing chronic illness and disease, and those that are seeking low-impact, therapeutic, and rehabilitative programs. However, there can be significant variation among different segments within the older adult community based on age, abilities, lifestyles, and interests – as a result, there is no "one size fits all approach".

Emerging Recreational Activities

The popularity of recreation and sport activities changes with time and can be affected by several factors, such as socio-economic characteristics, lifestyle trends, and the activity's exposure and accessibility. National registration figures indicate that, where once ice hockey and baseball were dominant, soccer has taken rise since the 1990s. More recently, a national study found that interest in children's activities was beginning to shift away from these sports towards other less formal extracurricular activities, such as music lessons, dance lessons, language classes, and drama classes.¹⁷

Additionally, the once popular sports of curling, racquetball, and aerobics – though still prevalent in some areas – have generally given way to new and emerging activities such as pickleball, disc golf, skateboarding and BMX biking, outdoor fitness and new forms of body weight training, cricket, year-round indoor athletic training, challenge courses and adventure play, plus other sports that are established but growing such as basketball and tennis. Many municipalities are also offering a wider variety of programming focused on physical activity and mental wellness, mindfulness, inter-generational opportunities, and outdoor programs (e.g., meditation, nature walks, yoga, etc.).

The pandemic and rising interest in outdoor activities has led to increased requests in many communities for spaces that support individual or small group usage, such as off-leash dog

¹⁷ Ipsos. <u>One in Three (32%) Families Going into Debt **to Fund their Children's Extra**-Curricular <u>Activities, Up 5 Points from Last Year</u>. 2018. <u>https://www.ipsos.com/en-ca/news-polls/back-to-school-2018</u></u>

parks, multi-use trails, sport courts, community gardens, outdoor classrooms, outdoor skating rinks, unstructured spaces, and digital infrastructure (e.g., Wi-Fi in parks, etc.).

Inclusion & Access

Growing Concerns over Affordability

Affordability is a concern for many households given the current challenging economic climate and the fact that participation in leisure activities is one of several spending choices for discretionary income. In particular, income can be a significant barrier to participation in organized sports where equipment, travel and rental fees result in greater costs to the **participant. Research from 2018 found that the cost of children's activities put a strain on** the finances of a majority (55%) of Canadian parents. Hockey topped the list as the most expensive extracurricular activity (an average cost of nearly \$750) and the research found that parents were increasingly less likely to enroll their children in hockey as a result. Conversely, swimming was one the most affordable and popular after-school activities for children.¹⁸

Making Recreation Accessible for Persons with Disabilities

One in five Canadians aged 15 years and over (amounting to 6.2 million individuals) have one or more disabilities relating to physical, sensory, cognitive or mental health¹⁹. As the average age of Canadians continues to increase, so will the number of persons living with disabilities.

Accessibility-related barriers affect persons with disabilities from achieving the full benefits of participating in leisure activities and other aspects of daily life. The Accessibility for Ontarians with Disabilities Act, 2005, (AODA) directs municipalities to consider the needs of persons with disabilities through facility design and service delivery. By 2025, municipalities are required to remove all barriers within new and redeveloped municipal facilities, including those related to physical space and through customer service training.

Further, access to the outdoors and exposure to recreation and the arts can be valuable in providing therapeutic relief, while exercise and cognitive stimulation afforded through leisure participation can mitigate the onset of chronic conditions associated with aging such as limited mobility and dementia. Many communities are beginning to provide outdoor spaces that directly benefit persons with disabilities, such as sensory gardens, quiet areas, raised garden beds, and autism-friendly playgrounds.

Improving Gender Equity in Sports

A substantially higher percentage of boys and men participate in sport compared to girls and women. Starting in late adolescence, one-in-three women leave sport as compared to one-in-ten boys²⁰. This trend has worsened since the onset of the pandemic, when it was reported that 90% of female recreation participants were negatively impacted (specifically young women ages 6 to 18 years old). The research suggests that young women are

¹⁸ Ibid.

¹⁹ Statistics Canada. <u>Canadian Survey on Disability</u>. 2017. <u>https://www150.statcan.gc.ca/n1/daily-guotidien/181128/dq181128a-eng.htm</u>

²⁰ Canadian Women & Sport. <u>The Rally Report</u>. 2020. <u>https://womenandsport.ca/wp-</u> <u>content/uploads/2020/06/Canadian-Women-Sport_The-Rally-Report.pdf</u>

participating substantially less than they did pre-pandemic and that 25% are not committed to returning to sport after the pandemic.²¹ To bolster participation among women, the Federal government has established a goal of achieving equity in sport participation by the year 2035.

Many municipalities and recreation providers have been instrumental in providing leadership opportunities, gender-specific sport leagues, and local engagement initiatives. A recent survey found that 84% of Ontarians believe recreation programs, parks and community facilities make it easier for people to socialize and feel included.²² Beyond sport, thoughtful design of public spaces can make them more fun, safer for diverse groups, and generally more inclusive of everyone. Examples include providing a wider variety of play opportunities, including gender-neutral forms of play such as climbing (e.g., natural elements) and building (e.g., loose parts).

Using Parks and Recreation to Support Indigenous Reconciliation

Indigenous awareness, recognition, understanding, and reconciliation are addressed through a number of sectoral documents, such as Parks for All (2017) and the calls to action identified by the Truth and Reconciliation Commission of Canada (2015). The latter calls upon all levels of government to ensure long-term Aboriginal athlete development, growth and public education.

All communities have a role to play in recognizing the importance of Indigenous voices in parks, recreation, and sport. For example, many municipalities are showcasing Indigenous history through public art and plaques in community centres and parks, along with exploring sports programs and ceremonial events that deepen our understanding of these cultures. A recent survey saw that 59% of Canadians want to see Indigenous place names restored and 68% support more Indigenous representation through art, native plant gardens, and signage.²³ Reconciliation is an ongoing process that must occur in a respectful manner recognizing Indigenous cultural traditions and practices. Ensuring that Indigenous voices are sought and included in planning and policy development is growing as a priority for municipalities.

Safe Spaces for Marginalized and Displaced Populations

The pandemic has intensified social inequities and negatively impacted vulnerable populations such as lower-income households, ethnic minorities, and persons with disabilities. The research is clear that marginalized populations have been disproportionately impacted and finding it harder to remain active.

Intentional decisions and meaningful action are required to improve equity in resource provision and access to recreation services for all populations. For example, recreation facilities can play a role in supporting under-housed and displaced populations, serving as cooling centres, community showers, food pantries, and safe spaces. Most parks and recreation departments are not well equipped to deal with this challenge and greater education and dialogue are often required. While policies and approaches for

²³ Park People. Reclaiming Urban Spaces is a Decolonial Act. 2022. <u>https://ccpr.parkpeople.ca/2022/stories/inclusion/reclaiming-urban-spaces-is-a-decolonial-act</u>

 ²¹ Canadian Women & Sport and E-Alliance. <u>COVID Alert Pandemic Impact on Girls in Sport</u>. 2021.
 <u>https://womenandsport.ca/wp-content/uploads/2021/07/COVID-Alert-final-English-July-2021.pdf</u>.
 ²² Parks and Recreation Ontario. <u>Value Survey</u>, 2021.

accommodating transient residents may differ, municipalities are increasingly serving a wider range of needs and working with other sectors to connect residents to essential services.

Connecting People & Nature

Rising Use of Parks and Outdoor Recreation

Communities witnessed increased demand for unstructured outdoor recreation activities within parks and trails during the COVID-19 pandemic as people found or rediscovered new ways to remain active and connected. Although this created some operational challenges and created added strain on budgets, it has largely been viewed positively as it has **strengthened residents' connections** with their community and nature, and introduced many people to new activities, often within their local neighbourhood. Park usage has continued to climb during the pandemic – 55% said they spent more time in parks in 2021 than in 2020, and 58% indicate that they would like to spend even more time in parks.²⁴

As a result of this renewed interest, residents expect more from their parks in terms of amenities and quality. Many communities are reimagining existing spaces in creative ways, such as car-free streets (or temporary street closures), outdoor workout areas, and open space enhancements that allow for creative programming and community interaction (e.g., Wi-Fi in parks, increased seating options, creation of new activity zones, challenging play opportunities, nature-based programs, etc.). Public demand is especially strong for year-round washrooms in parks and natural areas. Although meeting these needs will be a challenge due to rapidly rising costs and supply chain issues, a recent report suggests that there is substantial support for public investment – 87% of city residents support more public funding for parks.²⁵

Improving our Connections with Nature

There is a growing amount of research highlighting the physical and psychological health benefits of interacting with nature for people of all ages. For example, children with access to parks, playgrounds and other outdoor amenities are more likely to be physically active, and are less likely to be overweight and obese; this is especially true if the parks are within walking or biking distance and have facilities that encourage physical play. Time in nature also provides children the chance to develop social-emotional skills and healthy behaviors **critical to thrive. Unfortunately, children's overall exposure** to nature has been steadily declining.

Some ways that municipalities have encouraged residents to spend time outdoors are through the provision of off-road trail networks, community gardens, naturalization initiatives, nature-based programming, stewardship activities, educational programs, etc. Trails systems offer residents and visitors an opportunity to connect with nature through natural environments within and surrounding the community. Emphasis is also being placed on expanded outdoor play opportunities for children and youth, including natural playgrounds.

 ²⁴ Park People. <u>The Canadian Parks Report: Nurturing Relationships & Reciprocity</u>. 2022.
 ²⁵ Ibid.

Nearly half (48%) of Canadians indicate that they have been spending more time in naturalized spaces during the pandemic.²⁶ In some places, concern has been expressed over over-use of natural areas due to increased visitation (large parks in particular saw a spike in usage). Intentional planning is critical to ensuring that natural areas are properly managed and able to support priorities such as expanded biodiversity.

Supporting Active Transportation

Active transportation offers many personal health and wellness benefits and is a core element of complete communities. Recently, the concept of a "15-minute city" has been gaining prominence, requiring that neighbourhoods be designed to allow people access to basic and essential services at distances that can be accessed by foot or bicycle within 15 minutes of their home.

During the pandemic, municipalities observed a surge in recreational trail use as residents participated close-to-home and sought connections with nature. Expanded use of these networks can be expected to continue – interest in bike lanes, off-road trails and cycling infrastructure are common requests in most communities. Active transportation is environmentally-friendly as it reduces road congestion and vehicle-related greenhouse gas emissions.

Keeping Pace with Parkland Needs in Growing Communities

Access to outdoor space matters. There is a growing recognition of the broader utility and value of parks for individuals and communities, including their many physical and mental heath, social, environmental, and economic benefits. However, with many communities experiencing fast growth in population and density, most are finding it challenging to develop new parks to meet growing demand due to land scarcity and rising land values.

Another issue is equity. Several studies have found that under-served populations (e.g., low-income households, visible minorities, recent immigrants, Indigenous communities and more) tend to have below average access to parks, particularly larger open space areas²⁷. It is important not only to ensure that sufficient parkland is secured, but that it is equitably distributed across communities so that all residents can enjoy the benefits. Now more than ever, municipalities have an obligation to target investment (including park development and renewal, facility development) within neighbourhoods without adequate access.

Increasing Focus on Environmental Design and Climate Change

There is an increasing need to reduce our impact on the environment to be more sustainable and resilient to climate change. The way in which we design and operate our recreation and parks facilities can help us meet our environmental objectives. Increasingly, municipalities are designing facilities to meet "net zero" and "carbon neutral" targets through the use of technologies that enhance energy efficiency, reduce waste, and lower our greenhouse gas emissions. Although these enhancements often come with a higher initial capital cost, they must be balanced against improved sustainability, resiliency, and potentially longer-term operational savings.

²⁶ Ibid.

²⁷ Green Infrastructure Ontario Coalition and RePublic Urbanism. <u>Improving Access to Large Parks in</u> <u>Ontario's Golden Horseshoe</u>. March 2022.

Fortunately, the many environmental benefits of parks and public spaces – such as reducing the urban heat island effect, mitigating flooding, and improving air quality – illustrate the critical importance of their role as public infrastructure and lend support for further **investment.** Already thought of as "green infrastructure", parks are being positioned to be more environmentally sustainable through reducing grass cutting and naturalization initiatives, planting of native species, tree canopy targets, net zero infrastructure, and programs that educate about local natural heritage features (e.g., outdoor classrooms or interpretive signage). More communities are also experimenting by piloting new approaches in parks, such as bioswales, rain gardens, pollinator gardens, habitat restoration, and biodiversity initiatives. Green infrastructure strategies that include directions for parks are becoming more common and helping to ensure these practices become standard.

Supportive Environments

Multi-Use Recreation Facilities as Community Hubs

In this era of user convenience and cost recovery, most municipalities (like Gravenhurst) are centralizing multiple recreational and cultural facilities under one roof. There are a range of benefits of multi-**use facilities including the creation of a "one**-stop-**shop" destination** where all household members can gather and engage in recreation activities, thereby contributing to sport development, tourism, and operational efficiency. During the pandemic, many of these spaces provided critical services relating to public health (e.g., testing and vaccination centres)

Increasingly, these facilities are being designed as "community hubs" that provide a central access point for a range of needed health and social services – along with cultural, recreational and greenspaces – to nourish community life. They are serving an important role by connecting people to necessary services that extend well beyond traditional sport and recreation activities (e.g., child care, food distribution, warming and cooling centres, emergency shelters, etc.). Partnerships with service providers can help municipalities leverage resources and reach new audiences.

Providing High Quality, Multi-functional and Flexible Facilities

Today's consumers expect and demand high quality sports and recreation facilities that can

support an increasingly sophisticated network of users, athletes, and related service providers. Part of this can be explained by the exposure of residents to newer facilities in other communities. With many smaller communities witnessing significant population growth and in-migration of residents from larger urban centres, these residents are bringing their bigger city expectations with them and anticipating similar levels of service. Complete communities with a variety of accessible leisure opportunities will be poised to capitalize on this trend, while those with under-funded or inadequate amenities will be expected to increase investment to keep pace.

This trend also reflects the expectations that come with increased spending in the sector. In 2019, Canadians allocated 5% of their annual household expenses to recreation and culture activities (including the purchase of sports equipment, art supplies and musical instruments,

as well as admission to movies, live performances, and museums, membership payments towards recreation and leisure facilities, etc.), an average of over \$4,600 per household.²⁸

The provision of high quality, multi-use facilities encourage physical and social activity among all age groups, while also creating opportunities for sport tourism at a regional scale. Best practices in facility design consider safety, accessibility, comfort, placemaking and opportunities for community gathering, socialization, and inclusive experiences. A recent focus has been placed on the provision of experiential amenities (e.g., indoor playgrounds, challenge courses and rock climbing, functional training areas, etc.).

There may be new infrastructure needs in a post-COVID-19 setting, with a priority being placed on accessible, resilient, and human-scaled spaces that provide for adequate separation and improved ventilation. An emphasis may be placed on flexible spaces that can be closed off from other areas and subdivided for a variety of small and large group activities, as well as non-recreational use during public health emergencies. Economic stimulus to the sector – such as continued senior government grants – may help many communities to address needed infrastructure improvements, particularly those projects with wide-ranging benefits and sound rationale. Added costs for design and capital construction can be anticipated for certain facility types given recent supply chain issues, labour shortages, and rising inflation rates.

Rationalizing and Addressing Aging Infrastructure

The 2019 Canadian Infrastructure Report Card found that approximately one-third of **Canada's sports and recreation facilities (including arenas and pools) were considered to be** in fair to very poor condition (ranking only behind bridges and roads) and in need of revitalization and expensive repairs.²⁹ Many of these facilities were built in the 1970s or earlier and, due to the era of construction, have various design and age-related deficiencies that are impacting their operational efficiency and ability to adequately serve their patrons.

Facility renewal and reinvestment projects have been a focus for local governments for some time, often requiring alternative funding sources such as senior government grants, naming rights, operating partnerships, land swaps, and more. Due to the current economic situation and resultant cost escalations, many communities will require increased financial commitments from all levels of government to facilitate the redesign, development and retrofitting of parks and recreation facilities. The infrastructure deficit provides an opportunity not only to modernize facilities by making them more multi-use, but also to consider facility conversion or adaptive re-use options that accommodate emerging activities.

Designing Facilities to be Sport-Friendly

Organized sport in general – but particularly at high-performing levels – requires access to specialized facilities such as aquatic centres, arenas, and sports fields. Increasingly, athletes and organizations serving the competitive sport market are seeking recreation infrastructure

²⁸ Statistics Canada. Table 11-10-0222-01. <u>Household spending, Canada, regions and provinces</u>. <u>https://www150.statcan.gc.ca/t1/tb11/en/tv.action?pid=1110022201</u>

²⁹ Monitoring the State of Canada's Core Public Infrastructure: The Canadian Infrastructure Report Card 2019. http://canadianinfrastructure.ca/downloads/canadian-infrastructure-report-card-2019.pdf

that is built to **be "competition-ready" in order to accommodate elevated training and sport** tourism opportunities.

In evaluating the needs of sport in the design of new and redevelopment of existing recreation facilities, municipalities must factor in existing and future demand, as well as opportunities for sport tourism. Sport tourism offers a number of economic benefits, supporting amenities such as hotels, restaurants, and parking, among other industries. **"Tourna-cations" –** families of athletes scheduling family vacations to coincide with athletic tournaments – is a recent trend and means that facilities must consider the needs of both participants and spectators (e.g., Wi-Fi, charging stations, higher-end concessions, family entertainment options, wayfinding kiosks, pet-friendly public spaces, etc.).

Recreation Capacity

The Great Resignation - Significant Turnover in Recreation Programming Staff

Since the beginning of the pandemic, many parks and recreation departments have experienced a decline in their number of employees, particularly part-time staff and seasonal workers. This time period – **"The Great Resignation"** – has seen many staff leave their jobs for a multitude of reasons, resulting in an increased workload for remaining employees and decreasing opportunities for people to participate in activities.³⁰ For example, pandemic restrictions led to a reduction in training opportunities for many municipalities, which is currently impacting the number of lifeguards and program instructors, leading to program cancellations. These workers are integral to the recreation services that keep their community engaged.

Due to the low availability of qualified workers and rising operating and staffing costs, there is concern that non-profit agencies may stop offering affordable programming (e.g., beforeand after-school programs, summer camps, etc.). For example, several YMCAs in Ontario have permanently closed due to significant membership losses during the pandemic, leaving a void in many communities.

Declining Volunteerism

Volunteers are critical to the delivery of community-based parks and recreation activities and events; however, the number of volunteers and their commitment are declining. In 2018, Canadian volunteers devoted about 1.65 billion volunteer hours, down from 1.96 billion in 2013 – a 16% decrease in only five years.³¹ The pandemic has further accelerated this trend.

The most important factor preventing individuals from volunteering in sport is "time or busy schedule". More adults volunteer in an informal capacity (especially young adults), compared to a formal capacity (which is more common amongst older adults). The role of younger volunteers is vital to the sustainability of sport, especially in light of the pandemic and its greater impact on older populations.³²

https://www.nrpa.org/blog/nrpa-parks-snapshot-2021-year-end-survey-results/. ³¹ Statistics Canada. 2018 General Social Survey on Giving, Volunteering and Participating.

³⁰ Roth, K. <u>NRPA Parks Snapshot: 2021 Year-End Survey Results</u>. 2021.

³² CFLRI. Monitoring & Tracking the Field: Volunteering in Sport. 2022.

Pandemic Challenges for Canadian Recreation Sport Organizations

Sport organizations have been significantly affected as a result of the COVID-19 pandemic. A report from early 2022 finds that 52% of Canadian sport organizations say that it will take until at least 2024 to reach their pre-pandemic state. Further, 75% of sport organizations indicate that the costs of running sport programs have increased and 94% are concerned that youth will be particularly impacted. ³³ A previous survey of Canadian sport organizations were bankrupt or are nearing having to file for bankruptcy and 30% of organizations had temporarily or permanently closed during the pandemic.³⁴

Many communities rely on organizations and spaces provided by third parties (e.g., schools, churches, non-profits, private sector) to support programming. Service reductions and closures can create program gaps, sometimes with an expectation for municipalities to step in and fill the void. Recognizing that this situation is evolving, service providers must closely monitor demand, participation, and usage levels to adjust resource allocations as necessary. Working with local community organizations will be critical as we emerge from the pandemic to ensure programming continues to be successful over the long-term.

The Necessity of Partnerships

Municipal parks and recreation departments throughout Ontario are increasingly challenged to provide and maintain top quality facilities, programs and services within defined budgets. As financial pressures mount and the need for cost containment rises, communities are examining new and creative service delivery models, including developing relationships with third-party entities. With municipalities facing increasing demands for new amenities, many are turning to partnerships with non-profits and community groups to bring expertise, new programming, alternative funding, and shared risks. Most municipalities have a long history of working with public libraries, school boards, service clubs, or other providers to maximize resources.

Looking ahead, the sector is likely to see more partnerships than fewer. Sport for Life reported that 72% of organizations have reached out to work with others and/or support one another in starting initiatives.³⁵ The pandemic has also strengthened existing and created new forms of collaboration with other sectors, something that may carry forward into the future. Many of these new roles – including community-based supports (e.g., food security, health service coordination, homelessness, etc.) –will require additional policy direction, training, and support.

Data, Technology and Digital Transformation

Data is becoming more accessible and mainstream, with increased data literacy enabling more informed decision-making. Parks and recreation departments are gaining access to growing amounts of data geared specifically towards the sector. These advanced analytics

³⁴ Canadian Tire Jumpstart Charities. <u>Jumpstart State of Sport Report</u>. 2021.

³³ Canadian Tire Jumpstart Charities. <u>Jumpstart State of Sport Report</u>. 2022.

https://cdn.shopify.com/s/files/1/0122/8124/9892/files/Jumpstart_State_of_Sport_Report_March_20_21.pdf?v=1616793836.

³⁵ Sport for Life. <u>Impacts of COVID-19 on Local Sports Organizations Nationwide Survey Results</u>. Sport for Life, June 2020, <u>https://sportforlife.ca/wp-content/uploads/2020/06/National-Report-Impacts-of-COVID-19-on-Local-Sports-Organizations-1.pdf</u>.

allow for more in-depth analysis on trends and tendencies that can support predictive modelling.

Technological advances are also enabling service providers and users to be more aware of leisure opportunities in their communities. From online services, virtual programming, and mobile and wearable technologies, the integrated application of technology in recreation service delivery can assist in enhancing client experiences and engaging a wider user base.

Digital technology is becoming pervasive in the public realm, enhancing client experiences beyond the walls of community facilities. Some examples include³⁶:

- Public Wi-Fi / hot spots
- Device charging stations / hubs
- Digital screens / kiosks
- Smart transportation infrastructure (e.g., smart traffic signals, pedestrian crossings, smart sidewalks, parking sensors)
- Smart street furniture (e.g., smart lamp posts, smart benches)
- Digital public art
- Digital wayfinding

Evolving Financial Challenges

Parks and recreation department budgets were significantly impacted by the COVID-19 pandemic, as facilities were closed and revenue streams dried up. Now, as operations resume and ramp up to pre-pandemic levels, most municipalities are experiencing escalating cost factors and staffing shortages that are leading to rapidly rising capital and operating budget needs, along with delays in much-needed capital projects.

The effects of the current economic situation will be felt for some time and are likely to cause most communities to more actively seek out alternative funding sources. Some options include grants, naming rights, and innovative partnerships. The recreation sector **has a history of "doing more with less" and finding creative ways to ensure that residents** are able to participate and engage fully in these essential services.

Arts & Culture

Culture can be Difficult to Define

The term "culture" is a multi-faceted concept and, as a result, is frequently misused and misinterpreted. Recent literature in cultural planning points to defining "culture" as activities that: harness the assets of a community; celebrate the unique resources, such as heritage properties, natural assets, and community spirit; revitalize downtown cores; honour and respect the unique contributions of artists and artisans; create diverse and safe neighbourhoods; raise the bar for urban design; and protect public spaces. Cultural plans often encourage professionals and individuals within the arts and culture sector to lead informed conversations about culture (employed as cultural planners or added to municipal

³⁶ Lenarcic Biss, Danielle and Pamela Robinson. <u>Parks and Open Spaces: Challenges and Opportunities</u> of Smart Technologies. February 2021.

committees), what it means, how it impacts communities, and, importantly, whose cultures should be included or have been excluded in the planning process.

Arts and Culture Attendance and Participation is Growing and Evolving

Research on attendance is broad but highlights growing participation and high levels of **appreciation for arts and culture across the country. Residents' value authentic experiences** and the unique attributes of communities. People are also experiencing and appreciating arts and culture in less traditional ways and have increasing expectations for programs and events.

Data from the 2016 Canadian Social Survey indicates that 99.5% of Canadians aged 15 or older participated in some type of arts, culture, or heritage activity. This includes 86% that attended an art gallery, an arts performance, an artistic or cultural or festival, or a movie theatre. There has been a strong increase in the percentage of Canadians visiting art galleries and historic sites between 1992 and 2016.

In addition, the participation rates for many arts, culture, and heritage activities have increased over 25 years, with 50% of Canadians making or performing art in 2016 (led by crafts at 18%, music at 15%, visual arts at 13%, writing at 11%, and dancing at 9%).

Patterns of higher attendance rates were found for many demographic groups, including women, youth, families with higher income and levels of educational attainment, and non-religious Canadians. Additionally, recent immigrants tend to have much higher attendance rates than earlier immigrants. While higher income positively correlates with arts attendance, it has little influence on the proportion of Canadians that participate in making or performing art.³⁷

Pandemic Impacts on Arts and Culture

Arts and cultural industries were categorized as non-essential and were hard hit by the COVID-19 pandemic. Theatres and museums were closed and festivals were cancelled across the county. For a sector that was already in a precarious state prior to the start of **the pandemic, being the "first to close and last to open" has been a significant challenge for** many. Notably, there was a 25% decrease in employment levels (including self-employment) in the arts, entertainment, and recreation sector – higher than any other industry in 2020.³⁸ Many organizations also count on sponsorships for funding, which dried up due to the pandemic.

Fortunately, there are signs that the industry is recovering as many activities are resuming in 2022. However, the sector is also affected by the same staffing and volunteer shortages seen in the recreation sector. Inclusive and affordable opportunities for arts and cultural participation and attendance will be important to our recovery.

It is difficult to predict what will come next for the industry as we emerge from the pandemic, though it is clear that there are increasing options and competition for ones' time. As one study puts it: "It seems the shift in the use of technology for the consumption of arts and culture content will stick around even once the pandemic begins to subside. The

 ³⁷ Hill Strategies Research Inc. <u>Demographic Patterns in Canadians' Arts Participation in 2016</u>.
 <u>https://hillstrategies.com/resource/demographic-patterns-in-canadians-arts-participation-in-2016/</u>
 ³⁸ Hill Strategies Research Inc. <u>Organizational stress and resilience in the arts in Canada</u>. 2021.

pandemic has created new competition for live entertainment further complicating the effort needed to get Canadians out of their homes. Rethinking the customer journey will be critical as we **emerge from the pandemic.**"³⁹

Digital Transformation of Arts and Culture

The pandemic accelerated technological shifts that were already influencing large segments of the creative and recreational industries. For example, digital technologies have allowed creative individuals to self-publish, produce, market, distribute, and sell their creations, no longer relying on traditional means of production, distribution, and marketing. Digital culture has also allowed the creator to engage with audiences directly, and allows for creators to reach mass markets and tailor their products to suit consumers across borders.

This pivot to digital programming and practices has opened up new opportunities for artists and arts organizations. During the pandemic (and potentially beyond), some artists created virtual shows (e.g., music, theatre, etc.) to continue to reach their audience. In the heritage sector, museums developed digital resources, providing access to collections online, educational programs, virtual tours, self-organized experiences, etc. However, not all organizations have the capacity or the resources to deliver online programs, with smaller organizations requiring the greatest amount of continued support.

Theatre Audiences are Changing

In 2016, 72% of Ontarians aged 15 and older attended an arts event (excluding movie theatres); for many, this would have included theatre activities such as performing arts. While the business model for municipal and other theatres is unique to each venue, the industry is increasingly being impacted by changing demographics and competition. For example, the baby boom generation – which has helped to sustain many theatres over the decades – is rapidly aging and the next generation has different expectations and interests. Furthermore, popular culture is becoming increasingly fractured (e.g., there are over twenty identifiable music genres) and our population is becoming more diverse. Additionally, there are now more ways for people to consume arts and culture, often from the comfort of their own home. While these factors are not a death knell to the industry, it does suggest that many community theatres may need to adjust the diversity and focus of their business model in the years to come.

Racial Inequity in the Cultural Sector

Changing demographics and increased diversity in many communities and neighbourhoods will impact the cultural sector. Although the arts appeal to a large majority of Canadians in all demographic groups, there has been growing recognition in Canada of the lack of diversity in mainstream arts, culture, and heritage experiences, and also in the make-up of arts, culture, and heritage administrations, creators, instructors, and presenters. However, Indigenous, Black, and racialized artists are the highest underrepresented within Canadian

³⁹ Abacus Data. <u>Arts and culture during a pandemic and what will come next</u>. 2021. <u>https://abacusdata.ca/arts-culture-pandemic-canada-polling/</u>

cultural institutions both as presenting artists, and within management, executive positions, and boards.⁴⁰ '

The pandemic has raised awareness that many socio-economic factors (e.g., income, age, Indigenous identity, racialized groups) can have a substantial influence on individuals' health and wellbeing. A study from 2016 found that cultural activities have a positive impact on Canadians' health and wellbeing, thus equitable access to culture can be related to equitable health outcomes.⁴¹ Traditional' arts and culture representation will need to expand to incorporate and exhibit new forms of art for a wider community, ensuring racial equity in the arts.

Demand for Local and Authentic Festivals and Events

Pandemic aside, technological innovations, changing demographics, lifestyles, and interests are impacting the delivery of festivals and events. For example, the internet and social media have fundamentally changed the way festivals and events are marketed, providing a more effective way to reach target audiences than traditional advertising. Online ticketing is now common across all event sizes (small to large), allowing for more information on audiences and the effectiveness of marketing tactics.

Festivals and event goers are also becoming more demanding. They expect more choices, experiences and authentic programming. There is an increasing demand for events that provide food, wine, and craft beer. Additionally, hybrid events – those that broaden the appeal of an event by adding complementary activities either in-person or in tandem online – are increasing in number. This helps to grow audiences, give them more ways to spend money, and expand the sponsor pool. As noted previously, many festivals and event organizers have also pivoted to delivering these experiences through online mediums, directly as a response to the COVID-19 pandemic.

Looking to the Past and Documenting our Living Heritage

As communities diversify and cultures are shared across the globe, there has been a move toward gathering, protecting and featuring intangible heritage elements. This includes many **aspects of a community's culture that are not represented by traditional physical artifacts,** buildings or monuments such as: storytelling, skill sharing and knowledge building. Often these intangibles are created, transmitted and maintained organically by a community without a realization that they are explicitly maintaining culture and heritage.

Rapidly changing demographics have pushed organizations and groups to document these intangibles for future generations as well as for cross-cultural learning and understanding. Many heritage groups, museums and galleries are using technologies to collect, archive and exhibit their local intangible heritage assets. Given our changing demographics, it is increasingly important to expand the definition of heritage beyond a Canadian-only focus to one that is encompassing of diverse histories of our new populations.

⁴⁰ Canadian Artists' Representation/Le Front des artistes canadiens (CARFAC). <u>Positioning the Arts as a Key Economic Driver in COVID-19 Recovery</u>. 2021. <u>https://www.carfac.ca/carfacwp2019/wp-content/uploads/CARFAC-2021-Pre-budget-Consultation.pdf</u>

⁴¹ Hill Strategies Research Inc. Canadians' Arts Participation, Health, and Well-Being. 2021.

Creative and Cultural Hubs are Important for Smaller Communities

With the help of increased federal funding, Canada has seen a rise of cultural hubs in recent years. Creative and cultural spaces bring people together – artists, cultural entrepreneurs, and organizations – in spaces that encourage collaboration, innovation, and development. These hubs give artists the platforms and access to tools they need to succeed creatively. They are key economic drivers to attract skilled labour and innovation to specific places, particularly in small towns and rural areas. Hubs can take the form of districts, or individual facilities that inherently become multi-use spaces. The adaptation of existing spaces (often humble accommodations that facilitate placemaking) allows access for various activities without additional development in communities where land or resources are limited.

Rising Land Values are Impacting Cultural Venues

Over the last few years, most cities have experienced rising land values, sometimes resulting in the displacement of arts and cultural activities.⁴² For example, it has been common for studio spaces to have closed due to increases in property tax and rent, competition with higher-value land uses, and development pressure. The World Cities Culture Forum has also identified this as an issue in growing communities around the globe. It is especially a concern for large cities as 50% of Canada's 158,100 artists reside in the nation's twelve largest cities, despite these cities accounting for only 34% of the overall Canadian population.⁴³

In response, a growing trend in some communities has been the retrofitting / use of community hubs and heritage homes (e.g., schools, old barn houses, homes, etc.) as cultural spaces. Multi-purpose cultural assets have become standard practice in many cultural plans today, in particular spaces that encourage different and complimentary types of activities, allowing for enhanced interaction within the community and providing opportunities for collaboration.

Empowering the Community through Tactical Urbanism and Placemaking

Residents and communities often take it on themselves to change, repair or beautify public spaces through a concept known as tactical urbanism. Tactical urbanism is a collection of temporary changes to the built environment to improve neighbourhoods and community gathering spaces. These changes can vary in cost and size and usually start at the community level as a way to create spaces that are inviting, easy to navigate and offer residents a sense of ownership and communal pride for their public spaces. This concept is extended to temporary or pop-up initiatives that can help to test out creative placemaking ideas.

Targeted Support to the Cultural Sector

The local arts and culture sector has been developed over decades through the dedication of its artists and cultural leaders, and the support of its audiences, philanthropists, volunteers, **sponsors and donors. Nurturing local cultural activity can be considered an "investment"** that can reap long-term rewards. For example, arts education helps in child-development and has many positive social impacts such as social cohesion, sense of place, economic

⁴² World Cities Culture Forum, worldcitiescultureforum.com

⁴³ Hill Strategies Research Inc. <u>Artists in Canadian Municipalities in 2016</u>. 2020.

diversification, and cultural awareness. It is in the best interest of residents, businesses and visitors to continue to support a vibrant, sustainable and resilient arts and culture sector.

As a result, most municipalities are seeking strategic approaches to support local organizations, including funding and subsidy programs. A recent example is the City of Toronto which recently reviewed its two cultural community grant programs. The City considered how it could more effectively influence the reach of these grants by targeting specific cultural organizations that could trickle down the grants via partnerships with others, as well as the establishment of a separate cultural festivals program and a new cultural access and development program to encourage participation by all in the arts and culture sector.

DRAFT

Appendix D: Service Levels for Parks & Trails

Identified below are recommended Parks and Trails Maintenance Levels of Service based on the analysis from Section 8.5. Levels of Service have been reorganized where appropriate, gaps have been filled, and missing service areas have been added.

In developing the recommended Levels of Service for the Town of Pelham, the following methodology has been used:

- A review was carried out of current Town Levels of Service (both formal or informal) and of work currently performed in parks and other Town spaces through documentation and discussions with management and front-line staff.
- The current staff complement carrying out parks and trails maintenance, the Public Works and RCW organizational structures related to outdoor maintenance, and the vehicle and equipment inventory and deployment were reviewed.
- Parks and trails hierarchy and classifications were considered in concert with recommendations in Section 8.1.
- Existing Park inventories and amenity assessments were reviewed.
- Pelham's parks, facilities and trails parks were visited to determine their current condition.
- Discussion with staff took place to determine any problems delivering service or areas of complaint from the public or other stakeholders.
- Existing Levels of Service for Pelham were compared to benchmark municipalities, industry norms, and requirements related to safety and liability, regulations, or legislation.

The recommended Levels of Service below have been organized by service areas and specific locations or amenities. The actions specified for the various service areas may be best carried out by the Public Works or RCW Departments. Determining responsibility will require additional review by the Town.

Parks and Trails	Description of Service	Target Condition	Scheduled Actions	Demand Actions			
Community and Neighbourhood Parks, Open Space, Town Facilities	Grass cutting and trimming.	Healthy turf cut to a 3" height. Areas around structures, beds, trees and hard surfaces trimmed.	Cut and trim weekly.	Restore winter damage to turf in spring as required.			
Trails	Grass cutting.	Turf adjacent to trails cut one mower width to 4" height.	Cut and trim weekly.	N/A			
SWM Pond Edges	Contracted grass cutting.	Turf at 6".	N/A	N/A			

Service Area - Turf Maintenance

Notes: The Town may wish to consider higher levels of turf maintenance for Community and higher profile parks, and Town Facilities.

Service Area -	Sports	Fields
001 1100 / 1100	Sports	ricias

Sports Fields	Description of Service	Target Condition	Scheduled Actions	Demand Actions
Inspection	Inspection as per checklist. Deficiencies recorded and reported.	Field and field amenities in good, safe and playable condition.	Inspect weekly in season.	Rectify deficiencies.
Soccer Fields	Irrigation of fields where systems installed as per schedule or through sensors.	Turf is irrigated sufficiently to promote healthy growth.	Line a minimum of once per week during the soccer season. Monthly inspection and testing of irrigation controllers and systems. Seasonal startup and shutdown of systems.	Turf repair (sodding or seeding) as determined through inspection or discussion with user groups. Repair to field amenities as required. Repair as required based on inspection or reported malfunction. Calibration, adjustment of heads and resetting of timers as required.
Ball Diamonds	Grass Cutting and trimming. Lining. Infield grooming.	Field is healthy at 2"-3" providing a safe surface. Fencing, benches, bleachers and backstops in good state of repair. Lines visible. Infield is level, drains properly and there is a smooth transition between the infield and outfield turf.	Lined a minimum of once per week during ball season.	Infield leveling and filling of low areas as required.

Notes: A maximum 2" length of turf is desirable for soccer for playability

Key actions include:

- a) The Town should consider implementing a program of regular topdressing, overseeding, fertilizing and aerating of sports fields, especially for soccer facilities. This work will improve the health of the turf and field resilience. It could be taken on by the Town or contracted.
- b) Irrigation should be installed at high use fields to improve turf health.

Service Area - Horticulture

Horticulture	Description of Service	Target Condition	Scheduled Actions	Demand Actions	
Primary Beds	Planting and maintenance of annuals in primary beds.	Beds are weed free; plants are healthy and properly spaced.	Planting in June, weeding by- weekly, watering every 2 days. Pruning of shrubs 2x per year.	Removal of dead plants and replace as required.	
Secondary Beds	Planting and maintenance of annuals in park beds.	Beds are weed free; plants are healthy and properly spaced.	Planting in June, weeding by- weekly, watering every 2 days. Pruning of shrubs 2x per year.	Removal of dead plants and replace as required.	
Hanging Baskets	Installation and maintenance of hanging baskets.	Baskets are attractive and plants are in good condition.	Installed in June, Water every 3-4 days.	Remove any dead plant material.	
Town Facilities	Planting and maintenance of annual and shrub beds outside Town facilities.	Beds are weed free; plants are healthy and properly spaced.	Beds inspected weekly. Shrubs pruned as required. Annual planting in June, weeding by-weekly. Watering every two days.	Removal of dead plants and replace as required.	

Notes: Primary beds are located in "Designated Business Areas". Secondary Beds are located in parks.

Key actions include:

- a) The Town should investigate the installation of irrigation in high profile beds to reduce labour costs and time.
- b) The Town should consider mulching of beds. This will reduce requirements for weeding and watering.

	eneral Maintenan				
General Maintenance	Description of Service	Target Condition	Scheduled Actions	Demand Actions	
Park Furniture	Repair or replacement of park benches, picnic tables.	Park furniture is safe and in good repair.	Annual inspection of all park furniture.	Repair of park furniture within one week of inspection or concern from user.	
Parks Fencing	Repair of Town- owned park and open space fencing.	Fencing is safe and in good repair.	Inspection of all fencing in spring and fall.	Repair of damage to fencing within one month of inspection or concern from a user. Replace fencing or sections of fencing as required based on inspection.	
Park signs	Repair or replacement of park signs.	All signs are legible and in good condition.	Inspection of park signs on a weekly basis as part of litter pickup.	Replacement or signs as required.	
Graffiti	Removal of graffiti from parks and open space signs, structures, and amenities.	Parks are and open spaces are free of graffiti.	Inspection of parks and open spaces for graffiti as part of regular maintenance. Field staff to report any graffiti found.	Removal of graffiti reported by staff or users within one week.	
Waste Receptacles	Repair or replacement of waste receptacles.	All waste receptacles are in good condition and in the proper locations.	Inspect waste receptacles as part of park waste management and report any issues.	Repair, replace or relocate any receptacles reported within a week.	

Service Area - General Maintenance

Notes: Graffiti removal is carried out by Public Works beautification staff. The Town may wish to investigate contracted graffiti removal.

Key actions include:

a) **Given Pelham's large older population, the Town may consider adding additional benches** along park pathways and trails to allow for frequent rest stops.

	bei vice Alea – Waste Mallagement					
Waste Management	Description of Service	Target Condition	Scheduled Actions	Demand Actions		
All Parks and Trails and the exterior of Town Buildings.	Litter pickup and removal from all areas. Emptying of waste receptacles.	Parks, outside areas and trails rights of way are free of litter. Receptacles emptied when more than 75% full.	A minimum of once per week and prior to grass cutting. Emptied as per agreement with Niagara Region and private contractors.	More frequent pickup as required for events and tournaments, or in high use areas. Emptying of overflowing receptacles or removal of dumped household waste within 24 hours of report.		
Open Space	Pickup and removal of litter including any dumped material. Emptying of waste receptacles.	Areas free from litter and dumped material. Receptacles emptied when more than 75% full.	Pickup and removal or litter spring and fall. Receptacles emptied once per week.	Pickup of reported dumped material within one week of report.		

Service Area - Waste Management

Notes: Receptacles should be placed at park and open space entrances, parking lots and along roadways where practical to facilitate waste removal

Service Area - Play Amenities

Play Amenities	Description of Service	Target Condition	Scheduled Actions	Demand Actions
Play Structures	Inspection of playgrounds, repair and maintenance of play structure components and surfaces.	All play structures and surfaces meet CSA safety standards; no glass or other hazards on playground surfaces.	Monthly documented inspection by a certified playground inspector.	Based on regular inspection or concern from the public, repair or replacement of any damaged component within three days; safety concerns to be addressed immediately. Repair to surface (artificial turf) as required. Blow off or sweep surface as requires; remove any hazardous material (e.g. glass, sharp objects).

Play Amenities	Description of Service	Target Condition	Scheduled Actions	Demand Actions
Skate Park	Inspection, repair and maintenance of skate park features and surfaces.	All components and equipment are fully functional; no graffiti or hazards on surfaces.	Documented inspection of skate park components and surfaces every month.	Based on regular inspection or concern from the public, repair or replacement of any damaged component within three days; safety concerns to be addressed immediately.
Spray Pads	Inspection, repair and maintenance of spray pad components and surrounding surfaces.	All spray pad components are fully functional; surfaces are clean and free of hazards.	Inspection and cleaning daily. Seasonal start-up and shutdown (spring and fall).	Component repair and replacement and surface repair acted on within three days of report.

Notes: Some municipalities permit graffiti at skate parks, on a managed basis, if desired by users. If desired, the Town should develop an internal policy, in consultation with users.

Key actions include:

a) The Town should consider annual assessment of all play structures with regard to condition, lifecycle and the need for replacement, in addition to monthly inspections.

Service Area – Outdoor Sports Courts

Outdoor Sports Courts	Description of Service	Target Condition	Scheduled Actions	Demand Actions
Tennis/Pickleball	Inspection, maintenance, sweeping and surface repair of tennis/pickleball courts.	Court surfaces are level, free for cracks and debris; lines are visible; nets are in good repair and adjusted for tension. Perimeter fencing is in a good state of repair; lighting is functioning.	Inspection of court monthly in season. Sweep courts monthly. Install and remove nets spring and fall. Adjust lighting timer as required.	Remove debris, adjust and repair nets, repair surfacing and fencing as required based on inspection or user concern.
Basketball/Multi- Sport	Inspection, maintenance, sweeping and surface repair of basketball/multi- sport courts.	Court surfaces are level, free for cracks and debris; lines are visible; basketball goals and backboards are in good repair. Perimeter fencing is in a good state of repair.	Inspection of court monthly in season. Sweep courts monthly.	Remove debris, repair basketball goals and backboards, repair surfacing and fencing as required based on inspection or user concern.

Service .	Area -	Trails a	and	Pathways

Trails and	Description of Service	Target	Scheduled	Demand Actions
Pathways	Inspection of trails.	Condition All trails are inspected regularly, and deficiencies documented.	Actions Inspect trails monthly to identify hazards, potholes or washouts, deadfalls, missing or damaged signage and sight line or other safety issues.	Deficiencies documented.
Asphalt/ Hard Surface Trails and Pathways	Maintenance and repair of trail treadway surface and shoulder.	Trails and pathways have an even, trip-free surface with no ponding. The right of way provides for safe sight lines.	Annual spring sweeping.	Repair of potholes, washouts and other hazard as determined by inspections of user concerns. Removal of deadfalls or other debris as determined by inspections or user concerns.
Limestone screenings, Stone Dust or Gravel Trails	Maintenance and repair of trail treadway surface and shoulder.	Trails and have an even, trip-free surface with no ponding, washouts, or potholes. The right of way provides for safe sight lines.	Addition of granular material and grading in spring as required.	Repair of potholes, washouts and other hazard as determined by inspections of user concerns. Removal of deadfalls or other debris as determined by inspections or user concerns.
Natural Trails (Soil, Turf, Mulch)	Maintenance and repair of trail treadway surface and shoulder.	Trails and have an even, trip-free surface with no ponding, washouts, or potholes. The right of way provides for safe sight lines.		Filling of holes or washouts as required.
Vegetation Control Trail ROW	Flail Mowing of the ROW for Steve Bauer and Gerry Berkhout Trails.	Vegetation is cut to provide for safe sight lines.	Every 2 years.	Cut more frequently if required based on inspection or user concerns.

Notes: Winter maintenance is currently provided on all paved trails, paved multi-use pathways, and park walkways through Public Works roads staff. See "Turf Maintenance" for grass cutting adjacent to trails.

Key actions include:

a) The Town should consider the recommendations of its 2016 AT Plan regarding the winter maintenance of selected cycling routes, trail, and park pathways in order to facilitate appropriate winter use of designated parks and open spaces.

Trees in Parks and Trails and Open Spaces	Description of Service	Target Condition	Scheduled Actions	Demand Actions
Inspection	Inspection of park trees.	N/A	Inspect park trees each fall.	Inspect park trees in response to user concerns.
Mulch	Mulching of park trees.	Trees are mulched correctly.	Mulch all park trees annually in spring or fall.	N/A
Pruning	Pruning of dead limbs on park trees. Prune of trees to provide appropriate sight lines.	Trees in parks are healthy, safe and allow for CPTED requirements.	N/A	Pruning of trees in response to inspections or staff/user concerns.
Removal of Dead or Hazard Trees in Parks	Tree removal as required.	Dead or hazard trees are not present in parks.	N/A	Removal of dead or hazard trees in response to inspection or staff/user concerns.
Removal of Dead or Hazard Trees in Open Spaces and Trails	Tree Removal as required.	Dead or hazard trees are not present in target areas (see Notes) in open spaces and adjacent to trails.	N/A	Removal of dead or hazard trees in response to inspection or staff/user concerns.

Service Area – Trees in Parks and Trails and Open Spaces

Notes: Public Works beautification staff carry out park tree maintenance in accordance to the Town's Tree Maintenance Policy. Park trees are not consistently mulched at the base and have sustained damage from string trimmers. "Target Areas" refers to trails, pathways or other areas of public access, or structures or other assets which may be impacted by falling trees or branches.

Drainage Study of the Farr, Webber and River Road Area

Town of Pelham Council Meeting

April 19, 2023

Presented by: Dr. Bahar SM





AGENDA OF THE MEETING

Objective and Scope of the Study

Drainage Analysis of the Study Area: Historical and Existing

Findings of Technical Analysis: Hydrologic, Hydraulic & Floodplain Mapping

Recommendations

Objective of the Study



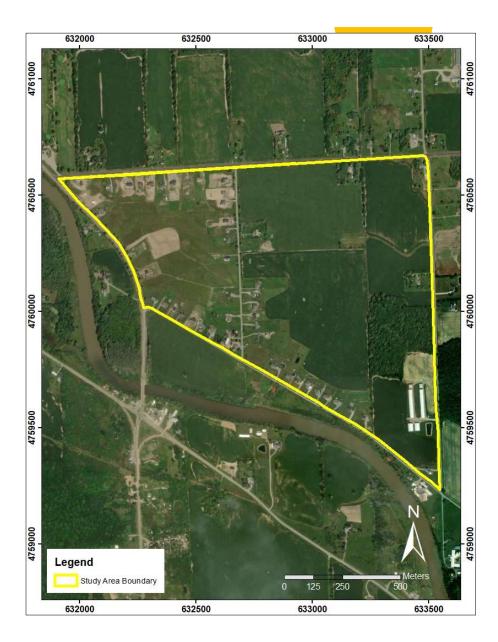
Residential and farm properties in the area have been experiencing drainage issues & flooding



The Town of Pelham has undertaken a drainage study to understand the drainage concerns and pertinent issues. The study area is within the jurisdiction of the Niagara Peninsula Conservation Authority (NPCA)

Brief Overview of the Study Area

- The Farr, Webber and River Road area in the Town of Pelham encompasses an area of approximately **1.27 sq.km** ٠
- **Extent of Study Area:** Victoria Avenue in the West and Church Street in the East. The Area is bounded Webber Road in the north and River Road in the South ٠
- Types of Data Used for analysis:
 - Hydrometeorological data of the study area (i.e., Rainfall Data using the Ministry of Transportation IDF Curve Lookup Table)
 - Hydrogeology of the study area (i.e., Soil Data)
 - Land Use of the study area (i.e., Land-use and Land-cover Data)
 - Topographic data (Field survey and Hydraulic structure) survey)
 - Historical Aerial Images
- Drainage Area after delineation of watershed : 2.74 sq.km
 Number of Delineated Subbasins: 21 ٠



Scope of Work

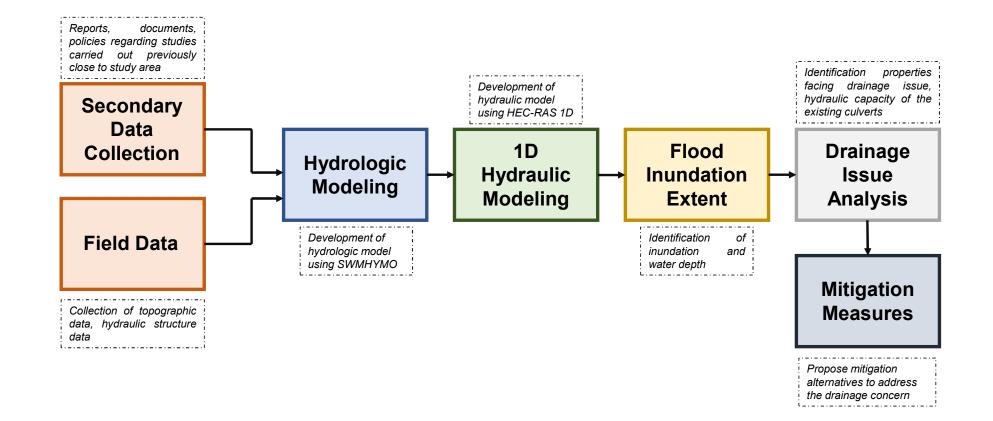
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4

- Collection and Review of background data and reports
- Perform field work to verify topographic mapping data, obtain topographic data and historic mapping data of the study area
- 3 Perform on-field fluvial geomorphic assessment
 - Development of hydrologic model(s) for the sub-watersheds within the drainage area(s)
- ⁵ Development of 1D hydraulic model(s) to determine the extent of flooding
- 6 Identify properties under flood risk and recommend mitigation options

Methodology for the Study



FIELD DATA COLLECTION



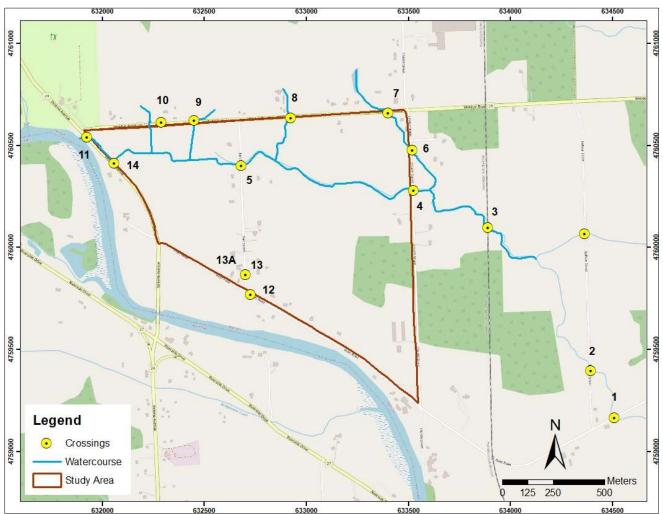


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Field Data Collection (Hydraulic Structure Survey)

Culver	Road	Culvert	Shape	Measurements		ts
t no.	Road	Туре		Width(m)	Height(m)	Dia(m)
1	River Road	Box Culvert	Rectangul ar	2.45	2.2	
2	Balfour St.	2*CSP	Circular			2.1
3	Railway	1*CSP	Circular			1.25
4	Church St	1*CSP	Eliptical	1.15	0.8	
5	Farr St	1*CSP	Circular			0.6
6	Church St 2	1* Plastic Blade Culvert (new)	Circular			0.6
7	Webber#1	1*CSP	Circular			1.4
8	Webber#2	1*CSP	Circular			1.15
9	Webber#3	1*CSP	Circular			0.9
10	Webber#4	1*CSP	Circular			0.7
11	Victoria- Webber	1*CSP	Circular			0.5~0.9
12	River Road 2	1*CSP	Circular			0.45
13	Farr St 2	1*CSP	Circular			0.65
13A	Farr Rd- Ditch	1*CSP	Circular			0.45
14	Victoria Avenue Properties	1*CSP	Circular			0.6

A total of 15 culverts were surveyed



Field Data Collection (Culvert Condition)



Figure 1: Near the Victoria Avenue



Figure 2: Webber Road



Figure 3: Farr Road



Figure 4: Victoria Avenue



Figure 5: Farr Road



Figure 6: Webber Road

Field Data Collection

Culvert at 275-285 Victoria Avenue Property



Culvert Inlet near 265-275 Victoria Avenue Property



Culvert outlet near 285 Victoria Avenue Property

Field Data Collection





FLOW OBSTRUCTION due to High Vegetation along the Crossings and Open Channels



HISTORIC AND EXISTING DRAINAGE

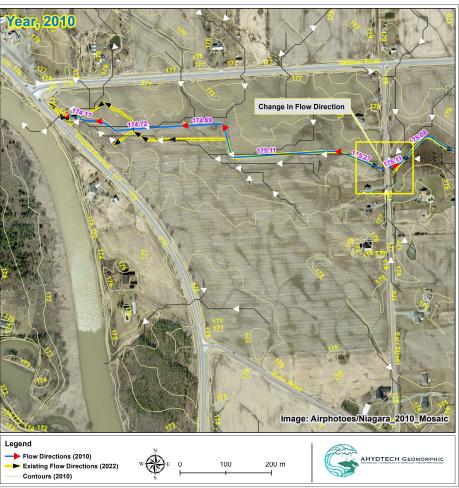




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Historical Aerial Image Analysis (2002 and 2010)



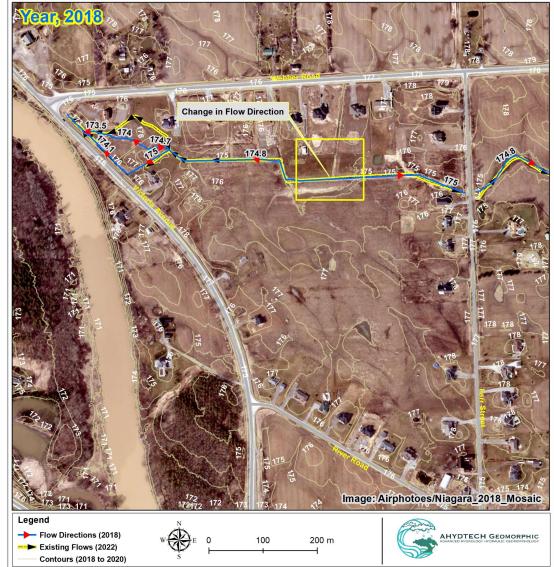


2002 and 2010 shows almost similar condition where the change of flow directions can be noticed near the Farr road, where one direction of the reach flows towards the west and the other towards the east.

Historical Aerial Image Analysis (2018)



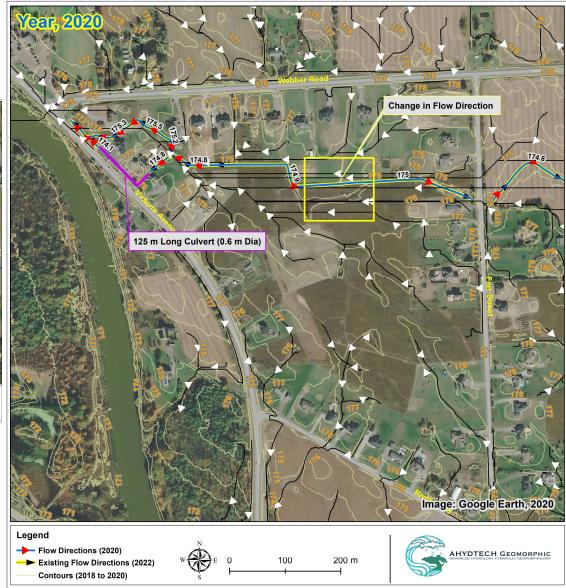
2018 shows the change in flow direction location shifted towards the west of Farr Road. Development through residential houses took place within the area compared to 2010. An additional channel is seen between two properties at the Victoria Avenue properties which turns at an angle of 90 degree (approx.)



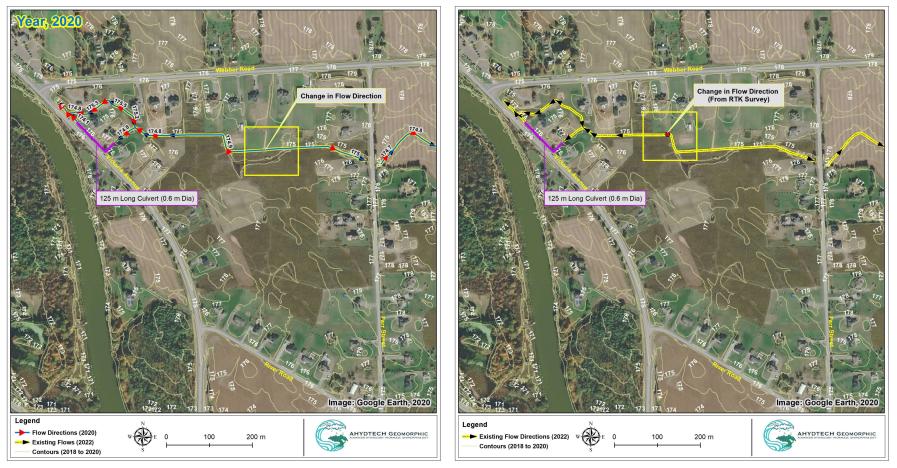
Historical Aerial Image Analysis (2020)



2020 shows the flow direction location change location like 2018. In the West channel, a 0.6m diameter and 125m long culvert runs in between 275 Victoria Avenue and 285 Victoria Avenue properties which runs 35m in between the two properties and then turns 90 degrees under the ditch along Victoria Avenue and the West Channel downstream.

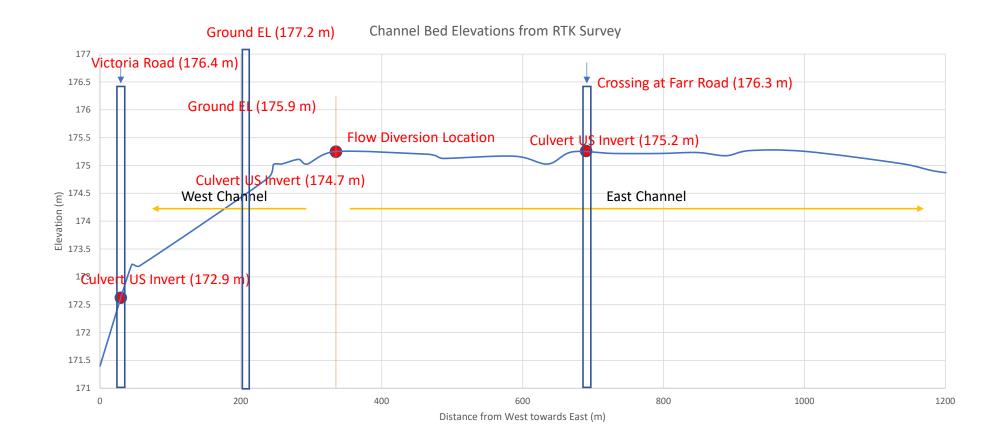


Existing Condition at the Study Area



The change in flow location obtained from the topographic survey conducted (in 2022) (*right side image*) shows the shifting of the changed location more towards west due to land filling issues.

Changes in Bed Elevation from the Topographic Data Collected



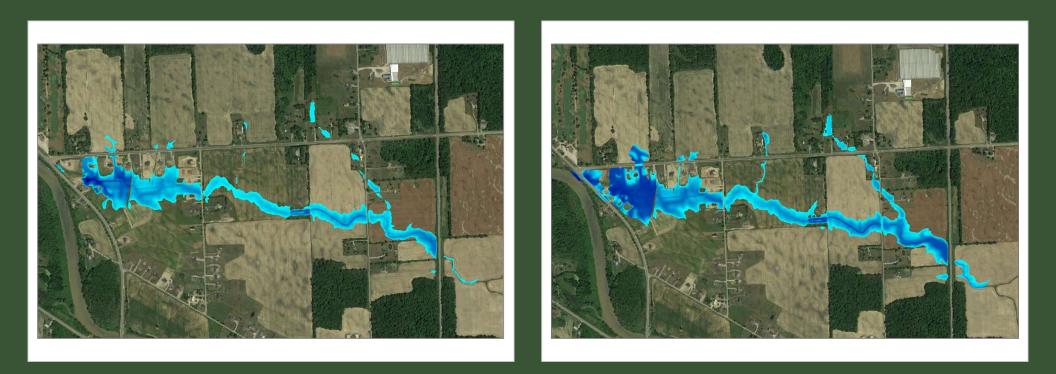
SUMMARY OF FINDINGS FROM TECHNICAL ANALYSIS



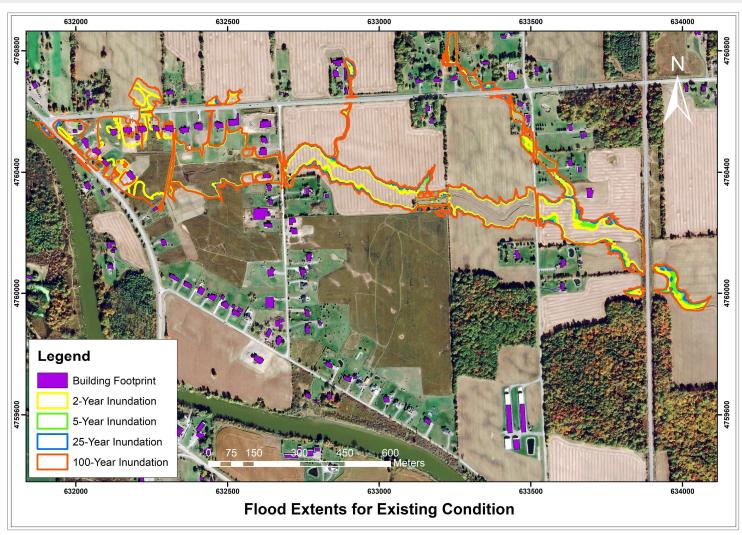


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2-Year VS 100-Year Inundation



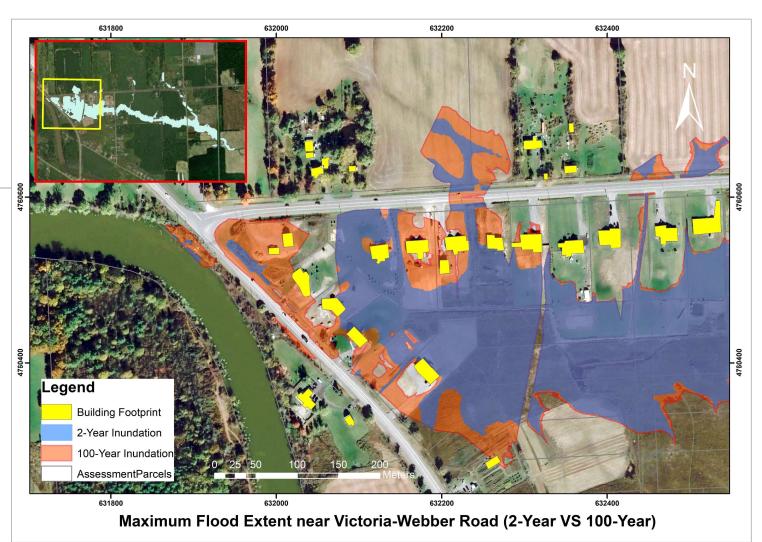
Flood Inundation Extent Map



- Near the Victoria Road and Webber Road, the extent of inundation appears to be higher.
- High inundation has also been observed near the Farr Road.
- The extent of flooding near the Church Street appears to be moderate.
- At the east side of the Webber Road, there seems to be a minimal degree of inundation.

Maximum Inundation

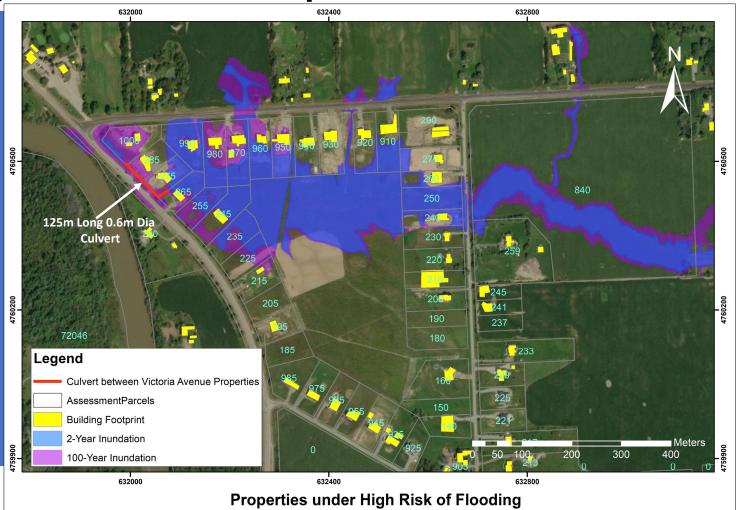
- In the West channel, a 0.6m diameter and 125m long culvert runs in between 265 Victoria Avenue and 275 Victoria Avenue properties which runs 35m in between the two properties and then turns 90 degrees under the ditch along Victoria Avenue and the West Channel downstream.
- This under sized culvert provides backwater effect even for the 2-year flow and flooding in both sides of the watercourse in the West channel.



Buildings within the Floodplain

The bounding area of Farr, Webber, Victoria, and River Road has the maximum extent of flooding and inundated water surface elevation compared to the other segments of the study area.

 A considerable number of properties (i.e. 950-990,1000 Webber Road properties, 225-285 Vitoria Avenue properties) fall within the area of extreme flooding.

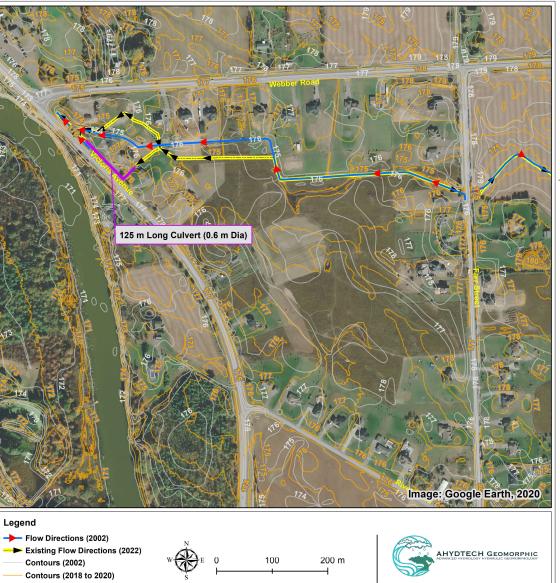


DRAINAGE ANALYSIS FOR THE EXISTING CONDITION AND FINDINGS





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Major Drainage Issues

- Landfilling & Alteration of the Drainage System
- Alteration of the Historical Natural Watercourses
- Hydraulic Capacity of the Culverts

RECOMMENDATIONS AND PROPOSED MITIGATION ALTERNATIVES





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Recommendations

• The NPCA Policy Document: *Policies for the Administration of Ontario Regulation 155/06 and the Planning Act*, specifies several development setbacks associated with flooding and alteration of watercourses. Following those guidelines before planning and construction a new building or any advancement of land near the floodplain, can eliminate the flood risk.

- Assessing the drainage issues, some mitigation options have been proposed below:
 - 1) Increase/Upgrade Culvert Hydraulic Capacity of 265-275 Victoria Avenue Culvert.
 - 2) Install Road Crossing at 265-275 Victoria Avenue for the upgraded culvert.
 - 3) Reinstall the Historical Watercourse between the 990 Webber Rd. and 285 Victoria Ave. properties.
 - 4) Increase/Upgrade Culvert Hydraulic Capacity of the Victoria-Webber intersection culvert along with reinstallation of the Historical Watercourse
 - 5) Implement Natural Channel Design to route flow from Farr Road to Victoria Avenue

• Drainage issues involve work on private properties and will require the willingness of private property owners to work together to resolve the drainage issues and that the municipality is restricted to do work on private property.

Proposed Three (3) Mitigation Alternatives

AHYDTECH assessed three alternative options to eliminate flooding issues within the study area. These are-

- 1. <u>The existing culvert under the Victoria Road should be sized for the 50-year return period</u> <u>flood event to minimize flooding because of backwater under major storm events.</u>
- 2. An overland flow channel should be constructed passing in between 285 Victoria Avenue, 990 and 1000 Webber Road properties, along the historical/original channel from the existing channel.
- 3. At final detailed design, <u>the Region and Town should consider a diversion of some or all of the</u> <u>stormwater from the tributaries that originate north of Webber Road and convey the flows</u> <u>easterly along the Webber Road ditches to Victoria Ave and the Welland River.</u> The design would need to confirm that the ditch system has the capacity to convey the design flow without impacting the existing property owners.

Alternative Option 1

The existing culvert under the Victoria Road should be sized for the 50year return period flood event.

- Existing diameter of the culvert at inlet was found to be 0.5m and hydraulic analysis shows that the culvert has the capacity to convey up to 25-year return period flood events.
- Different culvert diameter (0.6m, 0.8m and 1m) were used in the hydraulic model to check and assess the flooding extents.
- When the size of the culvert has been increased to <u>1m diameter, no flow stagnation and inundation</u> <u>occurs in the properties which had been flooded</u> <u>previously.</u>



Figure : Existing undersized Culvert under Victoria Road

Alternative Option 1

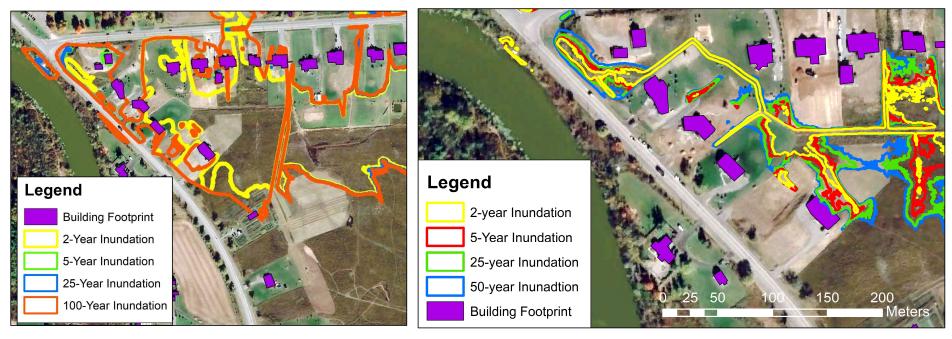


Figure : Flooding extent with the existing 0.5m diameter Culvert under Victoria Road

Figure : Flooding extent with the proposed 1m diameter Culvert under Victoria Road along when implemented along with the Alternative Option 2

A substantial reduction in inundation extents can be observed when the diameter of the Victoria Road culvert is increased to 1m.

Alternative Option 2

area to provide a positive flow gradient from Farr Road to Victoria Avenue outlet.

An overland flow channel should be constructed passing in between 285 Victoria Ave. 990 and 1000 Webber Road properties, along the historical/original channel from the existing channel. The channel should be designed for the major event storms. A detailed natural channel design should be prepared for the overland flow channel including for the channel in the study

- Scenario-1: 20% of the total flow generated within the West channel will be conveyed by the channel with 125m culvert.
- Scenario-2: No flow conveyed by the channel with 125m culvert.

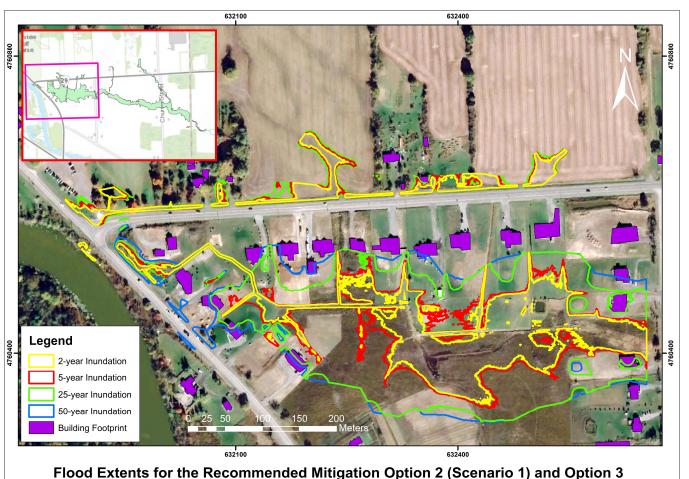


Alternative Option 2 (Scenario-1)

Scenario-1: 20% of the total flow generated within the West channel will be conveyed by the channel with 125m culvert (80% will be conveyed by the recommended overland flow channel.)

-Model results show that the 125m culvert can successfully convey 20% of the flow generated by 2-year and 5-Year Return Period floods to the Welland river without causing any inundation.

-The 125m culvert cannot capacitate 20% of the flow generated by 25-year flood event and causes significant backwater for 25 and greater return period's floods.



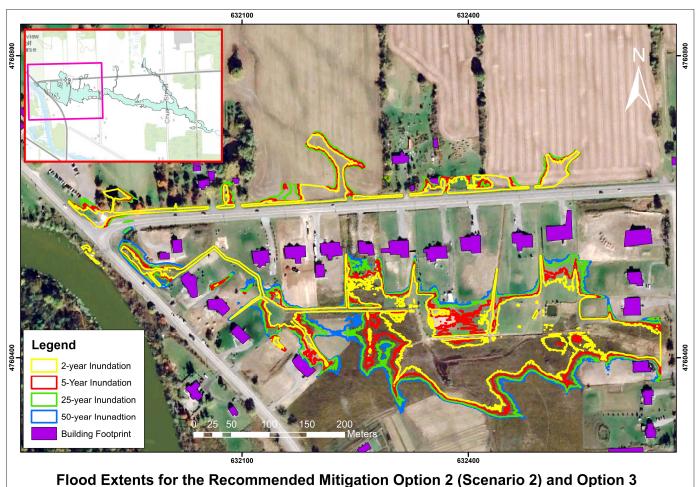
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Alternative Option 2 (Scenario-2)

Scenario-2: No flow conveyed by the channel with 125m culvert. (100% will be conveyed by the proposed overland flow channel.)

-Model results show that the proposed channel which runs between the properties at 990, 1000 Webber road and 285 Victoria Avenue has the capacity to convey 100% of the flow without causing any flooding issues.

-No inundation occurs within the area for 2, 5, 25 and 50-year flood scenarios.



Alternative Option 2

It is recommended either to close the channel passing between 265 to 285 Victoria Avenue, diverting the entire flow to the proposed overland channel passing through the 990, 1000 Webber Road and 285 Victoria Avenue properties

or

To increase the diameter of the 125m culvert such that it conveys a considerable portion of flow without causing any backwater throughout the channel and surrounding area.

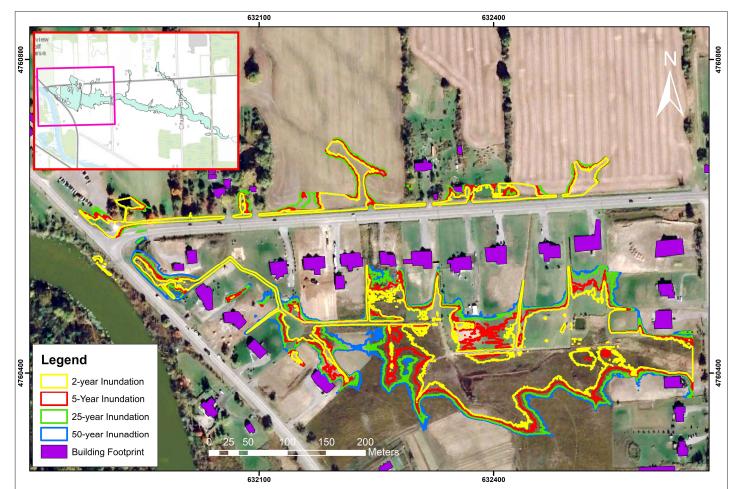
Alternative Option 3

Two of the tributaries which originated from the north of Webber Road and conveyed flow to the main channel south of Webber Road, will be diverted to Welland River through a roadside ditch north of Webber Road.



Alternative Option 3

Model result shows that this diversion channel notably eliminates flooding and reduce the extent of inundation within the project study area when implemented along with the Alternative Option 1 and Alternative Option 2.



Flood Extents for the proposed Alternative Option 1, Option 2(Scenario 2) and Option 3

Thank you!

Dr. Bahar SM, P. Geo. (Ltd), P. Eng.

Managing Director AHYDTECH Geomorphic Ltd. 22 Zecca Drive, Guelph, ON, N1L 1T1 Phone +1 519-400-0264 E: bahar@ahydtech.com

Barbara Weins, MCIP, RPP

Director, Community Planning and Development, Town of Pelham D: 905-980-6658 T: 905-892-2607x316 20 Pelham Town Square, PO Box 400, Fonthill, ON, LOS 1EO, Email: <u>bweins@pelham.ca</u>



Administration Services

Please fill out and return no later than 12 p.m. noon ten (10) days prior to the Meeting you wish to appear. Completed forms, including presentation materials are to be submitted to the Clerk's department and can be dropped off or emailed to <u>clerks@pelham.ca</u>

Name or Organization or Firm: John and Joyce Sonneveld (River Bend Farms)	
Name and Title of Presenter(s): John or Joyce Sonneveld	
Address: River Rd Fenwick	
Telephone:	Email:

Date of Meeting Requested: <u>April 19 2023</u>

How will you attend Council?	In-person	Electronically
*The delegate shall notify the	Clerk at least five (5) busines	s Days in advance.

Subject matter to be discussed:	Farr, River, Webber Road Drainage Study
If not for information, identify the desired action requested:	The desired action is to stop Farr Street from collecting and directing water onto our farm land.

Have you previously spoken on this issue? • Yes • No If a group or individual has previously appeared as a delegate, a further delegation from the same group or individual on the same topic will not be permitted, unless there is significant new information to be brought forward.

Do you have presentation material or speaking notes? • Yes • No Delegations are required to provide the Clerk's department presentation materials for publication in Council's agenda package. Materials must be provided no later than 12 p.m. noon ten (10) days prior to the Meeting.

I have read and understand the Delegation Protocol attached to this form and understand that the information contained on this form, including any attachments submitted, will become public documents and listed on the Town's meeting agenda and posted to the Town's website. I also understand that as a participant of this meeting, I will be recorded and further understand that this recording with be posted to the Town of Pelham's YouTube Channel.

	April 12 2023
Signature	Date



Delegation Protocols

The Clerk shall list a maximum of four (4) delegations per meeting. Delegations will be considered on a first come first serve basis, unless prioritized otherwise at the discretion of the Clerk, in consultation with the Chief Administrative Officer.

The purpose of the delegation process is to allow residents to make their views known to Council, based on the requirements of the Town of Pelham Procedural By-law. The views of interested citizens are valued and input is welcome, along with comments and constructive suggestions. Council must consider a large number of issues and concerns at any given time, thus the following protocol is observed:

- 1. The delegate shall arrive to the meeting by 8:45 am.
- A presentation by a delegate, who is a member of the public, shall be a maximum of five (5) minutes (whether the Delegation consists of an individual or a group). A presentation by a delegate, who is a member of Town or Regional staff, shall be a maximum of twenty (20) minutes.
- 3. Where the delegate is a group of persons, a primary speaker is to be assigned to address Council.
- 4. Discussion topics, other than the subject matter of the written request to appear as a delegation, will not be permitted. Subsequent delegations on the same topic, without significant new information, will not be permitted.
- 5. A delegate shall not speak disrespectfully, use offensive language and/or disobey the rules of procedure or a decision of the Chair. Remarks or questions concerning topics identified within Section 28.7 of the Procedural By-law shall be immediately ruled out of order. A subsequent offense during the same presentation will result in the speaker forfeiting their right to speak. The Chair reserves the right to immediately end the delegation if the remarks are considered severe.
- 6. Upon completion of remarks, the speaker(s) will remain in position to allow for any questions from Members. Members may ask questions for clarification purposes. After completion of any questions, the speaker will be asked to be seated or will be placed into the waiting room of the Zoom meeting.
- 7. Delegations will not be permitted on items that will be the subject of an upcoming or closed public meeting pursuant to the *Planning Act*, unless exceptional circumstances apply, which have been reviewed and approved by Council. Persons should present their concerns and opinions at the scheduled Public Meeting where their comments can be considered along with other submissions.



REGULAR COUNCIL MINUTES

Meeting #: C-07/2023 Date: Wednesday, April 5, 2023 Time: 9:00 AM Location: **Meridian Community Centre - Accursi A and B 100 Meridian Way** Fonthill, ON LOS 1E6 **Members Present: Mayor Marvin Junkin Councillor Bob Hildebrandt Councillor Wayne Olson Councillor John Wink Councillor Kevin Ker Councillor Shellee Niznik Councillor Brian Eckhardt** Staff Present: **David Cribbs Bob Lymburner** Jason Marr **Jennifer Stirton** Vickie vanRavenswaay **Barbara Wiens** Sarah Leach William Tigert Usama Seraj Lucas Smith

1. Call to Order and Declaration of Quorum

Noting that a quorum was present, the Mayor called the meeting to order at approximately 9:00 am.

2. Land Recognition Statement

Councillor Hildebrandt read the land acknowledgement into the record.

3. Approval of the Agenda

Moved By Councillor John Wink Seconded By Councillor Kevin Ker

BE IT RESOLVED THAT the agenda for the April 5, 2023, Regular meeting of Council be adopted, as circulated. For (7): Mayor Marvin Junkin, Councillor Bob Hildebrandt, Councillor Wayne Olson, Councillor John Wink, Councillor Kevin Ker, Councillor Shellee Niznik, and Councillor Brian Eckhardt

Carried (7 to 0)

4. Disclosure of Pecuniary Interests and General Nature Thereof

There were no pecuniary interests disclosed by any of the members present.

5. Hearing of Presentation, Delegations, Regional Report

5.1 Delegations

5.1.1 Wayne Liebau - 2024 Eclipse

Moved By Councillor Wayne Olson Seconded By Councillor Shellee Niznik

BE IT RESOLVED THAT Council receive the delegation from Wayne Liebau regarding the 2024 Eclipse, for information.

For (7): Mayor Marvin Junkin, Councillor Bob Hildebrandt, Councillor Wayne Olson, Councillor John Wink, Councillor Kevin Ker, Councillor Shellee Niznik, and Councillor Brian Eckhardt

Carried (7 to 0)

5.2 Presentations

5.2.1 Draft Town of Pelham 2023-2027 Strategic Plan

Mr. David Cribbs, Chief Administrative Officer presented the draft 2023-2027 Strategic Plan. Council reinforced that the plan is dynamic and expressed the need for a feedback system to assess progress.

Moved By Councillor Shellee Niznik Seconded By Councillor Wayne Olson

THAT the value "inclusive" be amended to state "inclusivity".

For (7): Mayor Marvin Junkin, Councillor Bob Hildebrandt, Councillor Wayne Olson, Councillor John Wink, Councillor Kevin Ker, Councillor Shellee Niznik, and Councillor Brian Eckhardt

Carried (7 to 0)

Moved By Councillor Brian Eckhardt Seconded By Councillor John Wink

BE IT RESOLVED THAT Council receive the presentation from David Cribbs, Chief Administrative Officer entitled Draft Town of Pelham 2023-2027 Strategic Plan, for information;

AND THAT Council endorse and adopt the 2023-2027 Strategic Plan, as presented, and as amended;

AND THAT the Chief Administrative Officer be and is hereby directed to take the necessary steps to implement the Strategic Plan.

For (7): Mayor Marvin Junkin, Councillor Bob Hildebrandt, Councillor Wayne Olson, Councillor John Wink, Councillor Kevin Ker, Councillor Shellee Niznik, and Councillor Brian Eckhardt

Carried (7 to 0)

5.2.22023-2027 Strategic Plan Action Item Reporting Metrics

Mr. David Cribbs, Chief Administrative Officer, presented the action items under each of the five (5) strategic plan priorities.

Moved By Councillor Kevin Ker Seconded By Councillor Bob Hildebrandt

BE IT RESOLVED THAT Council receive the presentation from David Cribbs, Chief Administrative Officer entitled 2023-2027 Strategic Plan Action Item Reporting Metric, for information.

For (7): Mayor Marvin Junkin, Councillor Bob Hildebrandt, Councillor Wayne Olson, Councillor John Wink, Councillor Kevin Ker, Councillor Shellee Niznik, and Councillor Brian Eckhardt

Carried (7 to 0)

6. Adoption of Council Minutes

Moved By Councillor Bob Hildebrandt **Seconded By** Councillor Kevin Ker

BE IT RESOLVED THAT the following minutes be adopted as printed, circulated, and read:

1. C-06/2023 - Regular Council Meeting - March 22, 2023

For (7): Mayor Marvin Junkin, Councillor Bob Hildebrandt, Councillor Wayne Olson, Councillor John Wink, Councillor Kevin Ker, Councillor Shellee Niznik, and Councillor Brian Eckhardt

Carried (7 to 0)

7. Request(s) to Lift Consent Agenda Item(s) for Separate Consideration

Councillor Hildebrandt indicated he would like to lift item 8.3.4. Councillor Niznik indicated she would like to lift item 8.3.5.

8. Consent Agenda Items to be Considered in Block

Moved By Councillor Shellee Niznik **Seconded By** Councillor Brian Eckhardt

BE IT RESOLVED THAT the Consent Agenda items as listed on the April 5, 2023, Council Agenda be received and the recommendations contained therein be approved, save and except 8.3.4 and 8.3.5:

- 8.1 Presentation of Recommendations Arising from Committee of Council, for Council Approval
- 8.2 Minutes Approval Committee of Council
- 8.3 Staff Reports of a Routine Nature for Information or Action
 - 8.3.1 LED Conversion Program Phase 1 Update, 2023-0092-Public Works

BE IT RESOLVED THAT Council receive Report #2023-0092 – Update on the LED Streetlight Replacement Project, for information.

8.3.2 Town Hall Building Addition March Update, 2023-0082-Public Works

BE IT RESOLVED THAT Council receive Report #2023-0082-Public Works – Town Hall Building Addition March Update, for information.

8.3.3 Official Plan Review and Update, 2023-0091-Planning

BE IT RESOLVED THAT Council receive the Memo – Official Plan Review and Update, for information.

8.3.4 Single Source for Architect for Centennial Park Accessible Universal Washroom Addition, 2023-0084-Corporate Services BE IT RESOLVED THAT Council receive Report #2023-0084 -Single Source Architect for Centennial Park Accessible Universal Washroom Addition to Concession, for information.

8.3.5 Single Sourcing - Ward Boundary and Council Composition Update and Selection Process for Deputy Mayor, 2023-0090-Clerks

BE IT RESOLVED THAT Council receive Report #2023-0090 Single Sourcing – Ward Boundary and Council Composition Update and Selection Process for Deputy Mayor, for information.

8.4 Action Correspondence of a Routine Nature

8.4.1 Canadian Viral Hepatitis Elimination Day - March 11, 2023

BE IT RESOLVED THAT the Corporation of the Town of Pelham hereby proclaim March 11, 2023, as Canadian Viral Hepatitis Elimination Day.

8.5 Information Correspondence

8.5.1 Town of Lincoln Council Resolution re: Ontario School Board Elections

BE IT RESOLVED that Council receive the resolution from the Town of Lincoln regarding Ontario School Board Elections, for information.

8.5.2 Ombudsman Open Meetings Guide for Municipalities

BE IT RESOLVED THAT Council receive correspondence and Open Meetings Guide for Municipalities from Ombudsman Ontario, for information.

8.6 Regional Municipality of Niagara Correspondence for Information or Action

8.6.1 Illegal Dumping 2022 Year End Summary and Updates

BE IT RESOLVED that Council receive correspondence dated March 28, 2023, from the Niagara Region regarding Illegal Dumping 2022 Year End Summary and Update, for information.

8.6.2 2022 Niagara Region Employment Inventory Results

BE IT RESOLVED that Council receive correspondence dated March 28, 2023, from the Niagara Region regarding 2022 Niagara Region Employment Inventory Results, for information.

For (7): Mayor Marvin Junkin, Councillor Bob Hildebrandt, Councillor Wayne Olson, Councillor John Wink, Councillor Kevin Ker, Councillor Shellee Niznik, and Councillor Brian Eckhardt

Carried (7 to 0)

9. Consent Agenda Item(s) Lifted for Separate Consideration if any

9.1 Single Source for Architect for Centennial Park Accessible Universal Washroom Addition, 2023-0084-Corporate Services

Councillor Hildebrandt indicated a competitive bidding process is appropriate for this item.

Main Motion

Moved By Councillor Bob Hildebrandt Seconded By Councillor Brian Eckhardt

BE IT RESOLVED THAT Council receive Report #2023-0084 -Single Source Architect for Centennial Park Accessible Universal Washroom Addition to Concession, for information.

Amendment:

Moved By Councillor Bob Hildebrandt **Seconded By** Councillor Brian Eckhardt

That the motion be amended to add:

AND THAT Council understands staff's recommendation has been presented to expedite the undertaking of the project, ensuring that the funding is not jeopardized, due to the tight time constraints established by the funding provider;

AND THAT Council acknowledges, in some circumstances, single sourcing can be an effective and efficient tool for the Town to utilize. However, as elected stewards of the ratepayers, it is also important to ensure, that financial expenditures need to represent the best available value for the taxpayers;

AND THAT a competitive bidding process on Municipal projects is a healthy exercise that helps balance the need for effective service delivery, while ensuring the wise use of fiscal resources;

AND THAT Council directs staff to seek out competitive alternatives for this project by using the tools available to the Town under its Purchasing Policy options; other than single sourcing for the Architectural services on the Accessible Universal Washroom and Concession facilities in Centennial Park. For (7): Mayor Marvin Junkin, Councillor Bob Hildebrandt, Councillor Wayne Olson, Councillor John Wink, Councillor Kevin Ker, Councillor Shellee Niznik, and Councillor Brian Eckhardt

Carried (7 to 0)

Motion as Amended:

Moved By Councillor Bob Hildebrandt Seconded By Councillor Brian Eckhardt

BE IT RESOLVED THAT Council receive Report #2023-0084 - Single Source Architect for Centennial Park Accessible Universal Washroom and Addition to Concession, for information;

AND THAT Council understands staff's recommendation has been presented to expedite the undertaking of the project, ensuring that the funding is not jeopardized, due to the tight time constraints established by the funding provider;

AND THAT Council acknowledges, in some circumstances, single sourcing can be an effective and efficient tool for the Town to utilize. However, as elected stewards of the ratepayers, it is also important to ensure, that financial expenditures need to represent the best available value for the taxpayers;

AND THAT a competitive bidding process on Municipal projects is a healthy exercise that helps balance the need for effective service delivery, while ensuring the wise use of fiscal resources;

AND THAT Council directs staff to seek out competitive alternatives for this project by using the tools available to the Town under its Purchasing Policy options; other than single sourcing for the Architectural services on the Accessible Universal Washroom and Concession facilities in Centennial Park.

For (7): Mayor Marvin Junkin, Councillor Bob Hildebrandt, Councillor Wayne Olson, Councillor John Wink, Councillor Kevin Ker, Councillor Shellee Niznik, and Councillor Brian Eckhardt

Carried (7 to 0)

9.2 Single Sourcing - Ward Boundary and Council Composition Update and Selection Process for Deputy Mayor, 2023-0090-Clerks

Councillor Niznik indicated a competitive bidding process is appropriate for this item.

Main Motion

Moved By Councillor Shellee Niznik Seconded By Councillor Kevin Ker

BE IT RESOLVED THAT Council receive Report #2023-0090 – Single Sourcing – Ward Boundary and Council Composition Update and Selection Process for Deputy Mayor, for information.

Amendment:

Moved By Councillor Shellee Niznik Seconded By Councillor Kevin Ker

That the motion be amended to add:

AND THAT Council understands staff's recommendation has been presented to Council with the following rationale: That Watson and Associates completed the last review of the ward boundaries in 2013; Watson and Associates provided the budget estimates approved in the 2023 Town Budget; and that there are few other firms with the knowledge and experience in undertaking such a project;

AND THAT Council recently approved a procurement policy that allows for sole and single sourcing under specific circumstances; however, Council prefers a competitive bidding process on this project;

AND THAT Council directs staff to seek out competitive alternatives for this project by using the tools available to the Town under its Purchasing Policy options; other than single sourcing for selection of a firm to undertake the ward boundary review and selection process for a Deputy Mayor.

For (7): Mayor Marvin Junkin, Councillor Bob Hildebrandt, Councillor Wayne Olson, Councillor John Wink, Councillor Kevin Ker, Councillor Shellee Niznik, and Councillor Brian Eckhardt

Carried (7 to 0)

Motion as Amended:

Moved By Councillor Shellee Niznik **Seconded By** Councillor Kevin Ker

BE IT RESOLVED THAT Council receive Report #2023-0090 – Single Sourcing – Ward Boundary and Council Composition Update and Selection Process for Deputy Mayor, for information. AND THAT Council understands staff's recommendation has been presented to Council with the following rationale: That Watson and Associates completed the last review of the ward boundaries in 2013; Watson and Associates provided the budget estimates approved in the 2023 Town Budget; and that there are few other firms with the knowledge and experience in undertaking such a project;

AND THAT Council recently approved a procurement policy that allows for sole and single sourcing under specific circumstances; however, Council prefers a competitive bidding process on this project;

AND THAT Council directs staff to seek out competitive alternatives for this project by using the tools available to the Town under its Purchasing Policy options; other than single sourcing for selection of a firm to undertake the ward boundary review and selection process for a Deputy Mayor.

For (7): Mayor Marvin Junkin, Councillor Bob Hildebrandt, Councillor Wayne Olson, Councillor John Wink, Councillor Kevin Ker, Councillor Shellee Niznik, and Councillor Brian Eckhardt

Carried (7 to 0)

10. Presentation and Consideration of Reports

10.1 Members of Council Reports

10.2 Staff Reports Requiring Action

10.2.1 JP Niagara Tulip Experience Date Night Event -2023 Designation of Municipal Significance, 2023-0080-Clerks

Moved By Councillor John Wink **Seconded By** Councillor Brian Eckhardt

BE IT RESOLVED THAT Council receive Report #2023-0080 – JP Niagara Experience 2023 Date Night Event – Designation of Municipal Significance, for information.

AND THAT Council designate the JP Niagara Experience 2023 Date Night Event, to be held from 7:00 pm to 10:00 pm on May 11, 2023, and May 18, 2023, at 1934 Centre Street, as a Municipally Significant Event. For (7): Mayor Marvin Junkin, Councillor Bob Hildebrandt, Councillor Wayne Olson, Councillor John Wink, Councillor Kevin Ker, Councillor Shellee Niznik, and Councillor Brian Eckhardt

Carried (7 to 0)

10.2.2 Recommendation Report - Draft Plan of Subdivision and Zoning By-law Amendment, Kunda Park Phase 4, 2023-0089-Planning

Moved By Councillor Kevin Ker Seconded By Councillor Wayne Olson

BE IT RESOLVED THAT Council receive Report #2023-89 for information as it pertains to File Nos. 26T19-020-02 & AM-03-2020;

AND THAT Council directs Planning staff to prepare the by-law for approval of the Zoning By-law amendment for Council's consideration;

AND THAT Council approves the Draft Plan of Subdivision, attached as Appendix A, subject to the conditions in Appendix B.

For (7): Mayor Marvin Junkin, Councillor Bob Hildebrandt, Councillor Wayne Olson, Councillor John Wink, Councillor Kevin Ker, Councillor Shellee Niznik, and Councillor Brian Eckhardt

Carried (7 to 0)

10.2.3 Quaker Road Reconstruction Project Update, 2023-0083-Public Works

Moved By Councillor Bob Hildebrandt **Seconded By** Councillor Shellee Niznik

BE IT RESOLVED THAT Council receive Report #2023-0083-Public Works – Quaker Road Reconstruction Project Update and Pelham St Phase 4 Project, for information;

AND THAT Council approve the deferral of the following projects to 2024: RD 13-23 Quaker Rd Reconstruction (\$2,100,000); WTR 01-23 Quaker Rd-Watermain (\$800,000) and WST 06-23 Quaker Rd- Wastewater (\$1,050,000) as summarized on Appendix 1; AND THAT Council approve in 2023 the Pelham Street Phase 4 Reconstruction Road Project # 300649 for \$3,436,000 and Pelham St Phase 4 Watermain Project # 700286 for \$685,000, to be funded as follows: \$595,000 Roads Reserve, \$644,000 by the Water Reserve, \$41,000 by the Wastewater Reserve, \$791,000 by Ontario Community Infrastructure Fund (OCIF), \$1,200,000 ICIP Northern and Rural Grant and \$850,000 by Development Charges Revenue as summarized on Appendix 1;

AND THAT Council approve the change in funding for RD 09-23 Road Rehabilitation project # 300643 in 2023 from \$163,171 Roads Reserve and \$836,829 OCIF grant to \$630,171 Roads Reserve, \$324,000 from the Canada Community Benefit Fund (CCBF) and \$45,829 OCIF as summarized on Appendix 1.

For (7): Mayor Marvin Junkin, Councillor Bob Hildebrandt, Councillor Wayne Olson, Councillor John Wink, Councillor Kevin Ker, Councillor Shellee Niznik, and Councillor Brian Eckhardt

Carried (7 to 0)

11. Unfinished Business

12. New Business

13. Presentation and Consideration of By-Laws

Moved By Councillor Wayne Olson **Seconded By** Councillor Brian Eckhardt

BE IT RESOLVED THAT the Council of the Town of Pelham, having given due consideration to the following By-law do now read a first, second and third time and do pass same;

AND THAT the Mayor and Clerk be and are hereby authorized to sign and seal the by-law:

1. By-law 24-2023 - Being a By-law to authorize the execution of a subdivision agreement with Lally Homes Ltd. and the Corporation of the Town of Pelham – Emerald Trail Subdivision. Lally Homes Ltd. and the Corporation of the Town of Pelham. File No. 26T19-01-2021 For (7): Mayor Marvin Junkin, Councillor Bob Hildebrandt, Councillor Wayne Olson, Councillor John Wink, Councillor Kevin Ker, Councillor Shellee Niznik, and Councillor Brian Eckhardt

Carried (7 to 0)

14. Motions and Notices of Motion

14.1 Notice of Motion - Councillor Olson

Councillor Olson introduced his motion for April 19, 2023. The Councillor expressed desire to extend the pandemic exemption of temporary pop-up patios in parking lots and an ease of restrictions for food trucks.

15. Resolution to Move In Camera

Moved By Councillor Bob Hildebrandt Seconded By Councillor Shellee Niznik

BE IT RESOLVED THAT the next portion of the meeting be closed to the public in order to consider a matter under Section 239 (2) of the *Municipal Act*, as follows:

(b) - personal matters about an identifiable individual, including municipal employees and (d) - labour relations or employee negotiations - 2 items (Consideration of Appointments to Advisory Committees and External Boards)

For (7): Mayor Marvin Junkin, Councillor Bob Hildebrandt, Councillor Wayne Olson, Councillor John Wink, Councillor Kevin Ker, Councillor Shellee Niznik, and Councillor Brian Eckhardt

Carried (7 to 0)

16. Rise From In Camera

Moved By Councillor Kevin Ker **Seconded By** Councillor Brian Eckhardt

BE IT RESOLVED THAT Council adjourn the In Camera Session and that Council do now Rise: With Report

For (7): Mayor Marvin Junkin, Councillor Bob Hildebrandt, Councillor Wayne Olson, Councillor John Wink, Councillor Kevin Ker, Councillor Shellee Niznik, and Councillor Brian Eckhardt

Carried (7 to 0)

17. Appointments to Advisory Committees and External Boards

Moved By Councillor Wayne Olson **Seconded By** Councillor John Wink

BE IT RESOLVED THAT Council appoint the following individuals to the Pelham Active Transportation Committee:

- 1. Brian Baty
- 2. Frank Adamson
- 3. Lori Lehne
- 4. Patrick O'Hara
- 5. Rhys Evans
- 6. Council Representative: Councillor Eckhardt

AND THAT Council direct the Town Clerk to prepare and present the necessary appointment by-law at the following Regular Meeting of Council.

For (7): Mayor Marvin Junkin, Councillor Bob Hildebrandt, Councillor Wayne Olson, Councillor John Wink, Councillor Kevin Ker, Councillor Shellee Niznik, and Councillor Brian Eckhardt

Carried (7 to 0)

Moved By Councillor Shellee Niznik Seconded By Councillor Brian Eckhardt

BE IT RESOLVED THAT Council appoint the following individuals to the Pelham Cultural Advisory Committee:

- 1. Matthew Mocha
- 2. Stephanie Jones
- **3. Yvonne Van Lankveld**
- 4. Tammy Van Den Brink
- 5. Council Representative: Councillor Niznik

AND THAT Council direct the Town Clerk to prepare and present the necessary appointment by-law at the following Regular Meeting of Council.

For (7): Mayor Marvin Junkin, Councillor Bob Hildebrandt, Councillor Wayne Olson, Councillor John Wink, Councillor Kevin Ker, Councillor Shellee Niznik, and Councillor Brian Eckhardt

Carried (7 to 0)

18. Confirming By-Law

Moved By Councillor John Wink Seconded By Councillor Bob Hildebrandt

BE IT RESOLVED THAT the following By-law be read a first, second and third time and passed:

Being a By-law No. 25-2023 to Adopt, Ratify and Confirm the proceedings of Council of the Town of Pelham at its Regular Meeting held on the 05th day of April 2023.

For (7): Mayor Marvin Junkin, Councillor Bob Hildebrandt, Councillor Wayne Olson, Councillor John Wink, Councillor Kevin Ker, Councillor Shellee Niznik, and Councillor Brian Eckhardt

Carried (7 to 0)

19. Adjournment

The meeting was adjourned at 12:43 pm.

Moved By Councillor Bob Hildebrandt **Seconded By** Councillor Kevin Ker

BE IT RESOLVED THAT this Regular Meeting of Council be adjourned until the next regular meeting scheduled for April 19, 2023, at 9:00 am.

For (7): Mayor Marvin Junkin, Councillor Bob Hildebrandt, Councillor Wayne Olson, Councillor John Wink, Councillor Kevin Ker, Councillor Shellee Niznik, and Councillor Brian Eckhardt

Carried (7 to 0)

Mayor: Marvin Junkin

Town Clerk: William Tigert



Fire & By-law Enforcement Quarterly Report

Wednesday, April 19, 2023

Reporting Period: Fire and By-law Enforcement Department Quarterly Report for the period: Quarter 1 - January, February, March 2023

Recommendation:

BE IT RESOLVED THAT the Q1/2023 Fire and By-law Enforcement Department Report be received for information.

Department Overview and Statistics:

<u>By-law</u>

During the first quarter of 2023, the bylaw department performed 166 random cannabis odour tests, with no violations being recorded. 1 repeat cannabis odour complaint was received.

85 Winter parking tickets were issued in quarter 1.

Fire Prevention

Pelham fire prevention has started 2023 with various fire-related events and activities.

Over the past 3 months, inquiries have been coming in for both corporate and personal social events taking place throughout year.

Residents have been consistent with renewing recreational burn permits.

Fire prevention is still monitoring and distributing Town employee supplies of masks and hand sanitizers.

With the changing of the clocks this past month, fire has been getting the word out to test and change batteries in your smoke and carbon monoxide alarms.

<u>Training</u>

Recruit training continued. Recruits are progressing well and have been cleared to attend the hall for calls and are permitted to get on a truck for medical calls only at this point.

Annual defibrillation and medical training started in preparation for defibrillator testing that will be conducted from March to May.

Annual FIT testing has started ensuring all members are properly sized and fit their SCBA and N95 masks.

Conducted Town training on Emergency Response for staff who had not yet received the training.

Attended two sessions with Regional Fire Training Officers and EMS along with the new Medical Director on Defibrillation protocol changes. Pelham hosted both training sessions.

A Co-op student from Heritage Christian School started with training. The student is looking to start a career in the Fire Service and as her first step is completing a coop. She has already applied to post secondary school for the Fire Pre-Service program.

Training held a meeting with all department station Training Officers to discuss items such as training reports, live fire training, documentation, training topics, recruits, new equipment familiarization training, and Hazmat training being scheduled for the fall

Emergency Management

EM committee met over past quarter to review the Town of Pelham's HIRA and emergency plan.

Suppression

Incident responses are at a normal level, one structure fire resulted in property loss, no injuries to report.

Projects:

New heavy rescue 2 in currently in production with an estimated delivery date of May 2023

New pumper/tanker 3 has been ordered with an estimated delivery date of summer of 2024

New hurst hydraulic E tools have been order, the regional fire departments consolidated for an RFP.

Constituent Concerns and Issues Arising:

None

Employee Updates:

Pelham fire department celebrates 100 years at station 1 Fonthill. Fonthill fire association has several events planned and scheduled throughout 2023.

Grants, Concerns, RFPs, Agreements:

None

Meetings:

Regional chiefs

Regional emergency management committee

Eclipse 2024 working group

Canada games emergency committee

Regional fire coordinators

Council

Health and safety committee

SLT

23 FIRE & BY-LAW ADMINISTRATION

23 FIRE & BT-LAW ADMINISTRATIC										
FIRE RESPONSES		T			T	T	T		T	
	Total	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
STRUCTURE/VEHICLE FIRE	4	0	2	2						
MUTUAL AID OTHER DEPT	3	1	1	1						
MVC	21	7	2	12						
REMOTE / PRELIMINARY ALARMS	9	3	3	3						
MEDICAL ASSIST	52	22	12	18						
EMERG. & NON EMERG ASSIST	6	3	2	1						
PUBLIC ASSISTANCE	2	1	1							
GRASS/BRUSH FIRE/COMPLAINT	1	1								
RESCUES	1	1								
ODOUR INVESTIGATION	0	0								
CO INVESTIGATIONS	3	1	1	1						
Monthly Totals		40	24	38	0	0	0	0	0	0
Annual Total 2023	102									
Total Responses for 2022	481									
2023 FIRE PREVENTION										
INSPECTIONS										
	Total	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT
Inspections	9	2	4	3						
Town Monthly Building Inspect.	39	13	13	13						
Plan reviews	11	4	5	2						
Tapp-C	0	0	0	0						
Fireworks Permit	0	0	0	0						
Open Air Burning Permit	54	12	14	28						
Observed fire drill	0	0	0	0						
Court appearance	0	0	0	0						
Monthly Totals		31	36	46	0	0	0	0	0	0
Annual Total 2023	113									
Total Responses for 2021	552									
MONTHLY COMMITTEE/AS	SOCIATION	MEETINGS								
	Total	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT
OMFPOA	2	0	1	1						
Arson Committee	0	0	0	0						
TAPP-C										

Development Coordinator Meeting	11	4	5	2						
Town staff meeting	0	0	0	0						
Meetings, various (n.o.s.)	17	6	4	7				1		
					1			1		
Monthly Totals		10	10	10	0	0	0	0	0	0
Annual Total 2023	30									
Total Responses for 2021	154									
FIRE INVESTIGATIONS										
	Total	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT
	1	0	1	0						
Monthly Totals										
Annual Total 2023	1									
Total Responses for 2021	1									
PUBLIC EDUCATION										
	Total	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT
Station Visit School	0	0	0	0						
Fire Prevention Education Event	5	1	2	2						
Child / Children Visit Station	2	1	1	0						
Public Education Presentation	0	0	0	0						
General inquiries	17	5	4	8						
Facebook Public Education Posts	34	10	6	18						
				1						
Monthly Totals		17	13	28	0	0	0	0	0	0
Annual Total 2023	58									
Total Responses for 2021	357									
OTHER ACTIVITIES										
	Total	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Compliance Letter	4	0	2	2	ļ					
Fire safety plan/drill scenario reviews	0	0	0	0						
Training for firefighters	0	0	0	0						
Training Course	3	0	1	2						
Monthly Totals		0	3	4	0	0	0	0	0	0
Annual Total 2023	7									
Total Responses for 2021	26									
2023 BY-LAW SERVICES REPORT										
BY-LAW COMPLAINTS RECEIVED	TOTAL	IAN	EEP	MAD		MAY	U INI		ALIC	SEDT
	TOTAL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT

Complaints Received		7	11	9		l	l	l		
•										
Monthly Total		7	11	9	0	0	0	0	0	0
Y-T-D Total 2023	27									
2022 Total	193									
PARKING INFRACTIONS ISSUED										
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT
Tickets Issued		46	12	27						
Monthly Total		46	12	27	0	0	0	0	0	0
Y-T-D Total 2023	85									
2022 Total	63									
PARKING WARNINGS ISSUED										
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT
Warnings issued	Total	0	0	0						
Y-T-D Total 2023	0									
2022 Total	33									
ENVIRONMENTAL BY-LAW FILL AP		RECEIVED								
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT
Received	0	1	0	0						
Authorized	1	1	0	0						
Properties Exempt	0	0	0	0						
Denied	0	0	0	0						
Monthly Total		1	0	0	0	0	0	0	0	0
Y-T-D Total 2023	1									
2022 Total	7									
POLICE REPORTS FILED										
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT
	Total	0	0	0						
Mischief	0	0	0	0						
Vandalism	0	0	0	0						
Trespassing	0	0	0	0						
Graffiti	0	0	0	0						
Other	0	0	0	0						
Monthly Total		0	0	0	0	0	0	0	0	0
Y-T-D Total 2023	0									
2022 Total	2									

CANNABIS ODOUR COMPLAINTS	RECEIVED									
	Y-T-D	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT
NEW Complaints	0	0	0							
REPEAT Complaint	1			1						
Number of Violations		0	0	0						
Nasal Ranger detection	0	0	0	0						
fresh air detection	0	0	0	0						
From PELHAM	1			1						
From WELLAND	0									
Monthly Total		0	0	1	0	0	0	0	0	0
Y-T-D Total 2023	1									
2022 Total	17									
RANDOM CANNABIS ODOR TESTI	NG									
	Y-T-D	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT
Tests Completed		52	45	69						
Number of Violations	0	0	0	0						
Nasal Ranger detection	3	1	1	1						
fresh air detection	4	1	1	2						
Monthly Total		52	45	69	0	0	0	0	0	0
Annual Tests Total 2023	166									
2022 Total	418									
CANNABIS OPERATIONS LIGHT P	OLLUTION CO	MPLAINTS R	ECEIVED							
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT
NEW Complaints	0	0	0	0						
REPEAT Complaints	0									
From PELHAM	0									
From WELLAND	0									
Monthly Total		0	0	0	0	0	0	0	0	0
Y-T-D Total 2023	0									
2022 Total	0									
NOISE COMPLAINTS										
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT
NEW Complaints	1	0	0	1						
REPEAT Complaints	0									

Monthly Total		0	0	1	0	0	0	0	0	0
Y-T-D Total 2023	1									
2022 Total	19									
NON-PARKING AMP CITATIONS IS	SUED									
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT
AMPS ISSUED		0	0	0						
		-	-	°,						
Y-T-D Total 2023	0									



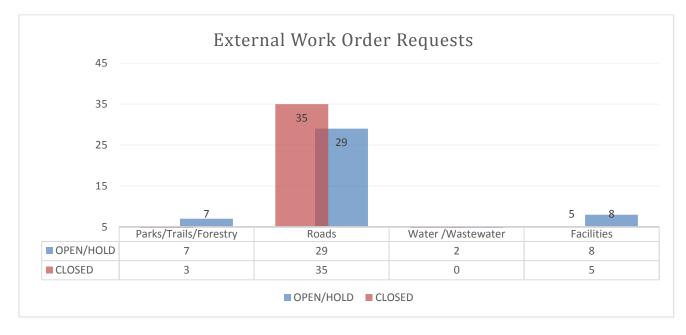
Public Works Department Quarterly Report

Wednesday, April 19, 2023

Reporting Period: Q1 Public Works Department Quarterly Report for the period: January 2023 – March 2023

Recommendation:

BE IT RESOLVED THAT the Q1/2023 Public Works Department Report be received for information.



Department Overview and Statistics:

The above overview only covers work orders through the current PSR system. The above statistics do not cover work order requests generated through email or phone correspondence. The Town's new Public Service Request known as MuniPasS will go live on Monday, April 17, 2023. The Town will be using the "Spot it? Share it!" logo to support the rollout. Data will be available using the new reporting system once the conversion with the existing system is complete.



Operations

Roads

The primary function of the Roads Staff is to perform maintenance activities identified during routine road patrols as per the Ontario Regulation 239/02; Minimum Maintenance Standards (MMS) for Municipal Highways, passed pursuant to the *Municipal Act, 2001*.

April 1, 2023, marks the end of the 2022-2023 Winter Season. Roads staff have begun decommissioning the winter fleet to transition into spring operations. Although staff has not received the contracted services invoices for March, the Winter Operations budget is believed to be healthy. Staff will report on 2023 winter operations once all invoicing has been received and operations data can be compiled.

Through the end of February and March, road staff has concentrated their efforts on patching potholes on municipal roads. During this period 95 tonnes of QPR cold patch has been utilized to patch potholes throughout the Town's transportation system. A further 20 tonnes of cold patch was used during a concentrated effort to patch potholes involving Roads, Beautification, and Water/Wastewater staff the week of April 3rd, 2023.

Beautification

Throughout the first quarter, both staff and the tree contractor began working on completing tree maintenance identified in the 2022 tree inspections. As per Schedule A of the Tree Maintenance Policy S802-01, staff has begun tree limb pruning and tree inspections in Section 7 which includes the North/East corner of Fonthill. Policy S802-01 prescribes a 7-year pruning cycle for municipal boulevard trees. Through the tree inventorying exercise, Section 7 was noted as an area requiring prioritization.

During the winter season, when not assisting in winter operations, staff perform equipment maintenance such as painting trailers and small engine servicing. Staff repair picnic tables and repaint garbage receptacles and the design of planting beds and ordering of planting material also occurs in this quarter in preparation for spring.

Corporate Services are working on a cemetery GIS mapping system and Public Works is working on a pilot project to digitize the Town's historic cemetery records.

Water/Wastewater

Water/wastewater maintenance activities continue throughout the year. Operators perform system pressure monitoring, flush water mains to ensure adequate chlorine residual, and respond to customer complaints or concerns.

Staff responded to one water quality concern in this quarter related to rusty water. The home is supplied by a cast iron watermain which can be the cause of coloured water from the tap. Staff did not find rusty water at either the home or while flushing watermains in the vicinity.

The Drinking Water Quality Management System received a surveillance audit by NSF International Strategic Registrations in March. The system received one Opportunity for Improvement (OFI) regarding the listing of standards required for essential supplies and services related to watermain pipe and fittings. This OFI was promptly addressed.

Engineering

The following is a summary of the activities that have occurred in the Engineering Department between January 2023 and March 2023:

Pelham Street South (Phase 2)

This phase of the project was completed in April of 2022 and is now on maintenance until April 30, 2023.



Pelham Street Phase 2 – Port Robinson to John Street

Pelham Street South (Phase 3)

This project was awarded to Rankin Construction Inc. on July 26, 2022. The project has recently restarted after the winter shutdown. Final surface works

such as top asphalt, sidewalks, and landscape restoration are estimated to be complete by the end of May 2023.

Town Staff, the consulting engineer, and the contractor have been working together to come up with cost-saving measures for the project. Various opportunities for cost savings have been identified and implemented thus far, which will aid in ensuring the project remains within budget.



Pelham Street Phase 3 – John Street to South Entrance of Spruceside Crescent

Pelham Town Hall Municipal Building Addition

In the months of February and March, work on the building addition has progressed steadily. It was anticipated that the project will be completed on March 31, 2023. However, supply chain issues and weather have affected the work scheduling for the building addition. To date, the contractor has completed roof assembly, exterior and interior masonry, painting, plumbing, duct work and electrical fixtures, exterior cladding, and flooring. It is scheduled that the ERV is to be delivered last week of April. The contractor is waiting for good weather to pour the concrete walkway.

The Town has received a revised schedule for the project to be completed by the end of April 2023, except for landscaping which will happen in the spring.



Pelham Town Hall Municipal Building Addition – March 2023

Road Base and Patching Repair Program (2023)

Staff is currently in the process of determining the locations for the asphalt base repairs and patching program for 2023. It is anticipated that this contract will be tendered in the spring of 2023.

Road Rehabilitation and Resurfacing Program (2023)

Engineering Staff are currently working with Public Works Operations Staff to develop a list of candidates for the 2023 Road Rehabilitation and Resurfacing program. The candidates being selected will be based on the information contained in the 2023 Pavement Condition Study and based on the road patrols completed by Operations Staff. The program will most likely focus on municipal roads with a low Pavement Condition Index. It is anticipated that this contract will be tendered in late spring of 2023.

Concrete Repair and Replacement Program (2023)

Staff is currently in the process of determining the locations for the concrete repair and replacement program. This program focuses on the repair and replacement of damaged or failed sidewalk panels and curbs within the Town right-of-way. It also encompasses facilities' concrete repair and replacement needs. The majority of the work completed as part of this annual project is predominantly concrete sidewalk repairs to ensure the Town is in compliance with the Minimum Maintenance Standards (MMS). It is anticipated that this contract will be tendered in the spring of 2023.

Roadside Ditching Program (2023)

Staff are currently reviewing locations for the 2023 Roadside Ditching Program. It is anticipated that the contract will be tendered in the summer of 2023.

Pavement Condition Index Study

An RFP was put out for the services of an engineering consultant to provide a townwide Pavement Condition Index Study for all municipal roads within Pelham. This information may be utilized in each Town's asset management software and in prioritizing capital projects. RFP was tendered on February 14, 2023 and was awarded to Applied Research Associates Inc on March 13, 2023. The study is anticipated to be completed by May 31st, 2023.

Foss Road Sanitary Sewer Design Upgrades

Town Staff recently released GHD from the design portion of the project as the design for the sanitary replacement is at 90% complete. The cost to complete

the design to 100% including the application and procurement of permits is included in the 2024 capital Budget for Council's consideration.

Staff is reviewing options to move forward with the project.

Church Street Sanitary Sewer Design Upgrades

The detailed engineering design was completed by Associated Engineering early in 2022. Permits, comments, and approvals have been obtained by CP Rail and the NPCA.

This project tender closed on July 4th, 2022, however, due to tender prices substantially exceeding the budget for this project, Staff decided to postpone this project and retender in 2023. The additional capital funding required to complete the project has been included in the 2023 Capital Budget request.

The project was tendered on March 9, 2023 and closed on April 4, 2023. Staff and the consultant are currently reviewing the bids from the contractors. It is anticipated that this contract will be awarded in the next few weeks. Construction is anticipated to begin in July 2023.

Quaker Road Reconstruction Detailed Design

Engineering staff are working closely with representatives from the Region and the design consultant (MTE) to finalize the design of Quaker Road from Pelham Street to Line Ave. The project will include the full urbanization of the roadway with concrete sidewalks on both sides of the street, on-road cycling facilities, new watermain and services, new storm sewer, and new sanitary sewer. The design is currently in the 90% stage and will be completed in April 2023. Town staff have been working with the City of Welland and Niagara Region staff to create temporary access off Line Avenue in Pelham to Summerlea Avenue in Welland. Temporary access is required for residents and emergency vehicles to enter and exit the subdivision without restriction during construction.

The City of Welland and Niagara Region will be financially responsible for both installing and removing the temporary access once construction has been completed. The project will be tendered and administered through Niagara Region. The project is to be tendered in spring 2023 by the Niagara Region and due to the complexity of the sanitary trunk main construction, the proposed works on Quaker Road in Pelham have been deferred to 2024/2025. Therefore, it is intended to switch focus and continue with Pelham Street Phase 4 and complete the construction works to the Welland Boundary.

Bridge Design for Cream Street (Structure No. 12) and Roland Road (Structure No. 13)

The Cream Street and Roland Road bridges were identified in the 2020 Biannual Bridge and Culvert inspections as structures that require rehabilitation and or replacement. The Bridge Condition Index (BCI) for Cream Street (Structure No. 12) is 48 with an overall condition of "poor". The BCI for Roland Road Bridge (Structure No. 13) is 60 with an overall condition rating of "fair". The detailed design assignment for the Cream Street bridge is complete and town staff is reviewing the final drawings and cost estimate. This project is planned to be tendered in April 2023 with construction anticipated to begin in July 2023. The Roland Road bridge design will commence with the completion of the Cream Street design and the project is anticipated to be tendered and constructed in 2024 pending budget approval.

Station Street Storm Pond Rehabilitation

This project has been awarded to Duffin Contracting Inc. The commencement of the project has been delayed. This is mainly due to permitting restrictions from the NPCA and permission to enter and gain access over a hydro easement that runs between Station Street and Cataract Road directly adjacent to the stormwater pond outlet. The contractor is continuing to work with the design consultant, Town Staff, and NPCA to get the approvals necessary to gain access to the site and complete the work. Based on failed attempts to gain access to the site via the Hydro One corridor the Town has now directed the contractor to gain access to the site through the existing storm sewer easement and stormwater management facility. As a result, there will need to be limited tree removal and restoration work on the existing pond. All of this work for the access will be completed on Town property. A portion of the property is on NPCA-regulated lands so permits and approvals through the Conservation Authority will be required. It is anticipated that the construction will commence once permits are received.

Northwest Fonthill Watermain Replacement Project

A Request for Proposal for the design of the Northwest Fonthill Watermain Replacement Project was awarded to Kerry T Howe Engineering Ltd. in September 2022. The purpose of the project is to replace non-PVC watermains and water services not meeting Town standards in Northwest Fonthill. Streets included as part of this project includes Strathcona Drive, Moote Lane, Daleview Crescent, Daleview Drive, Pinecrest Court, and Spencer Lane. The design for this project is anticipated to be finalized in the summer of 2023, with construction being phased over the next few years. The Town has received grant funding for this project.

LED Streetlight Conversion Project

Town staff have reviewed the Investment Grade Audit (IGA) and the first phase of the project, capped at an upset limit of \$250,000 based on Council's directive, has been completed. Based on the information received from the IGA and based on the current market price index the estimated cost for the project is now \$950,000. The primary reason for the cost increase is a direct result of approximately 320 additional fixtures being identified through the IGA (most of them being decorative style fixtures), and to account for increases in inflation and labour and material costs for 2023. The initial proposal by RealTerm Energy estimated that the savings in annual operating and maintenance costs would be approximately 74%. However, based on the Phase 1 IGA it is estimated that the utility cost to operate the streetlights will see a reduction of approximately 72% and the estimated maintenance costs will realize approximately 80% in savings. Overall, it is estimated that the total savings for the Phase 1 conversion will be approximately 74% representing a capital project cost payback of approximately 3.8 years. Originally, the contractor was to have Phase 1 completed by December 31st, 2022. Due to unforeseen weather delays, Phase 1 was substantially completed by the first week of February 2023. The LED Streetlight Replacement Project Phase 1 has officially transitioned from installation to reconciliation.

This means the installation has been successfully completed and moved to the maintenance period of the contract. Phase 2 of the project will commence in the spring of 2023 and will be completed by the end of the calendar year.



Phase 1 LED Streetlight Replacement Map

Canboro Road Reconstruction Detailed Design

A Request for Proposal for the design of the Canboro Road Reconstruction Project was awarded to Kerry T Howe Engineering Ltd. in August 2022. The purpose of the project is to replace the existing watermain as it has reached the end of its service life, as well as urbanize the roadway to include storm sewers, curb and gutter, and improved sidewalks. CCTV footage of the sanitary sewer on Canboro Road has been reviewed and alternatives for rehabilitation or replacement of the sewer are being evaluated. The design for this project is anticipated to be finalized in summer 2023, with construction anticipated to take place in 2025.

Stormwater Management Facilities Review Project

A Request for Proposal to undertake a review of the Town's stormwater management facilities closed in December 2022. This project has been awarded to Matrix Solutions Inc. The purpose of the project is to assess the condition and performance of all Town owned stormwater management facilities, as well as identify the capital, operations, maintenance, and compliance needs for the facilities. These stormwater management facilities include Town infrastructure such as wet and dry stormwater management ponds, in-line storage facilities, and oil-grit separators. The onsite works are due to commence in the Spring of 2023

Constituent Concerns and Issues Arising

None

Employee Updates

None

Grants, Concerns, RFPs, Agreements

None

Meetings

Public Works Officials Meetings Niagara Peninsula Contract Document Specification Meetings South Niagara Public Utilities Coordinating Committee Municipal Energy Symposium – Association of Municipalities of Ontario



Reporting Period: Clerk's Office Quarterly Report for the period: January, February, March 2023

Recommendation:

BE IT RESOLVED THAT the Q1/2023 Clerk's Report be received for information.

Department Overview and Statistics:

Year	2021	2022	2022 20			
Quarter (Year to Date)	Year End	Year End	Q1	Q2	Q3	Q4
Insurance or Small Claims Processed	29	47	14			
Pelham Deaths Registered	72	107	10			
Deaths Outside of Pelham Registered	99	79	21			
Lottery Licenses Issued	9	14	3			
Council Meetings Attended/Minuted	22	22	6			
Special Council Meetings Attended/Minuted	19	12	1			
COW Meetings Attended/Minuted	3	1	4			
Public Meetings Attended/Minuted	7	9	2			
Affidavits Sworn		222	58			
FOI Requests Received/Processed	19	16	2			
Closed Meeting Investigation	1	0	0			
Committee of Adjustment – Variances	41	19	9			
Committee of Adjustment – Consents	33	13	6			
Committee of Adjustment – Hearings	14	11	4			
OLT Appeals C of A	-	1	0			
Property Standards Appeals	-	-	0			
By-laws	101	99	23			
Itinerant Seller Licenses Issued	2	8	4			

Short Term Accommodation Licences Issued	3	1	2	
Sidewalk Patio/Sidewalk Sale Permits	3	3	0	
Special Event Permit – Private	2	3	4	
AMP Review Hearings	2	13	7	
Marriage Licenses Issued	51	68	10	
Civil Marriage Ceremonies Officiated	9	9	0	
Media Releases	44		12	
News Briefs	102		13	

Projects:

LaserFiche Kick-Off

The corporate records management project featuring the LaserFiche software began in 2023. A records management working group was created consisting of key personnel from each department. Multiple training sessions have occurred, with more to follow. The Clerk's department is overseeing this project and will continue to work with internal departments to ensure continued success.

Advisory Committee Training

The Clerk's department facilitated a training session for staff representatives and secretaries of advisory committees. The Clerk's department plans to attend the introductory meeting of each advisory committee to provide an overview of parliamentary procedure and conduct the Chair/Vice-Chair election. An understanding of parliamentary procedure amongst committee members promotes efficient and effective meetings.

Employee Updates:

Mr. Bill Tigert joined the Clerk's department as the Town Clerk. Mr. Tigert is filling in for Ms. Willford who is currently on parental leave. Mr. Tigert brings considerable experience humour and leadership to the department.

Ms. Jodi Legros joined the Clerk's department as the Legislative and Committee Coordinator. Ms. Legros was previously the Administrative Assistant to the Planning and Development department and brings a wealth of corporate knowledge and experience to the department.

Communications Analytics, January to March 2023

Page Views Pages per Session Average Time on Pag
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151,501	2.23	1:34
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Top 5 pages: (Main Page), Meridian Community Centre, Arena and Skating Programs, Activity Search, Careers, Adult Programs

Twitter

Tweets	Engagement	New Followers
272	253	44

Facebook

Engagement	Page Views	Total Reach
1460	3333	110,748

Instagram

Total Posts	Engagement	Post Video Views
302	1373	1126

Marketing Projects:

- Recreation General Programming
- Family Day
- Recreation Culture and Parks Master Plan
- March Break Camp
- Art Directory
- Winter Parking
- Committee Members
- Town Hall Renovation
- Youth Activity Instructor
- 2023 Budget
- Summer Camp Hiring
- Summer Aquatics Hiring
- Name the Pelham Plows
- Velveteen Rabbit
- Youth Drama Program
- SilverStick International
- PD Day Camps
- Pickleball Clinics
- Earth Week Rain Barrels

Public Relations Projects:

- 2023 Weather Event March
- FCC Legion Announcement
- Crime Stoppers

- Meals on Wheels

Grant Support:

- Niagara Tourism Relief Fund
- Greenbelt Foundation
- ParticipACTION Community Better Grant
- OTF Resilient Communities
- Charged for Change
- Niagara Community Foundation
- Seniors Community Grant

Meetings:

Town Clerk

- SLT

Deputy Clerk

- SLT
- Committee of Adjustment Hearings
- Pre-Consultation Meetings for Committee of Adjustment
- Legislative and Committee Coordinator Interview

Legislative and Committee Coordinator

- Committee of Adjustment Hearings
- AMPS Hearings Scribe

Communications Specialist

Pelham Summerfest EOC EM LAM Communicators



Wednesday, April 19, 2023

Reporting Period: Corporate Services Department Quarterly Report for the period: January, February and March 2023

Recommendation:

BE IT RESOLVED THAT the Q1/2023-0051 Corporate Services Department Report be received for information.

Department Overview and Statistics:

The Treasurer and the Deputy Treasurer worked with Finance staff on various year-end functions. Staff were working on year end closing processes, adjustments and accruals between January and March.

The Treasurer and Deputy Treasurer presented the 2023 Operating and Capital Budgets to Council in January.

The Deputy Treasurer prepared the water/wastewater budgets and presented it to Council in February.

Year end working papers were being finalized in March in preparation for the Audit in April.

The Deputy Treasurer is leading the project to migrate the Town's purchasing cards to BMO Mastercard. Staff from Corporate Services attended various meetings with BMO on implementation of this project in January. At the beginning of January, new BMO cards were used by the Manager of IT and the Procurement Officer as part of the pilot program before cards are rolled out to all users.

Staff from Corporate Services and Engineering met with FH Black consultants to work on the Bids & Tenders, and Planner Project.

The Revenue Analyst position became vacant in December, and it was filled in January.

Accounts Payable

The Accounts Payable Clerk has been in year end mode working diligently with the Town's vendors obtaining year end statements and requesting for outstanding invoices. Along with Town staff, following up on outstanding invoices still to be submitted for processing for year end. AP has been working diligently with staff and vendors to acquire statements and process invoices related to 2022 and 2023 in a timely and accurate manner. The AP Module was successfully closed for 2022 transactions on Feb. 24, 2023.

Accounts Payable is also working with the Deputy Treasurer on testing the new BMO Purchasing card with two high end users, to learn how to integrate the reporting and imports with the new monthly process for these cards before rolling out to the rest of the staff.

The Accounts Payable Clerk was also engaged in many meetings with the BMO implementation team for the new Purchasing Cards. Along with many other meetings with the Concur implementation team meetings with FH Black with regards to the Automation Processing Implementation Grant for the Corporate Services Department.

Information Technology

In the first quarter, the installation, implementation, testing and training on the audio/video system at the MCC was completed. The final testing of the virtual servers for the Records Management System and the digital sign installation at the Town Hall main entrance were also completed.

Projects during the first quarter included HRIS MyWay preliminary discussions with Central Square and the Central Square e-Billing Integration with the purchase orders issued and the tentative setup and installations scheduled for June 2023. Staff laptop and upgrades and replacements commenced in February 2023. Also, the Capital IT 02-22 server was completed in March.

The IT Manager is working on scheduling availability with Central Square to migrate all data and software setup for iCity and Vadim Online and this date is still to be determined. Work is being done on the installation of the network data lines in the Town Hall addition, for video surveillance cameras and wireless access points. The IT Manager attended Cybersecurity Threat Briefings biweekly online meetings with Canadian Centre for Cybersecurity.

Professional Development

Manager of Financial Services/Deputy Treasurer attended Supervisor Health and Safety Training.

Manager of Financial Services/Deputy Treasurer attended Deloitte's Public Sector Accounting Update for 2023.

Meetings:

SAP Bids & Tenders, Planner – FH Black Consultants and town staff BMO P-Card – Meeting with BMO Staff and Town Staff Finance & Audit Committee

Projects:

Constituent Concerns and Issues Arising: N/A

Employee Updates:

The Revenue Analyst, Riley Rousseau started on January 30, 2023. He has a Business Accounting diploma from Niagara College and has completed the Municipal Tax Administration Program through Seneca College. He has over three years of municipal experience in property taxes, water/wastewater billing and collections, most recently with the City of St. Catharines.

The Staff Accountant and Payroll Clerk passed the CPA Capstone 1.

Current Bids and Tenders

Invitation to Bid#2023-FD-01 FD 01-23 – Fire, Pumper 3 Tanker				
Bidders	<u>Amount</u>			
Dependable Truck & Tank Limited	\$906,375.00			
Award is to Dependable Truck & T \$ 906,375.00.	Tank Limited with a contract value of			
Budget: \$ 922,314.00 Council app	proved revised budget			
Invitation to Bid# 2022-PW-06 P	RK 01-22 – Consulting Services Recreation,			
Culture & Parks Master Plan				
<u>Bidders</u>	<u>Amount</u>			

Monteith Brown Planning Consultants	\$115,450.00 Evaluation Score 95/100			
MGA	\$102,900.00 Evaluation Score 89/100			
Award is to Monteith Brown Planning Consultants with a contract value of \$ 115,450.00.				
Budget: \$ 120,000.00				
Invitation to Bid# 2022-PW-10	- Roadside Mowing Program 2022 (2023, 2024)			
<u>Bidders</u>	<u>Amount</u>			
The Greenfield Group Ltd.	\$ 148,000.00 2022 (no provisional)			
Award is to The Greenfield Group Ltd. with a contract value of \$ 148,000.00				
Budget: \$ 175,000				
Budget: \$ 175,000 Invitation to Bid# 2023-PRK 01	PRK 06-23 – Centennial Park Diamond 3			
Budget: \$ 175,000				
Budget: \$ 175,000 Invitation to Bid# 2023-PRK 01 Lighting Design/Build Contract	PRK 06-23 – Centennial Park Diamond 3			
Budget: \$ 175,000 Invitation to Bid# 2023-PRK 01 Lighting Design/Build Contract <u>Bidders</u>	PRK 06-23 – Centennial Park Diamond 3 <u>Amount</u>			
Budget: \$ 175,000 Invitation to Bid# 2023-PRK 01 Lighting Design/Build Contract Bidders Sid Grabell Contracting Limited Nadelec Contracting Inc.	PRK 06-23 – Centennial Park Diamond 3 <u>Amount</u> \$ 221,490.77 Evaluation Score 93/100 \$ 240,000.00 Evaluation Score 87/100			
Budget: \$ 175,000 Invitation to Bid# 2023-PRK 01 Lighting Design/Build Contract Bidders Sid Grabell Contracting Limited	PRK 06-23 – Centennial Park Diamond 3 <u>Amount</u> \$ 221,490.77 Evaluation Score 93/100			
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Budget: \$ 175,000 Invitation to Bid# 2023-PRK 01 Lighting Design/Build Contract Bidders Sid Grabell Contracting Limited Nadelec Contracting Inc. Energy Network Services Inc. Weinmann Limited	PRK 06-23 – Centennial Park Diamond 3 <u>Amount</u> \$ 221,490.77 Evaluation Score 93/100 \$ 240,000.00 Evaluation Score 87/100 \$ 247,971.67 Evaluation Score 87/100			

Grants, Concerns, RFPs, Agreements:

Q1 2023		
Funding Applied For:	Grant	Amount
OMAFRA	Drainage Superintendant	\$ 9,179
	Summer Experience Program	
Ontario Trillium Foundation	2023	\$ 3,812
Government of Canada's	2023 ParticipACTION Community	
Community Sport for All Initiative	Better Challenge Grant	\$ 5,000
OTF Resilient Communities Fund	Bookmobile	\$ 198,200
	Senior Active Living Program 2023-	
Ontario Trillium Foundation	24 SALC	\$ 42,700
GICB	2023 Fonthill Library Renovation	\$ 2,396,031
Employment and Social		
Development Canada (ESDC)	Centennial Park washrooms	\$ 100,000
· · · · ·	North Pelham Park Tree Plant	
Niagara Community Foundation	and Seminar Series	\$ 15,000
	CSO Control Study-CCTV & Sewer	· · · · · · · · · · · · · · · · · · ·
Niagara Region	, Flushing	\$ 150,000
	CSO Control Study-Church St	
	Sanitary Sewer Planned	
Niagara Region	Replacements	\$ 4,000,000
	CSO Control Study-Sanitary	
Niagara Region	Capital Repair Program	\$ 140,000
	Sanitary I&I Program-Planned	
Niagara Region	Replacement and Rehabilitation	\$ 70,000
Funding Approved:	Grant	Amount
OMAFRA	Drainage Superintendant	\$ 9,179
	Summer Experience Program	
Ontario Trillium Foundation	2023	\$ 3,812
	New Horizons for Seniors	
Government of Canada	Program	\$ 25,000
Government of Canada's	2023 ParticipACTION Community	
Community Sport for All Initiative	Better Challenge Grant	\$ 5,000
Funding Denied:		
	Zero Emission Vehicle	
Natural Resources Canada	Infrastructure Program	\$ 94,285
		ې 5 4,265



Wednesday, April 19, 2023

Reporting Period: Recreation, Culture and Wellness Quarterly Report for the period: January 1 – March 31, 2023

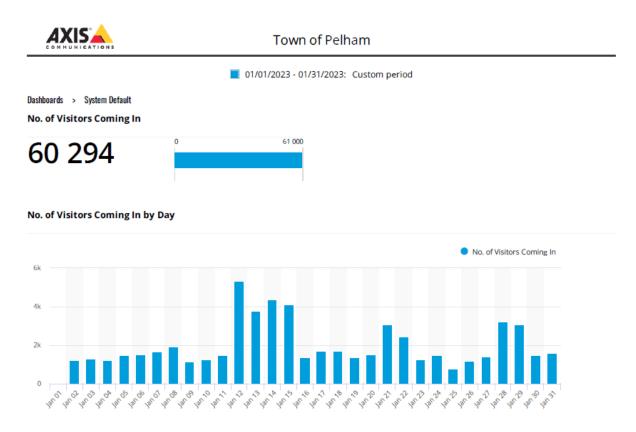
Recommendation:

BE IT RESOLVED THAT the Q1 2023 Recreation, Culture and Wellness Department Report be received for information.

Department Overview and Statistics:

January 2023 kicked off with a bang in the Meridian Community Centre for the Recreation, Culture, and Wellness team. The Pelham International Silver Stick was back again with over 96 teams from all over Canada and the United States. After a two-year hiatus, the MCC once again held the opening ceremonies for Pelham's Silver International, seeing exceptional numbers of visitors throughout the entire facility. On Thursday January 12th alone, over 5335 visitors, parents, and teammates from all over North America made the large facility seem small again. Over the four-day Silver Stick International tournament while all teams where once again playing out their finals, the Meridian Community Centre experienced 17,546 visitors.

The Meridian Community Centre continues to be getting busier over its lifetime. With the newly added spin class programs, growing gym demand and consistent meeting room rentals the facility allocations are on a consistent rise. In January the Meridian Community Centre experienced 60,294 visitors. This was by far the busiest the Community Centre has been since opening and envisioned. This is a great forecast for the future and community of Pelham.

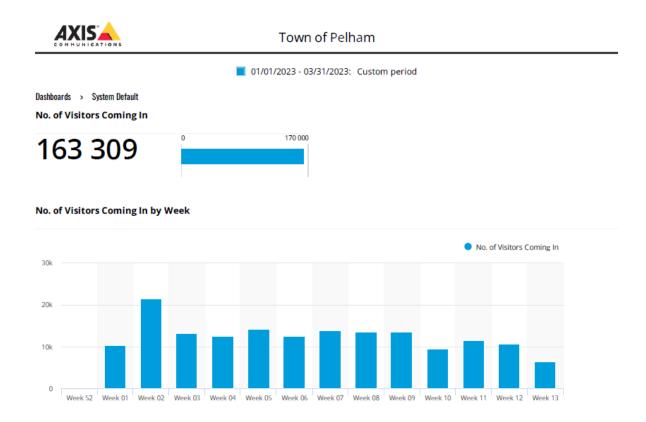


In February Recreation, Culture, And Wellness staff were continuously providing customer service, taking requests, creating permits, changing over rooms for events and rentals, flooding ice for user groups, all the while cleaning and maintaining the facility to the best of their abilities. The Meridian Community Centre experienced 53,759 visitors for a wide range of different reasons making the Centre a very significant hub for Pelham.

This year for the Pelham Pioneers Tournament, RCW staff went above and beyond to make their annual tournament a success. The layout for the tournament was setup as in the past of the upstairs of the old Pelham Arena, only to a much larger scale. Staff also maintained the bar service for the Pelham Pioneers making this a first and ultimately providing customer service levels far beyond the past. Pelham's Family Day festivities brought the community to the Centre for numerous activities, programs, and ultimately fun. Our Recreation, Culture, and Wellness team never shy away from creating positive experiences and providing customer service excellence.

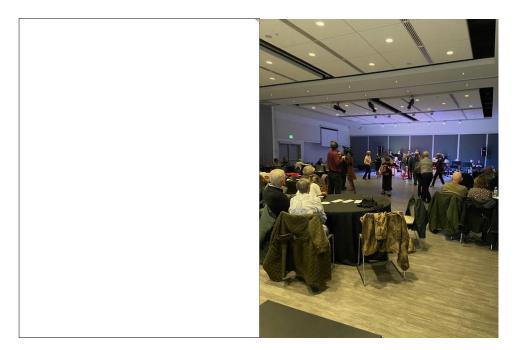
In March the Meridian Community Centre hosted 49,256 visitors through the doors. Many tournaments and events were hosted within the facility.

Basketball hosted OBA finals, Pelham Minor Hockey and STA Admirals had their play downs, Niagara Centre Skating Club had their annual Gala. Internal programs are at record attendance numbers, hosting numerous external events such as Para Sport Ontario's event in conjunction with Brock University. The Community Centre's Accursi room is now home to the Town of Pelham's council meetings every other Wednesday. The facility and staff consistently show growth not only in programs, rentals, and recreation, but also continuously expanding its doors and visions to utilize space to bring culture and inclusivity into Pelhams community. The Recreation, Culture, and Wellness team are proud to be inclusive, open minded and provide a safe environment for all community-based needs.



Big Band

The Town of Pelham's Big Band Dance Night, featuring the Jimmy Marando Swing Band takes place every third Tuesday of the month in the Accursi Room at the Meridian Community Centre. It is a night filled with swing, jazz, classical music, and lots of dancing! The attendance has been growing steadily with an average of 140 attendees throughout the last three months. This event continues to offer free admission with food and beverage available for purchase.



SAY IT! On Stage

"SAY IT" stands for "Seniors and Youth Intergenerational Theatre". It is a program designed to strengthen connections and encourage collaboration between teens and their elders. Through intergenerational conversation circles, senior participants have the opportunity to share anecdotes and experiences from their lives; these stories provided the foundation for a play that was produced and performed by both youth and senior participants.

This initiative also seeks to showcase the broad range of talents and passions individuals bring to the project – music, dance, visual arts, crafts, and trades. The aim is to involve the community of Pelham in all its diversity, including Indigenous presence and storytelling approaches.

Since March of 2022, participants were working on a stage play called *Stories Found*. Here is the premise:

"A little antique and curiosity shop in a small town holds a multitude of memories. Step through the door with us. Precious moments from people's lives will be experienced a new, rediscovered through objects that call them to mind. The value of material possessions cannot always be measured in dollars and cents. What really counts is the richness of the experiences that they represent. Stuff is the stories that we are made of."

After two successful live shows of "*Stories Found*" in November, the SAY IT! volunteers worked hard to create an online, accessible version of the filmed performance. This video is equipped with accurate subtitles to enhance viewing. Posted to Youtube on March 17th, 2023, this video now has over 200 views significantly increasing the number of people this show has reached.



The next SAY IT! on stage project is beginning in April 2023.

Comedy Night in Pelham

On March 4th, the Garden City Comedy Festival hosted "Comedy Night in Pelham", an evening of laughs with an all-star lineup headlined by one of Canada's top comics, Ian Sirota. The powerhouse lineup also featured performances from top touring headliners Ronnie Edwards, Renee Groux, and Paul McCllum, hosted by Niagara's own David Green. The evening sold out, with a total of 208 attendees. The evening was a great success filled with lots of laughter. Bar services were available for purchase. The next Comedy Night in Pelham is planned for Saturday July 29th, 2023. Tickets will be available soon for \$25. Call 289 668 3425 to reserve a table of 8 for \$150. Bar service will be available for purchase. Doors open at 7pm. Showtime 8pm.

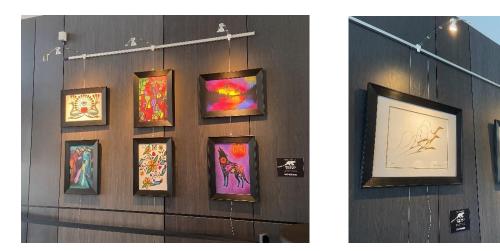
Visit **www.gardencitycomedyfestival.com** for more information or to purchase ticket!



MCC Art Walls

During Q1 of 2023, art displays were showcased on the Meridian Community Centre art walls. During the month of February, local Pelham artist Brittany Amadio showcased her extraordinary paintings in the atrium of the Meridian Community Centre.

During the month of March, the Upper Native Canadian Art Galley displayed art throughout the atrium, showcasing authentic paintings created by local Indigenous artists.



During Q1 of 2023, EL Crossley's grade 11 and grade 12 art classes continued to display their two bodies of work "Collective Consciousness" and "Re-purposed Parts Portraits" in the upper hallway at the Meridian Community Centre. EL Crossley students are currently working on new art pieces to display in the upper hallway throughout the next quarter.



Earth Week in Pelham:

Staff have been preparing for Earth Week events that will be taking place April 17 to April 22. Earth Week will encompass several elements and events, which include:

- Rain Barrel Sale Pick-up at MCC – April 22nd 9:00 am – 1:00pm

324 Rain Barrels are available for pre order for the subsidized price of \$40.00 each. We have currently sold 100 barrels. The rain barrel pick-up will be at the Meridian Community Centre during the Earth Day event. Link to purchase a rain barrel: Link to Rain Barrel Pre-Order!

- Community Cleanup – April 22, 9:00am – 12:00pm

As of April 5th, 108 people have signed up to participant in a community clean-up during Earth Week. Participants will arrive at the Meridian Community Centre at 9:00 am to pick-up their clean-up supplies and enjoy a coffee. They will then embark on their clean-up journeys for their designated Pelham areas. They will then join back up at the MCC afterward for a complimentary lunch.

- Eco-Expo – April 22 9:00 am – 12:00pm

Staff has built in a small vendor fair featuring local environmental organizations to be on-site during the Rain Barrel pick up and community clean-up.

Community Tree Plant Event – April 21, 10:00am – 12:00pm at North Pelham Park

The annual Community Tree Plant will be taking place at North Pelham Park this year where local schools, organizations and residents will be invited to participate in expanding the tree canopy in Pelham. The Community Tree Plant will be sponsored by a grant and 30 trees will be planted.

- Earth Week Challenge Virtual Scavenger Hunt – April 17 – 22

Daily missions that will challenge participants to take part in environmentally sustainable activities throughout the Town. Participants will have the opportunity to win prizes with the completion of missions.

Pelham Farmers' Market:

Staff have been working with the Farmers Market Committee on operations for the 2023 Pelham Farmers Market Season. The market will operate Thursday May 4 through October 5.

The Farmers Market Committee met on March 16, where vendors for the 2023 season were determined. There will be 22 vendors in total plus a non-profit booth.

Summer Chill Supper Market:

Staff is in preparation to host the Summer Chill Series on Thursday evenings from June 8 to September 21. The event will have options for local food vendors, as well as local beer, wine, and cider vendors. There is also opportunity for local musical performances and buskers. Food, beverage, and musician vendor applications have been submitted, and will be determined after the April 11 cut-off date.

Family Day

The 2023 Family Day Experience welcomed over 2500 people to the Meridian Community Centre. Families enjoyed getting active with hands on experiences from ParaSport Ontario, including sitting volleyball, wheelchair basketball and sledge hockey. Families also lined up for interactive opportunities including a photobooth, facepainting, balloon artist and laser tag! This fun filled day also included 2 sponsored public skates and a community expo which allowed over 12 community volunteer groups or sports teams to engage with the community and share information on their upcoming seasons or projects.

Active Programs

The Meridian Community Centre welcomed a new youth Afterschool Drama Program in partnership with Carousel Players in March. This program, set for ages 6-11 years old quickly filled and provides great after school opportunities for the community. Other popular programs such as FIT with Brock, Zumba and 55+ Aerobics have continued to grow their attendance. The Winter session of spin classes consists of 17 classes, with 11 of those classes reaching maximum registration of 14 participants.

Camps

The Town of Pelham Winter Break Camp from January 2-6 was a success again this year welcome a maximum registration of 37 campers. The camp week included activities such as camp games and songs, gym time, skating and a trip to Cheeky Monkeys indoor playland! The Town of Pelham March Break Camp registration quickly filled 2 months before the start of the camp program, with a total of 55 campers for the week. Camp activities included gym time, skating, a trip to White Meadows Sugar Bush and a trip to the Bowling Alley!

Mayor's Youth Advisory Council (MYAC) Working Group Updates

MYAC has been busy this year engaging with youth in the community through their social media platforms. They have helped to share study tips during exam season, held a Valentine's Day card competition and celebrated random acts of kindness day. They also sponsored the Laser Tag event at Family Day at the Meridian Community Centre and had a booth to engage with the community on how Pelham can be more youth friendly and what the working group could do to best support Pelham Youth. Currently, the group is in the planning stages of hosting an in-person Youth Forum in May at the Meridian Community Centre.

Festivals & Events Update

Pelham Summerfest & Canada Day working group volunteers have been established and are meeting bi-weekly and monthly respectively. Both working groups are working diligently to plan and coordinate all logistics for both Community Events.

Volunteers

During Q1 of 2023, Staff received six new volunteer expression of interest forms through the Town's website. Four of the applicants were interviewed and added to the Town's volunteer database. Town Staff continue to advertise volunteer opportunities by emailing the community volunteer database.

Volunteers assisted at the International Silver Stick Hockey Tournament at the MCC from January 12 to January 15. A total of 11 volunteers contributed approximately 60 hours to the event. Volunteers helped with checking in teams throughout the weekend at the MCC, Seymour-Hannah Sports Complex in St. Catharines, and the Vale Health and Wellness Centre in Port Colborne.

One Senior VIP (Volunteer in Pelham) has continued to contribute her time to the Meridian Community Centre. During Q1 of 2023, this volunteer contributed a total of 20 hours to assisting with the Orchestrum Music dropin program on Friday's and the monthly Big Band Dance Night.

Dedication Program

In the first quarter of 2023, the dedication program received two inquiries.

One inquiry is ongoing and will be followed with up by the customer later this Spring. The second inquiry is in the process of being completed. This bench was purchased by Pelham Cares in honour of their 40th anniversary, and will be installed at the MCC this Spring.

Transit Update

As of January 1, 2023, Niagara Region Transit amalgamated into one system by combining the municipal transit systems into one transit operator. NRT OnDemand metrics are no longer available under the new transit system. Reports will be provided by the Region on an annual basis.

Employee Updates:

The Active Living Programmer and Administrative Assistant completed the St. John Ambulance IDP course training to become certified to teach Babysitting and Home Alone courses.

Jodi Shishkov returned from Maternity leave February 21 in the Special Events & Festivals Role.

Lauren Phillips is covering a Maternity Leave Contract for 18 months in the Culture & Community Enhancement Role.

Meetings:

- Golden Horseshoe Regional Meeting
- MYAC meetings continued
- RCW Staff completed the St. John Ambulance IDP course training to become certified to teach Babysitting and Home Alone courses
- ASIG Regional Aquatics Meeting
- Staff attended the Parks and Recreation Ontario Educational forum and Aquatics Conference
- Staff Attended the Festivals and Events Ontario conference winning Top 100 Festivals in Ontario for Summer Chill Series & Pelham Summerfest
- Staff attended the Communities in Bloom workshop in Niagara on the Lake



Community Planning and Development Quarterly Report

Wednesday, April 19, 2023

Reporting Period: Community Planning and Development Department Quarterly Report for the period: January – March 2023

Recommendation:

BE IT RESOLVED THAT the Q1/2023 Community Planning and Development Department Report be received for information.

Department Overview and Statistics:

The Planning Department continues to work on the following development applications: 11 Subdivision Applications, 2 Official Plan Amendment applications, 7 Zoning By-Law Amendments, 2 applications for Site Plan Approvals, 8 consent applications, 10 minor variance applications and 2 Niagara Escarpment Development Permit applications.

On cannabis related matters, there is one appeal relating to Development Charges By-law Amendment that continues to remain outstanding. The court application by Woodstock Biomed with regards to the initial Interim Control By-law is also pending and the responding material was filed with the Courts. The Town is awaiting a court date. The court applications to quash the Odorous Industries Nuisance By-law is also pending and the Town is waiting receipt of the filings in order to respond.

Public meetings were held with regards to:

- a zoning by-law amendment for a 6-storey, 48-unit apartment building at 105 Welland Road;
- a zoning by-law amendment and draft plan of subdivision for Kunda Park Phase 4 consisting of 78 single detached residential lots and blocks of land for environmental protection.

Building:

The Building Department continues to receive incoming permit applications consistent with seasonal trends and remains busy with inspections. The building department was able to conduct a total of 403 inspections since the last quarterly report.

Months	Building Permits	Inspections	Demolitions	Co	ommercial Sq. Ft.	New Dwellings	Value of Construction
January	9	138	1	0		1	\$2,225,620
February	11	117	2	0		3	\$2,806,000
March	9	148	1	0		0	\$811,500
Total:	29	403	4	0	0	4	\$5,843,120

Building Activity Statistics from January 1 – March 30, 2023:

Building Permit Time Frames from January 1 – March 30, 2023:

Building Type and Number of required issue	days to	Number of Permits Issued	Average Number of Days to Issue Permit
House: 10	days	27	6
Small Building: 1	5 days	0	0
Large Building: 2	0 days	2	3
Complex Building: 3	30 days	0	0
Total:		29	

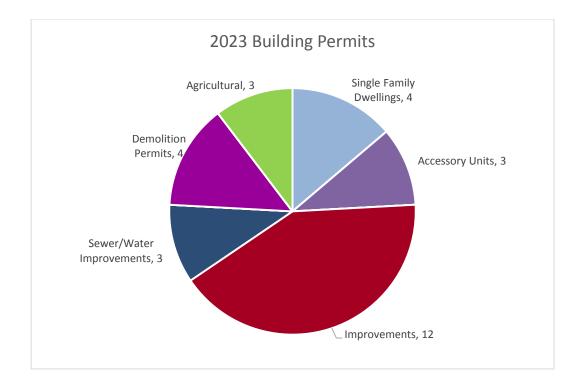
Major Building Projects Over \$250,000 (excluding single family dwelling units):

- \$1,000,000 addition to an existing Agriculture Warehouse
- \$350,000 residential addition and interior alterations
- \$600,000 for an accessory structure garage with loft

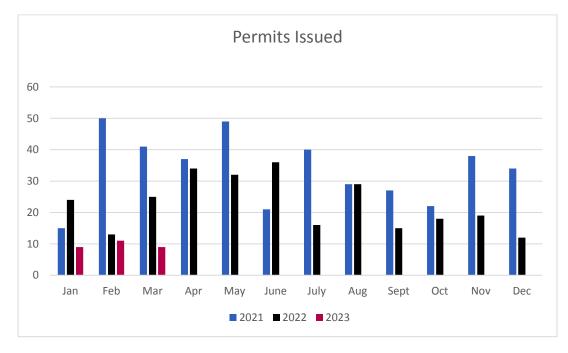
Town Development Charges collected by the Finance Department from

January to March 2023 total \$99,082.

Building Permit Breakdown (Year to Date):



Comparative Building Activity Statistics from 2021 to 2023:



Projects:

Comprehensive Zoning By-law: Discussions regarding scoping the hearing are being held with legal counsel and the OTL and their was agreement on the scoping of the appeal to apply only to the appellant's lands allowing the remainder of the By-law that is not subject to appeal to be in force and effect.

Town Official Plan Review and Update: WSP consultants are undertaking the conformity review of the existing Official Plan to determine the policy sets that are needed to conform with the new Region of Niagara Official Plan, Provincial Plans and policies and recent legislative changes. A draft report will be available by the end of April and the engaging Pelham website will be launched in April.

Farr/River/Webber Road Drainage Study: the consultants undertaking this work have completed their field investigation, undertaken a hydraulic modelling to determine the flooding extent and completed a historical analysis of the changes in the drainage pattern in the area. An Open House was held on January 26th, 2023 where the findings of the Drainage Study were presented to the public and feedback received. The consultants also met with the owners of River Bend Farms and their engineering consultants.

Planning Sharing Services Agreement: The Director and CAO have been meeting with Area Municipalities and the Region of Niagara regarding the sharing of planning services post Bill 23. A draft agreement has been prepared and presented to area CAOs. The CAO, Town Solicitor and Director reviewed the draft agreement and recommended some changes. Discussions with the Region are ongoing and moving towards finalizing the agreement in Q2.

Keenan Drain Assessment Schedule Update: K. Smart Associates is undertaking the work related to updating the assessment schedules for the Keenan Drain.

Constituent Concerns and Issues Arising:

Staff respond to resident inquiries and concerns on as need basis.

Employee Updates:

A new Building Intake and Zoning Clerk was hired in February.

The Administrative Assistant for the Department was the successful candidate for the Legislative and Committee Coordinator position in the Clerk's Department and started that position in March.

Deputy CBO took HIRA course on heating and ventilation in March.

The Building Inspector took the MMAH course on Small Buildings and wrote the exam in March.

Grants, Concerns, RFPs, Agreements:

No new request for proposals, grant applications or consultant agreements were undertaken in Q1.

Meetings:

On-going meetings:

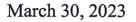
- OBOA Niagara Chapter Meetings
- Pre-Consultation Meetings
- SLT Meetings
- Joint Health & Safety Meetings
- Area Planners Meetings
- Regional Process Improvement Team Meetings

In addition to the various conversations with property owners and consultants regarding potential development applications, Staff have been involved in meetings regarding the following substantive matters:

- Bill 109 Industry Stakeholder Workshop
- Building Intake and Zoning Technician Interviews
- Laserfiche Training
- Clerk Interviews
- Committee of Adjustment Orientation and Training
- DSBN Long Term Accommodation Plan meeting
- Administrative Assistant Interviews
- Council Strategic Planning Workshop
- Natural Asset Management Roadmap Workshop



TOWN OF PELHAM APR 03 2023 RECEIVED



Corporation of the Town of Pelham 20 Pelham Town Square Fonthill, ON, LOS 1E0

Attention: Mayor Junkin,

RE: Assistance with Fire at 1786 Allanport Road.

On behalf of City Council, City Staff, Thorold Fire and Emergency Services and our residents, we would like to extend a sincere thank you for the assistance the Town of Pelham Fire Department provided to the City of Thorold in supporting our firefighters as they responded to the significant fire event at 1786 Allanport Road on Tuesday, March 21, 2023.

Together we can continue to keep our communities safe as our municipalities cooperate through these types of shared- service agreement, together we were able to provide exceptional fire response to our community. We truly appreciate all that you do in helping to keep all our residents safe.

Thank you again for your generosity and continual support to our community.

Sincerely,

Terry Ugulini Mayor City of Thorold

Manoj Dilwaria Chief Administrative Officer

City of Thorold P.O. Box 1044, 3540 Schmon Parkway, Thorold, Ontario L2V 4A7 *www.thorold.ca* Tel: 905-227-6613

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Community Planning and Development Department Wednesday, April 19, 2023

Weakeeday, April 10, 2020

Subject: Drainage Study for Farr, River, and Webber Road Area

Recommendation:

BE IT RESOLVED THAT Council receive Report #2023-0097 – Drainage Study for Farr, River, and Webber Road Area, for information;

AND THAT Staff be directed to investigate the feasibility of dredging the roadside ditches and culverts along Farr and River Road within Public Works 2023 Operating Budget and/or the 2023 roadside ditching program;

AND THAT Staff continues to participate in discussions with the developers on the east and west sides of River Road to identify potential long-term, comprehensive drainage and stormwater solutions.

Background:

Through the fall of 2021 Council and staff received several complaints regarding drainage issues in the Farr, River, and Webber Road area from rural residential and agricultural property owners. It is noted that the summer and fall of 2021 were wet. On December 20, 2021, Council received a deputation from two rural residential property owners along with a petition signed by property owners in the area. At the same meeting, Council also received a report outlining the various drainage issues occurring on private properties in the area. Also, on December 20, 2021, Council included undertaking a Drainage Study in the Farr, River, and Webber Road area as part of the approval of the 2022 Capital Budget.

On February 7, 2022, Council considered a motion to request staff to prepare a report on the Town initiating a petition for a municipal drain in the Farr, River, and Webber Road areas prior to preparing terms of reference and undertaking a request for proposals for the Drainage Study approved in the 2022 Capital Budget and that Council considered a staff report on the Town initiating a petition for a municipal Drain potentially as an alternative to undertaking the Drainage Study approved in

the 2022 Capital Budget. That motion was not supported by Council. Staff then proceeded with the Farr, River, Webber Road Drainage Study.

Terms of reference for the Drainage Study were prepared and a request for proposals was undertaken in the spring of 2022. Seven consulting firms submitted proposals for this work, the proposals were evaluated, and the project was awarded to AHYDTECH Geomorphic Ltd. in accordance with the Town Purchasing Policy. The work on this Study commenced in May 2022.

Analysis:

Study Findings:

The purpose of the Drainage Study was to review the study area to determine the drainage patterns of the area, identify drainage concerns and identify possible solutions to address drainage issues. The focus of the study was on the unnamed watercourse just south of Webber Road and the channels that contribute to it. The unnamed watercourse is regulated by the Niagara Peninsula Conservation Authority.

<image>

Study Area:

To identify the drainage patterns, assess the extent of flooding in the area and potential solutions the consultant undertook the following tasks:

- Collected and acquired data from open sources, including from the Town and Niagara Peninsula Conservation Authority, for the development of the hydrologic and hydraulic models
- Reviewed reports and documents regarding studies carried out previously close to the study area
- Conducted field visits to collect topographic data and assess the existing condition of the study area including all the culverts
- Developed a hydrologic model through SWMHYMO to obtain the variation of peak flows corresponding to different return period conditions
- Developed a hydraulic model using HEC-RAS 1D to simulate flooding extent in response to flows of different return period events obtained from the hydrologic model
- Identified properties under flood risk and recommended mitigation options
- Prepared reports detailing the methodology and results obtained from the study
- Carried out consultations with the Town, NPCA, and pertinent stakeholders regarding the progress of the study.

The consultants also evaluated changes that occurred to the unnamed watercourse over the years by reviewing historical aerial imagery and contour mapping of the area from 2002 (prior to development) to 2020 (after development) to determine the impact that changes to grading and the watercourse have had on the direction of flow of the unnamed watercourse. The changes to the watercourse and grading changes occurred primarily to accommodate the unplanned rural residential development in the area. In 2002 Farr Road was the divide in the flow direction of water and lands on the west side of Farr Road flowed to the west to the Welland River via a culvert at Victoria Avenue and lands on the east side of Farr Road flowed east and ultimately to the Welland River past Balfour Street. By 2018 the divide had shifted due to changes made to the watercourse and the raising or filling of land associated with the rural residential development that had been occurring in the area. The divide in the flow direction of flow of the watercourse is now south of 930 Webber Road. The lands west of 930 Webber Road flow to the west and lands east of 930 Webber Road flow to the east resulting in a greater area flowing to the east than pre-development.

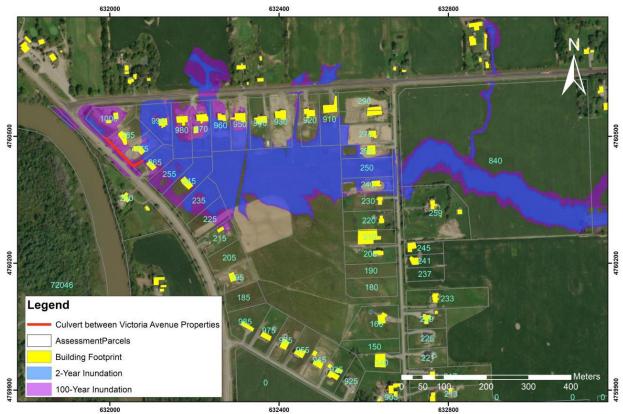
When evaluating the results of the hydrologic and hydraulic models that determined the flooding extent, it is evident that several properties and buildings are impacted by potential flood risk. Flow profiles were generated to illustrate the water levels along the main channels of the unnamed watercourse. Along the East Channel (East of Farr Road) the inundation depth ranges from 1.31m for the 2-year flood to 1.62m for the 100-year flood near the railway crossing between Church and Balfour Streets. Comparatively, in the West Channel (west of Farr Road) the inundation depth is higher and ranges from 1.74m for the 2-year flood to 5m for the 100-year flood near the Welland River over Victoria Avenue.

Inundation Depth with respect to Existing Ground Elevation

Return Period	Maximum Inundation depth (With respect to existing channel bed elevation) West Channel (m)	Maximum Inundation depth (With respect to existing channel bed elevation) East Channel (m)
2-Year	1.74	1.31
5-Year	4.94	1.43
25-Year	4.97	1.56
100-Year	5.00	1.62

The following aerial image illustrates the area impacted by the 2-year and 100-year flood inundation.

Flood Risk Area:



Properties under High Risk of Flooding

There is a private 0.6m diameter culvert that runs 35m between two private properties on Victoria Avenue being 265 and 275 Victoria Avenue, and then turns 90 degrees under the ditch on Victoria Avenue for another 90m. This private culvert is undersized and contributes to the backwater effect, even during the 2-year storm flows, and flooding on both sides of the watercourse on the West Channel. This backwater effect also affects the direction of water flow on the West Channel during storm events.

Given the topography of the area, which is very flat, and soil structure of the area, the area has extremely poor drainage capacity. When rainfall events occur, stormwater gets entrapped in the area due to poor drainage and flooding occurs. Some of the main causes of flooding include:

- Less capacity of the private culvert which causes backwater effects
- Lack of water conveying structures
- High elevated road deck with poor drainage, i.e., Webber Road
- Alteration of the natural watercourse
- Landfilling
- High and dense vegetation in the channels.

Study Recommendations:

The Drainage Study provided the following mitigation options to address the drainage issues generally:

- Repair and reconstruction of the existing culverts
- Increase the number of barrels within the culverts and the size of the culverts
- Construct new stormwater conveying structures
- Removal of vegetation from the watercourse, inlets, and outlets of the structures.

The Drainage Study also recommended 3 alternative mitigation options to address the flooding concerns on properties in the Victoria Avenue and Webber Road area including the following:

- The existing culvert under Victoria Avenue should be sized for the 50-year storm event to minimize flooding because of backwater under major storm events.
- An overland flow channel be constructed between 285 Victoria Avenue and 990 Webber Road properties along the historical/original channel and be designed for major storm events. Note this option can only occur if there is adequate clearance from existing septic systems.
- The Region and Town consider the diversion of some, or all, of the stormwater from the tributaries north of Webber Road to the Webber Road ditch to Victoria Avenue and the Welland River. The capacity of the existing ditch system would need to be confirmed.

Staff Comments:

The Drainage Study provides useful information with regards to understanding the drainage issues in the study area and the changes that have occurred over the years due to the unplanned development in an area that does not have a comprehensive stormwater management plan.

It is noted that the rural residential lots in this area were legally created through the testamentary devise process that existed in the *Planning Act* prior to July 1991. The testamentary devise process created the lots through a will and circumvented the usual subdivision approval process where matters such as access, stormwater management, servicing considerations, zoning, and land use compatibility matters would have been addressed as part of the subdivision approval process.

The Town was legally required to issue building permits on those lots that complied with the Town Zoning By-law, i.e., have frontage on an improved street, and through the building permit approval process, individual lot grading and drainage plans are required. However, without an overall comprehensive master grading and drainage plan for the entire area. Because the traditional planning process did not apply, there was no mechanism to ensure that the individual lot grading and drainage plans work together in a comprehensive way and that off-site drainage impacts are appropriately addressed. This is the main reason why the grading has changed incrementally through the study area over time as development has occurred.

Staff notes that the unnamed watercourse and the culvert between 265 and 275 Victoria Avenue are on private property and the Town has no legal authority or jurisdiction to do work on private property and to do so would result in liability for the Town whether that work related to improving the culvert, diverting the watercourse, creating an overland flow channel or alterations to the watercourse in any other way. Private property owners are responsible for doing work on private property and obtaining the necessary approvals for that work. The Town is not in a legal position to take on such work.

The Town can inspect the culverts on Farr and River Roads and clean them out along with cleaning out the Farr and River Road roadside ditches to improve the flow of water in the roadside ditches as these roadside ditches are within the Town's jurisdiction and ownership. At time of writing it is unknown if the cost of this work can be absorbed by the existing 2023 operations budget, and direction will be required from Council, as there are other ditches in Pelham which require maintenance.

The roadside ditches along Webber Road and Victoria Avenue are under the jurisdiction of the Region of Niagara, not the Town, as both Webber Road and Victoria Avenue are regional roads. Similarly, the culvert under Victoria Avenue is the responsibility of the Region, not the Town. Therefore, any work related to possibly increasing the size of the culvert on Victoria Avenue or diversion of water on the north side of Webber Road along the Webber Road roadside ditches would require the Region of Niagara's support and approval.

Because neither Webber Road nor Victoria Avenue roadways are experiencing drainage or flooding concerns, the Region would likely require that the costs associated with undertaking any work within the regional road allowances be the responsibility of the Town, not the Region, since from the Region's perspective, the works would address local issues, if the Region were to allow such works to occur. Discussions with the Region of Niagara staff would be required to obtain their support for work within their road allowances along with further engineering design work related to increasing the size of the culvert under Victoria Avenue and diverting the water from the north side of Webber Road to remain in the Webber Road roadside ditches. Staff is also aware that the two developers whom each have an interest in developing the internal lots created by testamentary devise on the east and west side of Farr Road have had some preliminary discussions regarding working together to address stormwater and drainage issues in the area, amongst other matters, as an approach to work towards ultimately receiving development approvals for the internal lots. This would involve the preparation of an overall stormwater management plan and system to deal with stormwater in these areas on a comprehensive approach. This approach would provide the best means of developing a comprehensive stormwater management solution on the understanding that there would be some development ultimately on the internal lots. It is anticipated that the number of lots that potentially would be developed would be less than the current number of lots created by testamentary devise, as some area would be required to be devoted to a stormwater management facility which would likely result in fewer lots. The exact number of lots that could potentially be developed is unknown at this time, however. The following aerial image illustrates the lots created by testamentary devise in this area on the east and west sides of Farr Road, including the internal lots.



Next Steps:

Town staff should investigate the possibility of including the cleaning of the roadside culverts and ditches along Farr and River Roads as part of the 2023 roadside ditching program. This may result in other roadside ditching priority areas being deferred to accommodate work in the Farr and River Road roadside ditches given the budget allocations for roadside ditching work.

Town staff should also continue to facilitate discussions with the two developers with the goal of determining an ultimate stormwater management solution through a development approval process required to allow for the development of the internal lots created by testamentary devise.

Financial Considerations:

At this time staff is unable to quantify the costs associated with the proposed mitigation measures recommended by the Drainage Study, however, staff would recommend investigating cleaning the Farr and River Road culverts and ditches as part of the Public Works 2023 Operating Budget and/or part of the 2023 roadside ditching program. To understand what the potential costs would be for the various recommended works by the consultant; detailed design would have to be undertaken and then cost estimates for the works could be undertaken.

Alternatives Reviewed:

An alternative to undertaking drainage improvements on private property is through work authorized under the *Drainage Act* which would involve going through the process to establish a municipal drain in this area including having a valid petition, retaining a Drainage Engineer, undertaking the design of the necessary works and ultimately construction of the works. The Drainage Study does provide useful information that would aid in the design of the work, as it has established the watershed boundary and determined the flooding extent occurring in the area. The Town could initiate the petition for a municipal drain by signing the petition as a property owner.

Alternatively, any other property owner could also initiate a petition for a municipal drain by signing a petition as a property owner. If the petition is deemed valid by the Drainage Engineer, the Drainage Engineer would then undertake the design works for the drainage improvements. Note, if the petition is deemed not valid by the Drainage Engineer, the design work would not proceed, and no costs are incurred by those who signed the petition. If after the design work is completed and petitioners decide to remove their names from the petition and the petition is then deemed not valid, anyone who signed the original petition would be responsible for sharing the costs incurred to date. If the petition remains valid after the design

work phase, then the costs associated with the design of the works and construction of the works would be shared by all the benefitting property owners in the watershed, not just those that signed the petition.

If the petition remains valid, a municipal drain under the *Drainage Act* is established and the Town facilitates the construction of the drainage improvement works by retaining the appropriate contractors to undertake the works with the works being overseen by the Drainage Engineer. The Town, through the Town Drainage Superintendent, would be responsible for ensuring the long-term maintenance of the municipal drain, and any work done to maintain the municipal drain over the years is shared by the benefitting property owners.

Another alternative is for the private property owners who are impacted by the drainage issues to work together to resolve the issues. This approach would involve the property owners retaining a qualified professional to design improvement works and obtain the appropriate approvals from the Niagara Peninsula Conservation Authority if needed. Town staff would be available to provide guidance to the property owners as needed. The individual property owners would share the costs of the works and it is recommended that the affected property owners agree to have easements on their lands that provide for the long-term protection of those drainage improvements works.

Strategic Plan Relationship: Infrastructure Investment and Renewal

The Drainage Study has identified properties that are subject to flooding risk and provided recommendations on infrastructure improvements and renewal on private, Town and Regional properties that could potentially aid in mitigating some of the flooding risks.

Consultation:

The Director of Public Works, the Manager of Engineering, the Drainage Superintendent, and the Niagara Peninsula Conservation Authority staff were consulted during the preparation of the Drainage Study.

In addition, a public open house was held on January 26, 2023, where the consultants presented the Study findings to the public and received input from the community. The consultants also reviewed the Study findings with the owners of River Bend Farms and their engineering consultant in advance of the open house.

During the open house, several comments were received from the public on the following themes:

• Divert the water from the north side of Webber Road to remain in the ditch on the north side of Webber Road

- There is a need to improve the ditches on Farr Road to accommodate the water flows
- Original farm drainage tiles still exist in some of the open field areas, but have been cut off due to development and have no outlet, and are contributing to flooding, need to understand where these farm field tiles are draining to
- Culverts on Farr Road need to be cleaned out and collapsed culverts need to be replaced
- Study should look at the drainage area to the south as well, closer to River Road, properties on River Road are experiencing flooding and have drainage issues as well
- 100-year floodplain at the northeast corner of Farr and River Road has been altered
- Ditches along Farr and River Road need to be cleaned out regularly which will improve the rate of water flowing to the Welland River
- Need to have a long-term solution to the drainage issues
- Questioned development proposals on the interior lands
- Questioned approvals from the Niagara Peninsula Conservation Authority that permitted some filling in the floodplain.

Following the open house Town staff have also had discussions with representatives of the two developers that have an interest in the undeveloped lots created by testamentary devise that are on the east and west sides of Farr Road. These property owners are desirous to be able to develop their lands and acknowledge that to move forward with development proposals, solutions to the stormwater management issues, among others, will be required. As of writing this report, these property owners are willing to engage in discussions with the objective of working together to find solutions.

Other Pertinent Reports/Attachments:

Report 2021-0211 Webber, Farr, and River Road Drainage Issues

Final Draft Drainage Study of Farr, Webber, and River Road Area of the Town of Pelham – February 2023 by AHYDTECH Geomorphic Ltd.

Prepared and Recommended by:

Barbara Wiens, MCIP, RPP Director of Community Planning and Development

Prepared and Submitted by:

David Cribbs, BA, MA, JD, MPA Chief Administrative Officer

Drainage Study of the Farr, Webber, and River Road area of the Town of Pelham

Final Report (Draft)

Pelham NIAGARA



AHYDTECH GEOMORPHIC

ADVANCED HYDROLOGY HYDRAULIC GEOMORPHOLOGY

February, 2023

AHYDTECH Geomorphic Ltd.

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ABBREVIATIONS AND ACRONYMS

CN	Curve Number
CSP	Corrugated Steel Pipe
DEM	Digital Elevation Model
DTM	Digital Terrain Model
GSC	Geodetic Survey of Canada
HEC	Hydrologic Engineering Center
LiDAR	Light Detection and Ranging
LULC	Land Use Land Cover
MNR	Ministry of Natural Resources
NAD	North American Datum
NPCA	Niagara Peninsula Conservation Authority
NRCS	Natural Resources Conservation Service
NSDB	National Soil Database
OHN	Ontario Hydro Network
RS	River Station
RTK	Real Time Kinematic
SSC	Soil Survey Complex
UTM	Universal Transverse Mercator



1 INTRODUCTION

AHYDTECH Geomorphic Ltd. has been retained by the Town of Pelham to provide consultancy services for a drainage study of the Farr, Webber, and River Road area. The existing condition of the drainage system of the area is in an unclear state which needs to be identified and resolved. The Farr, Webber and River Road area of the Town of Pelham is within the jurisdiction of the Niagara Peninsula Conservation Authority (NPCA).



Figure 1-1: Study Area near the Farr, Webber and River Road

The scope of the study includes developing a hydrologic model for the watershed and development of a 1D hydraulic model to determine the extent of flooding. AHYDTECH is undertaking a series of tasks to identify the drainage patterns, assess extent of flooding, and potential solutions to eradicate the existing drainage issues of the study area.

2 BACKGROUND

The Town of Pelham is within the Regional Municipality of Niagara comprising of communities namely: Fonthill, Fenwick, Ridgeville, Effingham, and North Pelham. The Farr, Webber and River Road areas of the Town of Pelham is located in Fenwick. Flooding issues has apparently been a concern here for a long time. A study conducted in 2017 by GM Blueplan Engineering, illustrated flooding issues and concerns in the urban areas of Fenwick along with other locations. Unplanned rural residential development, lack of a stormwater management plan connected with rural



residential usage and the lack of a municipal drain are the causes of damage and degradation of the land is facing. Overland flows are directed to a variety of natural and manmade drainage channels that discharge into the Welland River, where only a few of the natural channels are regulated. The natural flow of the creek has also been altered due to unplanned development of the residential houses. The Town has undertaken the drainage study in order to resolve the drainage concerns and pertinent issues. The Farr, Webber and River Road area of the Town of Pelham encompasses an area of approximately 1.27 sq.km (Figure 2-1). The drainage study area features from the west of Victoria Avenue and east of Church Street, corresponding to an area bounded by the south of Webber Road, the east and west side of Farr Street, north of the River Road and east of Victoria Road.

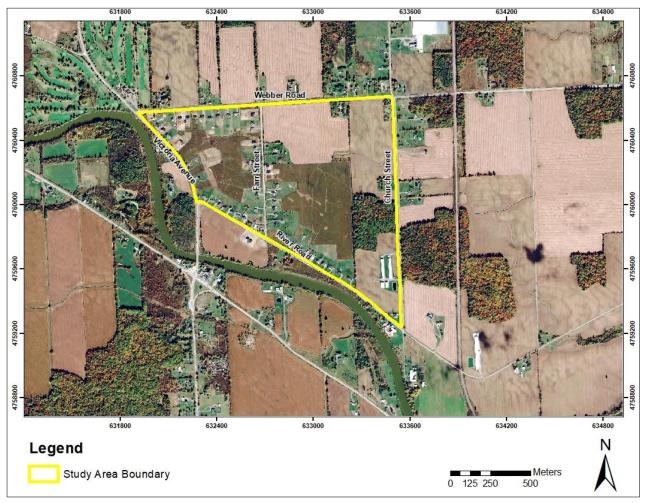


Figure 2-1: Extent of the Study Area

In order to identify the drainage patterns, assess extent of flooding, and potential solutions to eradicate the existing drainage issues of the study area, AHYDTECH has undertaken the following steps:

- 1. Collected and acquired necessary data from open sources and the Town for the development of hydrologic and hydraulic models;
- 2. Reviewed reports and documents regarding studies carried out previously close to study area;



- 3. Conducted field visits to collect topographic data and assess the existing condition of the study area ;
- 4. Developed a hydrologic model through SWMHYMO to obtain the variation of peak flows corresponding to different return period conditions
- 5. Developed a hydraulic model using HEC-RAS 1D to simulate flooding extent in response to flows of different return period events obtained from the hydrologic model;
- 6. Identified properties under flood risk and recommended mitigation options;
- 7. Prepared reports detailing methodology and results obtained from the study;
- 8. Carried out consultations with the Town, NPCA and pertinent stakeholders regarding the progress of the study.

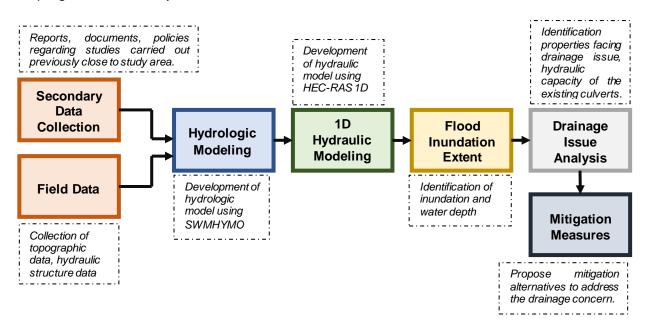


Figure 2-2: Flowchart showing the steps followed to complete the objectives of the study

2.1 COLLECTION & REVIEW OF EXISTING DATA

AHYDTECH project team had a project start-up meeting with the Town of Pelham staff virtually on 9th May 2022. AHYDTECH presented the workplan and the data required from the Town for the drainage study analysis. AHYDTECH reviewed and processed the following data and information:

- Rainfall data for storm events for specific return period events (2-, 5-, 25- and 100-year) obtained from Ministry of Transportation IDF Curve Lookup Table
- Land use, Land cover, Soil, and Digital Elevation Modelling (DEM) data
- Drainage, subwatershed and catchment boundaries
- Stream network data
- Policies documents for hydrologic and hydraulic model development
- Existing reports and information related to this study.



2.2 CHARACTERIZATION OF THE STUDY AREA

The study area encompassing the Farr, Webber and River Road area is largely rural, where trees and croplands are predominant. There are quite a few residential houses along the Farr, Webber, and River Roads, some of which are being subjected to the drainage issues currently. The land elevation of the watershed slopes downward from the west towards east, however there is an alteration in the direction of the stream at a certain location (details provided in **Section 3**). Since the study area is largely rural including some croplands, the soil characteristics of the study area is assumed to have moderate infiltration capacity. Welland River is flowing through the west and south of the study area. The topography of the area is nearly flat, and the elevation of the ground surface is comparatively low; hence, the area serves as an outlet area of the catchment and drainage issues are a common occurrence here.

3 DESKTOP ANALYSIS

Desktop analyses were performed to delineate the existing and historical drainage pattern within the study area. Whether or not the channels meet the definition of a watercourse, detailed study has been performed based on the present surveyed and historical available data. To estimate the flow pattern and possible changes along those channels, historical aerial images of certain years along a span of 20 years were analyzed.

3.1 NPCA DEFINITION OF A WATERCOURSE

A natural watercourse and surface water has distinct features where a natural watercourse is defined as a stream of water having a defined channel, with bed and banks where a surface water has no defined course. Under the *Conservation Authorities Act*, a watercourse is defined as "an identifiable depression in the ground in which a flow of water regularly or continuously occurs". Watercourses transport water, sediment, and energy, provides habitat for aquatic ecosystems and drinking water for the communities. Thus, a watercourse is a complex, multi-functional, living system (*NPCA Policy Document, 2022*). According to the *Conservation Authorities Act*, a municipal drain is also a watercourse and are therefore regulated by Conservation Authorities.

To assess whether the streams within the study area falls under the definition of a watercourse, the criteria based on which natural and surface water is defined have been seen and it was observed that the streams within the study area does not have a defined channel or bank. Besides, the study area is not serviced by any municipal drain. However, analyzing map from <u>NPCA Watershed</u> <u>Explorer</u> and <u>Contemporary Mapping of watercourses</u> flowline direction 2012, it was observed that the area along the flow channel generated in HEC-GeoHMS (Section 5.4) for the study area is under NPCA regulated lands and hence, the channels within the study area were classified as different types of watercourses such as agricultural ditch, constructed agricultural ditch, natural ditch, roadside ditch etc. which have been further illustrated in Figure 3-1.



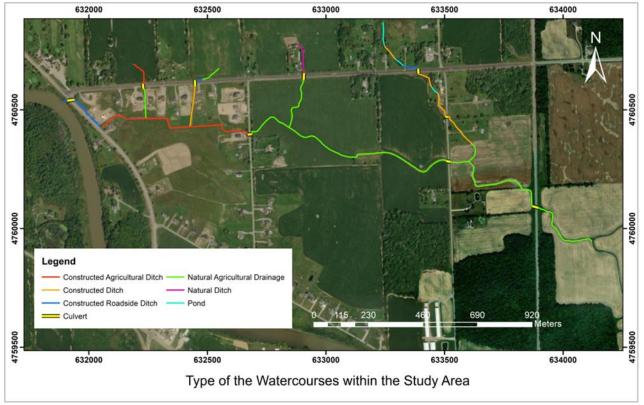


Figure 3-1: Types of Watercourses along the Study Area

3.2 HISTORICAL AERIAL IMAGERY ANALYSIS

Aerial photographs have been analysed from as early as the 2002 which provided a unique resource to describe changes within the study area for a period of 20 years. The following data sets were used for the purpose:

Date	Resolution (m)	Source
2002	0.12	AirPhotos_Niagara
2006	0.12	AirPhotos_Niagara
2010	0.12	AirPhotos_Niagara
2018	0.12	AirPhotos_Niagara
2020	0.12	AirPhotos_Niagara

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The elevation from the upstream (west of Farr Street) gradually increases downstream (towards Farr Street), until at Farr Street, the elevation decreases again, and the flow diversion of the stream is seen near the Farr Street. Beyond the Farr Street, towards the east, the elevations gradually decrease. Thus, the elevations to the west are higher than the east side. The image **(Figure 3-2)** also shows the watercourse (marked in blue line) for the year 2002 and the changes that has occurred to the flow path during existing condition (marked in yellow line).

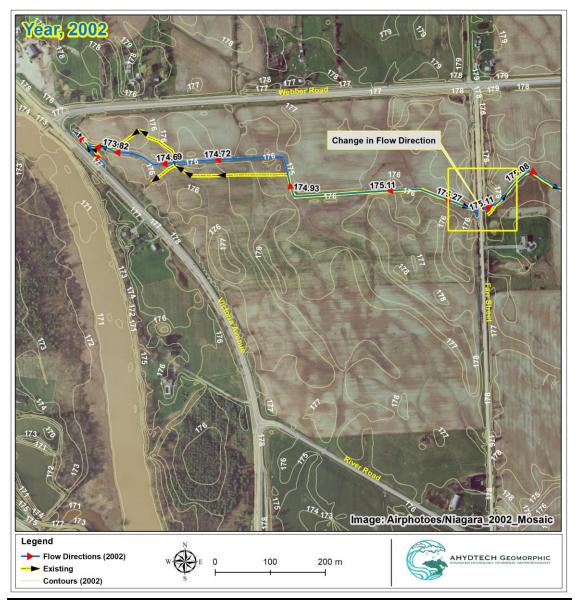


Figure 3-2: Aerial Image of 2002 of the Study Area



2010 shows nearly similar condition to 2002, except for some changes in elevation (compared to 2002) near the Victoria Avenue. The change in flow direction is still observed near the Farr Street. (Figure 3-3).

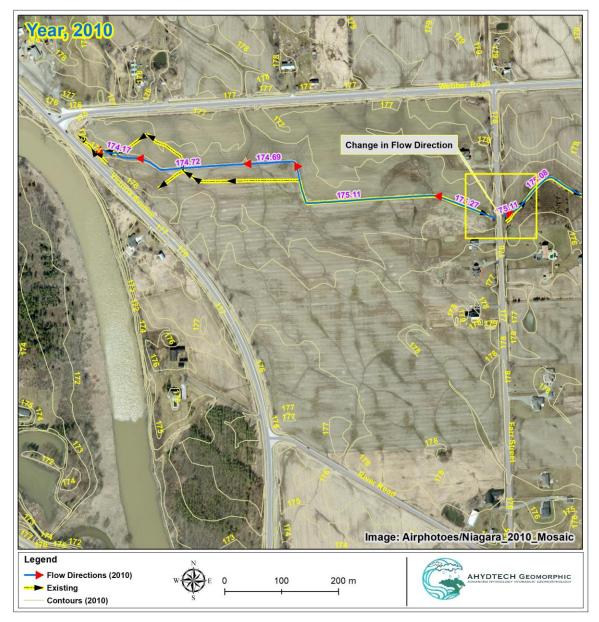


Figure 3-3: Aerial Image of 2010 of the Study Area



Based on the water course peak ground elevation, there is a change of flow direction in the study area. The change in flow direction is observed for 2018 aerial image where the flow change/diversion location shifted towards the west of Farr Road. There was a development of residential houses, which took place within the area compared to the 2010 aerial image. An additional channel culvert is seen between two properties at the Victoria Avenue properties (265 Victoria Avenue and 275 Victoria Avenue) which turns at an angle of 90 degree (approx.). Changes in elevations can also be noticed compared to 2010 (**Figure 3-4**).

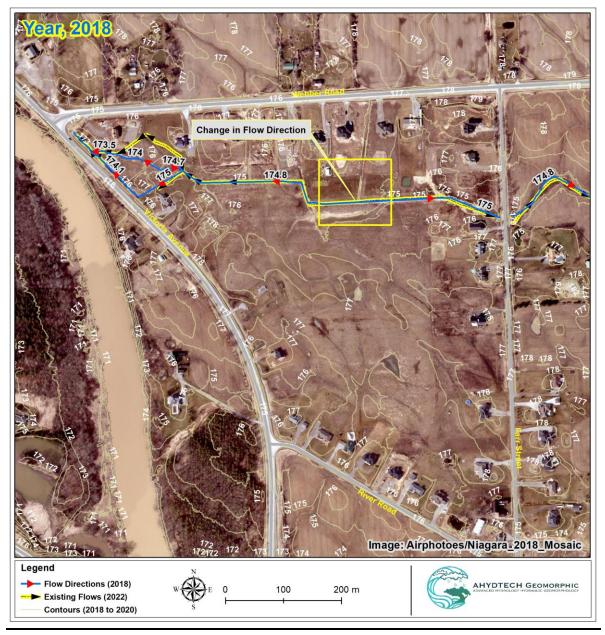


Figure 3-4: Aerial Image of 2018 of the Study Area



The study has done drainage analysis of 2020 aerial image. The flow change/diversion location observed in 2018 is also seen from the 2020 aerial image. A 0.6m diameter and 125m long culvert was installed in the west of Farr Street near the Victoria Avenue. The culvert runs 35m in between 265 Victoria Avenue and 275 Victoria Avenue properties, and then turns 90 degrees under the ditch along Victoria Avenue to join the west channel downstream *(Figure 3-5)*

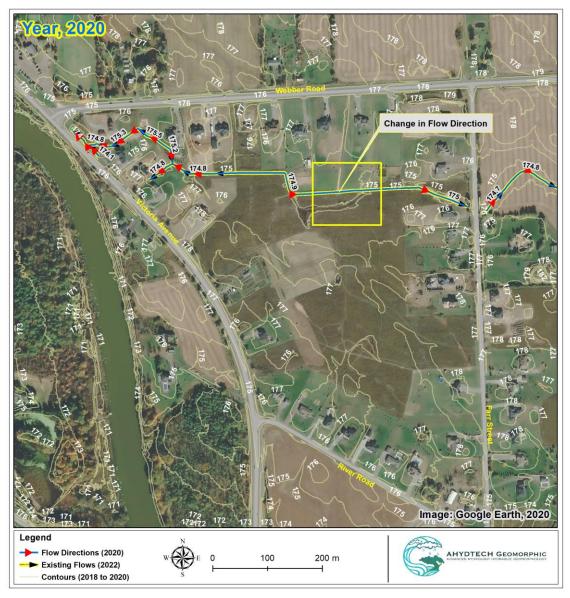


Figure 3-5: Aerial Image of 2020 of the Study Area



Existing Condition (2022 Topographic Survey, AHYDTECH)

As a part of the study, road crossing, water course and topographic field data were collected. It was observed from the field data and 2022 aerial image, the flow change/diversion location in the study area was further shifted towards the west as compared to the flow change/diversion location in the 2020 aerial image. **Figure 3-6** illustrates the existing condition of the study area and what changes have taken place in comparison to the 2020 condition.

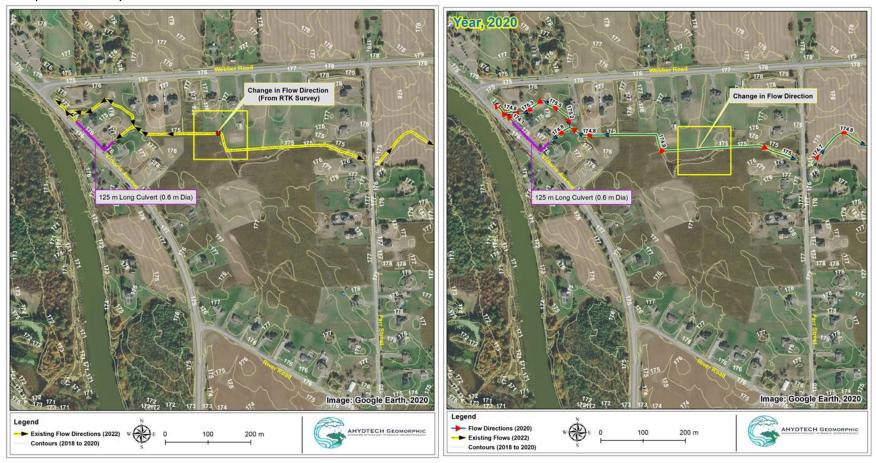


Figure 3-6: Existing Condition at the Study Area



4 DATA COLLECTION AND FIELD ASSESSMENT

4.1 TOPOGRAPHIC SURVEY AND CULVERT DATA COLLECTION

After completing the initial desktop analysis and review of the existing data, AHYDTECH implemented a field program. The field program included topographic surveying of the reaches in the watershed using a standard GNSS RTK/GPS survey techniques. The data was recorded in the geodetic control datum CGVD28, and all data files has been provided in the provincial UTM projections (NAD83). The RTK/GPS was used to acquire dimension of hydraulic structures such as that of bridges and culverts along the reaches were surveyed. The topographic survey includes about 2.9 kilometers starting from the Victoria Road up to the Church Street at the East. Cross-sections were taken using RTK along the main channel and at upstream and downstream of the Culverts. Total 15 culverts were surveyed, and relevant data was collected to perform hydraulic analysis. The culvert data were collected which includes a) Dimensions b) Invert Elevation c) Overt Elevation d) Type of Material e) Road Elevation etc. The topographic data locations and details of the hydraulic structures are provided in **Appendix B**.

4.1.1 CHANGES IN BED ELEVATION

The topography of the channel bed near the Farr Road had been observed to be nearly flat. Analyzing the RTK data collected during field survey, channel elevation profile was created. Furthermore, elevations of the crossings and road decks have been incorporated to visualize the exact location of flow diversion and crossings that directly affecting the channel causing flow obstruction. At approximately 350m east of the Victoria Road, the elevation of the channel bed seemed to be higher, considering which the flow change/diversion location was determined and later incorporated into the hydraulic model. **Figure 4-1** illustrate the longitudinal profile of the channel generated using the RTK data, the elevations of roads and crossings as well as the exact location of flow change/diversion.

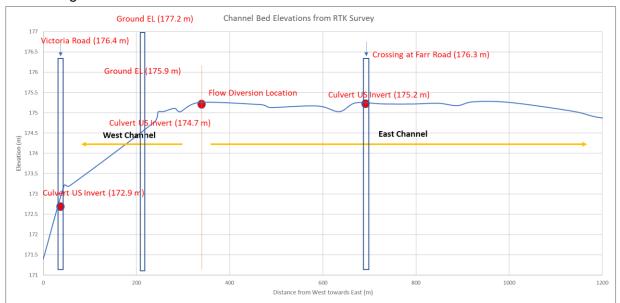


Figure 4-1: Changes in Channel Bed Elevation from West (Welland River) towards East



.2 EXISTING CONDITION OF THE CULVERTS

It was observed from the field program as well as analysis of the historical aerial images, some alignment of the watercourse had shifted from their initial position between the Victoria and Farr Road. There may be a variety of causes for shifting, but land filling and development activities are likely to be two of the main causes. Previously, a channel was running from the Farr Road in the west direction, while another was flowing in the opposite direction, towards the East. After initial evaluation of the field data, it was discovered that the flow diversion point had moved towards the west. Additionally, a few of the culverts are not operating properly. They no longer have as much capacity because of obstruction and structural deficiencies. Figure 4-2 represents the existing condition of the culverts in the study area.



Near the Victoria Avenue



Victoria Avenue



Webber Road



Farr Road



Farr Road



Webber Road

Figure 4-2: Existing Condition of the Culverts

4.1.3 VERIFICATION OF LIDAR DATA

The accuracy of the LiDAR data was checked using the RTK system in order to obtain the coordinates and elevation of several control points within the study area which were later compared with the LiDAR data. Table 3.1 shows the vertical accuracies of LiDAR data with respect to the control points where AHYDTECH has surveyed using GNSS RTK/GPS. The differences between the elevations of LiDAR data and survey data were compared. It is observed that the differences were minimal, and the LiDAR data was determined suitable for use in the study. The Easting and Northing are as per UTM projections (NAD83) while the vertical datum is CGVD13.



SI. No	Easting	Northing	LIDAR DTM Elevation(m)	Surveyed Elevation (m)	Difference (m)
1	632448.7	4760429.11	175.465	175.1668	0.2982
2	632455.8	4760428.6	175.566	175.4313	0.1347
3	632655.3	4760404.97	175.395	175.3346	0.0604
4	632708.3	4760405.18	175.3	175.2336	0.0664
5	632992.5	4760352.42	175.09	175.036	0.054
6	633438.3	4760263.47	174.4781	174.57	-0.0919
7	633535	4760278.64	174.32	174.2661	0.0539
8	632109.1	4760468.59	175.12	175.0307	0.0893
9	632073.8	4760438.24	177.14	177.163	-0.023
10	631951.2	4760535.85	173.43	173.2299	0.2001
11	631942	4760547.22	173.97	173.9099	0.0601
12	631928.2	4760534.48	176.4	176.4073	-0.0073

Table 4-1: Comparison of vertical accuracies of LiDAR Data and field data

4.2 RAPID FLUVIAL GEOMORPHIC ASSESSMENT

AHYDTECH performed rapid fluvial geomorphic assessment while conducting field survey at the study area. The survey team had undertaken field assessment to characterize existing stream conditions within the study area. Channel stability was assessed and investigating the condition of the channel no fluvial processes were observed along the channel. However, alteration of channel at some locations were observed. Development and advancement of the area required additional landfilling activity which caused channel alteration. Additionally, it affected the conveying capacity of the channels, culverts and other hydraulic structures present within the study area. **Figure 4-3** shows the existing condition of different places.



Figure 4-3: Existing Conditions at Different Locations



5 HYDROLOGIC ANALYSIS

5.1 INTRODUCTION

The assessment of the drainage condition of the study area requires the development of a hydraulic model of the associated watercourse. A hydraulic model has been developed for the watercourse within the study area which needs flow at the upstream boundaries as one of the key input parameters. However, no observed discharge data is available for any section of the watershed thus prompting the development of a hydrologic model. An event-based hydrologic model has been developed in order to compute flows for the corresponding node points of the hydraulic model. The hydrologic model uses rainfall data to simulate runoff for specific storm events (2-,5-,25- and 100-Year). The flows obtained for different return period conditions has been used for the development of the hydraulic model and to assess the inundation extent of the study area.

The hydraulic model being developed has a domain that extends from the Victoria Road and ends near the Balfour Street. From early impressions, the drainage area of the creek appears to be much lower than 5 sq. kilometers. After delineation, the drainage area turned out to be 2.74 sq. kilometers. **Figure 5-1** shows the watercourses, the drainage area and watershed boundaries for the hydrologic and hydraulic analyses.

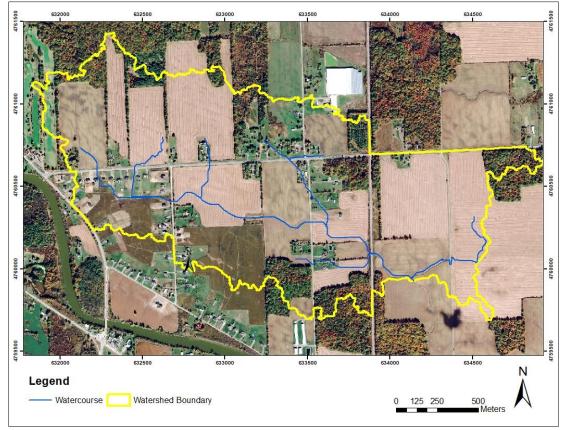


Figure 5-1: Watershed Boundary at Farr, Webber, and River Road Area



5.2 MODEL SELECTION

The watershed has been modelled using SWMHYMO software. SWMHYMO, developed by the J.F. Sabourin and Associates Inc. (JFSA), is a complex hydrologic model that can compute hydrologic analysis at low cost and low computational time. The model is widely used for small to large rural and urban areas. The SWMHYMO model computed flows at the corresponding node points of the hydraulic model. The computed flows have been then routed to simulate the flows for runoff. Before setting up the SWMHYMO model, the spatial delineation of the catchments into sub-basins were carried out using HEC-GeoHMS in the ArcGIS Environment.

The hydrologic model has been developed for a few specific storm events. These events represent storm events corresponding to different return period conditions. Peak flows corresponding to selected return periods was obtained from the hydrologic model where the return periods specified for the study are 2-, 5-, 25- and 100- year. The hydrologic model developed is an uncalibrated one, due to unavailability of discharge data nearby the watershed.

5.3 DATA COLLECTION AND PRE-PROCESSING

For the development of the event-based hydrologic model, the following types of data have been used:

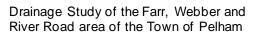
- 1) Hydrometeorological data of the study area (i.e., Rainfall Data)
- 2) Hydrogeology of the study area (i.e., Soil Data)
- 3) Land Use of the study area (i.e., Land-use and Land-cover Data)
- 4) Topographic data (i.e., Digital Elevation Model)

A brief description of each of the data types has been given in the upcoming sub-sections.

5.3.1 SOIL DATA COLLECTION AND PROCESSING

The soil data for the study area has been collected from the "<u>Soil Survey Complex</u>", prepared by the Ministry of Natural Resources (Ontario, 2019). The Ontario soil survey follows "Canadian System of Soil Classification," and the data layer has varied spatial resolution. The Soil Survey Complex (SSC) data model supports up to three soil components across one map unit (or polygon). The SSC data model is compliant with the National Soil Data Base (NSDB) data model for Detailed Soil Surveys.

Soil has been classified into some groups which are termed as Hydrologic Soil Groups or HSG based on measured rainfall, runoff, and infiltrometer data. The HSGs are of four types: Group A, Group B, Group C and Group D (USDA, NRCS, 2007a). Analysis of soil data for the study area shows that Group C is mostly dominant within the drainage areas. Group C soils have low infiltration rates when thoroughly wetted and consist chiefly of soils with a layer that impedes downward movement of water and soils with moderately fine to fine texture. These soils have a low rate of water transmission (USDA, NRCS, 1986). These soils have 20%-40% clay and less than 50% sand and have loam, silt loam, sandy clay loam, clay loam, and silty clay loam textures (USDA, NRCS, 2007b). **Figure 5-2** shows the soil type distribution along the delineated watershed.





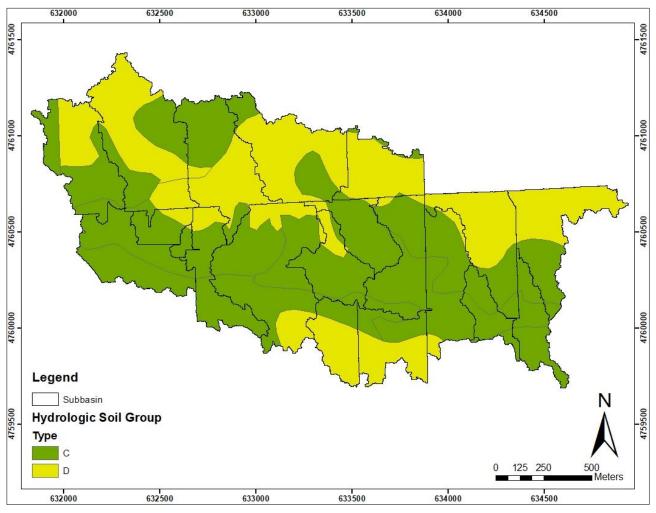


Figure 5-2: Soil Type Distribution along the Delineated Watershed

The percentage for each of the soil group within the watershed of the study area is presented in Table 5-1

Soil Type	Area Covered (sq.km)	Percentage of Area
С	1.6513	60.26
D	1.0889	39.74
Total Area	2.74	100.0

Table 5-1	Percentage of	Soil Type	over the	Delineated	Watershed
	r crocinage or			Demicated	v alci srica



5.3.2 LAND-USE AND LAND COVER (LULC) DATA COLLECTION AND PROCESSING

The ESRI global land use land cover (LULC) map, derived from ESA Sentinel-2 imagery at 10m resolution, was used as land-use and Land cover data. The dominant LULC type across the delineated watershed is illustrated in **Figure 5-3**.

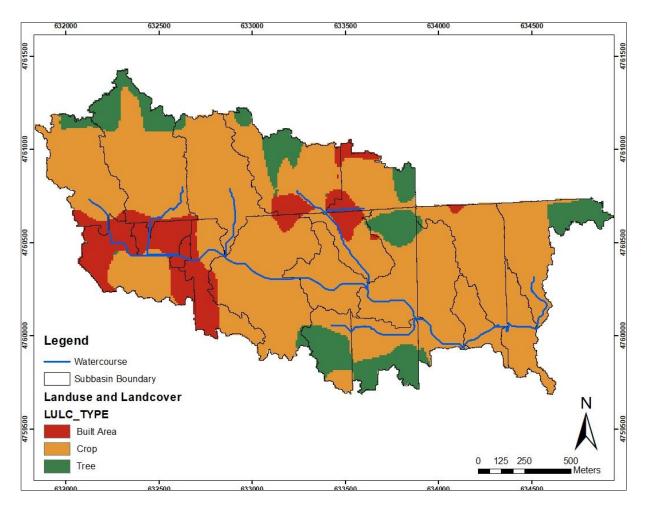


Figure 5-3: Land use and Land type for the Delineated Watershed

5.4 WATERSHED DELINEATION AND CHARACTERIZATION

The watershed was delineated using HEC-GeoHMS, a geospatial hydrology tool which is an extension of ArcGIS software. Required data for the pre-processing include Digital Elevation Models (DEM), digital stream alignments, and stream gage locations. DEM was obtained from <u>Ontario Geo-Hub</u> (Resolution of 0.5m) and the watercourse for the study area was obtained from <u>Ontario Hydro Network (OHN) - Watercourse</u>.

An outlet was specified based on which the drainage area upstream of the outlet was specified. The delineated watershed has a total of 21 subbasins with an area of approximately 2.74 sq.km (Figure 5-4). The subbasins generated was named with the initials beginning with "SB" followed by a two-



digit number suffix which provided each subbasin with a specific name for identification purpose. The following steps were followed sequentially in order to obtain the drainage area as a part of the pre-processing part for the development of hydrologic model.

Pre-processing: Catchment Delineation and Characterization of Streams and Subbasins

Based on DEM obtained by AHYDTECH for the study area, the watershed was delineated into subbasins following the workflow of the process as a part of pre-processing. The result of the preprocessing followed the determination of an outlet point in order to obtain subbasins for the catchments. Followed by basin processing, the subbasins and the streams were characterized based on the topographic information.

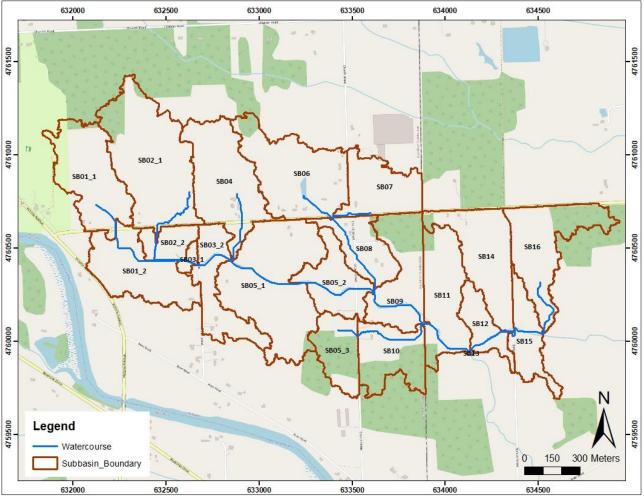


Figure 5-4: Subbasins Delineated for the Study Area

The primary subbasin characteristics are the subbasin area, longest flow-path length, and river length. The distance between the subbasin outlet to the most hydraulically remote point upstream within a subbasin is defined as the longest flow-path length. Longest flow-path is used to determine the time of concentration for a watershed. The river length and the subbasin area has been computed where the former has been used for routing purpose and the latter was computed for surface run-off flows through a series of streams to a particular point in a watercourse. Besides, the Time of Concentration (T_c) has been estimated using TR-55 methodology (details in **Section 5.6**) which



breaks watershed flows into sheet, shallow concentrated, and channel flows. TR-55 flow path segments are created for each kind of break.

5.5 METEOROLOGICAL ANALYSIS

Since there is an absence of discharge data nearby the study area, rainfall data has been used to simulate runoff data. For the development of the SWMHYMO model, 24-hour rainfall distributions have been prepared, where AHYDTECH made use of the <u>Ministry of Transportation IDF Curve</u> <u>Lookup Table</u> to determine the rainfall for storm events of the specific return periods (2-,5-,25- and 100-Year). The details of the meteorological data obtained from MTO IDF Curve Lookup Table in provided in **Appendix A**.

5.6 HYDROLOGIC MODEL PARAMETER DETERMINATION

A SWMHYMO data file was developed to analyze the peak flow for the specific return period condition within the delineated boundary. Two commands of the SWMHYMO model, CALIB NASHYD and CALIB STANDHYD were used to determine the flows from each of the subbasins. As identified that the study area was mostly rural, "CALIB NASHYD" command was used to simulate the runoff for the rural area. Again, CALIB STANDHYD command was used for areas where imperviousness was more than 20%. Hydrologic Model parameters and SWMHYMO node point name has been provided in **Appendix C**.

CALIB NASHYD

This hydrograph command, based on Nash's synthetic instantaneous unit hydrograph, is used to simulate runoff from a rural area or very large urban watershed and effects of inflow and infiltration in sanitary sewers. The CALIB NASHYD command requires the following inputs for computation of flows based on the precipitation data **(Table 5-2)**:

Parameter Name	Description
Area	Area of the catchment (hectares)
DWF	Dry weather flow components (m ³ /s)
CN	Curve Number
DT	Computational time step (minutes)
N	Number of lineal reservoirs
Τρ	Time to peak (hour)

CALIB STANDHYD

This hydrograph command is used to simulate runoff from urban watersheds with impervious areas greater than 20%. It used two parallel instantaneous unit hydrographs to simulate runoff from pervious and impervious surfaces. The CALIB STANDHYD command requires the following inputs for computation of flows based on the precipitation data **(Table 5-3)**

19|Page



-					
Parameter Name	Description				
Area	Area of the catchment (hectares)				
DWF	Dry weather flow component (m ³ /s)				
CN	Curve Number				
TIMP	Total imperviousness ratio (between 0.0 and 1.0)				
XIMP	Directly connected imperviousness ratio (between 0.0 and 1.0)				
LOSS	Type of loss over impervious surface				
DT	Computational time step (minutes)				
IAper	Initial abstraction on pervious surface (mm)				
SLPP	Average pervious surface slope (%)				
LGP	Average lot depth (m)				
MNP	Roughness coefficient for pervious surface				
SCP	Linear reservoir storage coefficient for pervious surface (minutes)				
IAimp	Initial abstraction on impervious surface (mm)				
SLPI	Average impervious surface slope (%)				
LGI	Average overflow travel length (m)				
MNI	Roughness coefficient for impervious surface				
SCI	Linear reservoir storage coefficient for impervious surface (minutes)				

Table 5-3: Parameters for CALIB STANDHYD

The dry weather flow or base flow has been assumed as zero (DWF = 0.0). The number of linear reservoirs was used as three (N = 3). These values are normally assumed due to limitation of site-specific detailed information.

Time of Concentration and Time to Peak

Time of Concentration (T_c) is attributed to the time taken for a runoff to travel from the most distant point in the watershed to the point of interest. Many methods are available, most of which are empirical and developed for specific condition. Here the 'velocity method' (also known as TR-55 method), originally introduced by Soil Conservation Service (USDA-SCS, 2010) and later elaborated by Natural Resources Conservation Service (USDA-NRCS, 2010). The details for the calculation of T_c are provided in the document *"Urban Hydrology for Small Watersheds – TR-55"*

The velocity method calculates T_c , segmenting the flow into sheet, shallow concentrated and channel types and T_c is obtained by summing up travel time off all the components of the drainage conveyance system as listed below:

<u>Sheet Flow:</u> Sheet flow is flow over the plane surfaces and usually occurs in the headwater of the streams.

<u>Shallow Concentrated Flow</u>: After about 100 ft, sheet flow usually becomes shallow concentrated flow, in which the average velocity is a function of watercourse slope and type of channel.

Open Channels: Open channels are assumed to begin where surveyed cross-sectional information has been obtained, where channels are visible on aerial photographs.



 T_c was obtained through the TR-55 method in HEC-GeoHMS which defined different flow regimes along the longest flow path, placing two points along the longest flow path for each subbasin. The first point, AA, marks the break between sheet flow and shallow concentrated flow, which is located about 100 feet from the watershed divide along the longest flow-path. The second point, BB, marks the break between shallow concentrated flow and channel flow and is by default located where the longest flow path first encounters the channel. T_c obtained was then used to calculate the Time to Peak (T_p) value and was estimated to be two-third of the value of T_c .

 $T_{p,}$ which is also sometimes denoted as Lag time, is defined as the time between a rainfall event and the corresponding peak flow. Thus, time to peak can be represented as:

$$T_p = \left(\frac{2}{3}\right) * T_c$$

Curve Number

The Curve Number (CN) Method, developed by the Soil Conservation Service (Soil Conservation Service 1964; 1972) for estimating runoff is widely used in North America and elsewhere. Using Hydrologic Soil Group (A/B/C/D) and LULC Type (ESRI), the Curve Number value was determined for 10m resolution grids. The Curve Number values corresponding to a particular LULC type and Hydrologic Soil Group to the *"Urban Hydrology for Small Watersheds – TR-55"* of USDA and NRCS was adapted for estimating the curve number.

Channel Routing

To simulate the flow of runoffs through channels and reservoirs, "ROUTE CHANNEL" command of the SWMHYMO model was used. The input parameters include: channel length, slope, roughness and cross-section of the channel. Manning's roughness coefficient for both the channel and floodplain was assigned based on the land use and land cover features. The Manning's roughness coefficient used for the SWMHYMO model was in consistent with the HEC-RAS model. The input and the output files of the SWMHYMO model is provided in **Appendix D** and **Appendix E** respectively.

5.7 SENSITIVITY ANALYSIS

Sensitivity analysis was done for the hydrologic model to estimate the influence of model parameters on the flow at the outlet. A table is given below showing the summary of sensitivity analysis of the hydrologic model. The first row is marked with yellow color indicating that simulation was done with all the initially assumed values. From the second row onwards, the blue cells indicate how we have changed the parameter values, to observe the change in peak discharge for the 100-year storm, at the outlet of the SWMHYMO model (outlet at SB13). For example, (x1.15) means we have multiplied the initially assumed values for each subbasin by the factor 1.15.



Simulation No.	Time to Peak	Curve Number	Initial Abstraction	Slope	Manning's n		Flow at Outlet
					Channel	Bank	(cms)
A0	×1	×1	×1	×1	0.055	0.035	11.784
A1	×1.15	×1	×1	×1	×1	×1	11.056
A2	×0.85	×1	×1	×1	×1	×1	12.681
B1	×1	×1.15	×1	×1	×1	×1	15.756
B2	×1	×0.85	×1	×1	×1	×1	9.034
C1	×1	×1	×1.15	×1	×1	×1	11.63
C2	×1	×1	×0.85	×1	×1	×1	11.958
D1	×1	×1	×1	×1.15	×1	×1	11.947
D2	×1	×1	×1	×0.85	×1	×1	11.688
E1.1	×1	×1	×1	×1	0.085	×1	11.663
E1.2	×1	×1	×1	×1	0.045	×1	11.837
E2.1	×1	×1	×1	×1	×1	0.045	11.871
E2.2	×1	×1	×1	×1	×1	0.015	12.873

Table 5-4: Sensitivity Analysis of the Hydrological Parameters

It can be observed from the model results that, the model is sensitive to most of the model parameters, where it is highly sensitive to the value of Curve Number (CN) and Time to Peak (T_p). Besides, the model is also sensitive to other parameters as well.

5.8 FLOW RESULT

In order to assess the drainage condition and identify the areas which are susceptible to flooding, a 1D hydraulic Model has been developed using HEC-RAS software. The HEC-RAS model makes use of discharge as upstream boundary condition. The SWMHYMO model has been used to generate flows for several inlets/junctions within the watershed at this stage. illustrates the locations identified inlets and junctions for the flow generation. The value of the generated flow (cms) at each inlet and junction have been demonstrated in **Figure 6-9.** Although the flow direction location has been observed at a certain location, the SWMHYMO model assumes all the flows in a single direction, i.e., from upstream towards downstream. However, based on the topography and other site features, the flow that was obtained from the SWMHYMO model, has been diverted into two directions, one towards the west and other towards the east in the HEC-RAS model.



6 DEVELOPMENT OF HYDRAULIC MODEL

To assess the drainage condition near the Farr, Webber, and River Road at the Town of Pelham; AHYDTECH has developed a 1D hydraulic model of the watercourses through HEC-RAS. The hydraulic model results were analyzed to assess the potential drainage issues and provide suitable mitigation measures within the study area.

6.1 HYDRAULIC MODEL SELECTION

HEC-RAS is a software for one-dimension or two-dimensions simulations of the evolution of a flood, which could have a steady or an unsteady flow rate, sediment transport, change of the riverbed etc. The name 'HEC-RAS' derived from the creators of the software: Hydrologic Engineering Center, which stands as a subdivision of the Institute of Water Resources, U.S Army Corps of Engineers (HEC), and "RAS" is an acronym from "River Analysis System". The software itself, has four main river analysis possibilities: the constant flow rate at the surface of a considered river profile; simulation of an unsteady flow of water; calculations of the sediment transport and modifications of the riverbed; and analysis of the water quality (U.S. Corps of Engineers, 2003, Tate et al. 1999). It is a widely used tool to model 1D flow simulation and provides graphical results. Inundation mapping is accomplished in the HEC-RAS Mapper portion of the software and Tabular output is also available. Model results can be post-processed using SMS software to obtain and map detailed results. When the length-to-width ratio is larger than 3:1, a 1D hydraulic model can provide fairly good results (UK Environment Agency, 2009). More detailed information about HEC-RAS can be obtained from the website: http://www.hec.usace.army.mil/software/hec-ras/.

The unidimensional hydraulic modeling of the study area has been carried out using HEC-RAS version 6.1.

6.2 HEC-RAS MODEL DOMAIN

Based on the figure in the TOR, it appears that some sections of the watercourses are not connected to each other. Analyzing the tentative flow direction map, two distinct outlets (illustrated on **Figure 6-1**) were incorporated within the hydraulic model. The domain of this hydraulic model has been taken such that they begin from where the watercourses are deemed "discernible" based on NPCA definition and up until they flow into the Welland River. Watercourses were represented by 6 Rivers, 10 Reaches, 4 junctions into the model which have been further explained in **Section 6.3.1**.



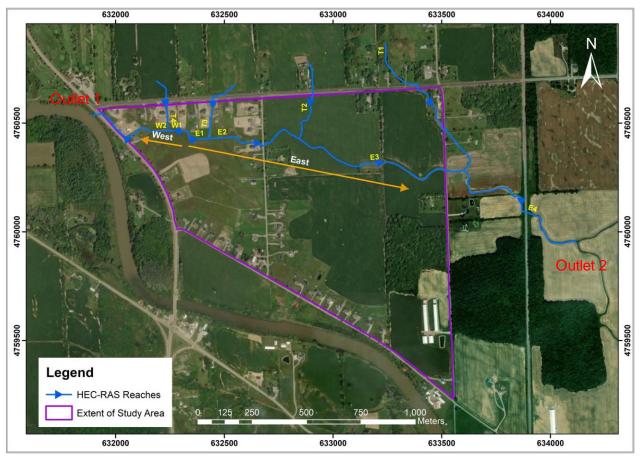


Figure 6-1: Simulated reaches in HEC-RAS Model for Existing Condition of the study area

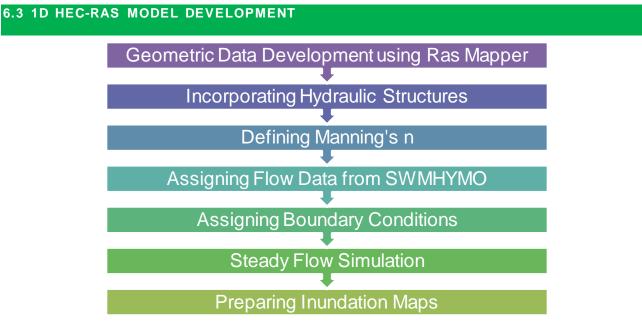


Figure 6-2: Methodology for 1D Hydraulic Model Development for the Study area



6.3.1 GEOMETRIC DATA DEVELOPMENT USING HEC-RAS MAPPER

The HEC-RAS Mapper module is an interface that can be used from the main HEC-RAS software. It offers a geospatial depiction of the HEC-RAS geometry, simulation results, and other relevant geospatial data to help users develop river hydraulic models.

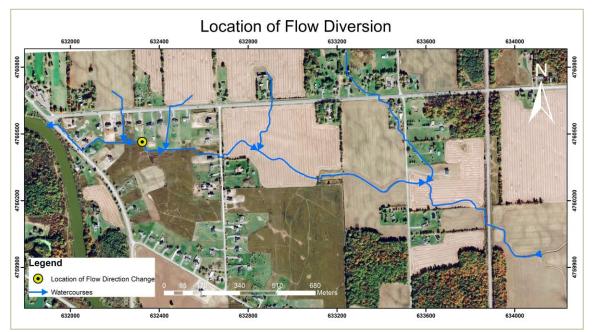


Figure 6-3: Flow Diversion Location at the Study Area

AHYDTECH used HEC-RAS 6.1 to create a 1D hydraulic geometric data into the model to analyze the drainage pattern of the study area near Farr, Webber and River Road, Town of Pelham. To determine the existing location of flow diversion, i.e., the location from which flow diverts towards east and west direction within the study area, AHYDTECH assessed the collected field survey data and Digital Elevation Model (DEM) which has been discussed in detail in **Section 4. Figure 6-3** shows the estimated flow diversion location (as obtained from the field survey assessment) within the study area based on which geometric data has been developed for the existing condition of the project site.

6.3.1.1 RIVER CENTERLINE, BANKLINES, FLOWPATHS

The centerlines of the watercourses within the project study area were delineated in the downstream direction in HEC-RAS Mapper using DEM from LiDAR data and field survey data. Two individual drainage systems were considered into the model based on the two outlets in East and West directions that were specified in RFP.

River Centerline is used to assign the river station (RS) values of the cross-sections, measured from the downstream end to upstream along the river reach and compute the main channel reach lengths between two cross sections by utilizing the HEC-RAS Mapper.

Bank lines are used to define the main channel banks for a cross section. It can be both continuous and discontinuous and can be drawn from any end of the watercourse. Though RAS Mapper enables users to auto-generate the bank lines using DEM/DTM, AHYDTECH has defined the bank lines



considering the bank position data collected during the field survey since it provides more accurate and recent data. For each watercourse, left and right banks have been defined for the study area, which has been illustrated in **Figure 6-4**.

Flow path lines are used to compute reach lengths between cross-sections in the left and right overbank which were delineated towards the downstream direction. It also facilitates the user to auto-generate the lines. However, AHYDTECH used the field data to delineate the flow path lines for the study area.

6.3.1.2 CROSS-SECTION CUTLINES

Cross-sections are developed using the attributes of other layers, such as the River, Bank Lines, and Terrain layers, as well as the spatial layout of the cross-section lines. The primary data source used in characterizing cross-sections in the study area is the cross-section dataset collected during RTK Field Survey by the Senior Engineer. A total of 231 cross-sections have been taken using approximately 50m of spacing for the watercourses within the study area (Figure 6-4). When each cross-section is defined, RAS Mapper automatically compute the River Name, Reach Name, River Station, Bank Station, Reach Length, and other data for the cross-section and automatically extracts the elevation data from the DEM/DTM. The RAS Mapper enables the user to manually insert the ground elevation point data which assist users in updating cross-sections where field data and/or bathymetric data are available. Since, AHYDTECH has completed the field survey and collected the elevation data of the drainage lines and all other relevant data required for the model, those data were applied in RAS Mapper when developing cross-sections for the study area.

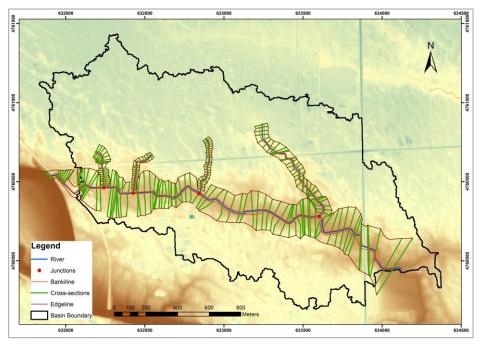


Figure 6-4: Geometry Data Developed in RAS Mapper

6.3.1.3 DEM MODIFICATION



The basis for any accurate hydraulics is a good representation of ground surface elevations for the watercourses and floodplain areas. A good DEM/DTM accurately describes the elevations of the channels and floodplains by incorporating important features that regulate water movement, such as the channel bottom and channel banks and high grounds such as the roadways and levees.

AHYDTECH has collected all the relevant data required for the hydraulic analysis of the study area including cross-sections of the channels passing through the study area, left and right bank of the channels and floodplains. When geometric data has been developed in RAS Mapper, it automatically used the elevation data derived from the 2021 LiDAR-based DEM data for the 231 cross-sections. Given that the LiDAR-based DEM data is insufficient to represent the bathymetry of the main channels, the elevation data derived from the survey was employed using geometry editor to substitute the main channel portion of the LiDAR-based cross-figure geometric data, for example the cross-section at RS 146 as presented in **Figure 6-5** below. The 'Hybrid' cross section geometric data were generated by making minor adjustments to station elevation data points and other parameters.

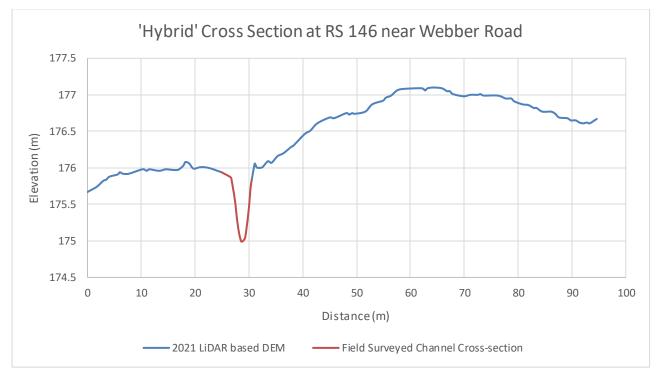


Figure 6-5: Modified Cross Section at RS 146 using LIDAR DEM and Surveyed Data



Cross-section interpolation is necessary to supplement surveyed cross-section data in between two surveyed cross-sections, since the LiDAR DEM data isn't sufficient to represent all the points/sections along a channel within the study area and field survey data of the channel weren't taken at constant interval. During the survey data collection, there were some locations where it was difficult to access due to dense and high vegetation as well as landfills. Since the surveyed cross-section data have been incorporated into the DEM using terrain modification tool in RAS Mapper, cross-section interpolation surface can be computed using RAS Mapper. Interpolation surface in RAS Mapper is constructed from the river centerline, cross- section cutlines, bank lines and edge lines, which is used for interpolating hydraulic model results. **Figure 6-6** shows the cross-section interpolation surface in the RAS Mapper.

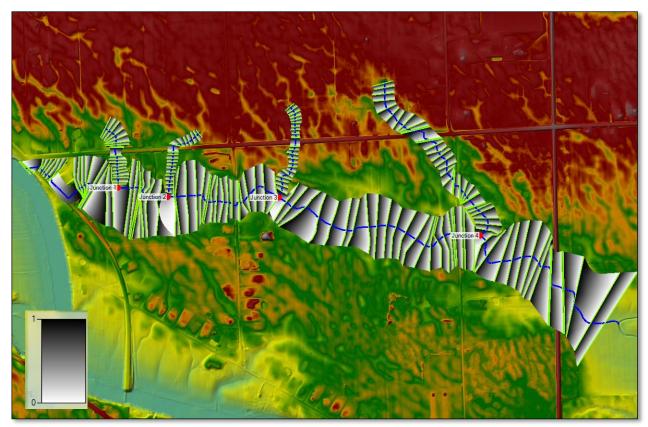


Figure 6-6: Cross-section Interpolation Surface in RAS Mapper

6.3.1.5 MODELING HYDRAULIC STRUCTURES

After entering all the necessary cross-section data, culverts within the study area were added along the channels using 1D hydraulic elements. The study area covers 11 culverts which have been incorporated and simulated as 1D culvert in the model. Dimensions, upstream and downstream conditions, and elevation data of the culverts were collected during the field survey. Culvert barrels were made of Corrugated Steel Pipe (CSP) and most of these are circular in shape. Culvert and road embankments were also included in the model, which were used to refer any area blocking the stream and the roadway. **Figure 6-7** illustrates typical cross-sections of a culvert modeled in HEC-RAS from both upstream and downstream of the culvert.



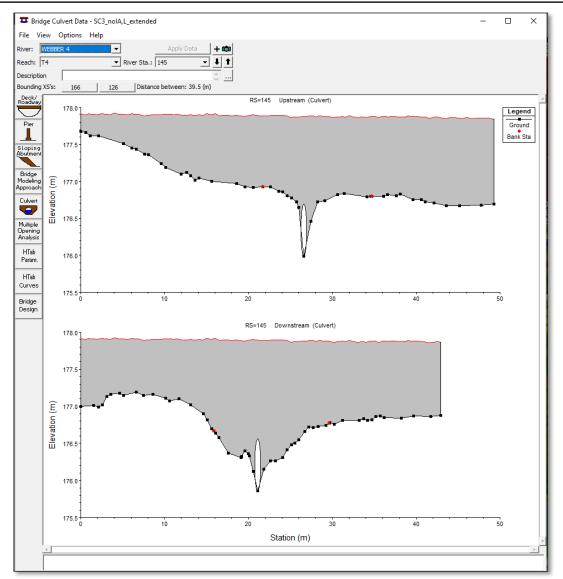


Figure 6-7: Sample profile of a Culvert at Webber Road between RS 126 and RS 166



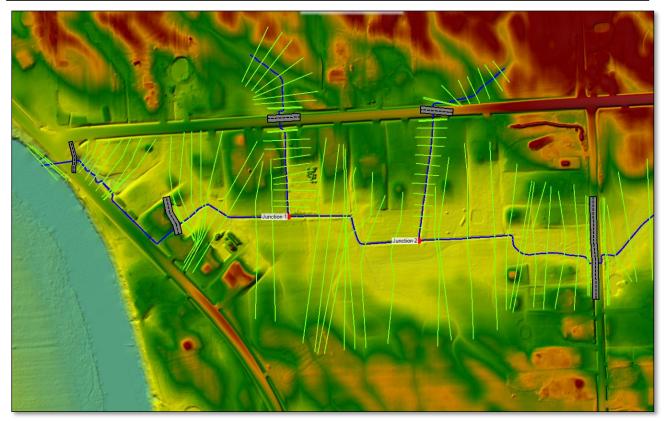


Figure 6-8: Some of the Culverts with Road Decks at the study area

6.3.1.6 MANNING'S ROUGHNESS COEFFICIENT

The accuracy of the simulated water surface levels in hydraulic modeling depends on the parameterization of Manning's roughness coefficient (n). It reflects hydraulic resistance for flow in a river and flood plain. Roughness in the main channel is usually lower than that in the flood plain. It also varies in the flood plain depending on the type of land use/land cover.

Manning's roughness coefficients (n) were determined based on land use and land cover of the study area following the *Technical Guidelines for Flood Hazard Mapping (EWRG, March 2017)*. Manning's n for Corrugated Steel Pipe and Corrugated Plastic Blade Culverts were also determined following the guidelines mentioned. The dominant land use/cover along the left bank and the right bank have been determined and the Manning's n values have been assigned accordingly. **Table 6-1** shows the range of values of Manning's "n" for different land use/cover as per the guidelines.



Onen Chennel	'n'	Calibratio	n Range				
Open Channel	Standards	Minimum	Maximum				
	Overbank						
Woods	0.08	0.04	0.12				
Meadows	0.055	0.035	0.07				
Lawns	0.045	0.03	0.055				
	Channel						
Natural	0.035	0.025	0.045				
Grass	0.03	0.025	0.035				
Natural Rock	0.035	0.025	0.045				
Armour Stone	0.025	0.017	0.03				
Concrete	0.015	0.011	0.017				
Articulated Block	0.02	0.019	0.032				
Gabions	0.025	0.02	0.03				
Wood	0.012	0.011	0.013				
Culvert							
Corrugated Steel Pipe (CSP)	0.024	0.021	0.027				
Corrugated Plastic Pipe (CPP)	0.013	0.011	0.015				

Table 6-1: Manning's	Roughness	Coefficient
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6.4 STEADY FLOW DATA

6.4.1 FLOW VALUES

After inserting all the geometric data into the model, 1D steady flow data were incorporated. Flow values were placed at inlets and flow change locations for 1D steady flow simulation. **Figure 6-9** shows the locations of the Inlet and Junctions for flow simulation and **Table 6-2** shows the simulated flow developed for the 1D Steady Flow Analysis.

HEC-RAS Points	RS at HEC- RAS Model	2-Year Flow (cms)	5-Year Flow (cms)	25-Year Flow (cms)	100-Year Flow (cms)
l1	259	0.214	0.367	0.637	0.882
12	308	0.235	0.403	0.701	0.972
13	383	0.247	0.431	0.757	1.054
l4	790	0.204	0.35	0.605	0.836
J1	420	0.429	0.691	1.136	1.527
J2	2096	0.943	1.437	2.249	2.949
J3	1598	1.832	2.984	4.904	6.632
J4	754	2.921	4.839	8.093	10.533
W1	519	0.431	0.649	0.997	1.291
E1	2250	0.216	0.324	0.499	0.645

Table 6-2: Flow Developed for 1D Steady Flow Analysis



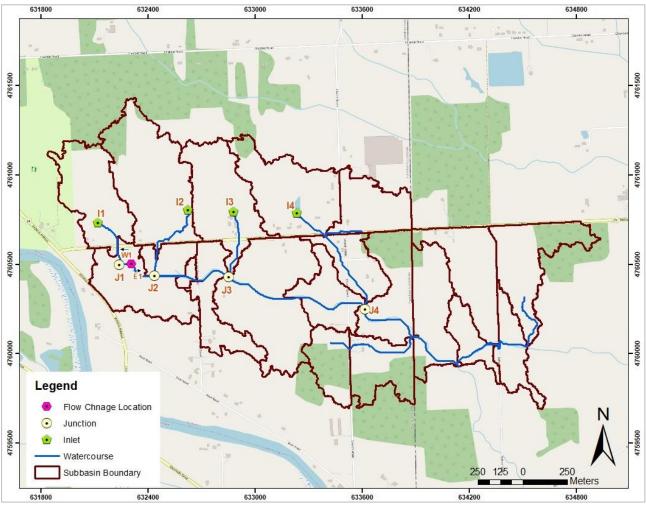


Figure 6-9: Flow Change Locations in HEC-RAS

6.4.2 UPSTREAM BOUNDARY CONDITION

One of the key input parameters of a hydraulic model is the flow at upstream boundaries. The flow of 2, 5, 25 and 100-year return periods were obtained from the event based SWMHYMO model. Normal Depths of the channels were also calculated, and corresponding channel slopes were incorporated into the model. At the junctions, HEC-RAS automatically makes use of flow data (assigned) as upstream boundary conditions.

6.4.3 DOWNSTREAM BOUNDARY CONDITION

It is important that the downstream boundary is far from the project study area to eliminate boundary effect on the hydraulic analysis. When performing hydraulic analysis, Water Surface Elevation is selected as the downstream boundary conditions at the outlets. Since the two outlets of the watercourses are at the Welland River, the known water surface elevation of the river for 100-year return period, 175.06 meters has been used as downstream boundary condition for 100-year return period. For 2-, 5- and 25-year return periods, Normal Depth has been employed as the downstream boundary condition for steady state in this study since the water surface elevation is unknown. Hydrometric gage station was not available within the acceptable limit of the study area. Hence, it



was not possible to incorporate any observed or historical flow or water level data into the model for 2, 5 and 25-Year Return periods.

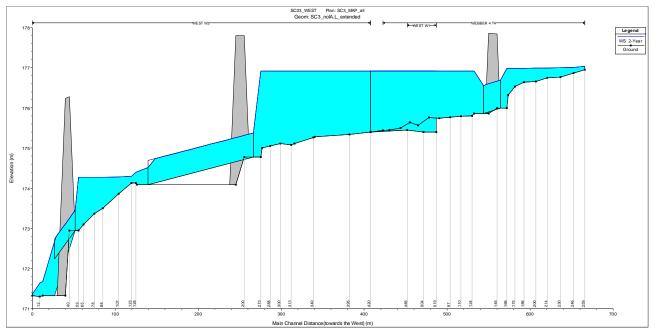
6.5 STEADY FLOW SIMULATION

1D Steady flow simulation has been performed by AHYDTECH to delineate the extent of flooding within the study area and analyze the water surface profiles for different flood scenarios (2, 5, 25 and 100-year) to identify the drainage issues within the study area. Simulations were also performed for different sub-scenarios which were developed for different geometric conditions. The model was run for the existing condition of the study area using RTK data and hydraulic structure data collected during the field survey program.

6.5.1 PROFILE PLOTS

Flow profiles were generated to illustrate the water levels at different river stations of the East and West channels. **Figure 6-10** to **Figure 6-17** show the depth of inundation along the main channels and their associated tributary channels. It has been observed that throughout the West channel the depth increases up to 1.74m for 2-year and 5m for the 100-year flood event near the Welland river over the Victoria Road. The depth is comparatively low at the East channel.

Along the East channel, maximum inundation depth was found to be 1.31m and 1.62m near the Railway Crossing between Church and Balfour Streets, for the 2-year and the 100-year flood conditions.



West Channel

Figure 6-10: Profile Plot generated for West Channel with associated tributary channel (2-Year)



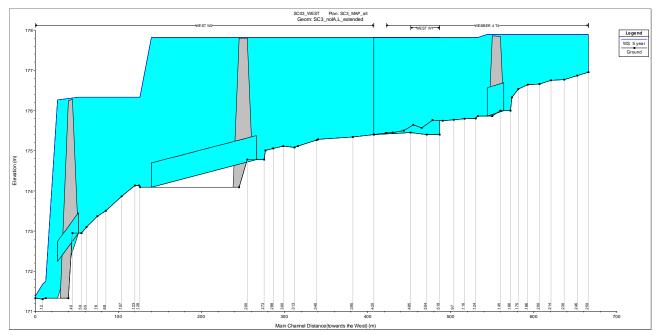


Figure 6-11: Profile Plot generated for West Channel with associated tributary channel (5-Year)

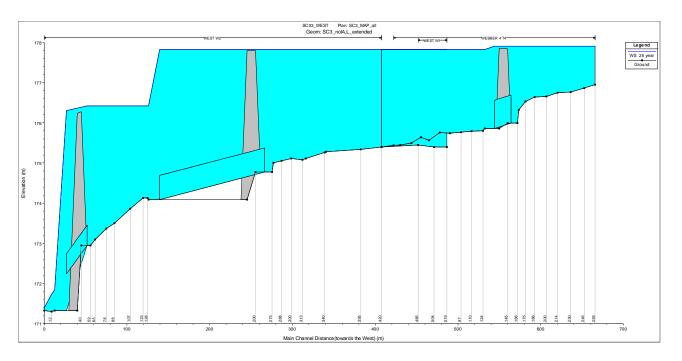


Figure 6-12: Profile Plot generated for West Channel with associated tributary channel (25-Year)



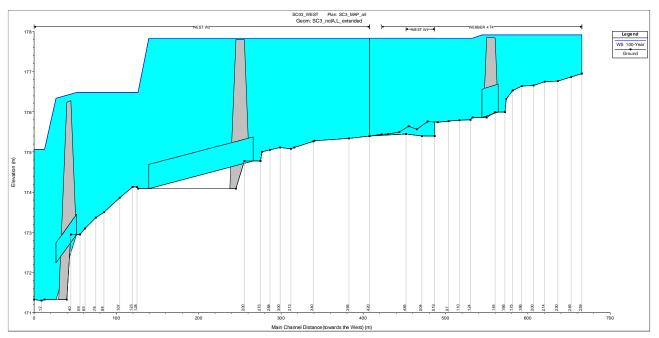
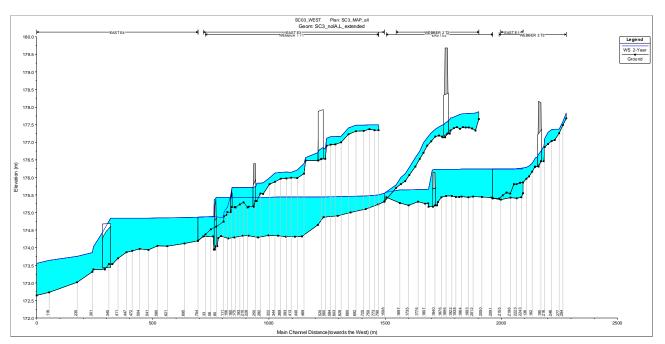
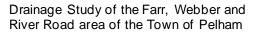


Figure 6-13: Profile Plot generated for West Channel with associated tributary channel (100-Year)



East Channel

Figure 6-14: Profile Plot generated for East Channel with associated tributary channels (2-Year)





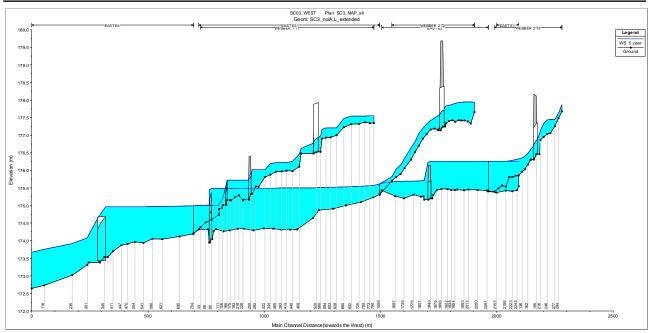


Figure 6-15: Profile Plot generated for East Channel with associated tributary channels (5-Year)

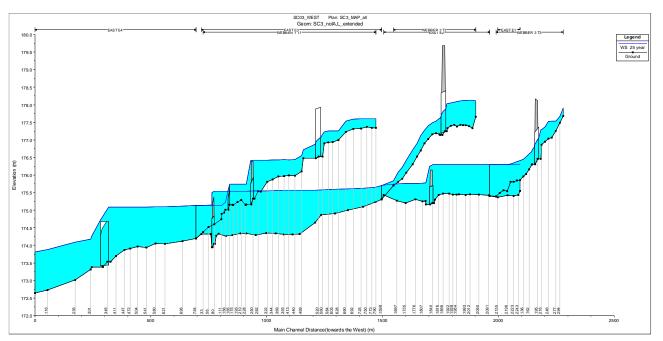


Figure 6-16: Profile Plot generated for East Channel with associated tributary channels (25-Year)



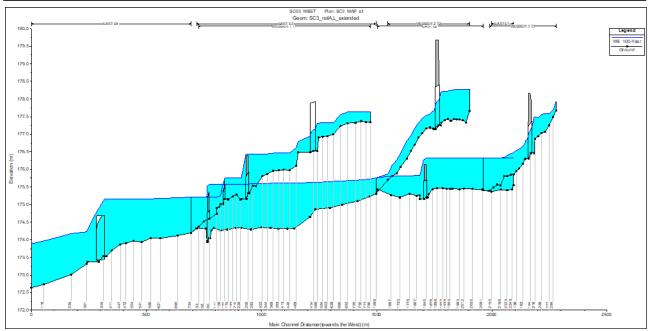


Figure 6-17: Profile Plot generated for East Channel with associated tributary channels (100-Year)

Return Period	Maximum Inundation depth (With respect to existing channel bed elevation) West Channel (m)	Maximum Inundation depth (With respect to existing channel bed elevation) East Channel (m)
2-Year	1.74	1.31
5-Year	4.94	1.43
25-Year	4.97	1.56
100-Year	5.00	1.62

Table 6 3: Inundation Depth with respect to Existing Ground Elevation

6.5.2 ESTIMATED WATER SURFACE PROFILES

The HEC-RAS model was simulated for different flood scenarios. Computed water surface profiles for various flood events with return periods (2-,5-, 25- and 100 year) have been illustrated below from **Figure 6-18** to **Figure 6-21**, for existing condition of the study area.

Analyzing the field condition and survey data, it had been estimated that the direction of flow changes from a certain point located at approximately 350m east of Victoria Road, at the east side of the tributary channel approaching from the most west culvert of the Webber Road. Depending on the change in flow direction, two main channels has been developed where one has been directed towards east and another towards the west in the hydraulic model. Hence, the estimated water surface profiles for different channels, for different flood events and different geometric conditions have been demonstrated for 2, 5, 25 and 100-year return period. Analyzing the results, it has been observed that the maximum inundated water surface elevation is 176.92 meters for 2-year, 177.81 meters for 5-year, 177.82 meters for 25-year and 177.83 for 100-year return period at the channel flowing towards the west. **Table 6-3** shows water maximum and minimum surface elevations found from the hydraulic analysis.



Return Period	Maximum WSE (m)	Minimum WSE (m)
2-Year	176.92	171.36
5-Year	177.81	173.70
25-Year	177.82	173.85
100-Year	177.83	173.94

	Table	6-3:	Water	Surface	Elevations
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The following **Figure 6-18** to **Figure 6-21** illustrates gradual inundation and water surface elevation change for 2, 5, 25 and 100-year return periods.

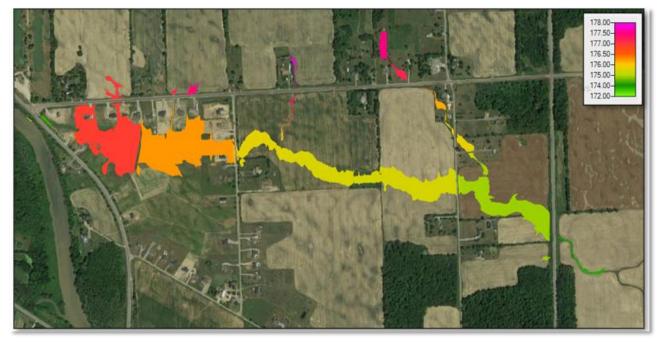


Figure 6-18: Inundated Water Surface Elevation map generated using simulated flow for 2-year return period



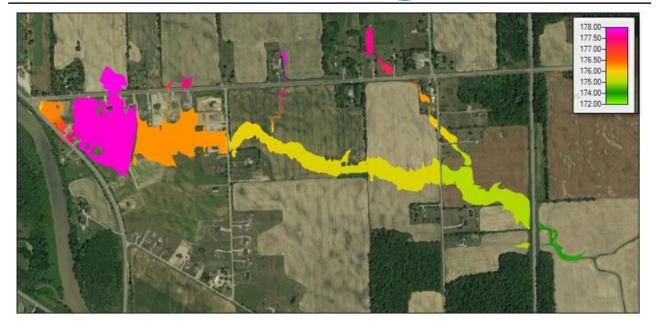


Figure 6-19: Inundated Water Surface Elevation map generated using simulated flow for 5-year return period

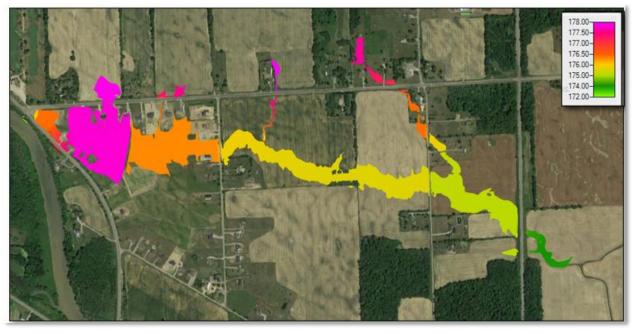


Figure 6-20: Inundated Water Surface Elevation map generated using simulated flow for 25-year return period



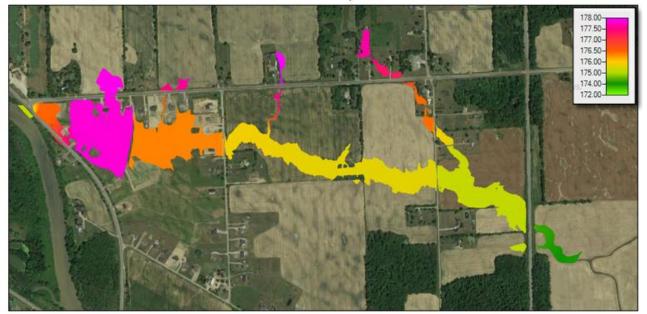


Figure 6-21: Inundated Water Surface Elevation map generated using simulated flow for 100-year return period

6.5.3 DIFFERENCE IN FLOODLINES

Flood lines were computed using RAS Mapper for 2-, 5-, 25- and 100-year flood events. Inundation area for each flood condition have been tabulated below in **Table 6-4**

Return Period	Inundated Area (Existing Condition) (sq.km)
2-Year	0.17
5-Year	0.22
25-Year	0.24
100-Year	0.26

Table 6-4: Inundation Area and Depth for Different Return Periods



6.5.4 BUILDINGS WITHIN THE FLOODPLAIN

AHYDTECH collected Building Footprint from the <u>ODB (Open Database of Buildings)</u>. The layer contains information regarding the buildings collected over a few years throughout the Ontario region. AHYDTECH used the footprints to identify the most vulnerable properties that are under risk of flooding. Model results show that the bounding area of Farr, Webber, Victoria, and River Road has the maximum extent of flooding and inundated water surface elevation is also very high at this area compared to the others segment of the study area. **Figure 6-22** demonstrates the inundation caused by 2-Year and 100-Year flood events including the buildings that fall within those flood extents.

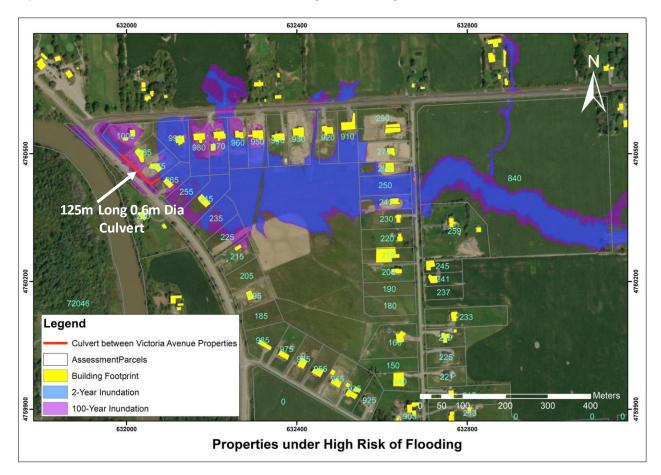


Figure 6-22: Properties within the floodplain near Farr, Webber, and Victoria Road



6.6 HYDRAULIC ANALYSIS AND DRAINAGE AREA MAPPING

AHYDTECH followed applicable technical guidelines to do hydraulic analysis and to produce drainage area mapping products. Simulated inundation map near the Farr, Webber and River Road in the Town of Pelham using HEC-RAS model has been illustrated in **Figure 6-23.** Observing the inundation maps for 2-, 5-, 25- and 100-year flood generated using HEC-RAS model, distinct flooding conditions throughout the study area were noticed. Near the Victoria Road and Webber Road, the extent of inundation appears to be higher, and the residential buildings have been observed to be within the inundation zones. The extent of flooding near the Church Street appears to be moderate. High inundation has also been observed near the Farr Road. At the east side of the Webber Road, there seems to be a minimal degree of inundation. Overall, it can be observed that the 5, 25 and 100-Year flood result causes significant overflow within the study area. In the West channel, there is a 0.6m diameter culvert in between 265 Victoria Avenue and 275 Victoria Avenue properties. This culvert is 125 m long, which runs 35 m in between the two properties and then turns 90 degrees under the ditch along Victoria Avenue the West Channel downstream. This culvert is under sized, which provides backwater effect even for the 2-year flow and flooding in both sides of the watercourse in the West channel.



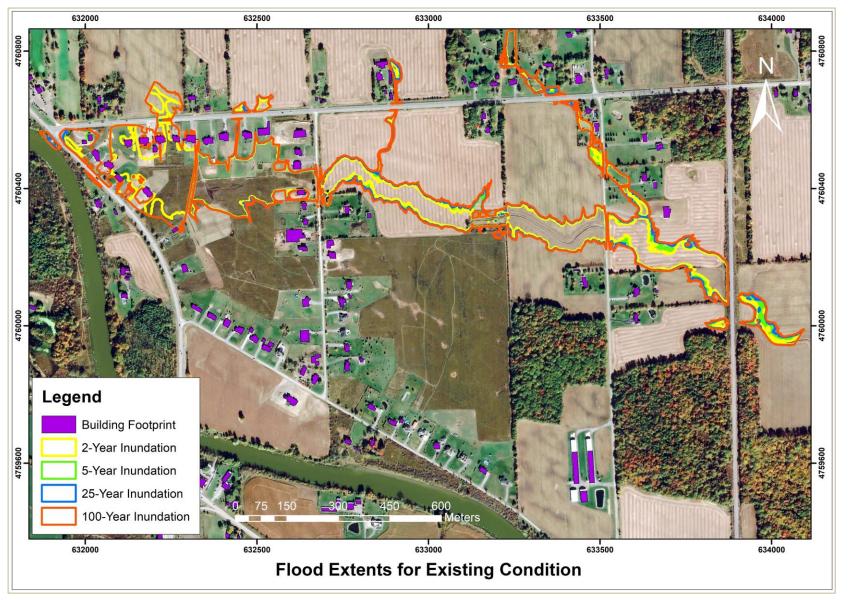


Figure 6-23: Inundation Extent Map for different return periods generated using HEC-RAS



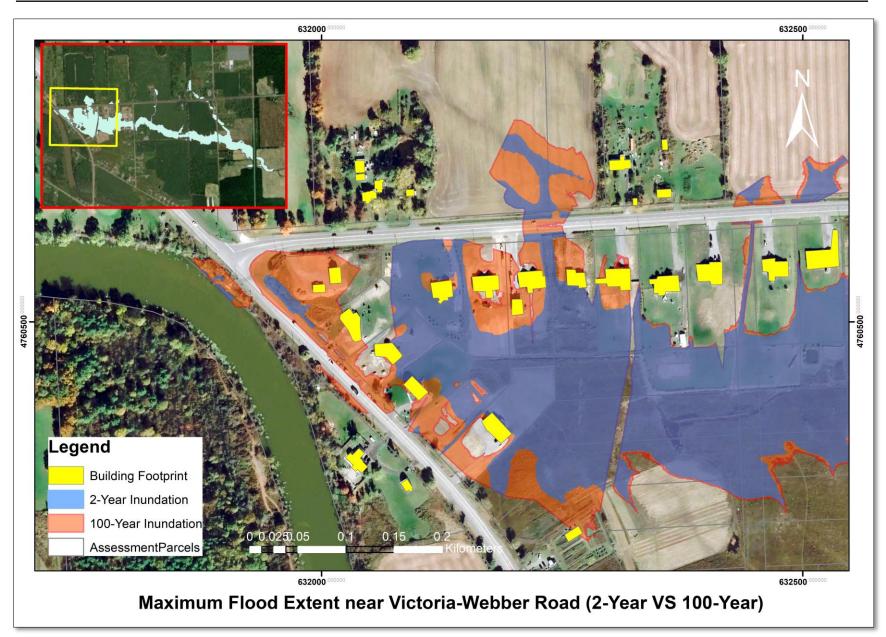


Figure 6-24: Maximum Inundation area delineated using RAS Mapper near Victoria-Webber Road



7 CONCLUSION

An Open House Meeting was held on January 26, 2023, with the presence of stakeholders from the study area, Town, NPCA and AHYDTECH. After analyzing the model results, observations from field assessment, desktop analysis and stakeholder meeting for the study area, it can be stated that the area has extremely poor drainage capacity. Furthermore, the topography of the land is nearly flat; hence, when a rainfall event occurs, stormwater gets entrapped in this area due to poor drainage facilities. Some of the major causes of flooding have been listed below:

- Less capacity of the culverts which causes backwater effects
- Lack of water conveying structures (e.g., Bridges/ Culverts)
- High elevated deck/road with poor drainage facilities
- Alteration of the natural watercourses
- Landfilling
- High and dense vegetation along the channels

AHYDTECH has performed comprehensive analysis on the main drainage issues and findings from the hydrologic and hydraulic analysis has been utilized to find possible measures to mitigate drainage issues based on which a list of recommendations has been offered.

8 **RECOMMENDATIONS**

Analyzing the results of 1D steady flow simulation and inundation maps, it has been noticed that a considerable number of properties falls within the area of extreme flooding near Victoria Road. The <u>NPCA Policy Document</u>: Policies for the Administration of Ontario Regulation 155/06 and the Planning Act, specifies several development setbacks associated with flooding and alteration of watercourses. Following those guidelines before planning and construction a new building or any advancement of land near the floodplain, can eliminate further extension of flood risk within the study area. Primarily assessing the drainage issues, some mitigation options have been discussed below:

- Repair and reconstruction of the existing culverts
- Increased number of barrels within the culverts as well as increased size of the culverts
- Construction of new stormwater conveying structures
- Removal of unwanted plants from the watercourses, inlets, and outlets of the structures

Since, the study area is situated very close to the bank of the Welland River, new and enlarged hydraulic structures and channels can be constructed in future to convey stormwater from the study area to the river. AHYDTECH has conducted detail analysis on the study area and specifically recommended some mitigation alternatives to eliminate flooding near the properties situated close to the intersection of Victoria and Webber Road where the channel meets the Welland River. This portion of the study area experiences frequent inundation, and the area is very prone to flooding for future extreme flood events which has been observed from the hydraulic analysis.

8.1 PROPOSED MITIGATION ALTERNATIVES

According to the aforementioned recommended mitigation options, detail analyses for some alternative options have been performed to assess the proposed specific alternative mitigation



options. Assessing the existing model results it has been observed that the bounding area of Farr, Webber, Victoria, and River Road at the west side of project site falls within the high flood risk zone. AHYDTECH assessed three alternative options to eliminate flooding issues which have been discussed below:

8.1.1 ALTERNATIVE OPTION 1

The existing culvert under Victoria Road should be sized for the 50-year storm event to minimize flooding because of backwater under major storm events.

AHYDTECH performed a detailed analysis on water depth and water surface elevation as well as inundation extent increasing the size of the culvert under Victoria Road that conveys water from the west channel to Welland River. Assessing the field survey data, the measured diameter of the culvert at inlet was found to be 0.5m. The culvert size does not allow the water to flow through the culvert and backwater effect is observed. Besides, model results showed that water accumulates at the inlet of the culvert and causes inundation and flow stagnation in the study area. Backwater effect in the surrounding area is also flooding the nearby properties for different flood scenarios.

Different culvert diameter (0.6m, 0.8m and 1m) were used to check and assess the flooding extents. When the size of the culvert has been increased to 1m diameter, no flow stagnation and inundation occurs in the properties which had been flooded previously. The hydraulic analysis shows that the culvert has capacity to convey up to 25-year return period storm events. The culvert cannot convey the 100-year flow, which can cause flooding in the area. Since, the 100-year water surface elevation of Welland River is 175.06m, which is higher than the culvert upstream invert elevation of 173.5m, it is very natural to anticipate that the culvert will be submerged under water for the 100-year storm event for the Welland river watershed. Therefore, 100-Year flood scenario has not been incorporated in the map since it causes same inundation for every scenario.

8.1.2 ALTERNATIVE OPTION 2

An overland flow channel should be constructed passing in between 285 Victoria Ave. and 990 Webber Road properties, along the historical/original channel from the existing channel. The overflow channel will by-pass/away from any septic tank. The channel should be designed for the major event storms. A detailed natural channel design should be prepared for the overland flow channel including for the channel in the study area to provide a positive flow gradient from Farr Road to Victoria Avenue outlet.

Two flow scenarios have been developed which is illustrated below, where F1 and F2 denotes the contributing flows and the area considered for the purpose.

- F1: Flow from the north of Webber Road (i.e., flow from two subbasins namely SB01_1 and SB02_1) flows through a channel (or a roadside ditch). It is assumed that the flow coming from these tributaries will discharge directly into the Welland River.
- F2: Flow generated by an area bounded by Victoria Avenue, Webber Road, and Farr Street excluding the contributing flows from north of Webber Road (i.e., flow from two subbasins namely SB01_1 and SB02_1). The flow gradient from Farr Road to Victoria Road where the channel has been redesigned with improved conveyance capacity, which will accommodate the flow to pass gently along the channel to Welland River without causing significant flooding.



A new channel has been added with the existing channel at the upstream of Victoria Road where the existing 125m culvert runs perpendicularly from the property 265 to 285 Victoria Avenue. The new channel will run between the properties at 1000 and 285 Victoria Avenue. Flows from F2 scenario has been considered here and is assumed to run entirely towards the west direction. A bifurcation has been created at 200m east of Victoria Road to incorporate the overland flow channel which has been designed to carry flow to the downstream culvert under Victoria Road to minimize flooding/ drainage issues. The new channel meets again the existing channel with 125m culvert at a junction immediate upstream of the Victoria Road culvert. This scenario has been developed based on the fact that the size of the culvert under Victoria Road is 1m. This is because the existing size (currently 0.5m diameter) of the culvert is acting as an obstruction and causing backwater pressure than conveying flow to Welland River caused by 2-, 5-, 25- and 100-Year flood scenarios which has been discussed in **Section 8.1.1**.

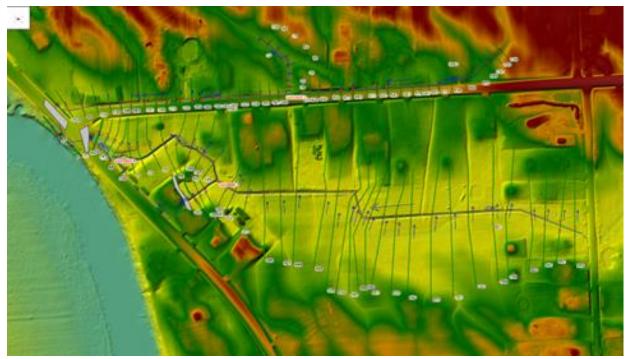


Figure 8-1: Schematic of the Geometry developed in HEC-RAS for the above scenario

The distribution of flow along the two channels incorporated through the bifurcation were estimated based on a trial-and-error process. Two channels, one with the existing 125 m culvert and other which has been designed to convey the flow that exceeds the 125 m culvert capacity. Moreover, it has also been examined whether the channel with culvert has the capacity to convey maximum portion of the generated flow or not. It has been observed that the culvert has the capacity to convey less than 20% of flow generated for the corresponding catchment where the newly generated channel can capacitate 100% of the flow without causing any significant flooding in the surrounding properties. Based on this observation, two different sub-scenarios have been discussed below according to the flow distribution and capacity of those two channels.

It should be noted that, inundation caused by the 100-Year return period has not been incorporated into the scenarios. This is because, the water surface elevation of the Welland River for 100-Year



return period was found to be 175.06m, which is higher compared to the existing upstream invert elevation of the culvert under Victoria Road. Therefore, the entire channel faces inundation due to backwater caused by the 100-Year water level of the Welland River.

SCENARIO 1: 20% OF THE FLOW CONVEYED BY THE CHANNEL WITH 125M CULVERT

When the existing portion of the bifurcated channel with the 125m culvert is subjected to convey 20% of the flow obtained in F2 scenario, it has been observed that the culvert causes backwater effect throughout the entire channel up until the Farr Road for 25-Year return period. As a result, the entire channel seems to become flooded, and the depth of water also increases despite having a very minimum flow for the 25-Year return period. For the 2 and 5-Year return period flood scenarios, no backwater effect has been observed. The following **Figure 8-2** illustrates the extents of inundation for the 2, 5, 25 and 50-year return period for this scenario. The severity of flooding increases when more than 20% of the flow is directed to this channel and the entire area gets inundated due to the backwater caused by the 125m culvert.

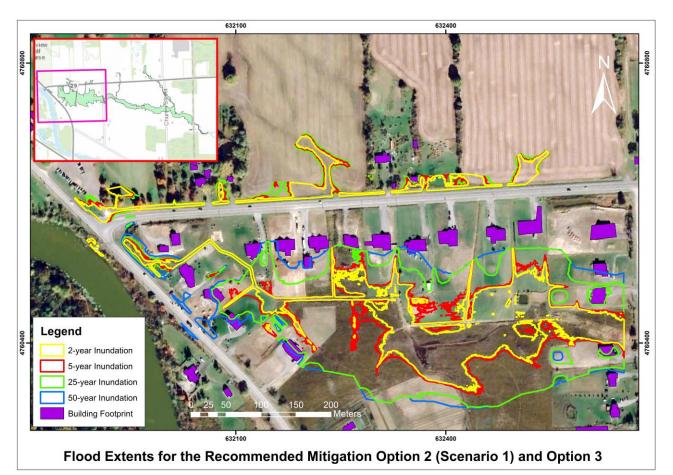


Figure 8-2: Flood Extents for the Recommended Mitigation Option 2(Scenario 1) and Option 3

SCENARIO 2: NO FLOW CONVEYED BY THE CHANNEL OF 125M CULVERT

This scenario considers that no flow is conveyed by the channel with 125 m culvert, and instead the entire flow is directed through the new proposed channel. Through this scenario it has been seen that, no inundation occurs within the area for 2, 5, 25 and 50-year flood scenarios. The new channel which runs between the properties at 1000 and 285 Victoria Avenue has the capacity to convey 100%

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of the flow without causing any flooding issues. This indicates that the backwater caused by the 125m culvert has the most contribution while causing inundation upstream, and the 125m culvert significantly increases the depth of water along the inundated channel. Figure 8-3 illustrates the extent of flooding when 125m culvert does not convey any flow. It can be observed comparing Figure 8-2 and Figure 8-3 that there is substantial reduction in inundation extent when the 125m culvert is excluded. Hence, it is recommended either to close the channel passing between 265 to 285 Victoria Avenue and diverting the entire flow to the new channel passing through the 1000 and 285 Victoria Avenue or to increase the diameter of the 125m culvert such that it conveys a considerable portion of flow without causing any backwater effect throughout the channel.

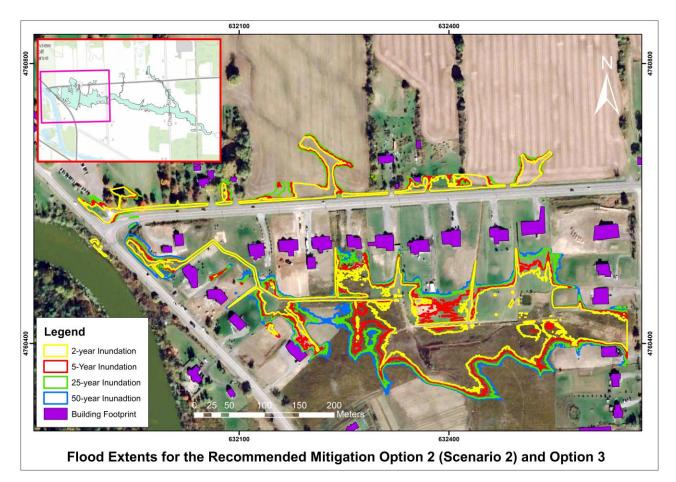


Figure 8-3: Flood Extents for the Recommended Mitigation Option 2(Scenario 2) and Option 3

8.1.3 ALTERNATIVE OPTION 3

At final detailed design, the Region and Town should consider a diversion of some or all of the stormwater from the tributaries that originate north of Webber Road and convey the flows easterly along the Webber Road ditches to Victoria Ave and the Welland River. The design would need to confirm that the ditch system has the capacity to convey the design flow without impacting the existing property owners.

AHYDTECH performed hydraulic analysis for both the Alternative Option 2 (Scenario 1 and Scenario 2) and Alternative Option 3 within a single model. In this alternative option, it has been assumed that



two of the tributaries which were originated from the north of Webber Road and conveyed flow to the main channel (**Figure 6-3**) south of Webber Road, will be diverted to Welland River through a roadside ditch north of Webber Road. The main reason of this flow diversion is to reduce flooding in the study area of Farr, Webber, Victoria, and River Road. **Figure 8-2** and **Figure 8-3** demonstrates the diversion of the tributaries north of Webber Road. The figures also demonstrate extents of flooding along the north ditch for different flood events. This alternative option notably eliminates flooding and reduce the extent of inundation within the project study area.

This study would like to forward following recommendations to mitigate the flooding in the project area:

- 1. Since the recommendations for improved drainage impacts more than one property, the Municipality and the Region should be responsible for future maintenance of the drainage system
- 2. The existing 125 m long culvert can be kept providing drainage for more frequent events. Proper maintenance of this culvert through visual inspection can confirm the integrity and add a manhole at the turn to facilitate cleaning.
- 3. The proposed diversion channel needs to be constructed by the Municipality as a capital works project as they permitted earthworks to fill in the original watercourse through the development process.
- 4. Two options are possible for the municipality to maintain the proposed new channel and the 125 m culvert. One, the municipality would take an easement over the lands for future maintenance of the 125m culvert. Two, the proposed channel and culvert will be incorporated into a drain under the Drainage Act. The property owners need to provide access/easement of the lands. However, if future maintenance is required the costs would be assessed to all upstream landowners.
- 5. The channel should be kept fence and structure free to permit infrequent storms to pass.

9 LIMITATIONS

Though a detail study has been performed to investigate the main drainage issues for the study area, some limitations were found which affected on the precisions of the model outputs such as:

Downstream Boundary Conditions

The downstream boundary condition used in the hydraulic model was the slope of the channel for 2, 5 and 25-Year return periods except for the 100-Year return period. Known water surface elevation of the Welland River for 100-Year return period (provided by the Town) has been used as downstream boundary condition. For 2-, 5- and 25-year, normal depth was used because, the Welland River near Farr, Webber and River Road do not have any stream flow gauge stations.

Model calibration

Both the hydrologic and hydraulic model requires gage station data for the purpose of calibration. Since no gage station have been found within the acceptable limit outside of the study area, it was not possible to calibrate the models. Thus, the hydrologic model developed is an uncalibrated one.

• 2D Hydraulic Model

2D hydraulic model could give more precise results regarding the flow diversion location, channel direction at different locations. Even if a flow path changes during an event, 2D hydraulic model can capture and handle flow diversion and flow change location.



10 REFERENCES

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Appendix A: Intensity-Duration Frequency (IDF) Curve

➢Ontario IDF CURVE LOOKUP

Active coordinate

42° 58' 45" N, 79° 22' 14" W (42.979167,-79.370833) Retrieved: Mon, 19 Sep 2022 06:13:48 GMT



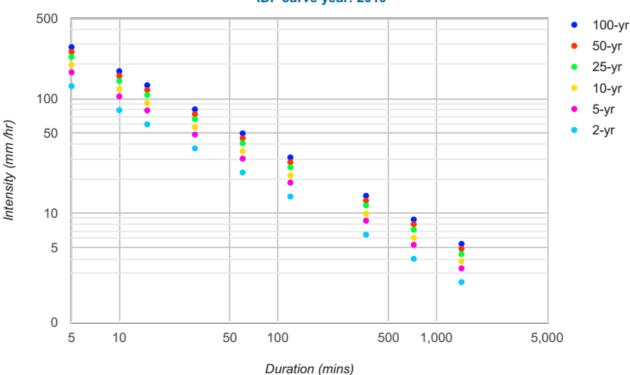
Location summary

These are the locations in the selection.

IDF Curve: 42° 58' 45" N, 79° 22' 14" W (42.979167,-79.370833)

Results

An IDF curve was found.



Coordinate: 42.979167, -79.370833 IDF curve year: 2010

Coefficient summary

IDF Curve: 42° 58' 45" N, 79° 22' 14" W (42.979167,-79.370833)

Retrieved: Mon, 19 Sep 2022 06:13:48 GMT

Data year: 2010

IDF curve year: 2010

Return period	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
Α	22.7	30.0	34.8	40.9	45.3	49.8
В	-0.699	-0.699	-0.699	-0.699	-0.699	-0.699

Statistics

Rainfall intensity (mm hr⁻¹)

Duration	5-min	10-min	15-min	30-min	1-hr	2-hr	6-hr	12-hr	24-hr
2-yr	128.9	79.4	59.8	36.9	22.7	14.0	6.5	4.0	2.5
5-yr	170.4	105.0	79.1	48.7	30.0	18.5	8.6	5.3	3.3
10-yr	197.7	121.8	91.7	56.5	34.8	21.4	9.9	6.1	3.8
25-yr	232.3	143.1	107.8	66.4	40.9	25.2	11.7	7.2	4.4
50-yr	257.3	158.5	119.4	73.5	45.3	27.9	12.9	8.0	4.9
100-yr	282.9	174.2	131.2	80.8	49.8	30.7	14.2	8.8	5.4

Rainfall depth (mm)

Duration	5-min	10-min	15-min	30-min	1-hr	2-hr	6-hr	12-hr	24-hr
2-yr	10.7	13.2	15.0	18.4	22.7	28.0	38.9	48.0	59.1
5-yr	14.2	17.5	19.8	24.4	30.0	37.0	51.4	63.4	78.1
10-yr	16.5	20.3	22.9	28.2	34.8	42.9	59.7	73.5	90.6
25-yr	19.4	23.9	26.9	33.2	40.9	50.4	70.1	86.4	106.5
50-yr	21.4	26.4	29.8	36.8	45.3	55.8	77.7	95.7	117.9
100-yr	23.6	29.0	32.8	40.4	49.8	61.4	85.4	105.2	129.6

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Appendix B: Field Survey



M//// 100000 - 1944 Legend Topographic Data Study Area Meters 125 250

Topographic Data Collections

Figure B1: Collection of topograpic data



Hydraulic Structure Survey

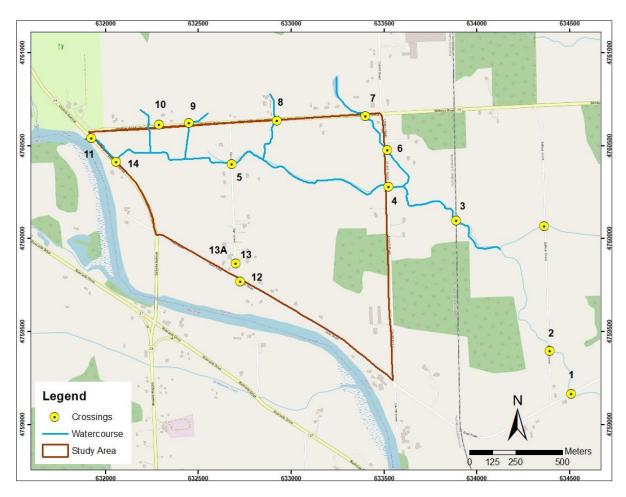


Figure B2: Locations of Crossings within the Study Area



Culvert no.	Road	Culvert Type	Shape	Measurements			
Cuivent no.	Rudu	Culvert Type	Shape	Width (m)	Height (m)	Dia (m)	
1	River Road	Box Culvert	Rectangular	2.45	2.2		
2	Balfour St.	2*CSP	Circular			2.1	
3	Railway	1*CSP	Circular			1.25	
4	Church St	1*CSP	Eliptical	1.15	0.8		
5	Farr St	1*CSP	Circular			0.6	
6	Church St 2	1* Plastic Blade Culvert (new)	Circular			0.6	
7	Webber#1	1*CSP	Circular			1.4	
8	Webber#2	1*CSP	Circular			1.15	
9	Webber#3	1*CSP	Circular			0.9	
10	Webber#4	1*CSP	Circular			0.7	
11	Victoria- Webber	1*CSP	Circular			0.5~0.9	
12	River Road 2	1*CSP	Circular			0.45	
13	Farr St 2	1*CSP	Circular			0.65	
13A	Farr Rd-Ditch	1*CSP	Circular			0.45	
14	Victoria Avenue Properties	1*CSP	Circular			0.6	



Appendix C: Hydrological Model Parameters and SWMHYMO ID



Table C1: Hydrological Model Parameters for 2-,5-,25- and 100-year Return Period Storm Events

Subbasin	Time to Peak (hr)	Area (hector)	Channel Slope (%)	CN Value	Initial Abstraction (mm)
SB01_1	0.869	17.36	0.42	70	7.44
SB01_2	0.701	15.56	0.1	80	7.00
SB02_1	1.444	27.50	0.66	68	7.12
SB02_2	0.461	4.75	0.1	82	7.00
SB03_1	0.212	1.14	0.1	82	7.75
SB03_2	0.621	10.92	0.1	69	8.32
SB04	0.786	19.72	0.1	70	8.51
SB05_1	0.575	29.50	0.1	68	7.16
SB05_2	1.306	10.39	0.02	70	7.35
SB05_3	1.159	8.51	0.02	65	9.23
SB06	1.350	21.20	0.105	71	7.92
SB07	1.737	11.36	0.105	68	7.15
SB08	0.499	8.98	0.5	80	6.75
SB09	0.568	14.34	0.1	73	8.38
SB10	0.729	11.38	0.48	72	8.97
SB11	0.083	14.81	0.1	78	7.60
SB12	0.459	6.02	0.1	78	7.35
SB13	0.117	0.07	0.1	78	7.35
SB14	0.607	15.85	0.1	78	7.34
SB15	0.543	7.95	0.75	78	7.35
SB16	1.297	16.71	0.61	78	7.35



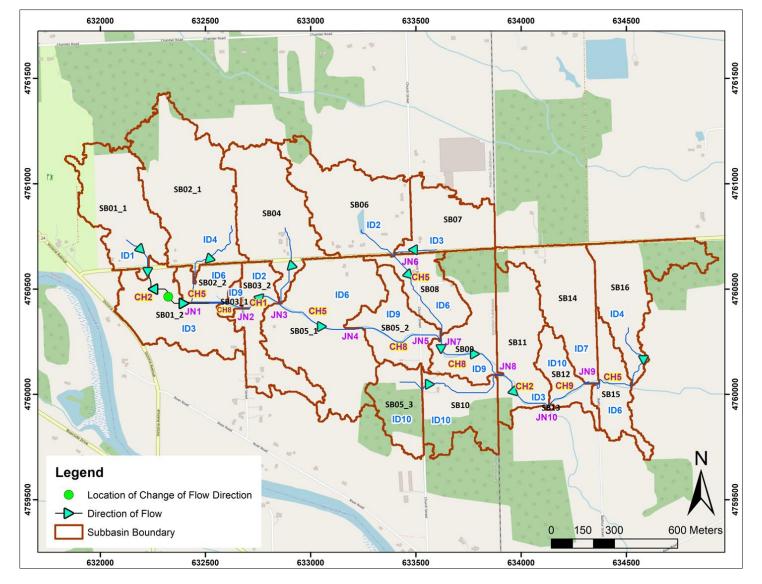


Figure C1: SWMHYMO IDs



Appendix D: SWMHYMO Input Files



2-year Return Period Storm Event

2 Metric units *# Project Name: [Pelham] Project Number: [6HH] *# Date : December 27, 2022 *# Modeller : [Dr. Bahar SM, P. Geo.(Ltd), P. Eng.] : [AHYDTECH Geomorphic Ltd., 22 Zecca Drive, Guelph, ON, N1L1T1] *# Company *# License # : 3556411 TZERO=[0.0], METOUT=[2], NSTORM=[0], NRUN=[0] START *응 [] <--storm filename, one per line for NSTORM time STORM FILENAME=["2SCSToP.STM"] READ STORM *8-----| ID=[1], NHYD=["SB01-1"], DT=[5]min, AREA=[17.36](ha), CALIB NASHYD DWF=[0](cms), CN/C=[70], IA=[7.44](mm),N = [3], TP = [0.869] hrs, IDout=[2], NHYD=["CH SB1-2"], IDin=[1], ROUTE CHANNEL RDT=[5](min), CHLGTH=[286.85] (m), CHSLOPE=[0.1] (%), FPSLOPE=[0.1](%), SECNUM=[1.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,6.3 -0.035,9.8 0.055,15.8] (DISTANCE (m), ELEVATION (m)) = [0, 177.19][6.3, 175.95] [7.8,175.82] [9.8,175.8] [11.2,176.3] [15.8,177.11] *----- SB01-2------ | ID=[3], NHYD=["SB01-2"], DT=[1] (min), AREA=[15.56] (ha), CALIB STANDHYD XIMP=[0.35], TIMP=[0.50], DWF=[0.0](cms), LOSS=[2], SCS curve number CN=[80], Pervious surfaces: IAper=[5.5] (mm), SLPP=[0.4] (%), LGP=[50.15](m), MNP=[0.25], SCP=[0.00](min), Impervious surfaces: IAimp=[1.5] (mm), SLPI=[0.5] (%), LGI=[150.51] (m), MNI=[0.013], SCI=[0.00] (min), RAINFALL=[, , , ,] (mm/hr) , END=-1 *------I ID=[4], NHYD=["SB02-1"], DT=[5]min, AREA=[27.50](ha), CALIB NASHYD DWF=[0](cms), CN/C=[68], IA=[7.12](mm), N=[3], TP=[1.444]hrs, RAINFALL=[, , , ,](mm/hr), END=-1 ROUTE CHANNEL IDout=[5], NHYD=["CH SB2-2a"], IDin=[4], RDT = [1] (min),CHLGTH=[91.31] (m), CHSLOPE=[0.1] (%), FPSLOPE=[0.1](%), SECNUM=[2.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,7.2 -0.035,9.7 0.055,17.2] (DISTANCE (m), ELEVATION (m)) = [3.2, 176.73] [7.2,176.53] [8.7,175.95] [9.7, 175.86]



[10.7,176.15] [17.2,176.85] ID=[6], NHYD=["SB02-2"], DT=[1] (min), AREA=[4.75] (ha), CALIB STANDHYD XIMP=[0.60], TIMP=[0.80], DWF=[0.0](cms), LOSS=[2], SCS curve number CN=[82], Pervious surfaces: IAper=[5.5](mm), SLPP=[0.6](%), LGP=[90.57](m), MNP=[0.25], SCP=[0.00](min), Impervious surfaces: IAimp=[1.5](mm), SLPI=[0.5](%), LGI=[30.2] (m), MNI=[0.013], SCI=[0.00] (min), RAINFALL=[, , , ,] (mm/hr) , END=-1 IDsum=[7], NHYD=["JN_1"], IDs to add=[2,3,5,6] ADD HYD ROUTE CHANNEL IDout=[8], NHYD=["CH SB2-3"], IDin=[7], RDT=[1](min), CHLGTH=[285.25] (m), CHSLOPE=[0.1](%), FPSLOPE=[0.1](%), SECNUM=[3.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,6.8 -0.035,9.8 0.055,15.8] (DISTANCE (m), ELEVATION (m)) = [0, 177.19][6.8,175.95] [7.8,175.82] [10.1,175.80] [12.3,176.33] [15.8,177.11] ID=[9], NHYD=["SB01-2"], DT=[1] (min), AREA=[1.14] (ha), CALIB STANDHYD XIMP=[0.35], TIMP=[0.50], DWF=[0.0](cms), LOSS=[2], SCS curve number CN=[82], Pervious surfaces: IAper=[5.0](mm), SLPP=[0.5](%), LGP=[64.12](m), MNP=[0.25], SCP=[0.00](min), Impervious surfaces: IAimp=[2.75](mm), SLPI=[0.3](%), LGI=[30](m), MNI=[0.013], SCI=[0.00](min), RAINFALL=[, , , ,](mm/hr) , END=-1 IDsum=[10], NHYD=["JN 2"], IDs to add=[8,9] ADD HYD *8-----|-----| IDout=[1], NHYD=["CH SB3-2"], IDin=[10], ROUTE CHANNEL RDT=[1](min), CHLGTH=[179.28] (m), CHSLOPE=[0.1] (%), FPSLOPE=[0.1](%), SECNUM = [4.1],NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,6.8 -0.035,9.8 0.055,15.8] (DISTANCE (m), ELEVATION (m)) = [0, 177.19][6.8,175.95] [7.8,175.82] [10.1,175.80] [12.3,176.33] [15.8,177.11] ----|-----sB03-2-----ID=[2], NHYD=["SB03-2"], DT=[5]min, AREA=[10.92](ha), CALIB NASHYD DWF=[0](cms), CN/C=[69], IA=[8.32](mm), N=[3], TP=[0.621]hrs, RAINFALL=[, , , ,] (mm/hr), END=-1 ID=[3], NHYD=["SB04"], DT=[5]min, AREA=[19.72](ha), CALIB NASHYD DWF=[0](cms), CN/C=[70], IA=[8.51](mm), N=[3], TP=[.786] hrs,



	RAINFALL=[, , , ,] (mm/hr), END=-1
	 JN 3
ADD HYD	IDsum=[4], NHYD=["JN_3"], IDs to add=[1,2,3]
ROUTE CHANNEL	<pre>IDout=[5], NHYD=["CH_SB5 1 IDout=[5], NHYD=["CH_SB5-1"], IDin=[4], RDT=[1](min), CHLGTH=[451.02](m), CHSLOPE=[0.1](%), FPSLOPE=[0.1](%), SECNUM=[5.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,10.7 -0.035,25.1 0.055,34.5] (DISTANCE (m), ELEVATION (m))=[3.30,176.73] [10.7,175.93] [18.7,175.53] [25.1,175.95] [30.1,176.15] [34.5,176.85]</pre>
CALIB NASHYD	<pre>ID=[6], NHYD=["SB05-1"], DT=[5]min, AREA=[29.50](ha), DWF=[0](cms), CN/C=[68], IA=[7.16](mm), N=[3], TP=[0.575]hrs,</pre>
*%	RAINFALL=[, , , ,] (mm/hr), END=-1
*%	JN 4
ADD HYD	IDsum=[7], NHYD=["JN 4"], IDs to add=[5,6]
ROUTE CHANNEL	<pre>IDout=[8], NHYD=["CH_SB5-2"], IDin=[7], RDT=[1](min), CHLGTH=[429.36](m), CHSLOPE=[0.02](%), FPSLOPE=[0.02](%), SECNUM=[6.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,10.7 -0.035,25.1 0.055,34.5] (DISTANCE (m), ELEVATION (m))=[3.30,176.73] [10.7,175.93] [18.7,175.53] [25.1,175.95] [30.1,176.15] [34.5,176.85]</pre>
CALIB NASHYD	<pre>ID=[9], NHYD=["SB05-2"], DT=[5]min, AREA=[10.39](ha), DWF=[0](cms), CN/C=[70], IA=[7.35](mm), N=[3], TP=[1.306]hrs, RAINFALL=[,,,,](mm/hr), END=-1</pre>
CALIB NASHYD	<pre>ISB05-3</pre>
	 IDsum=[1], NHYD=["JN_5"], IDs to add=[8,9,10] SB06
CALIB NASHYD	<pre>ID=[2], NHYD=["SB06"], DT=[5]min, AREA=[21.20](ha), DWF=[0](cms), CN/C=[71], IA=[7.92](mm), N=[3], TP=[1.350]hrs, RAINFALL=[, , , ,](mm/hr), END=-1</pre>
CALIB NASHYD	<pre>ID=[3], NHYD=["SB07"], DT=[5]min, AREA=[11.36](ha), DWF=[0](cms), CN/C=[68], IA=[7.15](mm), N=[3], TP=[1.737]hrs, RAINFALL=[, , , ,](mm/hr), END=-1</pre>
	 JN_6
	_



ADD HYD *%	IDsum=[4], NHYD=["JN_6"], IDs to add=[2,3]
ROUTE CHANNEL	<pre>IDout=[5], NHYD=["CH_SB8"], IDin=[4], RDT=[5](min), CHLGTH=[490.44](m), CHSLOPE=[0.5](%), FPSLOPE=[0.5](%), SECNUM=[7.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,6.8 -0.035,10.1 0.055,15.8] (DISTANCE (m), ELEVATION (m))=[4.7,176.80] [6.8,175.95] [8.2,175.82] [10.1,175.97] [12.3,176.33] [15.8,177.01]</pre>
*%CALIB NASHYD	<pre></pre>
0	
ADD HYD	IDsum=[7], NHYD=["JN 7"], IDs to add=[1,5,6]
*%ROUTE CHANNEL	
CALIB NASHYD	<pre>ID=[9], NHYD=["SB09"], DT=[5]min, AREA=[14.34](ha), DWF=[0](cms), CN/C=[73], IA=[8.38](mm), N=[3], TP=[0.568]hrs, RAINFALL=[, , , ,](mm/hr), END=-1</pre>
* CALIB NASHYD *%	<pre>ID=[10], NHYD=["SB10"], DT=[5]min, AREA=[11.38](ha), DWF=[0](cms), CN/C=[72], IA=[8.97](mm), N=[3], TP=[0.729]hrs, RAINFALL=[, , , ,](mm/hr), END=-1</pre>
	 JN 8
ADD HYD	$IDsum=[1], NHYD=["JN_8"], IDs to add=[8,9,10]$
*%ROUTE CHANNEL	
	SB11
CALIB NASHYD	<pre>ID=[3], NHYD=["SB11"], DT=[1]min, AREA=[14.81](ha),</pre>



	DWF=[0](cms), CN/C=[78], IA=[7.6](mm), N=[3], TP=[0.083]hrs,
* %	RAINFALL=[, , , ,] (mm/hr), END=-1
CALIB NASHYD	<pre>ID=[4], NHYD=["SB16"], DT=[5]min, AREA=[16.71](ha), DWF=[0](cms), CN/C=[78], IA=[7.35](mm), N=[3], TP=[1.297]hrs, RAINFALL=[, , , ,](mm/hr), END=-1</pre>
*%	
ROUTE CHANNEL	<pre>IDout=[5], NHYD=["CH_SB15"], IDin=[4], RDT=[5](min), CHLGTH=[298.57](m), CHSLOPE=[0.75](%), FPSLOPE=[0.75](%), SECNUM=[10.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,16.7 -0.035,27.5 0.055,40.2] (DISTANCE (m), ELEVATION (m))=[8.8,175.65] [16.7,175.36] [22.8,175.22] [27.5,175.29] [35.5,175.52] [40.2,175.65]</pre>
*%	SB15SB15
	<pre>ID=[6], NHYD=["SB15"], DT=[5]min, AREA=[7.95](ha), DWF=[0](cms), CN/C=[78], IA=[7.35](mm), N=[3], TP=[0.543]hrs, RAINFALL=[, , , ,](mm/hr), END=-1</pre>
CALIB NASHYD	<pre>ID=[7], NHYD=["SB14"], DT=[5]min, AREA=[15.85](ha), DWF=[0](cms), CN/C=[78], IA=[7.35](mm), N=[3], TP=[0.607]hrs, RAINFALL=[, , , ,](mm/hr), END=-1</pre>
	JN 9
ADD HYD	IDsum=[8], NHYD=["JN_9"], IDs to add=[5,6,7]
ROUTE CHANNEL	<pre>IDout=[9], NHYD=["CH_SB12"], IDin=[8], RDT=[5](min), CHLGTH=[222.25](m), CHSLOPE=[0.1](%), FPSLOPE=[0.1](%), SECNUM=[11.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,16.7 -0.035,27.5 0.055,40.2] (DISTANCE (m), ELEVATION (m))=[8.8,175.65] [16.7,175.36] [22.8,175.22] [27.5,175.29] [35.5,175.52] [40.2,175.65]</pre>
	<pre>ID=[10], NHYD=["SB12"], DT=[5]min, AREA=[6.02](ha), DWF=[0](cms), CN/C=[78], IA=[7.35](mm), N=[3], TP=[0.459]hrs, RAINFALL=[, , , ,](mm/hr), END=-1</pre>
	JN_10JN_10
ADD HYD	IDsum=[1], NHYD=["JN_10"], IDs to add=[2,3,9,10]
ADD HYD * SAVE HYD	<pre>IDsum=[1], NHYD=["JN_10"], IDs to add=[2,3,9,10] ID=[1], # OF PCYCLES=[-1], ICASEsh=[1] HYD_COMMENT=["JN_10"]</pre>



2 Metric units *# Project Name: [Pelham] Project Number: [6HH] *# Date : December 27, 2022 *# Modeller : [Dr. Bahar SM, P. Geo.(Ltd), P. Eng.] : [AHYDTECH Geomorphic Ltd., 22 Zecca Drive, Guelph, ON, N1L1T1] *# Company *# License # : 3556411 TZERO=[0.0], METOUT=[2], NSTORM=[0], NRUN=[0] START *응 [] <--storm filename, one per line for NSTORM time STORM FILENAME=["5SCSToP.STM"] READ STORM *8-----| ID=[1], NHYD=["SB01-1"], DT=[5]min, AREA=[17.36](ha), CALIB NASHYD DWF=[0](cms), CN/C=[70], IA=[7.44](mm),N = [3], TP = [0.869] hrs, IDout=[2], NHYD=["CH SB1-2"], IDin=[1], ROUTE CHANNEL RDT=[5](min), CHLGTH=[286.85] (m), CHSLOPE=[0.1](%), FPSLOPE=[0.1](%), SECNUM=[1.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,6.3 -0.035,9.8 0.055,15.8] (DISTANCE (m), ELEVATION (m)) = [0, 177.19][6.3, 175.95] [7.8,175.82] [9.8,175.8] [11.2,176.3] [15.8,177.11] *----- SB01-2------ | ID=[3], NHYD=["SB01-2"], DT=[1] (min), AREA=[15.56] (ha), CALIB STANDHYD XIMP=[0.35], TIMP=[0.50], DWF=[0.0](cms), LOSS=[2], SCS curve number CN=[80], Pervious surfaces: IAper=[5.5] (mm), SLPP=[0.4] (%), LGP=[50.15](m), MNP=[0.25], SCP=[0.00](min), Impervious surfaces: IAimp=[1.5] (mm), SLPI=[0.5] (%), LGI=[150.51] (m), MNI=[0.013], SCI=[0.00] (min), RAINFALL=[, , , ,](mm/hr) , END=-1 *------I ID=[4], NHYD=["SB02-1"], DT=[5]min, AREA=[27.50](ha), CALIB NASHYD DWF=[0](cms), CN/C=[68], IA=[7.12](mm), N=[3], TP=[1.444]hrs, RAINFALL=[, , , ,](mm/hr), END=-1 ROUTE CHANNEL IDout=[5], NHYD=["CH SB2-2a"], IDin=[4], RDT = [1] (min),CHLGTH=[91.31] (m), CHSLOPE=[0.1] (%), FPSLOPE=[0.1](%), SECNUM=[2.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,7.2 -0.035,9.7 0.055,17.2] (DISTANCE (m), ELEVATION (m)) = [3.2, 176.73] [7.2,176.53] [8.7,175.95] [9.7, 175.86]



[10.7,176.15] [17.2,176.85] ID=[6], NHYD=["SB02-2"], DT=[1] (min), AREA=[4.75] (ha), CALIB STANDHYD XIMP=[0.60], TIMP=[0.80], DWF=[0.0](cms), LOSS=[2], SCS curve number CN=[82], Pervious surfaces: IAper=[5.5](mm), SLPP=[0.6](%), LGP=[90.57](m), MNP=[0.25], SCP=[0.00](min), Impervious surfaces: IAimp=[1.5](mm), SLPI=[0.5](%), LGI=[30.2] (m), MNI=[0.013], SCI=[0.00] (min), RAINFALL=[, , , ,] (mm/hr) , END=-1 IDsum=[7], NHYD=["JN_1"], IDs to add=[2,3,5,6] ADD HYD ROUTE CHANNEL IDout=[8], NHYD=["CH SB2-3"], IDin=[7], RDT=[1](min), CHLGTH=[285.25] (m), CHSLOPE=[0.1](%), FPSLOPE=[0.1](%), SECNUM=[3.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,6.8 -0.035,9.8 0.055,15.8] (DISTANCE (m), ELEVATION (m)) = [0, 177.19][6.8,175.95] [7.8,175.82] [10.1,175.80] [12.3,176.33] [15.8,177.11] ID=[9], NHYD=["SB01-2"], DT=[1] (min), AREA=[1.14] (ha), CALIB STANDHYD XIMP=[0.35], TIMP=[0.50], DWF=[0.0](cms), LOSS=[2], SCS curve number CN=[82], Pervious surfaces: IAper=[5.0](mm), SLPP=[0.5](%), LGP=[64.12](m), MNP=[0.25], SCP=[0.00](min), Impervious surfaces: IAimp=[2.75](mm), SLPI=[0.3](%), LGI=[30](m), MNI=[0.013], SCI=[0.00](min), RAINFALL=[, , , ,](mm/hr) , END=-1 IDsum=[10], NHYD=["JN 2"], IDs to add=[8,9] ADD HYD *8-----|-----| IDout=[1], NHYD=["CH SB3-2"], IDin=[10], ROUTE CHANNEL RDT=[1](min), CHLGTH=[179.28] (m), CHSLOPE=[0.1] (%), FPSLOPE=[0.1](%), SECNUM = [4.1],NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,6.8 -0.035,9.8 0.055,15.8] (DISTANCE (m), ELEVATION (m)) = [0, 177.19][6.8,175.95] [7.8,175.82] [10.1,175.80] [12.3,176.33] [15.8,177.11] ----|-----sB03-2-----ID=[2], NHYD=["SB03-2"], DT=[5]min, AREA=[10.92](ha), CALIB NASHYD DWF=[0](cms), CN/C=[69], IA=[8.32](mm), N=[3], TP=[0.621]hrs, RAINFALL=[, , , ,](mm/hr), END=-1 ID=[3], NHYD=["SB04"], DT=[5]min, AREA=[19.72](ha), CALIB NASHYD DWF=[0](cms), CN/C=[70], IA=[8.51](mm), N=[3], TP=[.786] hrs,



	RAINFALL=[, , , ,] (mm/hr), END=-1
	 JN 3
ADD HYD	IDsum=[4], NHYD=["JN 3"], IDs to add=[1,2,3]
ROUTE CHANNEL	CH_SB5-1
* CALIB NASHYD	<pre>ID=[6], NHYD=["SB05-1"], DT=[5]min, AREA=[29.50](ha), DWF=[0](cms), CN/C=[68], IA=[7.16](mm), N=[3], TP=[0.575]hrs,</pre>
	RAINFALL=[, , , ,] (mm/hr), END=-1
*8	JN 4
ADD HYD	IDsum=[7], NHYD=["JN_4"], IDs to add=[5,6]
ROUTE CHANNEL	<pre>IDout=[8], NHYD=["CH_SB5-2"], IDin=[7], RDT=[1](min), CHLGTH=[429.36](m), CHSLOPE=[0.02](%), FPSLOPE=[0.02](%), SECNUM=[6.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,10.7 -0.035,25.1 0.055,34.5] (DISTANCE (m), ELEVATION (m))=[3.30,176.73] [10.7,175.93] [18.7,175.53] [25.1,175.95] [30.1,176.15] [34.5,176.85]</pre>
CALIB NASHYD	<pre>ID=[9], NHYD=["SB05-2"], DT=[5]min, AREA=[10.39](ha), DWF=[0](cms), CN/C=[70], IA=[7.35](mm), N=[3], TP=[1.306]hrs, RAINFALL=[, , , ,](mm/hr), END=-1</pre>
CALIB NASHYD	<pre>ISB05-3</pre>
	 IDsum=[1], NHYD=["JN 5"], IDs to add=[8,9,10]
*%	SB06
CALIB NASHYD	<pre>ID=[2], NHYD=["SB06"], DT=[5]min, AREA=[21.20](ha), DWF=[0](cms), CN/C=[71], IA=[7.92](mm), N=[3], TP=[1.350]hrs, RAINFALL=[, , , ,](mm/hr), END=-1</pre>
CALIB NASHYD	<pre>ID=[3], NHYD=["SB07"], DT=[5]min, AREA=[11.36](ha), DWF=[0](cms), CN/C=[68], IA=[7.15](mm), N=[3], TP=[1.737]hrs, RAINFALL=[, , , ,](mm/hr), END=-1</pre>
**	JN_6



ADD HYD IDsum=[4], NHYD=["JN_6"], IDs to add=[2,3] -----| ROUTE CHANNEL IDout=[5], NHYD=["CH SB8"], IDin=[4], RDT=[5](min), CHLGTH=[490.44] (m), CHSLOPE=[0.5] (%), FPSLOPE=[0.5](%), SECNUM = [7.1],NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,6.8 -0.035,10.1 0.055,15.8] (DISTANCE (m), ELEVATION (m)) = [4.7, 176.80] [6.8, 175.95] [8.2,175.82] [10.1,175.97] [12.3,176.33] [15.8,177.01] ID=[6], NHYD=["SB08"], DT=[5]min, AREA=[8.98](ha), CALIB NASHYD DWF=[0](cms), CN/C=[80], IA=[6.75](mm), N=[3], TP=[0.499]hrs, RAINFALL=[, , , ,] (mm/hr), END=-1 *%-----JN_7------JN_7------I IDsum=[7], NHYD=["JN_7"], IDs to add=[1,5,6] ADD HYD ROUTE CHANNEL IDout=[8], NHYD=["CH_SB9"], IDin=[7], RDT = [1] (min), CHLGTH=[410.25](m), CHSLOPE=[0.1](%), FPSLOPE=[0.1](%),NSEG=[3] SECNUM=[8.1], (SEGROUGH, SEGDIST (m))=[0.055,6.8 -0.035,9.8 0.055,15.8] (DISTANCE (m), ELEVATION (m)) = [2.7, 179.19][6.8,175.95] [7.8,175.82] [10.1,175.80] [12.3,176.33] [15.8,179.11] ID=[9], NHYD=["SB09"], DT=[5]min, AREA=[14.34](ha), CALIB NASHYD DWF=[0](cms), CN/C=[73], IA=[8.38](mm), N=[3], TP=[0.568]hrs, RAINFALL=[, , , ,] (mm/hr), END=-1 ID=[10], NHYD=["SB10"], DT=[5]min, AREA=[11.38](ha), CALIB NASHYD DWF=[0](cms), CN/C=[72], IA=[8.97](mm), N=[3], TP=[0.729]hrs, RAINFALL=[, , , ,] (mm/hr), END=-1 *8----------ADD HYD IDsum=[1], NHYD=["JN_8"], IDs to add=[8,9,10] ROUTE CHANNEL IDout=[2], NHYD=["CH SB11"], IDin=[1], RDT=[1](min), CHLGTH=[302.05](m), CHSLOPE=[0.1](%), FPSLOPE=[0.1](%), SECNUM=[9.1], SECSUM=[3] (SEGROUGH, SEGDIST (m))=[0.055,6.8 -0.035,9.8 0.055,15.8] (DISTANCE (m), ELEVATION (m)) = [2.7, 179.19] [6.8,175.95] [7.8,175.82] [10.1,175.80] [12.3,176.33] [15.8,179.11] *%-----SB11-----SB11-------| CALIB NASHYD ID=[3], NHYD=["SB11"], DT=[1]min, AREA=[14.81](ha),



<pre>*4SB1GSB1G</pre>		DWF=[0](cms), CN/C=[78], IA=[7.6](mm), N=[3], TP=[0.083]hrs, RAINFALL=[, , , ,](mm/hr), END=-1
DWF=[0] (cms), CM/C=[78], TA=[7.35] (mm), N=[3], TP=[1.297]hrs, RAINFALL=[, , ,] (mm/hr), END=-1 ROUTE CHANNEL IDout=[5], NHYD=("CH_SB15"), IDin=[4], RDT=[5] (min), CHLGTH=[288.57] (m), CHSLOPE=[0.75] (%), FFSLOPE=[0.75] (%), SECNUM=(10.1], NSEG=[3] (SECROUCH, SECDIST (m))=[0.055,16.7 -0.035,27.5 0.055,40.2] (DISTANCE (m), ELEVATION (m))=[8.8,175.65] (DISTANCE (m), ELEVATION (m))=[8.8,175.65] (DISTANCE (m), ELEVATION (m))=[8.8,175.65] (ALIE NASHYD ID=[6], NHYD=["S815"], DT=[5]min, AREA=[7.95] (ha), DWF=[0] (cms), CM/C=[78], IA=[7.35] (mm), N=[3], TP=[0.553]hrs, RAINFALL=[, , , [(mm/hr), END=-1 *4	*%	SB16
**	CALIB NASHYD	DWF=[0](cms), CN/C=[78], IA=[7.35](mm), N=[3], TP=[1.297]hrs,
ROUTE CHANNEL IDout=[5], NHTD=["CH_SBL5"], IDin=[4], RDT=[5](min), CHLGTH=[290.57](m), CHSLOPE=[0.75](%), FFSLOPE=[0.75](%), SECNUM=[10.1], NSEC=[3] (SECRUD(H, SECDIST (m))=[0.055,16.7 -0.035,27.5 0.055,40.2] (DISTANCE (m), ELEVATION (m))=[8.8,175.65] [22.8,175.22] [23.5,175.23] [33.5,175.25] *%	*%	
<pre>FPSIOPE=[0.75](%), SECNUM=[10.1], NSEG=[3] (SECROUCH, SEGDIST (m)=[0.055,16.7 -0.035,27.5 0.055,40.2] (DISTANCE (m), ELEVATION (m)=[8.8,175.65] [22.8,175.22] [27.5,175.29] [35.5,175.22] [40.2,175.65] *%</pre>	ROUTE CHANNEL	<pre>IDout=[5], NHYD=["CH_SB15"], IDin=[4], RDT=[5](min),</pre>
<pre>(DISTANCE (m), ELEVATION (m))=[8.9,175.65]</pre>		FPSLOPE=[0.75](%),
<pre>[16.7,175.36] [22.8,175.22] [37.5,175.22] [35.5,175.52] [40.2,175.65] *\$</pre>		<pre>(SEGROUGH, SEGDIST (m))=[0.055,16.7 -0.035,27.5 0.055,40.2] (DISTANCE (m), ELEVATION (m))=[8.8,175.65]</pre>
[27.5,175.29] [35.5,175.52] [40.2,175.65] *\$		[16.7,175.36]
<pre>(40.2,175.65) *\$</pre>		[27.5,175.29]
CALIB NASHYD ID=[6], NHYD=["SB15"], DT=[5]min, AREA=[7.95] (ha), DWF=[0] (cms), CN/C=[78], IA=[7.35] (mm), N=[3], TP=[0.543]hrs, RAINFALL=[, , ,] (mm/hr), END=-1 *\$		
DMF=[0](cms), CN/C=[78], IA=[7.35](mm), N=[3], TP=[0.543]hrs, RAINFALL=[, , , ,](mm/hr), END=-1 *%	*%	SB15
<pre>*%</pre>	CALIB NASHYD	DWF=[0](cms), CN/C=[78], IA=[7.35](mm), N=[3], TP=[0.543]hrs,
CALIB NASHYD ID=[7], NHYD=["SB14"], DT=[5]min, AREA=[15.85](ha), DWF=[0](cms), CN/C=[78], IA=[7.35](mm), N=[3], TP=[0.607]hrs, RAINFALL=[, , , ,](mm/hr), END=-1 *%		
<pre>RAINFALL=[, , , ,] (mm/hr), END=-1 **</pre>	*% CALIB NASHYD	<pre>ID=[7], NHYD=["SB14"], DT=[5]min, AREA=[15.85](ha), DWF=[0](cms), CN/C=[78], IA=[7.35](mm),</pre>
*&		RAINFALL=[, , , ,] (mm/hr), END=-1
ADD HYD *%		
ROUTE CHANNEL IDout=[9], NHYD=["CH_SB12"], IDin=[8], RDT=[5](min), CHLGTH=[222.25](m), CHSLOPE=[0.1](%), FPSLOPE=[0.1](%), SECNUM=[11.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,16.7 -0.035,27.5 0.055,40.2] (DISTANCE (m), ELEVATION (m))=[8.8,175.65] [16.7,175.36] [22.8,175.22] [27.5,175.29] [35.5,175.52] [40.2,175.65] *%		
CHLGTH=[222.25](m), CHSLOPE=[0.1](%), FPSLOPE=[0.1](%), SECNUM=[11.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,16.7 -0.035,27.5 0.055,40.2] (DISTANCE (m), ELEVATION (m))=[8.8,175.65] [16.7,175.36] [22.8,175.22] [27.5,175.29] [35.5,175.52] [40.2,175.65] *%SB12	ROUTE CHANNEL	<pre>IDout=[9], NHYD=["CH_SB12"], IDin=[8],</pre>
SECNUM=[11.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,16.7 -0.035,27.5 0.055,40.2] (DISTANCE (m), ELEVATION (m))=[8.8,175.65] [16.7,175.36] [22.8,175.22] [27.5,175.29] [35.5,175.52] [40.2,175.65] *%		CHLGTH=[222.25](m), CHSLOPE=[0.1](%),
<pre>(SEGROUGH, SEGDIST (m))=[0.055,16.7 -0.035,27.5 0.055,40.2] (DISTANCE (m), ELEVATION (m))=[8.8,175.65] [16.7,175.36] [22.8,175.22] [27.5,175.29] [35.5,175.52] [40.2,175.65] *%</pre>		
[22.8,175.22] [27.5,175.29] [35.5,175.52] [40.2,175.65] *%SB12		<pre>(SEGROUGH, SEGDIST (m))=[0.055,16.7 -0.035,27.5 0.055,40.2] (DISTANCE (m), ELEVATION (m))=[8.8,175.65]</pre>
[27.5,175.29] [35.5,175.52] [40.2,175.65] *%SB12		[16.7,175.36]
[35.5,175.52] [40.2,175.65] *%SB12		
[40.2,175.65] *%SB12		
<pre>*%SB12</pre>		
CALIB NASHYD ID=[10], NHYD=["SB12"], DT=[5]min, AREA=[6.02](ha), DWF=[0](cms), CN/C=[78], IA=[7.35](mm), N=[3], TP=[0.459]hrs, RAINFALL=[, , , ,](mm/hr), END=-1 *%		
RAINFALL=[, , ,] (mm/hr), END=-1 *%	*% CALIB NASHYD	<pre>ID=[10], NHYD=["SB12"], DT=[5]min, AREA=[6.02](ha), DWF=[0](cms), CN/C=[78], IA=[7.35](mm),</pre>
*JN_10	+ 0	RAINFALL=[, , , ,] (mm/hr), END=-1
ADD HYD IDsum=[1], NHYD=["JN_10"], IDs to add=[2,3,9,10] *	^ & +	
SAVE HYD ID=[1], # OF PCYCLES=[-1], ICASEsh=[1] HYD_COMMENT=["JN_10"] *%	ADD HYD	IDsum=[1], NHYD=["JN_10"], IDs to add=[2,3,9,10]
*8	SAVE HYD	<pre>ID=[1], # OF PCYCLES=[-1], ICASEsh=[1] HYD COMMENT=["JN 10"]</pre>



2 Metric units *# Project Name: [Pelham] Project Number: [6HH] *# Date : December 27, 2022 *# Modeller : [Dr. Bahar SM, P. Geo.(Ltd), P. Eng.] : [AHYDTECH Geomorphic Ltd., 22 Zecca Drive, Guelph, ON, N1L1T1] *# Company *# License # : 3556411 TZERO=[0.0], METOUT=[2], NSTORM=[0], NRUN=[0] START *응 [] <--storm filename, one per line for NSTORM time READ STORM STORM FILENAME=["25SCSTOP.STM"] *8-----| ID=[1], NHYD=["SB01-1"], DT=[5]min, AREA=[17.36](ha), CALIB NASHYD DWF=[0](cms), CN/C=[70], IA=[7.44](mm),N = [3], TP = [0.869] hrs, IDout=[2], NHYD=["CH SB1-2"], IDin=[1], ROUTE CHANNEL RDT=[5](min), CHLGTH=[286.85] (m), CHSLOPE=[0.1](%), FPSLOPE=[0.1](%), SECNUM=[1.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,6.3 -0.035,9.8 0.055,15.8] (DISTANCE (m), ELEVATION (m)) = [0, 177.19][6.3, 175.95] [7.8,175.82] [9.8,175.8] [11.2,176.3] [15.8,177.11] *----- SB01-2------ | ID=[3], NHYD=["SB01-2"], DT=[1] (min), AREA=[15.56] (ha), CALIB STANDHYD XIMP=[0.35], TIMP=[0.50], DWF=[0.0](cms), LOSS=[2], SCS curve number CN=[80], Pervious surfaces: IAper=[5.5] (mm), SLPP=[0.4] (%), LGP=[50.15](m), MNP=[0.25], SCP=[0.00](min), Impervious surfaces: IAimp=[1.5](mm), SLPI=[0.5](%), LGI=[150.51] (m), MNI=[0.013], SCI=[0.00] (min), RAINFALL=[, , , ,](mm/hr) , END=-1 *------I ID=[4], NHYD=["SB02-1"], DT=[5]min, AREA=[27.50](ha), CALIB NASHYD DWF=[0](cms), CN/C=[68], IA=[7.12](mm), N=[3], TP=[1.444]hrs, RAINFALL=[, , , ,](mm/hr), END=-1 ROUTE CHANNEL IDout=[5], NHYD=["CH SB2-2a"], IDin=[4], RDT = [1] (min),CHLGTH=[91.31] (m), CHSLOPE=[0.1] (%), FPSLOPE=[0.1](%), SECNUM=[2.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,7.2 -0.035,9.7 0.055,17.2] (DISTANCE (m), ELEVATION (m)) = [3.2, 176.73] [7.2,176.53] [8.7,175.95] [9.7, 175.86]



[10.7,176.15] [17.2,176.85] ID=[6], NHYD=["SB02-2"], DT=[1] (min), AREA=[4.75] (ha), CALIB STANDHYD XIMP=[0.60], TIMP=[0.80], DWF=[0.0](cms), LOSS=[2], SCS curve number CN=[82], Pervious surfaces: IAper=[5.5](mm), SLPP=[0.6](%), LGP=[90.57](m), MNP=[0.25], SCP=[0.00](min), Impervious surfaces: IAimp=[1.5](mm), SLPI=[0.5](%), LGI=[30.2] (m), MNI=[0.013], SCI=[0.00] (min), RAINFALL=[, , , ,] (mm/hr) , END=-1 IDsum=[7], NHYD=["JN_1"], IDs to add=[2,3,5,6] ADD HYD ROUTE CHANNEL IDout=[8], NHYD=["CH SB2-3"], IDin=[7], RDT=[1](min), CHLGTH=[285.25] (m), CHSLOPE=[0.1](%), FPSLOPE=[0.1](%), SECNUM=[3.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,6.8 -0.035,9.8 0.055,15.8] (DISTANCE (m), ELEVATION (m)) = [0, 177.19][6.8,175.95] [7.8,175.82] [10.1,175.80] [12.3,176.33] [15.8,177.11] ID=[9], NHYD=["SB01-2"], DT=[1] (min), AREA=[1.14] (ha), CALIB STANDHYD XIMP=[0.35], TIMP=[0.50], DWF=[0.0](cms), LOSS=[2], SCS curve number CN=[82], Pervious surfaces: IAper=[5.0](mm), SLPP=[0.5](%), LGP=[64.12](m), MNP=[0.25], SCP=[0.00](min), Impervious surfaces: IAimp=[2.75](mm), SLPI=[0.3](%), LGI=[30](m), MNI=[0.013], SCI=[0.00](min), RAINFALL=[, , , ,](mm/hr) , END=-1 IDsum=[10], NHYD=["JN 2"], IDs to add=[8,9] ADD HYD IDout=[1], NHYD=["CH SB3-2"], IDin=[10], ROUTE CHANNEL RDT=[1](min), CHLGTH=[179.28] (m), CHSLOPE=[0.1] (%), FPSLOPE=[0.1](%), SECNUM = [4.1],NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,6.8 -0.035,9.8 0.055,15.8] (DISTANCE (m), ELEVATION (m)) = [0, 177.19][6.8,175.95] [7.8,175.82] [10.1,175.80] [12.3,176.33] [15.8,177.11] ----|-----sB03-2-----ID=[2], NHYD=["SB03-2"], DT=[5]min, AREA=[10.92](ha), CALIB NASHYD DWF=[0](cms), CN/C=[69], IA=[8.32](mm), N=[3], TP=[0.621]hrs, RAINFALL=[, , , ,] (mm/hr), END=-1 ID=[3], NHYD=["SB04"], DT=[5]min, AREA=[19.72](ha), CALIB NASHYD DWF=[0](cms), CN/C=[70], IA=[8.51](mm), N=[3], TP=[.786] hrs,



	RAINFALL=[, , , ,] (mm/hr), END=-1
	 JN 3
ADD HYD	IDsum=[4], NHYD=["JN_3"], IDs to add=[1,2,3]
ROUTE CHANNEL	<pre>IDout=[5], NHYD=["CH_SB5-1"], IDin=[4], RDT=[1](min), CHLGTH=[451.02](m), CHSLOPE=[0.1](%), FPSLOPE=[0.1](%), SECNUM=[5.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,10.7 -0.035,25.1 0.055,34.5] (DISTANCE (m), ELEVATION (m))=[3.30,176.73] [10.7,175.93] [18.7,175.53] [25.1,175.95] [30.1,176.15] [34.5,176.85]</pre>
*CALIB NASHYD	<pre>ISB05-1 ID=[6], NHYD=["SB05-1"], DT=[5]min, AREA=[29.50](ha), DWF=[0](cms), CN/C=[68], IA=[7.16](mm), N=[3], TP=[0.575]hrs,</pre>
* °	RAINFALL=[, , , ,] (mm/hr), END=-1
*8	JN 4J
ADD HYD	IDsum=[7], NHYD=["JN 4"], IDs to add=[5,6]
ROUTE CHANNEL	<pre>IDout=[8], NHYD=["CH_SB5-2"], IDin=[7], RDT=[1](min), CHLGTH=[429.36](m), CHSLOPE=[0.02](%), FPSLOPE=[0.02](%), SECNUM=[6.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,10.7 -0.035,25.1 0.055,34.5] (DISTANCE (m), ELEVATION (m))=[3.30,176.73]</pre>
CALIB NASHYD	<pre>ID=[9], NHYD=["SB05-2"], DT=[5]min, AREA=[10.39](ha), DWF=[0](cms), CN/C=[70], IA=[7.35](mm), N=[3], TP=[1.306]hrs, RAINFALL=[,,,,](mm/hr), END=-1</pre>
CALIB NASHYD	<pre>ISB05-3I ID=[10], NHYD=["SB05-3"], DT=[5]min, AREA=[8.51](ha), DWF=[0](cms), CN/C=[65], IA=[9.23](mm), N=[3], TP=[1.159]hrs, RAINFALL=[, , , ,](mm/hr), END=-1</pre>
	 IDsum=[1], NHYD=["JN_5"], IDs to add=[8,9,10] SB06
CALIB NASHYD	<pre>ID=[2], NHYD=["SB06"], DT=[5]min, AREA=[21.20](ha), DWF=[0](cms), CN/C=[71], IA=[7.92](mm), N=[3], TP=[1.350]hrs, RAINFALL=[, , , ,](mm/hr), END=-1</pre>
CALIB NASHYD	<pre>SB07</pre>
	 JN_6
	_



ADD HYD *%	IDsum=[4], NHYD=["JN_6"], IDs to add=[2,3]
ROUTE CHANNEL	<pre>IDout=[5], NHYD=["CH_SB8"], IDin=[4], RDT=[5](min), CHLGTH=[490.44](m), CHSLOPE=[0.5](%), FPSLOPE=[0.5](%), SECNUM=[7.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,6.8 -0.035,10.1 0.055,15.8] (DISTANCE (m), ELEVATION (m))=[4.7,176.80] [6.8,175.95] [8.2,175.82] [10.1,175.97] [12.3,176.33] [15.8,177.01]</pre>
*%CALIB NASHYD	<pre>SB08</pre>
8	
ADD HYD	IDsum=[7], NHYD=["JN 7"], IDs to add=[1,5,6]
	CH_SB09
	CHLGTH=[410.25](m), CHSLOPE=[0.1](%), FPSLOPE=[0.1](%), SECNUM=[8.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,6.8 -0.035,9.8 0.055,15.8] (DISTANCE (m), ELEVATION (m))=[2.7,179.19] [6.8,175.95] [7.8,175.82] [10.1,175.80] [12.3,176.33] [15.8,179.11]
CALIB NASHYD	<pre>SB09</pre>
CALIB NASHYD	<pre>ID=[10], NHYD=["SB10"], DT=[5]min, AREA=[11.38](ha), DWF=[0](cms), CN/C=[72], IA=[8.97](mm), N=[3], TP=[0.729]hrs, RAINFALL=[, , , ,](mm/hr), END=-1</pre>
*응	
ADD HYD	JN_8 IDsum=[1], NHYD=["JN_8"], IDs to add=[8,9,10]
*%ROUTE CHANNEL	
*%	SB11
CALIB NASHYD	<pre>ID=[3], NHYD=["SB11"], DT=[1]min, AREA=[14.81](ha),</pre>



	DWF=[0](cms), CN/C=[78], IA=[7.6](mm), N=[3], TP=[0.083]hrs, RAINFALL=[, , , ,](mm/hr), END=-1
*%	
CALIB NASHYD	<pre>ID=[4], NHYD=["SB16"], DT=[5]min, AREA=[16.71](ha), DWF=[0](cms), CN/C=[78], IA=[7.35](mm), N=[3], TP=[1.297]hrs, RAINFALL=[, , , ,](mm/hr), END=-1</pre>
*응	CH-SB15
ROUTE CHANNEL	IDout=[5], NHYD=["CH_SB15"], IDin=[4], RDT=[5](min), CHLGTH=[298.57](m), CHSLOPE=[0.75](%), FPSLOPE=[0.75](%), SECNUM=[10, 1], NSEC=[2]
	SECNUM=[10.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,16.7 -0.035,27.5 0.055,40.2] (DISTANCE (m), ELEVATION (m))=[8.8,175.65] [16.7,175.36] [22.8,175.22] [27.5,175.29]
	[35.5,175.52] [40.2,175.65]
*&	[40.2,173.65]
CALIB NASHYD	<pre>ID=[6], NHYD=["SB15"], DT=[5]min, AREA=[7.95](ha), DWF=[0](cms), CN/C=[78], IA=[7.35](mm), N=[3], TP=[0.543]hrs, RAINFALL=[, , , ,](mm/hr), END=-1</pre>
CALIB NASHYD	<pre>ID=[7], NHYD=["SB14"], DT=[5]min, AREA=[15.85](ha), DWF=[0](cms), CN/C=[78], IA=[7.35](mm), N=[3], TP=[0.607]hrs, RAINFALL=[, , , ,](mm/hr), END=-1</pre>
	JN_9 IDsum=[8], NHYD=["JN_9"], IDs to add=[5,6,7] CH-SB12
	<pre>IDout=[9], NHYD=["CH_SB12"], IDin=[8], RDT=[5](min),</pre>
	CHLGTH=[222.25](m), CHSLOPE=[0.1](%), FPSLOPE=[0.1](%),
	SECNUM=[11.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,16.7 -0.035,27.5 0.055,40.2] (DISTANCE (m), ELEVATION (m))=[8.8,175.65] [16.7,175.36] [22.8,175.22] [27.5,175.29] [35.5,175.52] [40.2,175.65]
*%CALIB NASHYD	<pre>ID=[10], NHYD=["SB12"], DT=[5]min, AREA=[6.02](ha), DWF=[0](cms), CN/C=[78], IA=[7.35](mm), N=[3], TP=[0.459]hrs, DAINEALL=[</pre>
*%	RAINFALL=[, , , ,](mm/hr), END=-1
*	JN_10
ADD HYD	IDsum=[1], NHYD=["JN_10"], IDs to add=[2,3,9,10]
SAVE HYD	<pre>ID=[1], # OF PCYCLES=[-1], ICASEsh=[1] HYD_COMMENT=["JN_10"] </pre>
	، ا
FINISH	'



```
2
  Metric units
*#****
           *# Project Name: [Pelham] Project Number: [ 6HH ]
*# Date : December 27, 2022
*# Modeller : [ Dr. Bahar SM, P. Geo.(Ltd), P. Eng. ]
         : [ AHYDTECH Geomorphic Ltd., 22 Zecca Drive, Guelph, ON, N1L1T1]
*# Company
*# License # : 3556411
START
           TZERO=[0.0], METOUT=[2], NSTORM=[0], NRUN=[0]
*응
            [ ] <--storm filename, one per line for NSTORM time
*8-----|-----|
STORM_FILENAME=["100SCSTOP.STM"]
READ STORM
*%______|_____|_____|
ID=[1], NHYD=["SB01-1"], DT=[5]min, AREA=[17.36](ha),
CALIB NASHYD
            DWF=[0](cms), CN/C=[70], IA=[7.44](mm),
            N=[3], TP=[0.869]hrs,
ROUTE CHANNEL
            IDout=[2], NHYD=["CH SB1-2"], IDin=[1],
            RDT=[5](min),
            CHLGTH=[286.85] (m), CHSLOPE=[0.1] (%),
                         FPSLOPE=[0.1](%),
            SECNUM=[1.1],
                        NSEG=[3]
            (SEGROUGH, SEGDIST (m))=[0.055,6.3 -0.035,9.8 0.055,15.8]
            ( DISTANCE (m), ELEVATION (m)) = [0, 177.19]
                                [6.3, 175.95]
                                [7.8,175.82]
                                [9.8,175.8]
                                [11.2,176.3]
                                [15.8,177.11]
ID=[3], NHYD=["SB01-2"], DT=[1] (min), AREA=[15.56] (ha),
CALIB STANDHYD
            XIMP=[0.35], TIMP=[0.50], DWF=[0.0](cms), LOSS=[2],
            SCS curve number CN=[80],
            Pervious surfaces: IAper=[5.5] (mm), SLPP=[0.4] (%),
                         LGP=[50.15](m), MNP=[0.25], SCP=[0.00](min),
            Impervious surfaces: IAimp=[1.5](mm), SLPI=[0.5](%),
                         LGI=[150.51] (m), MNI=[0.013],
SCI=[0.00] (min),
            RAINFALL=[ , , , , ] (mm/hr) , END=-1
ID=[4], NHYD=["SB02-1"], DT=[5]min, AREA=[27.50](ha),
CALIB NASHYD
            DWF=[0](cms), CN/C=[68], IA=[7.12](mm),
            N=[3], TP=[1.444]hrs,
IDout=[5], NHYD=["CH SB2-2a"], IDin=[4],
ROUTE CHANNEL
            RDT = [1] (min),
            CHLGTH=[91.31] (m), CHSLOPE=[0.1] (%),
                     FPSLOPE=[0.1](%),
NSEG=[3]
            SECNUM=[2.1],
            (SEGROUGH, SEGDIST (m))=[0.055,7.2 -0.035,9.7 0.055,17.2]
            ( DISTANCE (m), ELEVATION (m)) = [3.2, 176.73]
                                [7.2,176.53]
                                [8.7, 175.95]
```



[9.7,175.86] [10.7,176.15] [17.2,176.85] ID=[6], NHYD=["SB02-2"], DT=[1] (min), AREA=[4.75] (ha), CALIB STANDHYD XIMP=[0.60], TIMP=[0.80], DWF=[0.0](cms), LOSS=[2], SCS curve number CN=[82], Pervious surfaces: IAper=[5.5](mm), SLPP=[0.6](%), LGP=[90.57](m), MNP=[0.25], SCP=[0.00](min), Impervious surfaces: IAimp=[1.5](mm), SLPI=[0.5](%), LGI=[30.2] (m), MNI=[0.013], SCI=[0.00] (min), RAINFALL=[, , , ,] (mm/hr) , END=-1 *8-----| $IDsum=[7], NHYD=["JN_1"], IDs to add=[2,3,5,6]$ ADD HYD ROUTE CHANNEL IDout=[8], NHYD=["CH SB2-3"], IDin=[7], RDT=[1](min),CHLGTH=[285.25] (m), CHSLOPE=[0.1] (%), FPSLOPE=[0.1](%), SECNUM=[3.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,6.8 -0.035,9.8 0.055,15.8] (DISTANCE (m), ELEVATION (m)) = [0, 177.19][6.8,175.95] [7.8, 175.82] [10.1,175.80] [12.3,176.33] [15.8,177.11] ID=[9], NHYD=["SB01-2"], DT=[1] (min), AREA=[1.14] (ha), CALIB STANDHYD XIMP=[0.35], TIMP=[0.50], DWF=[0.0](cms), LOSS=[2], SCS curve number CN=[82], Pervious surfaces: IAper=[5.0] (mm), SLPP=[0.5] (%), LGP=[64.12](m), MNP=[0.25], SCP=[0.00](min), Impervious surfaces: IAimp=[2.75](mm), SLPI=[0.3](%), LGI=[30](m), MNI=[0.013], SCI=[0.00](min), RAINFALL=[, , , ,] (mm/hr) , END=-1 *%-----JN 2------|------| IDsum=[10], NHYD=["JN $\overline{2}$ "], IDs to add=[8,9] ADD HYD *%______ IDout=[1], NHYD=["CH SB3-2"], IDin=[10], ROUTE CHANNEL RDT=[1](min), CHLGTH=[179.28] (m), CHSLOPE=[0.1] (%), FPSLOPE=[0.1](%), SECNUM=[4.1],NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,6.8 -0.035,9.8 0.055,15.8] (DISTANCE (m), ELEVATION (m)) = [0, 177.19][6.8,175.95] [7.8,175.82] [10.1,175.80] [12.3,176.33] [15.8,177.11] *-----SB03-2------ID=[2], NHYD=["SB03-2"], DT=[5]min, AREA=[10.92](ha), CALIB NASHYD DWF=[0](cms), CN/C=[69], IA=[8.32](mm), N=[3], TP=[0.621]hrs, RAINFALL=[, , , ,](mm/hr), END=-1 -----SB04------| ID=[3], NHYD=["SB04"], DT=[5]min, AREA=[19.72](ha), CALIB NASHYD DWF=[0](cms), CN/C=[70], IA=[8.51](mm),



	N=[3], TP=[.786]hrs, RAINFALL=[,,,,](mm/hr), END=-1
	JN 3
	IDsum=[4], NHYD=["JN_3"], IDs to add=[1,2,3]
ROUTE CHANNEL	IDout=[5], NHYD=["CH_SB5-1"], IDin=[4], RDT=[1](min), CHLGTH=[451.02](m), CHSLOPE=[0.1](%),
	FPSLOPE=[0.1](%), SECNUM=[5.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,10.7 -0.035,25.1 0.055,34.5] (DISTANCE (m), ELEVATION (m))=[3.30,176.73] [10.7,175.93]
	[10.7,175.53] [18.7,175.53] [25.1,175.95] [30.1,176.15] [34.5,176.85]
*	[34.3,170.83]
CALIB NASHYD	<pre>ID=[6], NHYD=["SB05-1"], DT=[5]min, AREA=[29.50](ha), DWF=[0](cms), CN/C=[68], IA=[7.16](mm), N=[3], TP=[0.575]hrs,</pre>
*&	RAINFALL=[,,,,](mm/hr), END=-1
	JN 4JN 4
ADD HYD	IDsum=[7], NHYD=["JN_4"], IDs to add=[5,6]
ROUTE CHANNEL	IDout=[8], NHYD=["CH_SB5-2"], IDin=[7], RDT=[1](min),
	CHLGTH=[429.36] (m), CHSLOPE=[0.02] (%), FPSLOPE=[0.02] (%),
	<pre>SECNUM=[6.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,10.7 -0.035,25.1 0.055,34.5] (DISTANCE (m), ELEVATION (m))=[3.30,176.73]</pre>
	[10.7,175.93] [18.7,175.53]
	[25.1,175.95]
	[30.1,176.15] [34.5,176.85]
*CALIB NASHYD	- SB05-2 ID=[9], NHYD=["SB05-2"], DT=[5]min, AREA=[10.39](ha), DWF=[0](cms), CN/C=[70], IA=[7.35](mm),
	N=[3], TP=[1.306]hrs, RAINFALL=[,,,,,](mm/hr), END=-1
* CALIB NASHYD	- SB05-3 ID=[10], NHYD=["SB05-3"], DT=[5]min, AREA=[8.51](ha), DWF=[0](cms), CN/C=[65], IA=[9.23](mm),
	N=[3], TP=[1.159]hrs, RAINFALL=[,,,,,](mm/hr), END=-1
* % * %	- j - JN 5j
ADD HYD	IDsum=[1], NHYD=["JN_5"], IDs to add=[8,9,10]
CALIB NASHYD	<pre>ID=[2], NHYD=["SB06"], DT=[5]min, AREA=[21.20](ha), DWF=[0](cms), CN/C=[71], IA=[7.92](mm), N=[3], TP=[1.350]hrs,</pre>
*%	RAINFALL=[, , , ,] (mm/hr), END=-1
° CALIB NASHYD	<pre>ID=[3], NHYD=["SB07"], DT=[5]min, AREA=[11.36](ha), DWF=[0](cms), CN/C=[68], IA=[7.15](mm),</pre>
	N = [3], $TP = [1.737]$ hrs,



ADD HYD IDsum=[4], NHYD=["JN 6"], IDs to add=[2,3] *%______ ROUTE CHANNEL IDout=[5], NHYD=["CH_SB8"], IDin=[4], RDT=[5](min), CHLGTH=[490.44] (m), CHSLOPE=[0.5] (%), FPSLOPE = [0.5](%),SECNUM=[7.1], NSEG=[3] (SEGROUGH, SEGDIST (m)) = [0.055, 6.8 -0.035, 10.1 0.055, 15.8] (DISTANCE (m), ELEVATION (m)) = [4.7, 176.80][6.8, 175.95] [8.2,175.82] [10.1,175.97] [12.3,176.33] [15.8,177.01] CALIB NASHYD ID=[6], NHYD=["SB08"], DT=[5]min, AREA=[8.98](ha), DWF=[0](cms), CN/C=[80], IA=[6.75](mm), N=[3], TP=[0.499]hrs, RAINFALL=[, , , ,] (mm/hr), END=-1 *8-----|-----| ADD HYD IDsum=[7], NHYD=["JN_7"], IDs to add=[1,5,6] RDT=[1](min), CHLGTH=[410.25] (m), CHSLOPE=[0.1] (%), FPSLOPE=[0.1](%), SECNUM=[8.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,6.8 -0.035,9.8 0.055,15.8] (DISTANCE (m), ELEVATION (m)) = [2.7, 179.19][6.8, 175.95] [7.8,175.82] [10.1,175.80] [12.3,176.33] [15.8,179.11] ID=[9], NHYD=["SB09"], DT=[5]min, AREA=[14.34](ha), CALIB NASHYD DWF=[0](cms), CN/C=[73], IA=[8.38](mm), N=[3], TP=[0.568]hrs, RAINFALL=[, , , ,] (mm/hr), END=-1 ID=[10], NHYD=["SB10"], DT=[5]min, AREA=[11.38](ha), CALIB NASHYD DWF=[0](cms), CN/C=[72], IA=[8.97](mm), N = [3], TP = [0.729]hrs, RAINFALL=[, , , ,](mm/hr), END=-1 $IDsum=[1], NHYD=["JN_8"], IDs to add=[8,9,10]$ ADD HYD ROUTE CHANNEL IDout=[2], NHYD=["CH SB11"], IDin=[1], RDT = [1] (min), CHLGTH=[302.05](m), CHSLOPE=[0.1](%), FPSLOPE=[0.1](%), SECNUM=[9.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,6.8 -0.035,9.8 0.055,15.8] (DISTANCE (m), ELEVATION (m)) = [2.7, 179.19] [6.8,175.95] [7.8,175.82] [10.1,175.80] [12.3,176.33] [15.8,179.11]



CALIB NASHYD	<pre>ID=[3], NHYD=["SB11"], DT=[1]min, AREA=[14.81](ha), DWF=[0](cms), CN/C=[78], IA=[7.6](mm), N=[3], TP=[0.083]hrs, RAINFALL=[, , , ,](mm/hr), END=-1</pre>
CALIB NASHYD	<pre>ID=[4], NHYD=["SB16"], DT=[5]min, AREA=[16.71](ha), DWF=[0](cms), CN/C=[78], IA=[7.35](mm), N=[3], TP=[1.297]hrs, RAINFALL=[,,,,](mm/hr), END=-1 CH-SB15</pre>
ROUTE CHANNEL	<pre>IDout=[5], NHYD=["CH_SB15"], IDin=[4], RDT=[5](min), CHLGTH=[298.57](m), CHSLOPE=[0.75](%), FPSLOPE=[0.75](%), SECNUM=[10.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,16.7 -0.035,27.5 0.055,40.2] (DISTANCE (m), ELEVATION (m))=[8.8,175.65] [16.7,175.36] [22.8,175.22] [27.5,175.29] [35.5,175.52] [40.2,175.65]</pre>
CALIB NASHYD	<pre>ID=[6], NHYD=["SB15"], DT=[5]min, AREA=[7.95](ha), DWF=[0](cms), CN/C=[78], IA=[7.35](mm), N=[3], TP=[0.543]hrs, RAINFALL=[, , , ,](mm/hr), END=-1</pre>
CALIB NASHYD	<pre>ID=[7], NHYD=["SB14"], DT=[5]min, AREA=[15.85](ha), DWF=[0](cms), CN/C=[78], IA=[7.35](mm), N=[3], TP=[0.607]hrs, RAINFALL=[, , , ,](mm/hr), END=-1</pre>
ADD HYD	 IDsum=[8], NHYD=["JN_9"], IDs to add=[5,6,7]
	<pre>IDout=[9], NHYD=["CH_SB12"], IDin=[8], RDT=[5](min), CHLGTH=[222.25](m), CHSLOPE=[0.1](%), FPSLOPE=[0.1](%), SECNUM=[11.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,16.7 -0.035,27.5 0.055,40.2] (DISTANCE (m), ELEVATION (m))=[8.8,175.65] [16.7,175.36] [22.8,175.22] [27.5,175.29] [35.5,175.52] [40.2,175.65]</pre>
*% CALIB NASHYD	<pre>RDT=[5] (min), CHLGTH=[222.25] (m), CHSLOPE=[0.1] (%), FPSLOPE=[0.1] (%), SECNUM=[11.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,16.7 -0.035,27.5 0.055,40.2] (DISTANCE (m), ELEVATION (m))=[8.8,175.65] [16.7,175.36] [22.8,175.22] [27.5,175.29] [35.5,175.52] [40.2,175.65] SB12</pre>
*% CALIB NASHYD	<pre>RDT=[5] (min), CHLGTH=[222.25] (m), CHSLOPE=[0.1] (%), FPSLOPE=[0.1] (%), SECNUM=[11.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,16.7 -0.035,27.5 0.055,40.2] (DISTANCE (m), ELEVATION (m))=[8.8,175.65] [16.7,175.36] [22.8,175.22] [27.5,175.29] [35.5,175.52] [40.2,175.65] SB12</pre>
*% CALIB NASHYD *% ADD HYD	<pre>RDT=[5] (min), CHLGTH=[222.25] (m), CHSLOPE=[0.1] (%), FPSLOPE=[0.1] (%), SECNUM=[11.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,16.7 -0.035,27.5 0.055,40.2] (DISTANCE (m), ELEVATION (m))=[8.8,175.65] [16.7,175.36] [22.8,175.22] [27.5,175.29] [35.5,175.52] [40.2,175.65] SB12</pre>
*% CALIB NASHYD *% ADD HYD * SAVE HYD	<pre>RDT=[5] (min), CHLGTH=[222.25] (m), CHSLOPE=[0.1] (%), FPSLOPE=[0.1] (%), SECNUM=[11.1], NSEG=[3] (SEGROUGH, SEGDIST (m))=[0.055,16.7 -0.035,27.5 0.055,40.2] (DISTANCE (m), ELEVATION (m))=[8.8,175.65] [16.7,175.36] [22.8,175.22] [27.5,175.29] [35.5,175.52] [40.2,175.65]</pre>



Appendix E: SWMHYMO Output Files



2 0 0 11 7 # 35	2017 56411 ***** ***** ***** *****
S W W M H H Y M M O O 222 0 0 11 7 APR SSSS W W M H H Y M M OOO 2 0 0 11 7 APR SSSS W W M H H Y M M OOO 2 0 0 11 7 a=== 2 0 0 11 7 # 33 33 33 34 35 34 35 35 35 35 35 35 35 35 35 35 36 <t< td=""><td>2017 56411 ***** ***** ***** *****</td></t<>	2017 56411 ***** ***** ***** *****
SSSS W W M H H Y M OOO 2 0 0 11 7 ==== 2 0 0 11 7 # 35 StormWater Management HYdrologic Model 222 000 11 7 ==== ************ A single event and continuous hydrologic simulation model ************************************	***** ***** ***** ***** ***** ***** ****
2 0 0 11 7 # 35 StormWater Management HYdrologic Model 222 000 11 7 === ************************************	55641 ***** ***** ***** ***** ***** ***** ***** *****
StormWater Management HYdrologic Model222000117===***********************************	** * * * * * * * * * * * * * * * * * *
<pre>************************************</pre>	** * * * ** * * * ** * * * ** * * ** * * ** * * * ** * * * * * * *
************************************	** * * * * * * * * * * * * * * * * * *
A single event and continuous hydrologic simulation model based on the principles of HYMO and its successors OTTHYMO-83 and OTTHYMO-89. ************************************	** * * * * * * * * * * * * * * * * * *
based on the principles of HYMO and its successors ************************************	**** **** **** **** ****
based on the principles of nino and Priso and OTTHYMO-89. ************************************	** * * * ** * * * ** * * ** * * ** * *
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Gatineau, Ontario (013) 030-3004 ************************************	****
Construction C	** * *
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User comments: 1:	
2:	
3:	

Date : December 27, 2022	
<pre>Modeller : [Dr. Bahar SM, P. Geo.(Ltd), P. Eng.] Company : [AHYDTECH Geomorphic Ltd., 22 Zecca Drive, Guelph, ON, N1L1T1] License # : 3556411</pre>	
N# : COMMAND#	
101:C00001	
START	
[TZERO = .00 hrs on 0]	
[TZERO = .00 hrs on 0] [METOUT= 2 (1=imperial, 2=metric output)]	
[TZERO = .00 hrs on 0] [METOUT= 2 (1=imperial, 2=metric output)] [NSTORM= 0]	
<pre>[TZERO = .00 hrs on 0] [METOUT= 2 (1=imperial, 2=metric output)] [NSTORM= 0] [NRUN = 0001]</pre>	
<pre>[TZERO = .00 hrs on 0] [METOUT= 2 (1=imperial, 2=metric output)] [NSTORM= 0] [NRUN = 0001] **********************************</pre>	
<pre>[TZERO = .00 hrs on 0] [METOUT= 2 (1=imperial, 2=metric output)] [NSTORM= 0] [NRUN = 0001] ************************************</pre>	
<pre>[TZERO = .00 hrs on 0] [METOUT= 2 (1=imperial, 2=metric output)] [NSTORM= 0] [NRUN = 0001] **********************************</pre>	
<pre>[TZERO = .00 hrs on 0] [METOUT= 2 (1=imperial, 2=metric output)] [NSTORM= 0] [NRUN = 0001] **********************************</pre>	
<pre>[TZERO = .00 hrs on 0] [METOUT= 2 (1=imperial, 2=metric output)] [NSTORM= 0] [NRUN = 0001] **********************************</pre>	
<pre>[TZER0 = .00 hrs on 0] [METOUT= 2 (1=imperial, 2=metric output)] [NSTORM= 0] [NRUN = 0001] ************************************</pre>	
<pre>[TZERO = .00 hrs on 0] [METOUT= 2 (1=imperial, 2=metric output)] [NSTORM= 0] [NRUN = 0001] **********************************</pre>	
<pre>[TZERO = .00 hrs on 0] [METOUT= 2 (1=imperial, 2=metric output)] [NSTORM= 0] [NRUN = 0001] ************************************</pre>	
<pre>[TZERO = .00 hrs on 0] [METOUT= 2 (1=imperial, 2=metric output)] [NSTORM= 0] [NRUN = 0001] ************************************</pre>	DWFc
<pre>[TZERO = .00 hrs on 0] [METOUT= 2 (1=imperial, 2=metric output)] [NSTORM= 0] [NRUN = 0001] ************************************</pre>	- DW F ca
<pre>[TZERO = .00 hrs on 0] [METOUT= 2 (1=imperial, 2=metric output)] [NSTORM= 0] [NRUN = 0001] ************************************</pre>	.0
<pre>[TZERO = .00 hrs on 0] [METOUT= 2 (1=imperial, 2=metric output)] [NSTORM= 0] [NRUN = 0001] ************************************</pre>	.0



[L/S/n= 287./ .100/.035] {Vmax= .272:Dmax= .232} R0001:C00005-----DTmin-ID:NHYD-----AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms 12:01 39.03 .660 CALIB STANDHYD 1.0 03:SB01-2 15.56 .647 No_date .000 [XIMP=.35:TIMP=.50] [LOSS= 2 :CN= 80.0]
 [Pervious]
 area:
 IAper=
 5.50:SLPP=
 .40:LGP=
 50.:MNP=.250:SCP=
 .0]

 [Impervious]
 area:
 IAimp=
 1.50:SLPI=
 .50:LGI=
 151.:MNI=.013:SCI=
 .0]

 R0001:C00006-------DTmin-ID:NHYD------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms

 CALIB NASHYD
 5.0
 04:SB02-1
 27.50
 .235 No date
 13:30
 15.75
 .267
 .000
 .235 No date [CN= 68.0: N= 3.00: Tp= 1.44] R0001:C00007-----DTmin-ID:NHYD-----AREAha-QPEAKcms-TpeakDate_hh:mm---RVmm-R.C.--DWFcms ROUTE CHANNEL -> 5.0 04:SB02-1 27.50 .235 No_date 13:30 15.75 n/a [RDT= 1.00] out<- 1.0 05:CH_SB2-2a 27.50 .234 No_date 13:31 15.75 n/a .000 .000 [L/S/n= 91./ .100/.035] {Vmax= .287:Dmax= .407}
 R0001:C00008-----DTmin-ID:NHYD-----AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.--DWFcms

 CALIB STANDHYD
 1.0 06:SB02-2
 4.75
 .277 No_date
 12:00
 49.64
 .840
 .000
 [XIMP=.60:TIMP=.80] [LOSS= 2 :CN= 82.0] [Pervious area: IAper= 5.50:SLPP= .60:LGP= 91.:MNP=.250:SCP= .0] [Impervious area: IAimp= 1.50:SLPI= .50:LGI= 30.:MNI=.013:SCI= .0] RO001:C00009------DTmin-ID:NHYD------AREAha-QPEAKcms-TpeakDate_hh:mm---RVmm-R.C.---DWFcms 17.36 .204 No_date 13:00 15.56 .647 No_date 12:01 ADD HYD 5.0 02:CH_SB1-2 16.63 n/a 1.0 03:SB01-2 39.03 n/a .000 + 1.0 05:CH_SB2-2a 27.50 .234 No_date 13:31 + 1.0 06:SB02-2 4.75 .277 No_date 12:00 SUM= 1.0 07:JN_1 65.17 1.064 No_date 12:00 15.75 n/a .000 .000 49.64 n/a 24.01 n/a .000 R0001:C00010-----DTmin-ID:NHYD-----AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
 ROUTE CHANNEL
 ->
 1.0
 07:JN_1
 65.17
 1.064
 No_date
 12:00

 [RDT=1.00] out<-</td>
 1.0
 08:CH_SB2-3
 65.17
 .972
 No_date
 12:02
 24.01 n/a .000 24.01 n/a .000 [L/S/n= 285./.100/.035] {Vmax= .427:Dmax= .511} R0001:C00011------DTmin-ID:NHYD-----AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms CALIB STANDHYD 1.0 09:SB01-2 1.14 .051 No_date 12:00 39.94 .676 .000 [XIMP=.35:TIMP=.50] [LOSS= 2 :CN= 82.0]
 [Pervious]
 area:
 IAper=
 5.00:SLPP=
 .50:LGP=
 64.:MNP=.250:SCP=
 .0]

 [Impervious]
 area:
 IAimp=
 2.75:SLPI=
 .30:LGI=
 30.:MNI=.013:SCI=
 .0]
 R0001:C00012-----DTmin-ID:NHYD-----AREAha-QPEAKcms-TpeakDate_hh:mm---RVmm-R.C.---DWFcms
 1.0
 08:CH_SB2-3
 65.17
 .972
 No_date
 12:02
 24.01
 n/a

 +
 1.0
 09:SB01-2
 1.14
 .051
 No_date
 12:00
 39.94
 n/a

 SUM=
 1.0
 10:JN_2
 66.31
 1.020
 No_date
 12:01
 24.29
 n/a
 .000 ADD HYD .000 12:01 .000 R0001:C00013-----DTmin-ID:NHYD-----AREAha-QPEAKcms-TpeakDate_hh:mm---RVmm-R.C.--DWFcms
 ROUTE CHANNEL
 ->
 1.0
 10:JN_2
 66.31
 1.020
 No_date

 [RDT=
 1.00]
 out<-</td>
 1.0
 01:CH_SB3-2
 66.31
 .965
 No_date
 12:01 24.29 n/a .000 12:03 24.29 n/a .000 [KD1-1.00] GLC- 1.0 GLCH_DB5 2 GCCH ...G_ACCTG_ACCT ...G_ACCT ...G_ACCT ...G_ACCT ...G_ACCT ...G_ACCT [CN= 69.0: N= 3.00: Tp= .62] R0001:C00015-----DTmin-ID:NHYD-----AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms CALIB NASHYD 5.0 03:SB04 .247 No date 19.72 12:35 16.05 .272 [CN= 70.0: N= 3.00: Tp= .79] R0001:C00016-----DTmin-ID:NHYD-----AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
 1.0
 01:CH_SB3-2
 66.31
 .965
 No_date

 +
 5.0
 02:SB03-2
 10.92
 .153
 No_date

 +
 5.0
 03:SB04
 19.72
 .247
 No_date

 SUM=
 1.0
 04:JN_3
 96.95
 1.283
 No_date
 ADD HYD 12:03 24.29 n/a 12:25 15.64 n/a .000 12:35 16.05 n/a .000 12:24 21.64 n/a .000 R0001:C00017-----DTmin-ID:NHYD-----AREAha-QPEAKcms-TpeakDate_hh:mm---RVmm-R.C.--DWFcms
 ROUTE CHANNEL
 ->
 1.0
 04:JN_3
 96.95
 1.283
 No
 date
 12:24
 21.64
 n/a

 [RDT=1.00] out<-</td>
 1.0
 05:CH_SB5-1
 96.95
 1.205
 No_date
 12:45
 21.64
 n/a
 .000 .000 [RDT= 1.00] OUC< 1.0 05:05 555 1.205 No_date 12.10 21.01 ..., a [L/S/n= 451./ .100/.035] {Vmax= .352:Dmax= .452} RO001:C00018-----DTmin-ID:NHYD-----AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms CALIB NASHYD 5.0 06:SB05-1 29.50 .438 No_date 12:20 15.73 .266 .000 [CN= 68.0: N= 3.00: Tp= .57] R0001:C00019------DTmin-ID:NHYD-----AREAha-QPEAKcms-TpeakDate hh:mm----RVmm-R.C.---DWFcms ADD HYD 1.0 05:CH_SB5-1 96.95 1.205 No_date 12:45 21.64 n/a + 5.0 06:SB05-1 29.50 .438 No_date 12:20 15.73 n/a SUM= 1.0 07:JN_4 126.45 1.602 No_date 12:31 20.26 n/a .000 .000 000 R0001:C00020-----DTmin-ID:NHYD-----AREAha-QPEAKcms-TpeakDate hh:mm----RVmm-R.C.---DWFcms ROUTE CHANNEL -> 1.0 07:JN_4 [RDT= 1.00] out<- 1.0 08:CH_SBS 1.0 07:JN_4 126.45 1.602 No date 12:31 1.0 08:CH_SB5-2 126.45 1.344 No_date 12:59 20.26 n/a .000 20.26 n/a .000 [L/S/n= 429./ .020/.035] {Vmax= .214:Dmax= .654} R0001:C00021-----DTmin-ID:NHYD-----AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms CALIB NASHYD 5.0 09:SB05-2 10.39 .101 No_date 13:20 16.67 .282 .000 [CN= 70.0: N= 3.00: Tp= 1.31]
 R0001:C00022-----DTmin-ID:NHYD-----AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.--DWFcms

 CALIB NASHYD
 5.0 10:SB05-3
 8.51
 .069 No_date
 13:10
 13.33
 .225
 .000



[CN= 65.0: N= 3.00	: Tp= 1.	16]							
R0001:C00023			AREAha-	-QPEAKcms-	-TpeakDat	e_hh:mm-	RVmm-	-R.C	DWFcms
ADD HYD		:CH_SB5-2							.000
+		:SB05-2	10.39		No_date				.000
+		:SB05-3	8.51		No_date				.000
R0001:C00024		:JN_5							.000
CALIB NASHYD				.204		13:25			.000
[CN= 71.0: N= 3.00			21.20	.201	no_aaree	10.20	10.01	.200	.000
R0001:C00025	DTmin-ID	: NHYD	AREAha-	-QPEAKcms-	-TpeakDat	e hh:mm-	RVmm-	-R.C	DWFcms
CALIB NASHYD	5.0 03	:SB07	11.36	.086	No_date	_13:50	15.74	.266	.000
[CN= 68.0: N= 3.00									
R0001:C00026									
ADD HYD	5.0 02		21.20	.204					.000
+		:SB07	11.36		No_date				.000
SUM=		:JN_6			No_date				.000
R0001:C00027 ROUTE CHANNEL ->		:NHYD :JN 6		-QPEAKCMS- .287					DwFCms
[RDT= 5.00] out<-		_							.000
[L/S/n= 490./ .50			52.50	.205	NO_date	10.10	10.50	ii/a	.000
{Vmax= .537:Dmax=									
R0001:C00028		:NHYD	AREAha-	-OPEAKcms-	-TpeakDat	e hh:mm-	RVmm-	-R.C	DWFcms
CALIB NASHYD		:SB08							
[CN= 80.0: N= 3.00					—				
R0001:C00029							RVmm-	-R.C	DWFcms
ADD HYD	1.0 01	:JN_5	145.35						.000
+	5.0 05	:CH_SB8	32.56	.283	No_date	13:40			.000
+		:SB08	8.98		No_date				.000
		:JN_7							.000
R0001:C00030	D'Imin-ID	: NHYD	AREAha-	-QPEAKcms-	-TpeakDat	e_hh:mm-			
ROUTE CHANNEL -> [RDT= 1.00] out<-	1.0 07	:JN_7 :CH_SB9	186.89	1.886	No_date	13:02 13:10		, .	.000
[L/S/n= 410./ .10		.cn_3b9	100.09	1.000	NO_uale	13.10	19.23	II/a	.000
{Vmax= .552:Dmax=									
R0001:C00031		: NHYD	AREAha-	-OPEAKcms-	-TpeakDat	e hh:mm-		-R.C	
CALIB NASHYD				.245					
[CN= 73.0: N= 3.00									
R0001:C00032		: NH YD	AREAha-	-QPEAKcms-	-TpeakDat	e hh:mm-	RVmm-	-R.C	DWFcms
CALIB NASHYD	5.0 10	:SB10	11.38	.157	No_date	_12:30	16.88	.286	.000
[CN= 72.0: N= 3.00	: Tp= .								
R0001:C00033	DTmin-ID				-	_			
ADD HYD		—		1.855	_				.000
+		:SB09	14.34		No_date		17.78		.000
					No date	12:30	16 88	n/a	.000
+	5.0 10	:SB10	11.38	. 137	_				
SUM=	1.0 01	:JN_8	212.61	2.148	No_date	13:02	19.03	n/a	.000
SUM=	1.0 01 DTmin-ID	:JN_8 :NHYD	212.61 AREAha-	2.148 QPEAKcms	No_date -TpeakDat	13:02 e_hh:mm-	19.03 RVmm-	n/a -R.C	.000
SUM=	1.0 01 DTmin-ID	:JN_8 :NHYD	212.61 AREAha-	2.148 QPEAKcms	No_date -TpeakDat	13:02 e_hh:mm-	19.03 RVmm- 19.03	n/a -R.C n/a	.000 DWFcms .000
SUM= R0001:C00034 ROUTE CHANNEL -> [RDT= 1.00] out<-	1.0 01 DTmin-ID 1.0 01 1.0 02	:JN_8 :NHYD	212.61 AREAha-	2.148 QPEAKcms	No_date -TpeakDat	13:02 e_hh:mm-	19.03 RVmm- 19.03	n/a -R.C n/a	.000
SUM= R0001:C00034 ROUTE CHANNEL -> [RDT= 1.00] out<- [L/S/n= 302./ .10	1.0 01 DTmin-ID 1.0 01 1.0 02 0/.035]	:JN_8 :NHYD	212.61 AREAha-	2.148 QPEAKcms	No_date -TpeakDat	13:02 e_hh:mm-	19.03 RVmm- 19.03	n/a -R.C n/a	.000 DWFcms .000
SUM= R0001:C00034 ROUTE CHANNEL -> [RDT= 1.00] out<- [L/S/n= 302./ .10 {Vmax= .571:Dmax=	1.0 01 DTmin-ID 1.0 01 1.0 02 0/.035] .753}	:JN_8 :NHYD :JN_8 :CH_SB11	212.61 AREAha- 212.61 212.61	2.148 -QPEAKcms 2.148 2.123	No_date -TpeakDat No_date No_date	13:02 e_hh:mm- 13:02 13:07	19.03 RVmm- 19.03 19.03	n/a -R.C n/a n/a	.000 DWFcms .000 .000
SUM= R0001:C00034 ROUTE CHANNEL -> [RDT= 1.00] out<- [L/S/n= 302./ .10	1.0 01 DTmin-ID 1.0 01 1.0 02 0/.035] .753} DTmin-ID	: JN_8 : NHYD : JN_8 : CH_SB11 : NHYD	212.61 AREAha- 212.61 212.61 AREAha-	2.148 -QPEAKcms 2.148 2.123	No_date -TpeakDat No_date No_date -TpeakDat	13:02 e_hh:mm- 13:02 13:07 e_hh:mm-	19.03 RVmm- 19.03 19.03	n/a -R.C n/a n/a -R.C	.000 DWFcms .000 .000
SUM= R0001:C00034 ROUTE CHANNEL -> [RDT= 1.00] out<- [L/S/n= 302./ .10 {Vmax= .571:Dmax= R0001:C00035	1.0 01 DTmin-ID 1.0 01 1.0 02 0/.035] .753} DTmin-ID 1.0 03	: JN_8 : NHYD : JN_8 : CH_SB11 : NHYD : SB11	212.61 AREAha- 212.61 212.61 AREAha-	2.148 -QPEAKcms- 2.148 2.123 -QPEAKcms-	No_date -TpeakDat No_date No_date -TpeakDat	13:02 e_hh:mm- 13:02 13:07 e_hh:mm-	19.03 RVmm- 19.03 19.03	n/a -R.C n/a n/a -R.C	.000 DWFcms .000 .000
SUM= R0001:C00034 ROUTE CHANNEL -> [RDT= 1.00] out<- [L/S/n= 302./ .10 {Vmax= .571:Dmax= R0001:C00035 CALIB NASHYD	1.0 01 DTmin-ID 1.0 01 1.0 02 0/.035] .753} DTmin-ID 1.0 03 : Tp= DTmin-ID	: JN_8 :NHYD : JN_8 : CH_SB11 : NHYD : SB11 08] :NHYD	212.61 AREAha- 212.61 212.61 AREAha- 14.81 AREAha-	2.148 -QPEAKcms- 2.148 2.123 -QPEAKcms- .509 -QPEAKcms-	No_date -TpeakDat No_date No_date -TpeakDat No_date -TpeakDat	13:02 e_hh:mm- 13:02 13:07 e_hh:mm- 12:00 e_hh:mm-	19.03 RVmm- 19.03 19.03 RVmm- 21.54 RVmm-	n/a -R.C n/a n/a -R.C .364 -R.C	. 000 DWFcms . 000 . 000 DWFcms . 000
SUM= R0001:C00034 ROUTE CHANNEL -> [RDT= 1.00] out<- [L/S/n= 302./ .10 {Vmax= .571:Dmax= R0001:C00035 CALIB NASHYD [CN= 78.0: N= 3.00 R0001:C00036 CALIB NASHYD	1.0 01 DTmin-ID 1.0 01 1.0 02 0/.035 DTmin-ID 1.0 03 : Tp= DTmin-ID 5.0 04	:JN_8 :NHYD :JN_8 :CH_SB11 :NHYD :SB11 08] :NHYD :SB16	212.61 AREAha- 212.61 212.61 AREAha- 14.81 AREAha-	2.148 -QPEAKcms- 2.148 2.123 -QPEAKcms- .509 -QPEAKcms-	No_date -TpeakDat No_date No_date -TpeakDat No_date -TpeakDat	13:02 e_hh:mm- 13:02 13:07 e_hh:mm- 12:00 e_hh:mm-	19.03 RVmm- 19.03 19.03 RVmm- 21.54 RVmm-	n/a -R.C n/a n/a -R.C .364 -R.C	. 000 DWFcms . 000 . 000 DWFcms . 000
SUM= R0001:C00034 ROUTE CHANNEL -> [RDT= 1.00] out<- [L/S/n= 302./ .10 {Vmax= .571:Dmax= R0001:C00035 CALIB NASHYD [CN= 78.0: N= 3.00 CALIB NASHYD [CN= 78.0: N= 3.00	1.0 01 DTmin-ID 1.0 01 1.0 02 0/.035] .753} DTmin-ID 1.0 03 : Tp= . DTmin-ID 5.0 04 : Tp= 1.	: JN_8 : NHYD : CM_8 : CH_SB11 : NHYD : SB11 08] : NHYD : SB16 30]	212.61 AREAha- 212.61 212.61 AREAha- 14.81 AREAha- 16.71	2.148 -QPEAKcms- 2.148 2.123 -QPEAKcms- .509 -QPEAKcms- .217	No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat No_date	13:02 e_hh:mm- 13:02 13:07 e_hh:mm- 12:00 e_hh:mm- 13:15	19.03 RVmm- 19.03 19.03 RVmm- 21.54 RVmm- 21.70	n/a -R.C n/a -R.C .364 -R.C .367	.000 DWFcms .000 .000 DWFcms .000
SUM= R0001:C00034 R0UTE CHANNEL -> [RDT= 1.00] out<- [L/S/n= 302./ .10 {Vmax= .571:Dmax= R0001:C00035 CALIB NASHYD [CN= 78.0: N= 3.00 R0001:C00037	1.0 01 DTmin-ID 1.0 01 1.0 02 0/.035] .753} DTmin-ID 1.0 03 : Tp= . DTmin-ID 5.0 04 : Tp= 1. DTmin-ID	: JN_8 : NHYD : JN_8 : CH_SB11 : NHYD : SB11 08] : NHYD : SB16 30] : NHYD	212.61 AREAha- 212.61 212.61 AREAha- 14.81 AREAha- 16.71 AREAha-	2.148 -QPEAKcms- 2.148 2.123 -QPEAKcms- .509 -QPEAKcms- .217 -QPEAKcms-	No_date -TpeakDat No_date No_date -TpeakDat No_date -TpeakDat No_date	13:02 e_hh:mm- 13:02 13:07 e_hh:mm- 12:00 e_hh:mm- 13:15 e_hh:mm-	19.03 RVmm- 19.03 19.03 RVmm- 21.54 RVmm- 21.70 RVmm-	n/a -R.C n/a -R.C .364 -R.C .367 -R.C	.000 DWFcms .000 .000 DWFcms .000 .000
SUM= R0001:C00034 ROUTE CHANNEL -> [RDT= 1.00] out<- [L/S/n= 302./.10 {Vmax= .571:Dmax= R0001:C00035 CALIB NASHYD [CN= 78.0: N= 3.00 R0001:C00037 R0UTE CHANNEL ->	1.0 01 DTmin-ID 1.0 01 0/.035] .753} DTmin-ID 1.0 03 : Tp= DTmin-ID 5.0 04 : Tp= 1. DTmin-ID 5.0 04	:JN_8 :NHYD :SB11 :NHYD :SB11 08] :NHYD :SB16 30] :NHYD :SB16	212.61 AREAha- 212.61 212.61 AREAha- 14.81 AREAha- 16.71 AREAha- 16.71	2.148 QPEAKcms- 2.148 2.123 - QPEAKcms- .509 - QPEAKcms- .217 - QPEAKcms- .217	No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat No_date	13:02 e_hh:mm- 13:02 13:07 e_hh:mm- 12:00 e_hh:mm- 13:15 e_hh:mm- 13:15	19.03 RVmm- 19.03 19.03 RVmm- 21.54 RVmm- 21.70 RVmm- 21.70	n/a -R.C n/a n/a -R.C .364 -R.C .367 -R.C n/a	
SUM= ROUTE CHANNEL -> [RDT= 1.00] out<- [L/S/n= 302./ .10 {Vmax= .571:Dmax= ROU01:C00035 CALIB NASHYD [CN= 78.0: N= 3.00 ROU01:C00037 ROUTE CHANNEL -> [RDT= 5.00] out<-	1.0 01 DTmin-ID 1.0 01 0/.035] .753} DTmin-ID 1.0 03 .753 DTmin-ID 5.0 04 : Tp= 1. DTmin-ID 5.0 04 : 5.0 04 5.0 04	:JN_8 :NHYD :SB11 :NHYD :SB11 08] :NHYD :SB16 30] :NHYD :SB16	212.61 AREAha- 212.61 212.61 AREAha- 14.81 AREAha- 16.71 AREAha- 16.71	2.148 QPEAKcms- 2.148 2.123 - QPEAKcms- .509 - QPEAKcms- .217 - QPEAKcms- .217	No_date -TpeakDat No_date No_date -TpeakDat No_date -TpeakDat No_date	13:02 e_hh:mm- 13:02 13:07 e_hh:mm- 12:00 e_hh:mm- 13:15 e_hh:mm- 13:15	19.03 RVmm- 19.03 19.03 RVmm- 21.54 RVmm- 21.70 RVmm-	n/a -R.C n/a n/a -R.C .364 -R.C .367 -R.C n/a	.000 DWFcms .000 .000 DWFcms .000 .000
SUM= R0001:C00034 ROUTE CHANNEL -> [RDT= 1.00] out<- [L/S/n= 302./ .10 {Vmax= .571:Dmax= R0001:C00035 CALIB NASHYD [CN= 78.0: N= 3.00 R0001:C00036 CALIB NASHYD [CN= 78.0: N= 3.00 R0001:C00037 ROUTE CHANNEL -> [RDT= 5.00] out<- [L/S/n= 299./ .75	1.0 01 DTmin-ID 1.0 01 0/.035] .753} DTmin-ID 1.0 03 : Tp= . DTmin-ID 5.0 04 : Tp= 1. DTmin-ID 5.0 05 0/.035]	:JN_8 :NHYD :SB11 :NHYD :SB11 08] :NHYD :SB16 30] :NHYD :SB16	212.61 AREAha- 212.61 212.61 AREAha- 14.81 AREAha- 16.71 AREAha- 16.71	2.148 QPEAKcms- 2.148 2.123 - QPEAKcms- .509 - QPEAKcms- .217 - QPEAKcms- .217	No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat No_date	13:02 e_hh:mm- 13:02 13:07 e_hh:mm- 12:00 e_hh:mm- 13:15 e_hh:mm- 13:15	19.03 RVmm- 19.03 19.03 RVmm- 21.54 RVmm- 21.70 RVmm- 21.70	n/a -R.C n/a n/a -R.C .364 -R.C .367 -R.C n/a	
SUM= R0001:C00034 ROUTE CHANNEL -> [RDT= 1.00] out<- [L/S/n= 302./ .10 {Vmax= .571:Dmax= R0001:C00035 CALIB NASHYD [CN= 78.0: N= 3.00 R0001:C00037 CALIB NASHYD [CN= 78.0: N= 3.00 R0001:C00037 ROUTE CHANNEL -> [RDT= 5.00] out<- [L/S/n= 299./ .75 {Vmax= .366:Dmax=	1.0 01 DTmin-ID 1.0 02 0/.035] .753} DTmin-ID 1.0 03 : Tp= . DTmin-ID 5.0 04 : Tp= 1. DTmin-ID 5.0 05 0/.035] .103}	: JN_8 : NHYD : CM_8 : CH_SB11 : NHYD : SB11 08] : NHYD : SB16 30] : NHYD : SB16 : CH_SB15	212.61 AREAha- 212.61 212.61 AREAha- 14.81 AREAha- 16.71 AREAha- 16.71 16.71	2.148 QPEAKcms- 2.148 2.123 - QPEAKcms- .509 - QPEAKcms- .217 - QPEAKcms- .217 .215	No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat No_date No_date No_date	13:02 e_hh:mm- 13:02 13:07 e_hh:mm- 12:00 e_hh:mm- 13:15 e_hh:mm- 13:15 13:25	19.03 RVmm- 19.03 19.03 RVmm- 21.54 RVmm- 21.70 RVmm- 21.70 21.70	n/a -R.C n/a n/a -R.C .364 -R.C n/a n/a	.000 DWFcms .000 .000 DWFcms .000 .000 .000 .000
SUM= R0001:C00034 ROUTE CHANNEL -> [RDT= 1.00] out<- [L/S/n= 302./ .10 {Vmax= .571:Dmax= R0001:C00035 CALIB NASHYD [CN= 78.0: N= 3.00 R0001:C00037 ROUTE CHANNEL -> [RDT= 5.00] out<- [L/S/n= 299./ .75 {Vmax= .366:Dmax= R0001:C00038	1.0 01 DTmin-ID 1.0 01 0/.035] .753} DTmin-ID 5.0 04 : Tp= 1. DTmin-ID 5.0 04 5.0 05 0/.035] .103} DTmin-ID	:JN_8 :NHYD :SB11 :NHYD :SB11 08] :NHYD :SB16 30] :NHYD :SB16 :CH_SB15 :NHYD	212.61 AREAha- 212.61 212.61 AREAha- 14.81 AREAha- 16.71 16.71 16.71 AREAha-	2.148 -QPEAKcms- 2.148 2.123 -QPEAKcms- .509 -QPEAKcms- .217 .215 -QPEAKcms- .217 .215	No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat	13:02 e_hh:mm- 13:02 13:07 e_hh:mm- 12:00 e_hh:mm- 13:15 13:25 e_hh:mm-	19.03 RVmm- 19.03 19.03 19.03 RVmm- 21.54 RVmm- 21.70 RVmm- 21.70 21.70 RVmm- 21.70 	n/a -R.C n/a n/a -R.C .364 -R.C n/a n/a -R.C	
SUM= R0001:C00034 R0UTE CHANNEL -> [RDT= 1.00] out<- [L/S/n= 302./ .10 {Vmax= .571:Dmax= R0001:C00035 CALIB NASHYD [CN= 78.0: N= 3.00 R0001:C00037 R0UTE CHANNEL -> [RDT= 5.00] out<- [L/S/n= 299./ .75 {Vmax= .366:Dmax= R0001:C00038 CALIB NASHYD	1.0 01 DTmin-ID 1.0 01 0/.035] .753} DTmin-ID 5.0 04 : Tp= 1. DTmin-ID 5.0 04 : Tp= 1. DTmin-ID 5.0 04 5.0 04 : To= 1. DTmin-ID 5.0 04 5.0 05 0/.035] .103} DTmin-ID 5.0 06	: JN_8 :NHYD : JN_8 : CH_SB11 : NHYD : SB11 08] : NHYD : SB16 : CH_SB15 : NHYD : SB15	212.61 AREAha- 212.61 212.61 AREAha- 14.81 AREAha- 16.71 AREAha- 16.71 16.71	2.148 -QPEAKcms- 2.148 2.123 -QPEAKcms- .509 -QPEAKcms- .217 .215 -QPEAKcms- .217 .215	No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat No_date No_date No_date	13:02 e_hh:mm- 13:02 13:07 e_hh:mm- 12:00 e_hh:mm- 13:15 13:25 e_hh:mm-	19.03 RVmm- 19.03 19.03 19.03 RVmm- 21.54 RVmm- 21.70 RVmm- 21.70 21.70 RVmm- 21.70	n/a -R.C n/a n/a -R.C .364 -R.C n/a n/a -R.C	.000 DWFcms .000 .000 DWFcms .000 .000 .000 .000
SUM= R0001:C00034 ROUTE CHANNEL -> [RDT= 1.00] out<- [L/S/n= 302./ .10 {Vmax= .571:Dmax= R0001:C00035 CALIB NASHYD [CN= 78.0: N= 3.00 R0001:C00037 ROUTE CHANNEL -> [RDT= 5.00] out<- [L/S/n= 299./ .75 {Vmax= .366:Dmax= R001:C00038 CALIB NASHYD [CN= 78.0: N= 3.00	1.0 01 DTmin-ID 1.0 01 0/.035] .753} DTmin-ID 1.0 03 : Tp= . DTmin-ID 5.0 04 : Tp= 1. DTmin-ID 5.0 04 : Tp= 1. DTmin-ID 5.0 05 0/.035] .103} DTmin-ID 5.0 06 : Tp= .	:JN_8 :NHYD :JN_8 :CH_SB11 :NHYD :SB11 08] :NHYD :SB16 30] :NHYD :SB16 :CH_SB15 :NHYD :SB15 54]	212.61 AREAha- 212.61 212.61 AREAha- 14.81 AREAha- 16.71 AREAha- 16.71 AREAha- 7.95	2.148 -QPEAKcms- 2.148 2.123 -QPEAKcms- .217 -QPEAKcms- .217 .215 -QPEAKcms- .174	No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat No_date	13:02 e_hh:mm- 13:02 13:07 e_hh:mm- 12:00 e_hh:mm- 13:15 13:25 e_hh:mm- 12:15	19.03 RVmm- 19.03 19.03 19.03 RVmm- 21.54 RVmm- 21.70 21.70 RVmm- 21.70	n/a -R.C n/a n/a -R.C .364 -R.C n/a n/a -R.C .367	DWFcms .000 .000 DWFcms .000 DWFcms .000 .000 DWFcms .000
SUM= R0001:C00034 R0UTE CHANNEL -> [RDT= 1.00] out<- [L/S/n= 302./ .10 {Vmax= .571:Dmax= R0001:C00035 CALIB NASHYD [CN= 78.0: N= 3.00 R0001:C00037 R0UTE CHANNEL -> [RDT= 5.00] out<- [L/S/n= 299./ .75 {Vmax= .366:Dmax= R0001:C00038 CALIB NASHYD	1.0 01 DTmin-ID 1.0 01 0/.035] .753} DTmin-ID 1.0 03 : Tp= . DTmin-ID 5.0 04 : Tp= 1. DTmin-ID 5.0 04 : Tp= 1. DTmin-ID 5.0 05 0/.035] .103} DTmin-ID 5.0 06 : Tp= .	: JN_8 :NHYD : JN_8 : CH_SB11 : NHYD : SB11 08] :NHYD : SB16 30] : NHYD : SB16 : CH_SB15 : NHYD : SB15 54] : NHYD	212.61 AREAha- 212.61 212.61 AREAha- 14.81 AREAha- 16.71 AREAha- 16.71 AREAha- 7.95	2.148 -QPEAKcms- 2.148 2.123 -QPEAKcms- .217 -QPEAKcms- .217 .215 -QPEAKcms- .174 -QPEAKcms-	No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat No_date	13:02 e_hh:mm- 13:02 13:07 e_hh:mm- 12:00 e_hh:mm- 13:15 13:25 e_hh:mm- 12:15	19.03 RVmm- 19.03 19.03 19.03 RVmm- 21.54 RVmm- 21.70 21.70 RVmm- 21.70 RVmm- 21.70 RVmm- 21.70	n/a -R.C .364 -R.C .367 -R.C n/a n/a -R.C .367 -R.C .367	DWFcms .000 .000 DWFcms .000 DWFcms .000 .000 DWFcms .000
SUM= R0001:C00034 ROUTE CHANNEL -> [RDT= 1.00] out<- [L/S/n= 302./ .10 {Vmax= .571:Dmax= R0001:C00035 CALIB NASHYD [CN= 78.0: N= 3.00 R0001:C00036 CALIB NASHYD [CN= 78.0: N= 3.00 R0001:C00037 ROUTE CHANNEL -> [RDT= 5.00] out<- [L/S/n= 299./ .75 {Vmax= .366:Dmax= R0001:C00038 CALIB NASHYD [CN= 78.0: N= 3.00 R0001:C00039	1.0 01 DTmin-ID 1.0 01 0/.035] .753} DTmin-ID 5.0 04 : Tp= 1. DTmin-ID 5.0 04 5.0 05 0/.035] .103} DTmin-ID 5.0 07	:JN_8 :NHYD :SB11 :NHYD :SB11 08] :NHYD :SB16 :ONYD :SB16 :CH_SB15 :NHYD :SB15 54] :NHYD :SB14	212.61 AREAha- 212.61 212.61 AREAha- 14.81 AREAha- 16.71 AREAha- 16.71 AREAha- 7.95 AREAha-	2.148 -QPEAKcms- 2.148 2.123 -QPEAKcms- .217 -QPEAKcms- .217 .215 -QPEAKcms- .174 -QPEAKcms-	No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat -TpeakDat -TpeakDat	13:02 e_hh:mm- 13:02 13:07 e_hh:mm- 12:00 e_hh:mm- 13:15 13:25 e_hh:mm- 12:15 e_hh:mm-	19.03 RVmm- 19.03 19.03 19.03 RVmm- 21.54 RVmm- 21.70 21.70 RVmm- 21.70 RVmm- 21.70 RVmm- 21.70	n/a -R.C .364 -R.C .367 -R.C n/a n/a -R.C .367 -R.C .367	
SUM= R0001:C00034 ROUTE CHANNEL -> [RDT= 1.00] out<- [L/S/n= 302./ .10 {Vmax= .571:Dmax= R0001:C00035 CALIB NASHYD [CN= 78.0: N= 3.00 R0001:C00036 CALIB NASHYD [CN= 78.0: N= 3.00 R0001:C00037 [L/S/n= 299./ .75 {Vmax= .366:Dmax= R0001:C00038 CALIB NASHYD [CN= 78.0: N= 3.00 R0001:C00039 CALIB NASHYD	1.0 01 DTmin-ID 1.0 01 0/.035] .753} DTmin-ID 5.0 04 : Tp= 1. DTmin-ID 5.0 04 : Tp= 1. DTmin-ID 5.0 04 5.0 05 0/.035] .103} DTmin-ID 5.0 06 : Tp= . DTmin-ID 5.0 07 : Tp= .	:JN_8 :NHYD :SB11 :SB11 :SB11 08] :NHYD :SB16 :CH_SB15 :NHYD :SB15 54] :NHYD :SB14 61]	212.61 AREAha- 212.61 212.61 AREAha- 14.81 AREAha- 16.71 16.71 AREAha- 16.71 AREAha- 15.85	2.148 -QPEAKcms- 2.148 2.123 -QPEAKcms- .509 -QPEAKcms- .217 -QPEAKcms- .217 -QPEAKcms- .174 -QPEAKcms- .326 -QPEAKcms-	No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat -TpeakDat -TpeakDat	13:02 e_hh:mm- 13:02 13:07 e_hh:mm- 12:00 e_hh:mm- 13:15 13:15 13:25 e_hh:mm- 12:15 e_hh:mm- 12:20 e_hh:mm-	19.03 RVmm- 19.03 19.03 19.03 RVmm- 21.54 RVmm- 21.70 21.70 RVmm- 21.70 RVmm- 21.70	n/a -R.C .364 -R.C .367 -R.C .367 -R.C .367 -R.C .367	
SUM= R0001:C00034 ROUTE CHANNEL -> [RDT= 1.00] out<- [L/S/n= 302./ .10 {Vmax= .571:Dmax= R0001:C00035 CALIB NASHYD [CN= 78.0: N= 3.00 R0001:C00036 ROUTE CHANNEL -> [RDT= 5.00] out<- [L/S/n= 299./ .75 {Vmax= .366:Dmax= R001:C00038 CALIB NASHYD [CN= 78.0: N= 3.00 R0001:C00039 CALIB NASHYD [CN= 78.0: N= 3.00 R0001:C00040 ADD HYD	1.0 01 DTmin-ID 1.0 01 0/.035] .753} DTmin-ID 1.0 03 TTP= . DTmin-ID 5.0 04 : TP= 1. DTmin-ID 5.0 04 : TP= 1. DTmin-ID 5.0 05 0/.035] .103} DTmin-ID 5.0 06 : TP= . DTmin-ID 5.0 07 : TP= . DTmin-ID 5.0 05	: JN_8 :NHYD : JN_8 : CH_SB11 : NHYD : SB11 08] : NHYD : SB16 : CH_SB15 : NHYD : SB15 54] : NHYD : SB14 61] : NHYD : CH_SB15	212.61 AREAha- 212.61 212.61 AREAha- 14.81 AREAha- 16.71 AREAha- 16.71 AREAha- 7.95 AREAha- 15.85 AREAha- 16.71	2.148 -QPEAKcms- 2.148 2.123 -QPEAKcms- .509 -QPEAKcms- .217 -QPEAKcms- .215 -QPEAKcms- .326 -QPEAKcms- .326	No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat No_date -TpeakDat No_date	13:02 e_hh:mm- 13:02 13:07 e_hh:mm- 12:00 e_hh:mm- 13:15 13:25 e_hh:mm- 12:15 e_hh:mm- 12:20 e_hh:mm- 12:20	19.03 RVmm- 19.03 19.03 19.03 RVmm- 21.54 RVmm- 21.70 RVmm- 21.70 RVmm- 21.70 RVmm- 21.70	n/a -R.C n/a n/a -R.C .364 -R.C n/a -R.C .367 -R.C .367 -R.C .367 -R.C .367	
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* User comment * 1: 2: * 3: Project Nar Date Date D22 Modeller Company LLT1] License # 556411	nts: ********* me: [Pe] : Dece : [Dr : [Af : :	(***** ham] ember . Bah	HP\Des ******* Pro 27, ar SM, H Geomo	<pre>ktop\Of</pre>	fice\1	Pelham\V 	14\V14\5- 	<pre>yr\5YR_P</pre>	elham	sum *****	****	******
USer comment 1: 2: 3: Project Nar Date Date 222 Modeller Company L1T1] License # 56411 ***********************************	nts: 	****** ham] mber . Bah HyDTEC	HP\Desi ******* Pro 27, ar SM, H Geomo	<pre>ktop\Of</pre>	fice\1	Pelham\V 	14\V14\5- 	<pre>yr\5YR_P</pre>	elham	sum *****	****	*******
User comment 1: 2: 3: Project Nar Date 22 Modeller Company LIT1] License # 56411 ***********************************	nts: ************************************	<pre></pre>	HP\Des! ******* Pro 27, ar SM, H Geomo *******	<pre>ctop\Of</pre>	fice\)	Pelham\V 	14\V14\5- 	<pre>yr\5YR_P</pre>	elham	sum *****	*******	*******
User comment 1: 2: 3: Project Name Date 22 Modeller Company Litense # 56411 ***********************************	nts: 		HP\Desi ******* Pro 27, ar SM, H Geomo ******* on mperial ******	<pre>ctop\Of</pre>	<pre>fice()</pre>	Pelham\V	14\V14\5- 	yr\5YR_P 	elham.:	sum 	*******	*******
User comment 1: 2: 3: Project Name Date 22 Modeller Company LIT1] License # 56411 ***********************************	nts: 	****** ham] ember . Bah iYDTEC (1=i; *****	HP\Desi ******** Pro 27, ar SM, H Geomo ******** on mperial ********	<pre>ctop\Of</pre>	<pre>fice()</pre>	Pelham\V	14\V14\5- 	yr\5YR_P 	elham.:	sum 	*******	*******
User comment 1: 2: 3: Project Nar Date 22 Modeller Company LIT1] License # 56411 ***********************************	nts: 		HP\Desi ******* Proj 27, ar SM, H Geomo ******* on mperial ******* ******* ******************	<pre>ctop \ Of</pre>	<pre>fice\1</pre>	Pelham\V	14\V14\5-	<pre>yr\5YR_P</pre>	elham.:	sum		
User comment 1: 2: 3: Project Name Date 22 Modeller Company LIT1] License # 56411 ***********************************	nts: 	<pre></pre>	HP\Desl ******* Proj 27, ar SM, H Geomo ******* 	<pre>ctop\Of </pre>	<pre>fice\1</pre>	Pelham\V	14\V14\5-	<pre>yr\5YR_P</pre>	elham.:	sum		
User comment 1: 2: 3: Project Name Date 22 Modeller Company LITU] License # 56411 ***********************************	nts: 	<pre></pre>	HP\Desl ******* Pro- 27, ar SM, H Geome ******* on mperial ******* ****** TM SCS .00:PTC 5.001; Tp= .8 min-TD	<pre>ctop\Of </pre>	fice\1	Pelham\V	14 \V14\5- 	<pre>yr\5YR_P </pre>	<pre>elham.: </pre>	sum 		CDWFcm 56 .00
User commen 1: 2: 3: Project Nam Date 22 Modeller Company LIT1] License # 56411 ***********************************	nts: 		HP\Desl ******* Pro: 27, ar SM, H Geomo ******* on mperial ******* ***** ****** TM S.CS .00:PTC min-ID 5.0 01: 5.0 01: 5	<pre>ctop\Of </pre>	fice\1	Pelham\V	14 \V14\5- 	<pre>yr\5YR_P </pre>	<pre>elham.: </pre>	sum 		CDWFcm 56 .00
User commen 1: 2: 3: Project Nar Date (22 Modeller Company Lirense # (56411 License # (56411 License # (56411 (STORM- (NSTORM- (SDT=10) 0001: c0002 READ STOI Filenamu COMMENT (SDT=10) (O1001: C0002 CALIB NASI (CN= 70) 0001: C0002 READ STOI (SDT=10) (SDT=5.4) (IL/S/n= (Vmax=	nts: 	<pre></pre>	HP\Desl ******* Proj 27, ar SM, H Geomo ******* mperial ******* ****** TM SCS .00:PTD min-ID 5.0 01: Tp= .6 min-ID 5.0 02 .035] .303}	<pre>ctop\Of </pre>	fice\1 	Pelham\V	14 \V14\5- 	<pre>yr\5YR_P Guelph, 0 ******** ******** -TpeakDa No_date No_date No_date</pre>	<pre>elham.: </pre>	sum 	-RVmm-R. 27.81 .3 -RVmm-R. 27.81 n 27.81 n	CDWFcm 56 .00 CDWFcm /a .00 /a .00
<pre>t User comment f 1: 2: 7 3: Project Name Date Date Date Date Date Date Date Dat</pre>	nts: 	<pre>****** ***** ***** ***** ***** ***** ****</pre>	HP\Des] HP\Des] ******* Proj 27, ar SM, H Geomo ******* mperial ******* ******* ******* mperial ******* ***************************	<pre>ctop \Of</pre>	<pre>fice\1</pre>	Pelham\V	14 \V14 \5- 	yr\5YR_P Guelph, (******** ******** -TpeakDa No_date -TpeakDa No_date -TpeakDa	<pre>elham.: </pre>	sum	-RVmm-R. 27.81 .3 -RVmm-R. 27.81 n 27.81 n -RVmm-R.	CDWFcm 56 .000 CDWFcm /a .000 /a .000

Drainage Study of the Farr, Webber, and River Road Area of the Town of Pelham



R0001:C00006 CALIB NASHYD	D	Tmin [.] 5.0	-ID:NHYD 04:SB02-1	AREAha 27.50	-QPEAKcms .403	-TpeakDate No date	e_hh:mm- 13:25	RVmm-R.C 26.45 .339	DWFcms .000
R0001:C00007 ROUTE CHANNEL [RDT= 1.00] ou [L/S/n= 91.	D	Tmin·	-ID:NHYD	AREAha	-QPEAKcms	-TpeakDate	e_hh:mm-	RVmm-R.C	DWFcms
[RDT= 1.00] ou	.t<-	1.0	05:CH SB2-2a	27.50	.403	No_date	13:30	26.45 n/a	.000
[L/S/n= 91.	/ .100	/.03	5] —			-			
{Vmax= .315:	Dmax=	.50	9}						
R0001:C00008 CALIB STANDHYD	D	Tmin· 1 0	-ID:NHYD	AREAha 4 75	-QPEAKcms	-TpeakDate	<pre></pre>	RVmm-R.C	DWFcms
[XIMP=.60:TIM	IP=.801	1.0	00.3002 2	4.75	.500	NO_uate	12.00	07.50 .070	.000
[LOSS= 2 :CN=									
			er= 5.50:SLPP=						
[Impervious R0001:C00009 ADD HYD R0001:C00010 R0UTE CHANNEL [RDT= 1.00] ou [L/S/n= 285.	area:	IAi: Tmin.	np= 1.50:SLPI=	.50:LGI=	30.:MNI:	=.013:SCI= -TooakDate	• .0] bb:mm_		DWFome
ADD HYD	D	5.0	02:CH SB1-2	17.36	.353	No date	12:55	27.81 n/a	.000
	+	1.0	03:SB01-2	15.56	.973	No_date	12:00	55.71 n/a	.000
	+	1.0	05:CH_SB2-2a	27.50	.402	No_date	13:30	26.45 n/a	.000
01	+	1.0	06:SB02-2	4.75	.386	No_date	12:00	67.96 n/a	.000
R0001:C00010	M= D	⊥.∪ Tmin∙	-TD:NHYD	03.17 AREAha	-OPEAKcms	-ToeakDate	12:00 hh:mm-		DWFcms
ROUTE CHANNEL	-> _	1.0	07:JN_1	65.17	1.647	No_date	12:00	36.82 n/a	.000
[RDT= 1.00] ou	t<-	1.0	08:CH_SB2-3	65.17	1.508	No_date	12:01	36.82 n/a	.000
{Vmax= .472: R0001:C00011				ARFAha	-OPFAKcms	- The ak Date	. bb∙mm-		DWFcms
CALIB STANDHYD									
[XIMP=.35:TIM	[P=.50]								
[LOSS= 2 :CN=			5 00 0	F.C	~ ~	0.5.0			
			er= 5.00:SLPP= np= 2.75:SLPI=						
R0001:C00012	area:	IAII Tmin·	пр- 2./3:55FI= -ID:NHYD	AREAba	-OPEAKcms	uis:Sci= -ToeakDate	∪j e hh:mm-	RVmm-R.C	DWFcms
R0001:C00012 ADD HYD	D	1.0	08:CH_SB2-3	65.17	1.508	No_date	12:01	36.82 n/a	.000
	+	1.0	09:SB01-2	1.14	.076	No_date	12:00	56.97 n/a	.000
SU	M=	1.0	10:JN_2	66.31	1.582	No_date	12:01	37.17 n/a	.000
R0001:C00013	D	Tmin·	-ID:NHYD	AREAha	-QPEAKcms	-TpeakDate	e_hh:mm-	RVmm-R.C	DWFcms
R0001:C00013 ROUTE CHANNEL [RDT= 1.00] OU	t<-	1.0	01:CH_SB3-2	66.31	1.499	No_date	12:01	37.17 n/a	.000
[L/S/n= 179.	/ .100	/.03	5]						
{Vmax= .469:									
R0001:C00014	D	Tmin	-ID:NHYD	AREAha	-QPEAKcms	-TpeakDate	e_hh:mm-	RVmm-R.C	DWFcms
CALIB NASHYD [CN= 69.0: N=	3 00.	5.0	02:SB03-2	10.92	.268	No_date	12:20	26.48 .339	.000
R0001:C00015	D	Tmin.	-ID:NHYD	AREAha	-OPEAKcms	-ToeakDate	e hh:mm-	RVmm-R.C	DWFcms
R0001:C00015 CALIB NASHYD [CN= 70.0: N=		5.0	03:SB04	19.72	.431	No_date	12:35	27.14 .347	.000
[CN= 70.0: N=	3.00:	Tp=	.79]			_			
R0001:C00016	D	Tmin	-ID:NHYD	AREAha	-QPEAKcms	-TpeakDate	e_hh:mm-	RVmm-R.C	DWFcms
ADD HYD	+	5.0	01:CH_SB3-2 02:9B03-2	66.31 10 92	1.499	No_date	12:02	37.17 n/a 26.48 n/a	.000
	+	5.0	03:SB04	19.72	.431	No date	12:35	27.14 n/a	.000
R0001:C00016 ADD HYD	M=	1.0	04:JN_3	96.95	2.088	No_date	12:20	33.93 n/a	.000
R0001:C00017	D	Tmin	-ID:NHYD	AREAha	-QPEAKcms	-TpeakDate	e_hh:mm-	RVmm-R.C	DWFcms
R0001:C00017 ROUTE CHANNEL [RDT= 1.00] ou	->	1.0	04:JN_3	96.95	2.088	No_date	12:20	33.93 n/a	.000
[L/S/n= 451.	/ .100	/.03	05:CH_SB5-1 51	90.90	1.9/8	NO_date	12:38	33.93 N/a	.000
{Vmax= .415:									
R0001:C00018	D	Tmin	-ID:NHYD	AREAha	-QPEAKcms	-TpeakDate	e_hh:mm-	RVmm-R.C	DWFcms
CALIB NASHYD		5.0	06:SB05-1	29.50	.753	No_date	12:20	26.42 .338	.000
[CN= 68.0: N= R0001:C00019					-OPEAKome	- Tho a k Date	bh•mm_		DWFome
ADD HYD	D	1.0	05:CH_SB5-1	96.95	1.978	No date	12:38	33.93 n/a	DWFCIIIS
	+	5.0	05:CH_SB5-1 06:SB05-1 07:JN_4	29.50	.753	No_date	12:20	26.42 n/a	.000
SU	M=	1.0	07:JN_4	126.45	2.681	No_date	12:29	32.17 n/a	.000
R0001:C00020	D	Tmin	-ID:NHYD	AREAha	-QPEAKcms	-TpeakDate	e_hh:mm-	RVmm-R.C	DWFcms
ROUTE CHANNEL [RDT= 1.00] ou	-> t<-	1.0	07:5N_4 08:CH_SB5-2	126.45	2.001	No_date	12:29	32.17 n/a 32.17 n/a	.000
[L/S/n= 429.	/ .020	/.03	5]						
{Vmax= .247:	Dmax=	.802	2 }						
R0001:C00021 CALIB NASHYD	D	Tmin	-ID:NHYD	AREAha	-QPEAKcms	-TpeakDate	e_hh:mm-	RVmm-R.C	DWFcms
CALIB NASHYD [CN= 70.0: N=	3.00.	ວ.ປ Tp=	1.311	TO.39	.1/2	NU_uate	13:12	21.01.331	.000
R0001:C00022	D	Tmin	-ID:NHYD	AREAha	-QPEAKcms	-TpeakDate	e_hh:mm-	RVmm-R.C	DWFcms
CALIB NASHYD		5.0	10:SB05-3					23.07 .295	
[CN= 65.0: N=	3.00:	Tro=	1.161			_			
R0001:C00023 ADD HYD	D	''min·	-1D:NHYD	AREAha	-QPEAKcms	-TpeakDate	e_hh:mm-	RVmm-R.C	DWFcms
עום עיש	+	5.0	09:SB05-2	10.39	.172	No_uate No date	13:15	27.87 n/a	.000
	+	5.0	10:SB05-3	8.51	.123	No_date	13:10	23.07 n/a	.000
SU	M=	1.0	01:JN_5	145.35	2.558	No_date	12:56	31.33 n/a	.000
R0001:C00024 CALIB NASHYD	D	Tmin	-ID:NHYD	AREAha	-QPEAKcms	-TpeakDate	e_hh:mm-	RVmm-R.C	DWFcms
[CN= 71.0: N=	3.00.	ວ.ປ Tro=	1.351	21.20	.350	NU_uate	13:20	20.32 .303	.000
R0001:C00025	D	Tmin	-ID:NHYD	AREAha	-QPEAKcms	-TpeakDate	e hh:mm-	RVmm-R.C	DWFcms
CALIB NASHYD		5.0	03:SB07	11.36	.147	No_date	- 13:50	26.43 .338	.000
[CN= 68 0 · N=	3 00.	Tro=	1 741						
R0001:C00026 ADD HYD R0001:C00027	D	1.m1n-	-1D:NHID	AREAha 21 20	-UPEAKCMS 350	No date		KVMM-R.C	DMF.CW2
1110 IIIU	+	5.0	03:SB07	11.36	.330	No date	13:50	26.43 n/a	.000
SU	M=	5.0	04:JN_6	32.56	.492	No_date	13:25	27.66 n/a	.000
R0001:C00027	D	Tmin	-ID:NHYD	AREAha	-QPEAKcms	-TpeakDate	e_hh:mm-	RVmm-R.C	DWFcms
ROUTE CHANNEL [RDT= 5.00] ou	->	5.0	04:JN_6	32.56	.492	No_date	13:25	27.66 n/a	.000
[RDT= 5.00] ou [L/S/n= 490.	.t<- / 500	5.0 / 0 ?!	US:CH_SB8	32.56	.488	No_date	13:35	2/.66 n/a	.000
{Vmax= .646:									
R0001:C00028				AREAha	-QPEAKcms	-TpeakDate	e_hh:mm-	RVmm-R.C	DWFcms
							-		



CALIB NASHYD [CN= 80.0: N= 3.00:	5.0 06:SB08	8.98	.368	No_date	12:10	37.75	.483	.000
[CN= 80.0: N= 3.00:	Tp= .50]							
R0001:C00029	D'I'min-ID:NHYD	AREAha-Q	PEAKCMS	-TpeakDate		RVmm-	R.C	DWFCms
ADD HYD	1.0 01:JN_5	145.35	2.338	No_date	12:36	31.33	n/a	.000
+	5.0 05:CH_5B0	32.30	.400	No_date	12.10	27.00	n/a	.000
CIIM-	1 0 07.TN 7	106 00	2 200	No_date	12:10	21 01	n/a	.000
R0001:C00030 ROUTE CHANNEL -> [RDT= 1.00] out<- [L/s/n= 410./ .100 (Vmax= .645:Dmax=	1.0 07.3N_7	100.09	J.200	-TooakDate	12:J0	31.01 	PC -	DWEcms
ROUDI:COUUSUL	1 0 07. TN 7	1 OC 00	2 200	- Ipeakbale	10.50	21 01		Dwrcins
ROUTE CHANNEL =>	1.0 07:JN_7	186.89	3.200	No_date	12:56	31.01	n/a	.000
[RDI= 1.00] OUL<-	1.0 08:CH_SB9	100.09	3.142	No_date	13:04	51.01	n/ a	.000
[L/3/I= 410./ .100	0201							
R0001.000031	.500} 	NPE \ b =	DEAKome	- Tho a k Date	hh•mm-	D1mm_	PC-	DWE cms
CALLE NAGEVD	5 0 00.000	1/ 3/	120	No dato	12.20	29.70	380	000
R0001:C00031E CALIB NASHYD [CN= 73.0: N= 3.00:	- TD- 571	14.54	.420	NO_uate	12.20	23.70	. 500	.000
P0001.000032	. 1937])Tmin_TD:NUVD	NPE \ b =	DEAKome	- Tho a k Dato	hh•mm-	D1/mm_	PC-	DWFome
[CN= 73.0: N= 3.00: R0001:CO0032E CALIB NASHYD [CN= 72.0: N= 3.00:	5 0 10.9B10	11 38	275	No date	12.30	28.46	364	000
[CN= 72 0: N= 3 00:	To= 731	11.50	.275	no_uu ce	12.00	20.40	. 504	.000
R0001:C00033E ADD HYD + + SUM=)Tmin-TD•NHYD	AREAha-C	PEAKoms	- Theak Date	hh•mm-		RC -	DWFcms
	1 0 08.CH SB9	186 89	3 1 4 2	No date	13.04	31 01	n/a	000
+	5 0 09.9B09	14 34	420	No_date	12.20	29 70	n/a	.000
+	5.0 10.SB10	11 38	275	No_date	12.20	28.46	n/a	.000
SUM=	1 0 01.JN 8	212 61	3 676	No date	12.56	30 78	n/a	000
B0001:000034	Tmin-TD·NHYD	AREAba-C	PEAKoms	-ToeakDate	hh·mm-		RC -	DWFcms
POITE CHANNET ->	1 0 01.TN 8	212 61	3 676	No dato	12.56	30 78	n/a	0.0.0
R0001:C00034 ROUTE CHANNEL -> [RDT= 1.00] out<- [L/S/n= 302./ .100	1.0 02.CH_SB11	212.01	3 643	No_date	12.50	30.78	n/a	.000
[L/S/n= 302./ .100	1.0 02.000_00011	212.01	5.045	no_uu ce	12.07	50.70	11/ CI	.000
{Vmax= 673:Dmax=	1 002}							
[L/S/n= 302./ .100 {Vmax= .673:Dmax= R0001:C00035E)Tmin-TD·NHYD	AREAha-C	PEAKoms	- Theak Date	hh•mm-		RC -	DWFcms
R0001:C00035E CALIB NASHYD [CN= 78.0: N= 3.00:	1.0 03:SB11	14.81	.811	No date	12:00	34.97	. 44.8	. 000
[CN= 78.0: N= 3.00:	TD= .081	11.01	.011		12.00	01.07		
R0001:C00036E CALIB NASHYD [CN= 78.0: N= 3.00:)Tmin-TD:NHYD	AREAha-C	PEAKcms	-ToeakDate	hh:mm-		R.C	DWFcms
CALIB NASHYD	5.0 04:SB16	16.71	.359	No date	13:15	35.15	.450	.000
[CN= 78.0: N= 3.00:	Tp= 1.30]							
R0001:C00037E ROUTE CHANNEL -> [RDT= 5.00] out<-	OTmin-ID:NHYD	AREAha-C	PEAKcms	-TpeakDate	hh:mm-		R.C	DWFcms
ROUTE CHANNEL ->	5.0 04:SB16	16.71	.359	No date	13:15	35.15	n/a	.000
[RDT= 5.00] out<-	5.0 05:CH SB15	16.71	.356	No date	13:25	35.15	n/a	.000
[L/S/n= 299./ .750	0/.035] _			-				
(Vmax= /22.Dmax=	1261							
R0001:C00038E CALIB NASHYD [CN= 78.0: N= 3.00:	OTmin-ID:NHYD	AREAha-Q	PEAKcms	-TpeakDate	hh:mm-	RVmm-	R.C	DWFcms
CALIB NASHYD	5.0 06:SB15	7.95	.289	No date	12:15	35.15	.450	.000
[CN= 78.0: N= 3.00:	Tp= .54]							
R0001:C00039	OTmin-ID:NHYD	AREAha-C	PEAKcms	-TpeakDate	hh:mm-		R.C	DWFcms
CALIB NASHYD	5.0 07:SB14	15.85	.542	No date	12:20	35.15	.450	.000
[CN= 78.0: N= 3.00:	Tp= .61]			_				
R0001:C00040E	DTmin-ID:NHYD	QREAha-Q	PEAKcms	-TpeakDate	hh:mm-	RVmm-	R.C	DWFcms
R0001:C00040L ADD HYD + + SUM= R0001:C00041	5.0 05:CH SB15	16.71	.356	No date	13:25	35.15	n/a	.000
+	5.0 06:SB15	7.95	.289	No date	12:15	35.15	n/a	.000
+	5.0 07:SB14	15.85	.542	No date	12:20	35.15	n/a	.000
SUM=	5.0 08:JN 9	40.51	1.042	No date	12:25	35.15	n/a	.000
R0001:C00041E	DTmin-ID:NHYD	QREAha-Q	PEAKcms	-TpeakDate	hh:mm-	RVmm-	R.C	DWFcms
ROUTE CHANNEL ->	5.0 08:JN_9	40.51	1.042	No_date	12:25	35.15	n/a	.000
[RDT= 5.00] out<-	5.0 09:CH_SB12	40.51	.990	No_date	12:40	35.15	n/a	.000
[1/0/11 222./ .100	,							
{Vmax= .277:Dmax=	.293}							
R0001:C00042E CALIB NASHYD [CN= 78.0: N= 3.00:	DTmin-ID:NHYD	AREAha-Ç	PEAKcms	-TpeakDate	_hh:mm-	RVmm-	R.C	DWFcms
CALIB NASHYD	5.0 10:SB12	6.02	.239	No_date	12:10	35.15	.450	.000
ADD HYD	1.0 02:CH_SB11	212.61	3.643	No_date	12:57	30.78	n/a	.000
+	1.0 03:SB11	14.81	.811	No_date	12:00	34.97	n/a	.000
+	5.0 09:CH_SB12	40.51	.990	No_date	12:40	35.15	n/a	.000
+	5.0 10:SB12	6.02	.239	No_date	12:10	35.15	n/a	.000
R0001:C00043	1.0 01:JN_10	273.95	4.960	No_date	12:56	31.75	n/a	.000
R0001:C00044E	DTmin-ID:NHYD	QREAha-Ç	PEAKcms	-TpeakDate	_hh:mm-	RVmm-	R.C	DWFcms
	1.0 01:JN_10	273.95	4.960	No_date	12:56	31.75	n/a	.000
fname :JN_10.0001								
remark:JN_10								
R0001:C00045								
FINISH								
****	****	*********	******		******	*******	****	********
WARNINGS / ERRORS /	NOTES							
dimilation 2.2		12.10.50						
Simulation ended on 20	122-12-28 at	13:18:58						



25-year Storm Event

SSSSS W W M M H H	и у у м	M 000	222	0 0 0	11 77777	
S W W W MM MM H H			2	0 0	11 7 7	
SSSSS WWW MMM HHHHH S WW MMH H		IM 0 0 M 0 0	2 22.2	0 0		Ver4.05.0 APR 2017
SSSSS WW M M H H		м 000	2	0 0	11 7	========
StormWater Management H	IYdrologic Mode	1	2 222	0 0 000	11 7 11 7	# 3556411 ========
****	* * * * * * * * * * * * * * * *	* * * * * * * * * * * *	* ** * * * ** * * * * *	******	** * * * * * * * * * *	*******
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***** A single						
**************************************	on the princip	les of HYMO 83 and OTTHY		ssors		**********
******				******		
***** Distribute	ed by: J.F. Sa	bourin and A	ssociates Inc			******
* * * * * * * * * * * * * * * * * * * *			613) 836-3884			******
* * * * * * * * * * * * * * * * * * * *		u, Quebec: (swmhymo@jfs	819) 243-6858	5		* * * * * * * * * * * * *
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+++++ Licensed u		Geomorphic I				+++++++++++++++++++++++++++++++++++++++
++++++++++++++++++++++++++++++++++++++	Guelph	+++++++++++++++++++++++++++++++++++++++	SERIAL#:3556			+++++++++++++++++++++++++++++++++++++++
* * * * * * * * * * * * * * * * * * * *						
	+++++ PROGRAM Maximum value					**********
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* * * * * * * * * * * * * * * * *	Max. number of	flow points	: 105408			* * * * * * * * * * *
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* Input file: C:\Users\HP\I						*
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* 3: ***** # ******************************	**************************************	************* [6HH]	****			*********
* 3: ***** # Project Name: [Pelham] F # Date : December 27, # Modeller : [Dr. Bahar S	Project Number: 2022 SM, P. Geo.(Ltd	*************** [6HH] l), P. Eng.]	* ** * * * * * * * * * *	*****	**	********
* 3: ************************************	Project Number: 2022 SM, P. Geo.(Ltd comorphic Ltd.,	[6HH] [, P. Eng.] 22 Zecca Dr	************** ive, Guelph,	******** ON, N1L1	** T1]	********
* 3: ************************************	Project Number: 2022 SM, P. Geo.(Ltd comorphic Ltd.,	[6HH] [, P. Eng.] 22 Zecca Dr	************** ive, Guelph,	******** ON, N1L1	** T1]	********
* 3: ************************************	Project Number: 2022 SM, P. Geo.(Ltd comorphic Ltd.,	[6HH] [, P. Eng.] 22 Zecca Dr	************** ive, Guelph,	******** ON, N1L1	** T1]	*********
* 3: ************************************	Project Number: 2022 SM, P. Geo.(Ltd comorphic Ltd.,	[6HH] [, P. Eng.] 22 Zecca Dr	************** ive, Guelph,	******** ON, N1L1	** T1]	
* 3: ***** # Project Name: [Pelham] E # Date : December 27, # Modeller : [Dr. Bahar S # Company : [AH2DTECH Ge # License # : 3556411 #***********************************	Project Number: 2022 SM, P. Geo. (Ltd somorphic Ltd.,	(6HH] 0, P. Eng.] 22 Zecca Dr	************** ive, Guelph,	******** ON, N1L1	** T1]	
* 3: ************************************	<pre>*roject Number: 2022 M, P. Geo.(Ltd comorphic Ltd., ************************************</pre>	(6HH] 0, P. Eng.] 22 Zecca Dr	************** ive, Guelph,	******** ON, N1L1	** T1]	
* 3: ************************************	Project Number: 2022 SM, P. Geo. (Ltd somorphic Ltd.,	(6HH] 0, P. Eng.] 22 Zecca Dr	************** ive, Guelph,	******** ON, N1L1	** T1]	
* 3: **** Project Name: [Pelham] F # Date : December 27, # Modeller : [Dr. Bahar S Company : [AHXDFECH Ge # License # : 3556411 ***********************************	Project Number: 2022 SM, P. Geo. (Ltd somorphic Ltd., 	<pre>************ [6HH] 1), P. Eng.] 22 Zecca Dr ************************************</pre>	**************************************	********* ON, N1L1 *******	** T1] **	*
* 3: ************************************	Project Number: 2022 Somorphic Ltd., somorphic Ltd., cial, 2=metric	<pre>************* [6HH] 22 Zecca Dr ************************************</pre>	**************************************	*********	** T1] ** **	**************************************
<pre>* 3: ***********************************</pre>	Project Number: 2022 SM, P. Geo. (Ltd comorphic Ltd., 	<pre>(6HH]), P. Eng.] 22 Zecca Dr 22 Zecca Dr</pre>	**************************************	ON, N1L1	** T1] ** 	······
* 3: ************************************	Project Number: 2022 SM, P. Geo. (Ltd comorphic Ltd., 	<pre>(6HH]), P. Eng.] 22 Zecca Dr 22 Zecca Dr</pre>	**************************************	ON, N1L1	** T1] ** 	······
* 3: ***** Project Name: [Pelham] F # Date : December 27, # Modeller : [Dr. Bahar S Company : [AHYDFECH Ge # License # : 3556411 ***********************************	Project Number: 2022 SM, P. Geo. (Ltd comorphic Ltd., 	<pre>(6HH]), P. Eng.] 22 Zecca Dr 22 Zecca Dr</pre>	**************************************	ON, N1L1	** T1] ** 	
* 3: ************************************	opicial, 2=metric	<pre>(6HH]), P. Eng.] 22 Zecca Dr 22 Zecca Dr</pre>	**************************************	ON, N1L1	** T1] ** 	*
<pre>* 3: ***********************************</pre>	Project Number: 2022 MM, P. Geo.(Ltd comorphic Ltd., comorphic Ltd., comorphic, Ltd., comor	<pre>(6HH]), P. Eng.] 22 Zecca Dr 22 Zecca Dr</pre>	**************************************	ON, N1L1	** T1] ** 	*
<pre>* 3: ***********************************</pre>	Project Number: 2022 www.p. Geo.(Ltd comorphic Ltd., 	<pre>************************************</pre>	**************************************	********* ON, N1L1 ********* ********* ********	** T1] ** ** ** ** ** ** **	DWFcms
<pre>* 3: ***********************************</pre>	Project Number: 2022 www.p. Geo.(Ltd comorphic Ltd., 	<pre>************************************</pre>	**************************************	********* ON, N1L1 ********* ********* ********	** T1] ** ** ** ** ** ** **	DWFcms
<pre>* 3: ***********************************</pre>	Project Number: 2022 SM, P. Geo. (Ltd comorphic Ltd., 	<pre>************ [6HH] 1), P. Eng.] 22 Zecca Dr ************************************</pre>	<pre>************************************</pre>	ON, N1L1 ********* *************************	** T1] ** ** ** ** ** ** RVmm-R. 47.20.4	CDWFcms 43 .000
<pre>* 3: ***********************************</pre>	Project Number: 2022 SM, P. Geo. (Ltd comorphic Ltd., 	<pre>************ [6HH] 1), P. Eng.] 22 Zecca Dr ************************************</pre>	<pre>************************************</pre>	ON, N1L1 ********* *************************	** T1] ** ** ** ** ** ** RVmm-R. 47.20.4	CDWFcms 43 .000
<pre>* 3: ***********************************</pre>	Project Number: 2022 SM, P. Geo. (Ltd comorphic Ltd., 	<pre>************ [6HH] 1), P. Eng.] 22 Zecca Dr ************************************</pre>	<pre>************************************</pre>	ON, N1L1 ********* *************************	** T1] ** ** ** ** ** ** RVmm-R. 47.20.4	CDWFcms 43 .000
<pre>* 3: ***********************************</pre>	Project Number: 2022 WM, P. Geo. (Ltd comorphic Ltd., 	<pre>************ [6HH] 1), P. Eng.] 22 Zecca Dr ************************************</pre>	<pre>************************************</pre>	ON, N1L1 ********* *************************	** T1] ** ** ** ** ** ** RVmm-R. 47.20.4	CDWFcms 43 .000
<pre>* 3: **** # Project Name: [Pelham] F # Date : December 27, # Modeller : [Dr. Bahar S # Company : [AHXDTECH Ge # License # : 3556411 #***********************************</pre>	Project Number: 2022 M, P. Geo.(Ltd somorphic Ltd., 	<pre>************ [6HH] 22 Zecca Dr ************************************</pre>	**************************************	********* ON, N1L1 ********* ************************	** T1] ** ** ** ** ** ** ** ** ** *	CDWFcms 43 .000 CDWFcms a .000 ⁄a .000
<pre>* 3: **** # Project Name: [Pelham] F # Date : December 27, # Modeller : [Dr. Bahar S # Company : [AHXDTECH Ge # License # : 3556411 #***********************************</pre>	Project Number: 2022 M, P. Geo.(Ltd somorphic Ltd., 	<pre>************ [6HH] 22 Zecca Dr ************************************</pre>	**************************************	********* ON, N1L1 ********* ************************	** T1] ** ** ** ** ** ** ** ** ** *	CDWFcms 43 .000 CDWFcms a .000 ⁄a .000
<pre>* 3: ***********************************</pre>	Project Number: 2022 M, P. Geo.(Ltd somorphic Ltd., 	<pre>************ [6HH] 22 Zecca Dr ************************************</pre>	**************************************	********* ON, N1L1 ********* ************************	** T1] ** ** ** ** ** ** ** ** ** *	CDWFcms 43 .000 CDWFcms a .000 ⁄a .000
<pre>* 3: ***********************************</pre>	Project Number: 2022 M, P. Geo.(Ltd somorphic Ltd., 	<pre>************ [6HH] 22 Zecca Dr ************************************</pre>	**************************************	********* ON, N1L1 ********* ************************	** T1] ** ** ** ** ** ** ** ** ** *	CDWFcms 43 .000 CDWFcms a .000 ⁄a .000
<pre>* 3: ***********************************</pre>	Project Number: 2022 WM, P. Geo. (Ltd comorphic Ltd., 	<pre>************************************</pre>	<pre>:ive, Guelph,</pre>	<pre>********* ON, N1L1 ********* *************************</pre>	** T1] ** ** ** ** ** ** ** ** ** 47.20 n, 47.20 n, 47.20 n, 47.20 n, 1	CDWFcms 43 .000 CDWFcms a .000 ⁄a .000
<pre>* 3: **** **** **** **** **** ***** *******</pre>	Project Number: 2022 SM, P. Geo.(Ltd comorphic Ltd., 	<pre>************************************</pre>	<pre>'ive, Guelph, ''''''''''''''''''''''''''''''''''''</pre>	********* ON, N1L1 ********* ************************	** T1] ** T1] ** ** ** ** ** ** ** ** ** ** ** ** **	CDWFcms 43 .000 CDWFcms a .000 /a .000 CDWFcms 57 .000
<pre>* 3: ***********************************</pre>	Project Number: 2022 SM, P. Geo.(Ltd comorphic Ltd., 	<pre>************************************</pre>	<pre>'ive, Guelph, ''''''''''''''''''''''''''''''''''''</pre>	********* ON, N1L1 ********* ************************	** T1] ** T1] ** ** ** ** ** ** ** ** ** ** ** ** **	CDWFcms 43 .000 CDWFcms a .000 /a .000 CDWFcms 57 .000
<pre>* 3: ***********************************</pre>	Project Number: 2022 WM, P. Geo.(Ltd comorphic Ltd., 	<pre>************ [6HH] [), P. Eng.] 22 Zecca Dr ************************************</pre>	<pre>************************************</pre>	********* ON, N1L1 ********* ************************	** T1] ** T1] ** ** ** ** ** ** ** ** ** ** ** ** **	CDWFcms 43 .000 CDWFcms a .000 /a .000 CDWFcms 57 .000 CDWFcms 24 .000
<pre>* 3: ***********************************</pre>	Project Number: 2022 WM, P. Geo. (Ltd comorphic Ltd., 	<pre>(6HH] (), P. Eng.] (),</pre>	<pre>************************************</pre>	<pre>********* ON, N1L1 ********* *************************</pre>	** T1] ** T1] ** ** ** ** ** ** ** ** ** ** ** ** **	CDWFcms 43 .000 CDWFcms 74 .000 2DWFcms 57 .000 CDWFcms 24 .000 CDWFcms 24 .000 CDWFcms



[L/S/n= 91 {Vmax= .348	./ .100)/.03		27.50	.700	No_date	13:25	45.12	n/a	.00
CALIB STANDHYD [XIMP=.60:TIN	E	OTmin 1.0	-ID:NHYD 06:SB02-2	AREAha 4.75	-QPEAKcms .551	-TpeakDate No_date	_hh:mm 12:00	RVmm- 95.71	-R.C .899	DWFcm .00
[LOSS= 2 :CN=										
			er= 5.50:SLPP=	.60:LGP=	91.:MNP=	=.250:SCP=	.01			
			np= 1.50:SLPI=							
								RVmm-	-R.C	DWFcm
ADD HYD		5.0	02:CH SB1-2	17.36	.617	No date	12:50	47.20	n/a	.00
	+	1.0	03:SB01-2	15.56	1.496	No date	12:00	81.74	n/a	.00
	+	1.0	05:CH SB2-2a	27.50	.700	No date	13:25	45.12	n/a	.00
	+	1.0	06:SB02-2	4.75	.551	No_date	12:00	95.71	n/a	.00
St	JM=	1.0	07:JN_1	65.17	2.611	No_date	12:00	58.10	n/a	.00
0001:C00010	E)Tmin•	-ID:NHYD	AREAha	QPEAKcms	-TpeakDate	_hh:mm-	RVmm-	-R.C	DWFcm
ROUTE CHANNEL	->	1.0	07:JN_1	65.17	2.611	No_date	12:00	58.10	n/a	.00
.0001:C0009 ADD HYD .0001:C00010 ROUTE CHANNEL [RDT= 1.00] ou [L/S/n= 285 (1/S/n= 285)				65.17	2.412	No_date	12:01	58.10	n/a	.00
{Vmax= .522: 0001:C00011				ARFAba	-OPFAKcms	- Tropak Date	hh•mm-		RC -	
CALIB STANDHYD		1.0	09:SB01-2	1.14	.115	No_date	12:00	83.37	.783	.00
[XIMP=.35:TIN [LOSS= 2 :CN=	= 82.0]									
[Pervious	area:	IApe	er= 5.00:SLPP=	.50:LGP=	64.:MNP=	=.250:SCP=	.0]			
			mp= 2.75:SLPI=							
0001:C00012	E)Tmin•	-ID:NHYD	AREAha	-QPEAKcms	-TpeakDate	_hh:mm-	RVmm-	-R.C	DWFcm
ADD HYD		1.0	08:CH_SB2-3 09:SB01-2 10:JN_2	65.17	2.412	No_date	12:01	58.10	n/a	.00
	+	1.0	09:SB01-2	1.14	.115	No_date	12:00	83.37	n/a	.00
St	JM=	1.0	10:JN_2	66.31	2.522	No_date	12:01	58.54	n/a	.00
UUU1:C00013	E)Tmin	-1D:NHYD	AREAha	-QPEAKcms	- IpeakDate	_hh:mm-	RVmm-	-R.C	DWFcm
0001:C00013 ROUTE CHANNEL [RDT= 1.00] ou	->	1.0	10:JN_2	66.31	2.522	No_date	12:01	58.54	n/a	.00
[L/S/II= 1/9	./ .100	1/.03	2]	66.31	2.398	NO_date	12:01	58.54	n/a	.00
{Vmax= .518	Dmax=	.78	3 }							
0001:C00014	E)Tmin•	-ID:NHYD	AREAha	-QPEAKcms	-TpeakDate	_hh:mm-	RVmm-	-R.C	DWFcn
CALIB NASHYD [CN= 69.0: N=		5.0	02:SB03-2	10.92	.471	No_date	12:20	45.41	.426	.00
[CN= 69.0: N=	= 3.00:	Tp=	. 62]							
0001:C00015 CALIB NASHYD [CN= 70.0: N=	E)Tmin∙	-ID:NHYD	AREAha	-QPEAKcms	-TpeakDate	_hh:mm-	RVmm-	-R.C	DWFcm
CALIB NASHYD		5.0	03:SB04	19.72	.757	No_date	12:30	46.42	.436	.00
[CN= 70.0: N=	= 3.00:	Tp=	.79]							
0001 • C0001 6	T) Thmin •	-TD•NHYD	– – – AREAha	-OPEAKcms	-ToeakDate	hh•mm-		-R C -	DWFcm
ADD HYD		1.0	01:CH_SB3-2 02:SB03-2 03:SB04 04:JN_3	66.31	2.398	No_date	12:01	58.54	n/a	.00
	+	5.0	02:SB03-2	10.92	.471	No_date	12:20	45.41	n/a	.00
	+	5.0	03:SB04	19.72	.757	No_date	12:30	46.42	n/a	.00
St	JM=	1.0	04:JN_3	96.95	3.457	No_date	12:17	54.59	n/a	.00
0001:C00017	E)Tmin•	-ID:NHYD	AREAha	-QPEAKcms	-TpeakDate	_hh:mm-	RVmm-	-R.C	DWFcm
ROUTE CHANNEL	->	1.0	04:JN_3	96.95	3.457	No_date	12:17	54.59	n/a	.00
0001:C00017 ROUTE CHANNEL [RDT= 1.00] ou	1t<-	1.0	05:CH_SB5-1	96.95	3.281	No_date	12:33	54.59	n/a	.00
[L/S/n= 451.	./ .100	1/.03	5]							
{Vmax= .474										
0001:C00018	L	JTIML II-	-1D:NHID	AREANd	-QPEAKCIIS	- Tpeakbale	-10.15	R VIIIII-	-R.C	DWFCII
CALIB NASHYD [CN= 68.0: N=	- 2 00.	5.0	00:SB03-1	29.50	1.312	No_date	12:15	45.09	.423	.00
0001.000019	T	n min.	-TD .NUVD	ARFAha	-OPFAKoms	- Theak Date	hh•mm-		RC -	
ADD HYD	1	1 0	05.CH SB5-1	96 95	3 281	No date	12.33	54 59	n/a	0.0
ADD IIID		5.0	05:CH_SB5-1 06:SB05-1 07:JN_4	20.55	1 210	No_date	12.35	45.00	n/a	.00
	т тм_	1.0	00.3B0J-1	126.45	1.512	No_date	12.15	40.09	n/a	.00
0001.000020		 	-TD:NUVD	120.43	-OPEAKome.	-TooakDate	12.2J		- P C -	
DOITE CUNNET	->	1 0	07.TN 4	126 / 5	2 LAICIUS 1 530	No dato	12.25	52 38	n/a	DWICI
* [PDT- 1 00] o	+ -	1.0	08.01 985-2	126.45	3 923	No_date	12.20	52.30	n/a	.00
0001:C00020 ROUTE CHANNEL * [RDT= 1.00] ou [L/S/n= 429]	./ .020)/.03	51	120.45	5.525	No_da ce	12.00	52.50	11/ CI	.00
{Vmax= .284	Dmax=	.99	B }							
0001:C00021	E	Tmin	-ID:NHYD	AREAha	-QPEAKcms	-TpeakDate	hh:mm-	RVmm-	-R.C	DWFcn
CALIB NASHYD		5.0	09:SB05-2	10.39	.297	No date	13:15	47.26	.444	.00
[CN= 70.0: N=	= 3.00:	Tp=	1.31]							
0001:C00022	E)Tmin	-ID:NHYD	AREAha	-QPEAKcms	-TpeakDate	_hh:mm-	RVmm-	-R.C	DWFcm
CALIB NASHYD		5.0	10:SB05-3	8.51	.221	No_date	13:05	40.43	.380	.00
[CN= 65.0: N=	= 3.00:	Tp=	1.16]							
0001:C00023	E)Tmin	-ID:NHYD	AREAha	-QPEAKcms	-TpeakDate	_hh:mm-	RVmm-	-R.C	DWFcm
ADD HYD		1.0	08:CH_SB5-2	126.45	3.923	No_date	12:38	52.38	n/a	.00
	+	5.0	09:SB05-2	10.39	.297	No_date	13:15	47.26	n/a	.00
	+	5.0	08:CH_SB5-2 09:SB05-2 10:SB05-3 01:JN_5	8.51	.221	No_date	13:05	40.43	n/a	.00
St	JM=	1.0	01:JN_5	145.35	4.397	No_date	12:42	51.31	n/a	.00
0001:C00024	E)Tmin•	-ID:NHYD	AREAha	-QPEAKcms	-TpeakDate	_hh:mm-	RVmm-	-R.C	DWFcn
0001:C00024 CALIB NASHYD	0.65	5.0	02:SB06	21.20	.605	No_date	13:15	48.03	.451	.00
[CN= /1.0: N=	= 3.00:	i ip=	1.33]							
0001:C00025	E	JTMLN-	-ID:NHYD 03:SB07	AREAha						
CALIB NASHYD	- 3 00	J.U 	03:350/ 1 7/1	11.30	.205	No_date	13:43	43.10	.423	.00
[CNT_ CO O. **					-0 PE 1 Vow -	- Tho a let the + -	hh mr		D C	
[CN= 68.0: N=	L	v تا التار.	10.MUID	21 20	GUL PURUCIUS.	ipearDate	13.16	- τ νιιιη - τ νιιιη	n.c	DWECI
0001:C00026		5.0	03.SB07	11 34	.003	No date	13.15	45 10	n/-	.00
0001:C00026	+	5.0	02:SB06 03:SB07 04:JN_6	32 56	.200 850	No date	13.25	47 01	n/=	.00
0001:C00026	+ JM=			ARFAba	-OPEAKome	-ToeakDato		R\ <i>I</i> mm-	-R C -	
0001:C00026 ADD HYD	+ JM=)Tmin.	-TD:NHYD		ST THING IN S.	-p-undre		T/ AITITLE		0.0
0001:C00026 ADD HYD ST 0001:C00027	L)Tmi n•	-ID:NHYD	32 54	252	No date	13.25	47 01	p/ ⊃	
0001:C00026 ADD HYD .0001:C00027	L)Tmi n•	-ID:NHYD	32.56	.852 846	No_date No_date	13:25	47.01 47.01	n/a n/a	.00
0001:C00026 ADD HYD SU 0001:C00027 ROUTE CHANNEL [RDT= 5.00] ou	L -> 1t<-	5.0 5.0	-1D:NHYD 04:JN_6 05:CH_SB8	32.56 32.56	.852 .846	No_date No_date	13:25 13:35	47.01 47.01	n/a n/a	.00
0001:00026 ADD HYD 0001:00027 ROUTE CHANNEL [RDT= 5.00] ou [L/S/n= 490	-> 1t<- / .500	5.0 5.0 5.0/	-1D:NHYD 04:JN_6 05:CH_SB8 5]	32.56 32.56	.852 .846	No_date No_date	13:25 13:35	47.01 47.01	n/a n/a	.00
0001:C00026 ADD HYD 0001:C00027 ROUTE CHANNEL [RDT= 5.00] ou [L/S/n= 490 {Vmax= .764	-> 1t<- ./ .500	5.0 5.0 5.0 /.03 .35	-1D:NHYD 04:JN_6 05:CH_SB8 5] 1}	32.56 32.56			13:25 13:35			
0001:C00026 ADD HYD 0001:C00027 ROUTE CHANNEL [RDT= 5.00] ot [L/S/n= 490 (Vmax= .764 0001:C00028	-> nt<- ./ .500 :Dmax=	5.0 5.0 5.0 0/.03 .35 DTmin	-ID:NHYD 04:JN_6 05:CH_SB8 5] 1} -ID:NHYD	32.56 32.56	-QPEAKcms	-TpeakDate	13:25 13:35	RVmm-	R.C.	DWFcm
0001:C00026 ADD HYD SU 0001:C00027 ROUTE CHANNEL [RDT= 5.00] on [L/S/n= 490. (Vmax= .764. 0001:C00028 CALIB NASHYD [CN= 80.0: N	-> ut<- ./ .500 :Dmax= E = 3.00:	5.0 5.0 0/.03 .35 0Tmin 5.0 ; Tp=	-1D:NHYD 04:JN_6 05:CH_SB8 5] 1} -ID:NHYD 06:SB08 .50]	32.56 32.56 AREAha 8.98	-QPEAKcms .604	-TpeakDate No_date	13:25 13:35 hh:mm- 12:10	RVmm- 60.95	-R.C .572	DWFcm .00
0001:C00026 ADD HYD ST ROUTE CHANNEL [RDT= 5.00] or [L/S/n= 490. (Vmax= .764 0001:C00028 CALIB NASHYD [CN= 80.01 **	-> ut<- ./ .500 :Dmax= E = 3.00:	5.0 5.0 0/.03 .35 0Tmin 5.0 ; Tp=	-1D:NHYD 04:JN_6 05:CH_SB8 5] 1} -ID:NHYD 06:SB08 .50]	32.56 32.56 AREAha 8.98	-QPEAKcms .604	-TpeakDate No_date	13:25 13:35 hh:mm- 12:10	RVmm- 60.95	-R.C .572	DWFcm .00
0001:C00026 ADD HYD 0001:C00027 ROUTE CHANNEL [RDT= 5.00] ou [L/S/n= 490 {Vmax= .764 0001:C00028 CALIB NASHYD	-> ut<- ./ .500 :Dmax= E = 3.00:	5.0 5.0 0/.03 .35 0Tmin 5.0 ; Tp=	-1D:NHYD 04:JN_6 05:CH_SB8 5] 1} -ID:NHYD 06:SB08 .50]	32.56 32.56 AREAha 8.98	-QPEAKcms .604	-TpeakDate No_date	13:25 13:35 hh:mm- 12:10	RVmm- 60.95	-R.C .572	DWFcm



						co 05	
+	5.0 06:SB08 1.0 07:JN_7	8.98	.604	No_date	12:10	60.95 r	1/a .000
SUM=	1.0 0/:JN_/	186.89	5.492	No_date	12:50	51.03 r	1/a .000
R0001:C00030	DTmin-ID:NHYD	AREAha-	QPEAKcms	-TpeakDate	hh:mm-	RVmm-R	.CDWFcms
ROUTE CHANNEL -> [RDT= 1.00] out<-	1.0 07:JN_7	186.89	5.492	No_date	12:50	51.03 r	ı/a .000
[RDT= 1.00] out<-	1.0 08:CH_SB9	186.89	5.403	No_date	12:58	51.03 r	ı/a .000
[L/S/N= 410./ .10	0/.035]						
{Vmax= .759:Dmax=	1.243}						
R0001:C00031	DTmin-ID:NHYD	AREAha-	OPEAKcms	-ToeakDate	hh:mm-	RVmm-R	.CDWFcms
CALIB NASHYD	5 0 09.5809	14 34	727	No date	12.15	50 13 4	171 000
[CN= 73.0: N= 3.00	. ma 571	14.54	• / 2 /	No_uate	12.10	50.15 .4	.000
			00000	ma a a la Da é a		Dilm. D	O DWD
R0001:C00032	DIRLIN-ID:NHID	AREANA-	QPEAKCINS.	-ipeakbale		RVIIIII-R	.CDwrcms
CALIB NASHYD [CN= 72.0: N= 3.00	5.0 IO:SBI0	11.38	.480	No_date	12:25	48.46 .4	.55 .000
[CN= 72.0: N= 3.00	: Tp= .73]						
[CN= 72.0: N= 3.00 R0001:C00033 ADD HYD + + R0001:C00034 ROUTE CHANNEL -> [RDT= 1.00] out<- [L/S/n= 302./.10	DTmin-ID:NHYD	AREAha-	QPEAKcms	-TpeakDate	_hh:mm-	RVmm-R	.CDWFcms
ADD HYD	1.0 08:CH SB9	186.89	5.403	No date	12:58	51.03 r	ı/a .000
+	5.0 09:SB09	14.34	.727	No date	12:15	50.13 r	1/a .000
+	5.0 10:SB10	11.38	.480	Nodate	12:25	48.46 r	1/a .000
SIIM=	1 0 01 • TN 8	212 61	6 388	No date	12.41	50.83 r	n/a 000
B0001.000034	T.O OT.ON_O	ADEADS	ODEAKeme	No_uate	12.11	DImm D	C DWEama
R0001:C00034	DINLIN-ID:NHID	AREANA-	QPEAKCINS.	-треакрасе		RVIIIII-R	.cDwrens
ROUTE CHANNEL ->	1.0 01:JN_8	212.61	6.388	No_date	12:41	50.83 r	ı/a .000
[RDT= 1.00] out<-	1.0 02:CH_SB11	212.61	6.313	No_date	12:48	50.83 r	ı/a .000
[L/S/n= 302./ .10	0/.035]						
(Umav- 701 · Dmav-	1 3/61						
R0001:C00035 CALIB NASHYD [CN= 78.0: N= 3.00	DTmin-ID·NHYD	AREAha-	OPEAKoms	-ToeakDate	hh·mm-		C DWFcms
CALLE NACUVE	1 0 02:0011	14 01	1 200	N- J-+-	12.00	E7 25 5	
CALLE NASHYD	1.0 03:SBII	14.81	1.299	No_date	12:00	57.35 .3	.000
[CN= 78.0: N= 3.00	: Tp= .08]						
R0001 · C00036	DTmin-TD·NHYD		OPEAKome	- Theak Date	hh•mm-		C DWEcms
CALIB NASHYD [CN= 78.0: N= 3.00	5.0 04:SB16	16.71	.598	No date	13:10	57.56 .5	540 .000
[CN= 78.0: N= 3.00	: To= 1.301			_			
D0001.000027	DEMIN TO NUVD		ODEAKoma	The end to De to a	hh mm	Diam D	C DME ama
DOUTE CUNNED >	5 0 04 cp16	16 71	E U U U U U U U U U U U U U U U U U U U	No date	12.10	57 56 ×	.c. DW10000
ROUTE CHANNEL -> [RDT= 5.00] out<-	5.0 04.3B10	10.71	.596	NO_date	13.10	57.50 1	1/a .000
[RDT= 5.00] OUT<-	2.0 02:CH_SBI2	16./1	.595	No_date	13:15	57.56 r	1/a .000
[L/S/n= 299./ ./5	0/.035]						
{Vmax= .493:Dmax=	.154}						
R0001:C00038	DTmin-ID:NHYD	AREAha-	OPEAKcms	-TpeakDate	hh:mm-	RVmm-R	.CDWFcms
CALTE NASHYD	5.0 06:SB15	7.95	.481	No date	12:15	57.56.5	40 .000
CALIB NASHYD [CN= 78.0: N= 3.00	• Tro= 541	/			10.10	07.00 .0	
[CN- /0.0. N- 5.00	. ipJaj		0000 <i>x</i>	ma a a la Da é a		Dilm. D	C DMD
R0001:C00039	DIRLIN-ID:NHID	AREANA-	QPEAKCINS.	-ipeakbate		RVIIIII-R	.CDwrcms
CALIB NASHYD	5.0 07:SB14	15.85	.902	No_date	12:20	57.56 .5	.000
CN = /8.0: N = .3.00	: 'l'D= .6						
R0001:C00040 ADD HYD + + SUM=	DTmin-ID:NHYD	AREAha-	OPEAKcms	-TpeakDate	hh:mm-	RVmm-R	.CDWFcms
ADD HYD	5.0 05:CH SB15	16.71	.595	No date	13:15	57.56 r	v/a .000
+	5 0 06·SB15	7 95	481	No date	12.15	57 56 r	n/a 000
	5.0 00.3B13	15 05	.401	No_uate	12.10	57.50 1	.000
+	5.0 07:5B14	10.65	.902	No_date	12:20	57.56 1	1/a .000
SUM=	5.0 08:JN_9	40.51	1./55	No_date	12:25	57.56 r	ı/a .000
ROUTE CHANNEL -> [RDT= 5.00] out<-	5.0 08:JN 9	40.51	1.755	No date	12:25	57.56 r	ı/a .000
[RDT= 5.00] out<-	5.0 09:CH SB12	40.51	1.677	No date	12:35	57.56 r	ı/a .000
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(17m - 11 - 211 - Dm - 11 -	2601						
(VIII X	.5007		0000 <i>x</i>	ma a a la Da é a		Dilm. D	O DWD
R0001:C00042	DIRLIN-ID:NHID	AREANA-	QPEAKCINS.	-ipeakbale		RVIIIII-R	.CDWFCMS
CALIB NASHYD	5.0 IO:SB12	6.02	.396	No_date	12:10	57.56 .5	.000
[CN /0.0. N 0.00	· 10 · 10]						
R0001:C00043	DTmin-ID:NHYD	AREAha-	QPEAKcms ·	-TpeakDate	hh:mm-	RVmm-R	.CDWFcms
ADD HYD	1.0 02:CH SB11	212.61	6.313	No date	12:48	50.83 r	1/a .000
+	DTmin-ID:NHYD 1.0 02:CH_SB11 1.0 03:SB11 5.0 09:CH_SB12 5.0 10:SB12 1.0 01;JN_10 DTMin-ID:NHYD	14.81	1.299	No_date	12:00	57.35	1/a .000
	5 0 00.00 0012	10 51	1 677	No data	12.25	57 56 -	/>
+	5.0 09:CR_3612	40.31	1.0//	No_uate	10.10	57.50 [./a .000
. +	D.U IU:SBIZ	6.02	.396	NO_date	12:10	3/.56 r	1/a .000
SUM=	1.0 01:JN_10	273.95	8.552	No_date	12:45	52.33 r	1/a .000
R0001:C00044	DTmin-ID:NHYD	AREAha-	QPEAKcms	-TpeakDate	e_hh:mm-	RVmm-R	.CDWFcms
R0001:C00044 SAVE HYD fname :JN_10.0001	1.0 01:JN_10	273.95	8.552	No_date	12:45	52.33 r	ı/a .000
remark:JN_10							
R0001:C00045							
FINISH							
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WARNINGS / ERRORS /							
Simulation ended on 2	022-12-28 at 13	:19:42					



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****************** A s	ingle event and cont	inuous hydrolog	ic simulatio	n model		
	based on the princip			ors	* * * * * * * * * *	
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********		: swmhymo@jfsa.c		********	*********	
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#************************ # Project Name: [Pelham # Date : Decembe; # Modeller : [Dr. B, # Company : [AHXDT]	**************************************	**************************************	****	****		****
<pre>#********************************* # Project Name: [Pelham # Date : Decembe: # Modeller : [Dr. B: # Company : [AHYDT] # License # : 3556411</pre>	******************************] Project Number: r 27, 2022 ahar SM, P. Geo.(Ltc ECH Geomorphic Ltd.,	**************************************	**************************************	********* , N1L1T1]		****
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<pre>#************************************</pre>	Project Number: r 27, 2022 ahar SM, P. Geo.(Ltc ECH Geomorphic Ltd., s on 0] =imperial, 2=metric ****** 100-YEAR SCS 2 oP.STM 4hr SCS 24.00:PTOT= 129.60] DTmin-ID.NHYD	<pre>************************************</pre>	**************************************	********* , N1L1T1] ********* *************************] 	DWFcms
<pre>#************************************</pre>	<pre>Project Number: r 27, 2022 ahar SM, P. Geo.(Ltc ECH Geomorphic Ltd., s on 0] =imperial, 2=metric ****** 100-YEAR SCS 2 ****** 100-YEAR SCS 2 ************************************</pre>	<pre>: [6HH] i), P. Eng.] . 22 Zecca Drive</pre>	**************************************	<pre>******** , N1L1T1] ******** **************************</pre>	RVmm-R.C 64.60 .498	DWFcms 3 .000
<pre>#************************************</pre>	<pre>Project Number: r 27, 2022 ahar SM, P. Geo.(Ltc ECH Geomorphic Ltd., s on 0] =imperial, 2=metric ****** 100-YEAR SCS 2 ****** 100-YEAR SCS 2 ************************************</pre>	<pre>: [6HH] i), P. Eng.] . 22 Zecca Drive</pre>	**************************************	<pre>******** , N1L1T1] ******** **************************</pre>	RVmm-R.C 64.60 .498	DWFcms 3 .000
<pre># Project Name: [Pelham # Date : Decembe: # Modeller : [Dr. B; # Company : [AHXDT] # License # : 3556411 #***********************************</pre>	<pre>Project Number: r 27, 2022 ahar SM, P. Geo.(Ltc ECH Geomorphic Ltd., s on 0] =imperial, 2=metric ****** 100-YEAR SCS 2 ****** 100-YEAR SCS 2 ************************************</pre>	<pre>: [6HH] i), P. Eng.] . 22 Zecca Drive</pre>	**************************************	<pre>******** , N1L1T1] ******** **************************</pre>	RVmm-R.C 64.60 .498	DWFcms 3 .000
<pre>#************************************</pre>	<pre>] Project Number: r 27, 2022 ahar SM, P. Geo.(Ltc ECH Geomorphic Ltd., ************************************</pre>	<pre>: [6HH] i), P. Eng.] . 22 Zecca Drive</pre>	**************************************	<pre>******** , N1L1T1] ******** **************************</pre>	RVmm-R.C 64.60 .498	DWFcms 3 .000
<pre>#************************************</pre>	<pre>Project Number: r 27, 2022 ahar SM, P. Geo.(Ltc ECH Geomorphic Ltd., son 0] =imperial, 2=metric ************************************</pre>	<pre>:: [6HH] i), P. Eng.] · 22 Zecca Drive output)] · CONDITION ***** 24 Hour Storm*** 24 Hour Storm***AREAha-QPEAKc 17.36 .8 17.36 .8 17.36 .8</pre>	<pre>************************************</pre>	<pre>******** , N1L1T1] ******** **************************</pre>	RVmm-R.C 64.60 .494 RVmm-R.C 64.60 n/a 64.60 n/a	DWFcms 3 .000 DWFcms a .000 a .000
<pre>#************************************</pre>	<pre>Project Number: r 27, 2022 ahar SM, P. Geo.(Ltc ECH Geomorphic Ltd., son 0] =imperial, 2=metric ************************************</pre>	<pre>:: [6HH] i), P. Eng.] · 22 Zecca Drive output)] · CONDITION ***** 24 Hour Storm*** 24 Hour Storm***AREAha-QPEAKc 17.36 .8 17.36 .8 17.36 .8</pre>	<pre>************************************</pre>	<pre>******** , N1L1T1] ******** **************************</pre>	RVmm-R.C 64.60 .494 RVmm-R.C 64.60 n/a 64.60 n/a	DWFcms 3 .000 DWFcms a .000 a .000
<pre># Project Name: [Pelham # Date : Decembe: # Modeller : [Dr. B; # Company : [AHXDT] # License # : 3556411 #***********************************</pre>	<pre>] Project Number: r 27, 2022 ahar SM, P. Geo.(Ltc ECH Geomorphic Ltd., ************************************</pre>	<pre>:: [6HH] i), P. Eng.] · 22 Zecca Drive output)] · CONDITION ***** 24 Hour Storm*** 24 Hour Storm***AREAha-QPEAKc 17.36 .8 17.36 .8 17.36 .8</pre>	<pre>************************************</pre>	<pre>******** , N1L1T1] ******** **************************</pre>	RVmm-R.C 64.60 .494 RVmm-R.C 64.60 n/a 64.60 n/a	DWFcms 3 .000 DWFcms a .000 a .000
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<pre># Project Name: [Pelham # Date : Decembe: # Modeller : [Dr. B; # Company : [AHXDT] # License # : 3556411 #</pre>	<pre>Project Number: r 27, 2022 ahar SM, P. Geo.(Ltc ECH Geomorphic Ltd., s on 0] =imperial, 2=metric ************************************</pre>	<pre>:: [6HH] i), P. Eng.] · 22 Zecca Drive output)] ************************************</pre>	<pre>************************************</pre>	<pre>******** , N1L1T1] ******** **************************</pre>	RVmm-R.C 64.60 .498 RVmm-R.C 64.60 n/a 64.60 n/a RVmm-R.C 103.48 .798	DWFcms 3 .000 DWFcms 3 .000 DWFcms 3 .000
<pre>#************************************</pre>	<pre>Project Number: r 27, 2022 ahar SM, P. Geo.(Ltc ECH Geomorphic Ltd., restriction of the second s on 0] =imperial, 2=metric restriction restriction of the second restriction of the second restrict</pre>	<pre>:: [6HH] i), P. Eng.] · 22 Zecca Drive</pre>	<pre>************************************</pre>	<pre>******** , N1L1T1] ******** **************************</pre>	RVmm-R.C 64.60 .498 RVmm-R.C 64.60 n/a 64.60 n/a RVmm-R.C 103.48 .798	DWFcms 3 .000 DWFcms 3 .000 DWFcms 3 .000
<pre>#************************************</pre>	<pre>Project Number: r 27, 2022 ahar SM, P. Geo.(Ltc ECH Geomorphic Ltd., ************************************</pre>	<pre>:: [6HH] i), P. Eng.] · 22 Zecca Drive output)] · 22 Zecca Drive output)] · 24 Hour Storm*** · · · · · · · · · · · · · · · · · ·</pre>	<pre>************************************</pre>	<pre>******** , N1L1T1] ******** **************************</pre>	RVmm-R.C 64.60 .494 RVmm-R.C 64.60 n/a 64.60 n/a 64.60 n/a RVmm-R.C 03.48 .794 RVmm-R.C 61.99 .474	DWFcms 3 .000 DWFcms 3 .000 a .000 a .000 a .000 DWFcms 3 .000
<pre>#************************************</pre>	<pre>] Project Number: r 27, 2022 ahar SM, P. Geo.(Ltc ECH Geomorphic Ltd., ************************************</pre>	<pre>:: [6HH] i), P. Eng.] · 22 Zecca Drive output)] · 22 Zecca Drive output)] · 24 Hour Storm*** · · · · · · · · · · · · · · · · · ·</pre>	<pre>, Guelph, ON</pre>	<pre>******** , N1L1T1] ******** **************************</pre>		DWFcms a .000 DWFcms a .000 a .000 DWFcms 3 .000 DWFcms 3 .000 DWFcms



[RDT= 1.00] out<- [L/S/n= 91./ .100 {Vmax= .372:Dmax=	0/.03	5]	27.50	.970	No_date	13:25	61.99	n/a	.000
R0001:C00008I CALIB STANDHYD [XIMP=.60:TIMP=.80]	OTmin 1.0		AREAha 4.75	-QPEAKcms .686	-TpeakDate No_date	_hh:mm- 12:00	RVmm- 118.46	-R.C .914	DWFcms .000
[LOSS= 2 :CN= 82.0] [Pervious area: [Impervious area:	IAp		FO TCT-	20 .MNT	- 012.CCT-	0.1			
R0001:C00009	DTmin	-ID:NHYD	AREAha	-QPEAKcms	-TpeakDate	hh:mm-	RVmm-	-R.C	DWFcms
ADD HYD	5.0	02:CH_SB1-2	17.36	.856	No_date	_12:45	64.60	n/a	.000
+	1.0	03:SB01-2	15.56	1.936	No_date	12:00	103.48	n/a	.000
+	1.0	05:CH_SB2-2a	27.50	.970	No_date	13:25	61.99	n/a	.000
+ SIIM=	1.0	06:5B02-2	4.73	.000	No_date	12:00	76 70	n/a	.000
R0001:C00010I	DTmin	-ID:NHYD	AREAha	-OPEAKcms	-ToeakDate	hh:mm-	RVmm-	-R.C	DWFcms
ROUTE CHANNEL ->	1.0	07:JN 1	65.17	3.450	No date	12:00	76.70	n/a	.000
R0001:C00010 ROUTE CHANNEL -> [RDT= 1.00] out<- [L/S/n= 285./ .100 {Wmax= .553:Dmax=		-	65.17	3.204	No_date	12:01	76.70	n/a	.000
R0001:C00011I	DTmin	-ID:NHYD	AREAha	-OPEAKcms	-TpeakDate	hh:mm-	RVmm-	-R.C	DWFcms
R0001:C00011I CALIB STANDHYD	1.0	09:SB01-2	1.14	.148	No_date	12:00	105.35	.813	.000
[XIMP=.35:TIMP=.50]					-				
[LOSS= 2 :CN= 82.0]									
[Pervious area:									
[Impervious area:	: IAiı	mp= 2.75:SLPI=	.30:LGI=	30.:MNI:	=.013:SCI=	.0]			
R0001:C00012I	DTmin	-ID:NHYD	AREAha	-QPEAKcms	-TpeakDate		RVmm-	-R.C	DWFcms
ADD HYD	1.0	08:CH_SB2-3	65.1/	3.204	No_date	12:01	/6./0	n/a	.000
R0001:C00012I ADD HYD + SUM=	1.0	10.TN 2	66 31	3 345	No_date	12.00	77 20	n/a	.000
B0001:C00013	DTmin	-TD:NHYD	AREAha	-OPEAKcms	-ToeakDate	hh:mm-	RVmm-	-R.C	DWFcms
R0001:C00013I ROUTE CHANNEL -> [RDT= 1.00] out<- [L/S/n= 179./ .100]	1.0	10:JN 2	66.31	3.345	No date	12:01	77.20	n/a	.000
[RDT= 1.00] out<-	1.0	01:CH SB3-2	66.31	3.202	No date	12:02	77.20	n/a	.000
[L/S/n= 179./ .100	0/.03	5] —			_				
{Vmax= .550:Dmax=	.89	B }							
R0001:C00014I	OTmin	-ID:NHYD	AREAha	-QPEAKcms	-TpeakDate	_hh:mm-	RVmm-	-R.C	DWFcms
R0001:C00014	5.0	02:SB03-2	10.92	.656	No_date	12:20	62.49	.482	.000
[CN= 69.0: N= 3.00	: Tp=	.62]							5.45
R0001:C00015I CALIB NASHYD [CN= 70.0: N= 3.00]	JTmin 5 0	-1D:NHYD	AREANa	-QPEAKCMS	- Ipeakuate		RVmm-	-R.C	DWFCms
CALLE NASHID		701	19.72	1.034	NO_date	12:30	03.77	.472	.000
R0001 · C00016	. ip-	./9] -TD:NHYD	ARFAba	-OPFAKcms	- Tho a k Dato	hh•mm-		-RC-	DWFcms
ADD HYD	1.0	01:CH SB3-2	66.31	3.202	No date	12:02	77.20	n/a	.000
+	5.0	02:SB03-2	10.92	.656	No date	12:20	62.49	n/a	.000
+	5.0	03:SB04	19.72	1.054	No ^{date}	12:30	63.77	n/a	.000
R0001:C00016	1.0	04:JN_3	96.95	4.656	No_date	12:17	72.81	n/a	.000
R0001:C00017I ROUTE CHANNEL -> [RDT= 1.00] out<- [L/S/n= 451 / 100]	DTmin	-ID:NHYD	AREAha	-QPEAKcms	-TpeakDate	_hh:mm-	RVmm-	-R.C	DWFcms
ROUTE CHANNEL ->	1.0	04:JN_3	96.95	4.656	No_date	12:17	72.81	n/a	.000
	1.0						/2.81	n/a	
[10] 1.00] 0420	. /	-1	50.55			12.50			.000
[1/0/11 101./ 100		J]	50.55		no_aace	12.00		,	.000
{Vmax= .515:Dmax=	.72	4 }							
{Vmax= .515:Dmax= R0001:C00018I	.72 DTmin	4} -ID:NHYD	AREAha	-QPEAKcms	-TpeakDate	hh:mm-	RVmm-	-R.C	DWFcms
{Vmax= .515:Dmax=	.72 DTmin 5.0	4} -ID:NHYD 06:SB05-1	AREAha	-QPEAKcms	-TpeakDate	hh:mm-	RVmm-	-R.C	DWFcms
(Vmax= .515:Dmax= R0001:C00018 CALIB NASHYD [CN= 68.0: N= 3.00] R0001:C00019	.72 DTmin 5.0 Tp=	4} -ID:NHYD 06:SB05-1 .57] -ID:NHYD	AREAha 29.50 AREAha	-QPEAKcms 1.825 -OPEAKcms	-TpeakDate No_date -TpeakDate	_hh:mm- 12:15	RVmm- 61.96	-R.C .478	DWFcms .000
(Vmax= .515:Dmax= R0001:C00018 CALIB NASHYD [CN= 68.0: N= 3.00] R0001:C00019	.72 DTmin 5.0 Tp=	4} -ID:NHYD 06:SB05-1 .57] -ID:NHYD	AREAha 29.50 AREAha	-QPEAKcms 1.825 -OPEAKcms	-TpeakDate No_date -TpeakDate	_hh:mm- 12:15	RVmm- 61.96	-R.C .478	DWFcms .000
(Vmax= .515:Dmax= R0001:C00018 CALIB NASHYD [CN= 68.0: N= 3.00] R0001:C00019	.72 DTmin 5.0 Tp=	4} -ID:NHYD 06:SB05-1 .57] -ID:NHYD	AREAha 29.50 AREAha	-QPEAKcms 1.825 -OPEAKcms	-TpeakDate No_date -TpeakDate	_hh:mm- 12:15	RVmm- 61.96	-R.C .478	DWFcms .000
(Wmax= .515:Dmax= R0001:C00018I CALIB NASHYD [CN= 68.0: N= 3.00 R0001:C00019I ADD HYD + SUM=	.72 .72 .72 .72 .72 .72 .72 .72	4) -ID:NHYD 06:SB05-1 .57] -ID:NHYD 05:CH_SB5-1 06:SB05-1 07:JN 4	AREAha 29.50 AREAha 96.95 29.50 126.45	-QPEAKcms 1.825 -QPEAKcms 4.434 1.825 6.183	-TpeakDate No_date -TpeakDate No_date No_date No_date No_date	_hh:mm- 12:15 _hh:mm- 12:30 12:15 12:25	RVmm- 61.96 RVmm- 72.81 61.96 70.28	-R.C .478 -R.C n/a n/a n/a	DWFcms .000 DWFcms .000 .000 .000
(Wmax= .515:Dmax= R0001:C00018I CALIB NASHYD [CN= 68.0: N= 3.00 R0001:C00019I ADD HYD + SUM=	.72 .72 .72 .72 .72 .72 .72 .72	4) -ID:NHYD 06:SB05-1 .57] -ID:NHYD 05:CH_SB5-1 06:SB05-1 07:JN 4	AREAha 29.50 AREAha 96.95 29.50 126.45	-QPEAKcms 1.825 -QPEAKcms 4.434 1.825 6.183	-TpeakDate No_date -TpeakDate No_date No_date No_date No_date	_hh:mm- 12:15 _hh:mm- 12:30 12:15 12:25	RVmm- 61.96 RVmm- 72.81 61.96 70.28	-R.C .478 -R.C n/a n/a n/a	DWFcms .000 DWFcms .000 .000 .000
(Wmax= .515:Dmax= R0001:C00018I CALIB NASHYD [CN= 68.0: N= 3.00 R0001:C00019I ADD HYD + SUM=	.72 .72 .72 .72 .72 .72 .72 .72	4) -ID:NHYD 06:SB05-1 .57] -ID:NHYD 05:CH_SB5-1 06:SB05-1 07:JN 4	AREAha 29.50 AREAha 96.95 29.50 126.45	-QPEAKcms 1.825 -QPEAKcms 4.434 1.825 6.183	-TpeakDate No_date -TpeakDate No_date No_date No_date No_date	_hh:mm- 12:15 _hh:mm- 12:30 12:15 12:25	RVmm- 61.96 RVmm- 72.81 61.96 70.28	-R.C .478 -R.C n/a n/a n/a	DWFcms .000 DWFcms .000 .000 .000
(Vmax= .515:Dmax= R0001:C00018 CALIB NASHYD [CN= 68.0: N= 3.00] R0001:C00019	.72 .72 .72 .72 .72 .72 .72 .72	4 TD:NHYD 06:SB05-1 .57] -ID:NHYD 06:SB05-1 07:JN_4 ID:NHYD 07:JN_4 08:CH_SB5-2	AREAha 29.50 AREAha 96.95 29.50 126.45	-QPEAKcms 1.825 -QPEAKcms 4.434 1.825 6.183	-TpeakDate No_date -TpeakDate No_date No_date No_date No_date	_hh:mm- 12:15 _hh:mm- 12:30 12:15 12:25	RVmm- 61.96 RVmm- 72.81 61.96 70.28	-R.C .478 -R.C n/a n/a n/a	DWFcms .000 DWFcms .000 .000 .000
(Vmax= .515:Dmax= R0001:C00018	.72 .72 .72 .72 .72 .72 .72 .72	J JD:NHYD 06:SB05-1 .57] JD:NHYD 05:CH_SB5-1 06:SB05-1 07:3M_4 -ID:NHYD 07:3M_4 08:CH_SB5-2 5] 2]	AREAha 29.50 AREAha 96.95 29.50 126.45 AREAha 126.45 126.45	-QPEAKcms 1.825 -QPEAKcms 4.434 1.825 6.183 -QPEAKcms 6.183 5.417	-TpeakDate No_date No_date No_date No_date -TpeakDate No_date No_date No_date	hh:mm- 12:15 12:30 12:15 12:25 hh:mm- 12:25 12:36	RVmm- 61.96 RVmm- 72.81 61.96 70.28 RVmm- 70.28 70.28	-R.C .478 -R.C n/a n/a -R.C n/a n/a	DWFcms .000 .000 .000 .000 .000 DWFcms .000 .000
(V)	.72 .77 .77 .77 .77 .77 .77 .77	-1 -ID:NHYD 06:SB05-1 .57] -ID:NHYD 06:SB05-1 06:SB05-1 07:JN_4 -ID:NHYD 08:CH_SB5-2 5] 2] -ID:NHYD	AREAha 29.50 AREAha 96.95 29.50 126.45 AREAha 126.45 126.45	-QPEAKcms 1.825 -QPEAKcms 4.434 1.825 6.183 -QPEAKcms 6.183 5.417 -OPEAKcms	-TpeakDate No_date -TpeakDate No_date No_date -TpeakDate No_date No_date -TpeakDate	_hh:mm- 12:15 12:30 12:15 12:25 hh:mm- 12:25 12:36 hh:mm-	RVmm- 61.96 RVmm- 72.81 61.96 70.28 RVmm- 70.28 70.28	-R.C .478 -R.C n/a n/a n/a -R.C n/a	DWFcms .000 .000 .000 .000 .000 .000 .000
R0001:C00018	.72 .72 .77 .77 .77 .77 .77 .77	J JD:NHYD 06:SB05-1 .57] JD:NHYD 05:CH_SB5-1 06:SB05-1 07:JN_4 1D:NHYD 07:JN_4 08:CH_SB5-2 5] JD:NHYD 09:SB05-2	AREAha 29.50 AREAha 96.95 29.50 126.45 AREAha 126.45 126.45	-QPEAKcms 1.825 -QPEAKcms 4.434 1.825 6.183 -QPEAKcms 6.183 5.417 -OPEAKcms	-TpeakDate No_date -TpeakDate No_date No_date -TpeakDate No_date No_date No_date	_hh:mm- 12:15 12:30 12:15 12:25 hh:mm- 12:25 12:36 hh:mm-	RVmm- 61.96 RVmm- 72.81 61.96 70.28 RVmm- 70.28 70.28	-R.C .478 -R.C n/a n/a n/a -R.C n/a	DWFcms .000 .000 .000 .000 .000 .000 .000
R0001:C00018	.72 .72 .77 .77 .77 .77 .77 .77	J JD:NHYD 06:SB05-1 .57] JD:NHYD 05:CH_SB5-1 06:SB05-1 07:3N_4 -ID:NHYD 07:3N_4 08:CH_SB5-2 5] 2) TD:NHYD 09:SB05-2 1.31]	AREAha 29.50 AREAha 96.95 29.50 126.45 AREAha 126.45 126.45 AREAha 10.39	-QPEAKcms 1.825 -QPEAKcms 4.434 1.825 6.183 -QPEAKcms 6.183 5.417 -QPEAKcms .411	-TpeakDate No_date -TpeakDate No_date No_date No_date No_date No_date -TpeakDate No_date	_hh:mm- 12:15 _hh:mm- 12:30 12:15 12:25 _hh:mm- 12:236 _hh:mm- 13:10	RVmm- 61.96 RVmm- 72.81 61.96 70.28 70.28 70.28 70.28	-R.C .478 -R.C n/a n/a -R.C n/a -R.C .499	DWFcms .000 .000 .000 .000 .000 .000 .000 .0
(Wmax= .515:Dmax= R0001:C00018	.72 .72 .77 .77 .77 .77 .77 .77	1 JD:NHYD 06:SB05-1 .57] -ID:NHYD 06:SB05-1 07:JN_4 1D:NHYD 08:CH_SB5-2 2] 1D:NHYD 09:SB05-2 1.31] 1D:NHYD	AREAha 29.50 AREAha 96.95 29.50 126.45 AREAha 126.45 126.45 AREAha 10.39 AREAha	-QPEAKcms 1.825 -QPEAKcms 4.434 1.825 6.183 -QPEAKcms 6.183 5.417 -QPEAKcms .411 -OPEAKcms	-TpeakDate No_date No_date No_date No_date -TpeakDate No_date No_date -TpeakDate No_date -TpeakDate -TpeakDate	_hh:mm- 12:15 _hh:mm- 12:25 _hh:mm- 12:25 _12:36 _hh:mm- _13:10 _hh:mm-	RVmm 61.96 RVmm 72.81 61.96 70.28 RVmm 70.28 70.28 70.28 RVmm 64.67	-R.C .478 -R.C n/a n/a -R.C .499 -R.C	DWFcms .000 .000 .000 .000 .000 .000 .000 .0
(Vmax= .515:Dmax= R0001:C00018	.72 .72 .77 .70 .77 .77 .77 .77 .77 .77 .77 .77		AREAha 29.50 AREAha 96.95 29.50 126.45 126.45 126.45 AREAha 10.39 AREAha 8.51	-QPEAKcms 1.825 -QPEAKcms 4.434 1.825 6.183 5.417 -QPEAKcms .411 -QPEAKcms .312	-TpeakDate No_date No_date No_date No_date No_date No_date No_date -TpeakDate No_date -TpeakDate No_date	_hh:mm 12:15 _hh:mm- 12:30 12:15 12:25 _hh:mm- 12:25 12:36 _hh:mm- 13:10 _hh:mm- 13:05	RVmm 61.96 72.81 61.96 70.28 70.28 70.28 70.28 70.28 RVmm 64.67 RVmm 56.35	-R.C .478 -R.C n/a n/a -R.C .499 -R.C .435	DWFcms .000 .000 .000 .000 .000 .000 .000 .0
(Vmax= .515:Dmax= R0001:C00018	.72 .72 .77 .70 .77 .77 .77 .77 .77 .77 .77 .77		AREAha 29.50 AREAha 96.95 29.50 126.45 126.45 126.45 AREAha 10.39 AREAha 8.51	-QPEAKcms 1.825 -QPEAKcms 4.434 1.825 6.183 5.417 -QPEAKcms .411 -QPEAKcms .312	-TpeakDate No_date No_date No_date No_date No_date No_date No_date -TpeakDate No_date -TpeakDate No_date	_hh:mm 12:15 _hh:mm- 12:30 12:15 12:25 _hh:mm- 12:25 12:36 _hh:mm- 13:10 _hh:mm- 13:05	RVmm 61.96 72.81 61.96 70.28 70.28 70.28 70.28 70.28 RVmm 64.67 RVmm 56.35	-R.C .478 -R.C n/a n/a -R.C .499 -R.C .435	DWFcms .000 .000 .000 .000 .000 .000 .000 .0
()"max= .515:Dmax= R0001:C00018	.72 .72 .77 .70 .77 .77 .77 .77 .77 .77 .77 .77		AREAha 29.50 AREAha 96.95 29.50 126.45 126.45 126.45 AREAha 10.39 AREAha 8.51	-QPEAKcms 1.825 -QPEAKcms 4.434 1.825 6.183 5.417 -QPEAKcms .411 -QPEAKcms .312	-TpeakDate No_date No_date No_date No_date No_date No_date No_date -TpeakDate No_date -TpeakDate No_date	_hh:mm 12:15 _hh:mm- 12:30 12:15 12:25 _hh:mm- 12:25 12:36 _hh:mm- 13:10 _hh:mm- 13:05	RVmm 61.96 72.81 61.96 70.28 70.28 70.28 70.28 70.28 RVmm 64.67 RVmm 56.35	-R.C .478 -R.C n/a n/a -R.C .499 -R.C .435	DWFcms .000 .000 .000 .000 .000 .000 .000 .0
()"max= .515:Dmax= R0001:C00018	.72 .72 .77 .70 .77 .77 .77 .77 .77 .77 .77 .77		AREAha 29.50 AREAha 96.95 29.50 126.45 126.45 126.45 AREAha 10.39 AREAha 8.51	-QPEAKcms 1.825 -QPEAKcms 4.434 1.825 6.183 5.417 -QPEAKcms .411 -QPEAKcms .312	-TpeakDate No_date No_date No_date No_date No_date No_date No_date -TpeakDate No_date -TpeakDate No_date	_hh:mm 12:15 _hh:mm- 12:30 12:15 12:25 _hh:mm- 12:25 12:36 _hh:mm- 13:10 _hh:mm- 13:05	RVmm 61.96 72.81 61.96 70.28 70.28 70.28 70.28 70.28 RVmm 64.67 RVmm 56.35	-R.C .478 -R.C n/a n/a -R.C .499 -R.C .435	DWFcms .000 .000 .000 .000 .000 .000 .000 .0
()"max= .515:Dmax= R0001:C00018	.72 .72 .77 .70 .77 .77 .77 .77 .77 .77 .77 .77		AREAha 29.50 AREAha 96.95 29.50 126.45 126.45 126.45 AREAha 10.39 AREAha 8.51	-QPEAKcms 1.825 -QPEAKcms 4.434 1.825 6.183 5.417 -QPEAKcms .411 -QPEAKcms .312	-TpeakDate No_date No_date No_date No_date No_date No_date No_date -TpeakDate No_date -TpeakDate No_date	_hh:mm 12:15 _hh:mm- 12:30 12:15 12:25 _hh:mm- 12:25 12:36 _hh:mm- 13:10 _hh:mm- 13:05	RVmm 61.96 72.81 61.96 70.28 70.28 70.28 70.28 70.28 RVmm 64.67 RVmm 56.35	-R.C .478 -R.C n/a n/a -R.C .499 -R.C .435	DWFcms .000 .000 .000 .000 .000 .000 .000 .0
Ido Shi 2000 (Wmax= .515:Dmax= R0001:C00018	.722 DTmin 5.00 : Tp= Tmin 1.00 5.00 DTmin 1.00 DTmin 1.00 1.00 DTmin 5.00 : Tp= DTmin 5.00 : Tp= DTmin 1.00 5.00 1.00	1 JD:NHYD 06:SB05-1 .57] JD:NHYD 05:CH_SB5-1 06:SB05-1 07:JN_4 ID:NHYD 07:JN_4 08:CH_SB5-2 10:SB05-2 1.31] ID:NHYD 0:SB05-3 1.16] ID:NHYD 08:CH_SB5-2 10:SB05-3 1.163 ID:SB05-3 10:SB05-3	AREAha 29.50 AREAha 126.45 126.45 126.45 AREAha 10.39 AREAha 8.51 AREAha 8.51 126.45 10.39 8.51 145.35	-QPEAKcms 1.825 -QPEAKcms 4.434 1.825 6.183 5.417 -QPEAKcms .411 -QPEAKcms .312 -QPEAKcms 5.417 .411 .312 6.064	-TpeakDate No_date -TpeakDate No_date No_date -TpeakDate No_date -TpeakDate No_date -TpeakDate No_date -TpeakDate No_date No_date No_date No_date No_date No_date No_date	_hh:mm- 12:15 12:25 12:25 12:25 12:36 _hh:mm- 13:10 _hh:mm- 13:05 12:36 13:10 13:05 12:36	RVmm 61.96 70.28 70.20 70.	-R.C n/a n/a n/a -R.C n/a -R.C .499 -R.C .435 -R.C n/a n/a n/a	DWFcms .000 .000 .000 .000 .000 .000 .000 .0
Ido Shi 2000 (Wmax= .515:Dmax= R0001:C00018	.722 DTmin 5.00 : Tp= Tmin 1.00 5.00 DTmin 1.00 DTmin 1.00 1.00 DTmin 5.00 : Tp= DTmin 5.00 : Tp= DTmin 1.00 5.00 1.00	1 JD:NHYD 06:SB05-1 .57] JD:NHYD 05:CH_SB5-1 06:SB05-1 07:JN_4 ID:NHYD 07:JN_4 08:CH_SB5-2 10:SB05-2 1.31] ID:NHYD 0:SB05-3 1.16] ID:NHYD 08:CH_SB5-2 10:SB05-3 1.163 ID:SB05-3 10:SB05-3	AREAha 29.50 AREAha 126.45 126.45 126.45 AREAha 10.39 AREAha 8.51 AREAha 8.51 126.45 10.39 8.51 145.35	-QPEAKcms 1.825 -QPEAKcms 4.434 1.825 6.183 5.417 -QPEAKcms .411 -QPEAKcms .312 -QPEAKcms 5.417 .411 .312 6.064	-TpeakDate No_date -TpeakDate No_date No_date -TpeakDate No_date -TpeakDate No_date -TpeakDate No_date -TpeakDate No_date No_date No_date No_date No_date No_date No_date	_hh:mm- 12:15 12:25 12:25 12:25 12:36 _hh:mm- 13:10 _hh:mm- 13:05 12:36 13:10 13:05 12:36	RVmm 61.96 70.28 70.20 70.	-R.C n/a n/a n/a -R.C n/a -R.C .499 -R.C .435 -R.C n/a n/a n/a	DWFcms .000 .000 .000 .000 .000 .000 .000 .0
(Vmax= .515:Dmax= R0001:C00018	.722 DTmin 5.00 Tmin 1.00 5.00 1.00 1.00 1.00 1.00 1.00 1.00	1 J.D.:NHYD 06:SB05-1 .57] JD:NHYD 05:CH_SB5-1 06:SB05-1 07:JM_4 08:CH_SB5-2 01 1D:NHYD 09:SB05-2 1.31] -ID:NHYD 09:SB05-3 1.16] -ID:NHYD 09:SB05-2 1.31] -ID:NHYD 09:SB05-3 1.16] -ID:NHYD 09:SB05-2 10:SB05-3 1.16] -ID:NHYD 09:SB05-2 10:SB05-3 01:JM_5 -ID:NHYD 02:SB06	AREAha 29.50 AREAha 126.45 126.45 126.45 AREAha 10.39 AREAha 8.51 AREAha 8.51 126.45 10.39 8.51 125.45 10.39	-QPEAKcms 1.825 -QPEAKcms 4.434 1.825 6.183 5.417 -QPEAKcms .411 -QPEAKcms .312 -QPEAKcms 5.417 .411 .312 6.064	-TpeakDate No_date -TpeakDate No_date No_date -TpeakDate No_date -TpeakDate No_date -TpeakDate No_date -TpeakDate No_date No_date No_date No_date No_date No_date No_date	_hh:mm- 12:15 12:25 12:25 12:25 12:36 _hh:mm- 13:10 _hh:mm- 13:05 12:36 13:10 13:05 12:36	RVmm 61.96 70.28 70.20 70.	-R.C n/a n/a n/a -R.C n/a -R.C .499 -R.C .435 -R.C n/a n/a n/a	DWFcms .000 .000 .000 .000 .000 .000 .000 .0
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[Wmax=.515:Dmax= R0001:C000181 CALIB NASHYD [CN= 68.0: N= 3.00] R0001:C000191 ADD HYD * R0001:C000201 R0UTE CHANNEL -> * [RDT= 1.00] out<-	.72: 77min 5.0 77min 1.0 77min 1.0 7.0 7 1.0 7 7 7 1.0 7 7 7 1.0 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	1 JD:NHYD 06:SB05-1 .57] JD:NHYD 05:CH_SB5-1 06:SB05-1 07:JN_4 JD:NHYD 07:JN_4 08:CH_SB5-2 10:INHYD 09:SB05-2 1.31] TD:NHYD 08:CH_SB5-3 1.16] ID:NHYD 08:SB05-3 10:SB05-3 11:JN_5 ID:NHYD 03:SB07 1.74] TD:NHYD 03:SB07 04:JN_6 05:CH_SB8 5] TD:NHYD 04:JN_6 05:CH_SB8 5] TD:NHYD	AREAHa 29.50 AREAHa 126.45 126.45 126.45 126.45 AREAHa 10.39 AREAHa 8.51 126.45 10.39 8.51 145.35 AREAHa 21.20 AREAHa 11.36 32.56 32.56 32.56 AREAHa 8.98	-QPEAKcms 1.825 -QPEAKcms 4.434 1.825 6.183 5.417 -QPEAKcms 6.183 5.417 -QPEAKcms 312 -QPEAKcms 5.417 .312 -QPEAKcms .836 -QPEAKcms .836 .354 1.177 -QPEAKcms 1.177 1.172 -QPEAKcms 8.807	-TpeakDate No_date -TpeakDate No_date -TpeakDate No_date -TpeakDate No_date -TpeakDate No_date -TpeakDate No_date -TpeakDate No_date -TpeakDate No_date -TpeakDate No_date -TpeakDate No_date -TpeakDate No_date -TpeakDate No_date -TpeakDate No_date -TpeakDate No_date -TpeakDate No_date -TpeakDate No_date -TpeakDate No_date -TpeakDate No_date -TpeakDate No_date -TpeakDate No_date	_hh:mm- 12:15 12:25 12:25 12:36 _hh:mm- 13:10 13:10 13:05 12:36 _hh:mm- 13:15 _hh:mm- 13:15 _hh:mm- 13:45 13:45 13:45 13:45 13:45 13:20 _hh:mm- 13:20 _13:30	RVmm 61.96 70.28 70.29 70.28 70.28 70.28 70.29 70.28 70.28 70.28 70.28 70.28 70.28 70.28 70.28 70.28 70.28 70.28 70.28 70.28 70.28 70.28 70.28 70.28 70.28 70.29 70.28 70.29 70.29 70.29 70.29 70.20 70.	R.C . 478 R.C n/a n/a -R.C . 499 -R.C . 435 -R.C . 507 -R.C . 507 -R.C . 625 -R.C . 625	DWFCms .000 DWFCms .000 .000 .000 .000 .000 .000 .000 .0
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+ 5.0 06:SB08	8.98 .807 No_date 12:10 80.9 186.89 7.569 No_date 12:47 68.8	9 n/a .000
SUM= 1.0 07:JN 7	186.89 7.569 No date 12:47 68.8	2 n/a .000
ROUTE CHANNEL -> 1.0 07:JN 7	186.89 7.569 No_date 12:47 68.8 186.89 7.434 No_date 12:48 68.8	2 n/a .000
[RDT= 1 001 out<- 1 0 08 CH SB9	186 89 7 434 No date 12:48 68 8	2 n/a 000
[L/S/n= 410./ .100/.035]	100100	- 11/ d • • • • • •
(Margare 920 - Dargare 1 474)		
{Vmax= .830:Dmax= 1.474}		
R0001:C00031DTmin-ID:NHYD	AKEAna-QPEAKCms-IpeakDate_nn:mmRvm	m-R.CDWFCms
CALIB NASHYD 5.0 09:SB09	14.34 1.001 No_date 12:15 68.2	9.527.000
[CN= 73.0: N= 3.00: Tp= .57]		
R0001:C00032DTmin-ID:NHYD	AREAha-OPEAKcms-ToeakDate hh:mmRVm	m-R.CDWFcms
CALIB NASHYD 5.0 10:SB10	11.38 .666 No_date 12:25 66.3	2.512.000
[CN= 72.0: N= 3.00: To= .73]		
DOOOL COOOLS DEMIN TO NUME	ADEADA ODEAKama modaliDate bbimm Dim	m D C DWEama
ADD HYD 1.0 08:CH_SB9	196 90 7 424 No data 12:40 69 9	2 7/2 000
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+ 5.0 09:SB09	186.89 7.434 No_date 12:48 68.8 14.34 1.001 No_date 12:15 68.2 11.38 .666 No_date 12:25 66.3 212.61 8.850 No_date 12:37 68.6	9 n/a .000
+ 5.0 10:SB10	11.38 .666 No_date 12:25 66.3	2 n/a .000
SUM= 1.0 01:JN_8	212.61 8.850 No_date 12:37 68.6	5 n/a .000
ROUTE CHANNEL -> 1.0 01:JN 8	212.61 8.850 No_date 12:37 68.6 212.61 8.745 No_date 12:44 68.6	5 n/a .000
[RDT= 1.00] out<- 1.0 02:CH_SB11	212.61 8.745 No date 12:44 68.6	5 n/a .000
[L/S/n= 302./ .100/.035]		
{Vmax= .867:Dmax= 1.603}		
0001:C00035DTmin-ID:NHYD	AKEAna-QPEAKCms-IpeakDate_nn:mmRvm	m-R.CDwrems
CALIB NASHYD 1.0 03:SB11	14.81 1.712 No_date 12:00 76.8	6.593.000
[CN= 78.0: N= 3.00: Tp= .08]		
CALIB NASHYD 5.0 04:SB16	16.71 .807 No_date 13:10 77.0	8.595.000
[CN= 78.0: N= 3.00: Tp= 1.30]	· · · · · · · · · · · · · · · · · · ·	
20001.000037DTmin-ID.NUVD	APEAba_OPEAKome_ThosekDato bb:mmPim	m-P C DWFome
DOUTE CURVET > E 0 04-0010	16 71 007 No John 10,100 77 0	a second second
<pre>R0001:C00037rmin-lD:NHYD R0UTE CHANNEL -> 5.0 04:SB16 [RDT= 5.00] out<- 5.0 05:CH_SB15 [L/.S/m= 299 / 750/035]</pre>	10.71 .007 NO_date 13.10 77.0	5 11/a .000
[RDT= 5.00] OUT<- 5.0 05:CH_SBI5	16./1 .803 No_date 13:15 //.0	8 n/a .000
[2, 0, 1. 2001, 1,000, 10000]		
{Vmax= .541:Dmax= .173}		
R0001:C00038DTmin-ID:NHYD	AREAha-QPEAKcms-TpeakDate_hh:mmRVm	m-R.CDWFcms
CALIB NASHYD 5.0 06:SB15	7.95 .649 No date 12:15 77.0	8 .595 .000
[CN= 78.0: N= 3.00: Tp= .54]	7.95 .649 No_date 12:15 77.0	
20001 · C00039	APEAba-OPEAKome-TooakDato bb .mmPim	m-P CDMFcms
CALTE NASHYD 5.0.07.SB14	15.85 1.217 No_date 12:15 77.0	8 595 000
[CN= 78.0: N= 3.00: Tp= .61]	10100 1111 10_0000 10110 //10	
R0001:C00040DTmin-ID:NHYD		
X0001:C00040DTMLH-ID:NHID	AREANA-OPEARCHIS-IPEARDate_III: MMRVM	m-R.CDWFCmS
ADD HYD 5.0 05:CH_SB15	16./1 .803 No_date 13:15 //.0	8 n/a .000
+ 5.0 06:SB15	7.95 .649 No_date 12:15 77.0	8 n/a .000
+ 5.0 07:SB14	16.71 .803 No_date 13:15 77.0 7,95 .649 No_date 12:15 77.0 15.85 1.217 No_date 12:15 77.0 40.51 2.383 No_date 12:25 77.0	8 n/a .000
SUM= 5.0 08:JN 9	40.51 2.383 No date 12:25 77.0	8 n/a .000
20001 · C000/1DTmin_TD · NUVD		m-D CDMFcms
ROUTE CHANNEL -> 5.0 08:JN 9	40.51 2.383 No date 12:25 77.0	8 n/a .000
[BDT= 5 00] out<- 5 0 09.CH_SB12	40.51 2.383 No_date 12:25 77.0 40.51 2.283 No_date 12:35 77.0	8 n/a 000
[L/S/n= 222./ .100/.035]		
{Vmax= .332:Dmax= .421}		
10001.000040 DEFINIT	ADDAL ODDAKANA MARABADA ALAMA DIA	
80001:C00042DTmin-ID:NHYD	AREANA-OPEARCHIS-IPEARDate_III: MMRVM	m-R.CDwFCmS
CALIB NASHYD 5.0 10:SB12	6.02 .533 No_date 12:10 77.0	8.595 .000
[CN= /8.0: N= 3.00: 1p= .46]		
0001:C00043DTmin-ID:NHYD	AREAha-QPEAKcms-TpeakDate_hh:mmRVm	m-R.CDWFcms
ADD HYD 1.0 02:CH SB11	212.61 8.745 No date 12:44 68.6	5 n/a .000
+ 1.0 03:SB11	14.81 1.712 No date 12:00 76.8	6 n/a .000
+ 5 0 09·CH SR12	AREAha-QPEAKcms-TpeakDate_hh:mmRVm 212.61 8.745 No_date 12:44 68.6 14.81 1.712 No_date 12:00 76.8 40.51 2.283 No_date 12:35 77.0 6.02 .533 No_date 12:10 77.0 273.95 11.784 No_date 12:42 70.5 	8 n/a 000
+ 5.0.10.0D12	6 02 533 No dato 12:00 77 0	8 n/a 000
0.0 10.3D12	272 05 11 704 No date 12:10 77.0	0 11/a .000
0001.000044 DE-1.0 01.0N_10	ADEADS ODEANsma Tra-Losts Lines Di	- 11/a .000
R0001:C00044DTmin-ID:NHYD SAVE HYD 1.0 01:JN_10	AREANA-UPEARCHIS-IPEARDATE_nn:mmRVm	m-R.CDWFCms
SAVE HYD 1.0 01:JN_10	2/3.95 11./84 No_date 12:42 70.5	3 n/a .000
iname :JN_10.0001		
remark:JN_10		
R0001:C00045		
FINISH		
* * * * * * * * * * * * * * * * * * * *	* * * * * * * * * * * * * * * * * * * *	*****
WARNINGS / ERRORS / NOTES		
Simulation ended on 2022-12-28 at 1	17.11	
	1/.11	



Appendix F: Geometric Data Developed in HEC-RAS



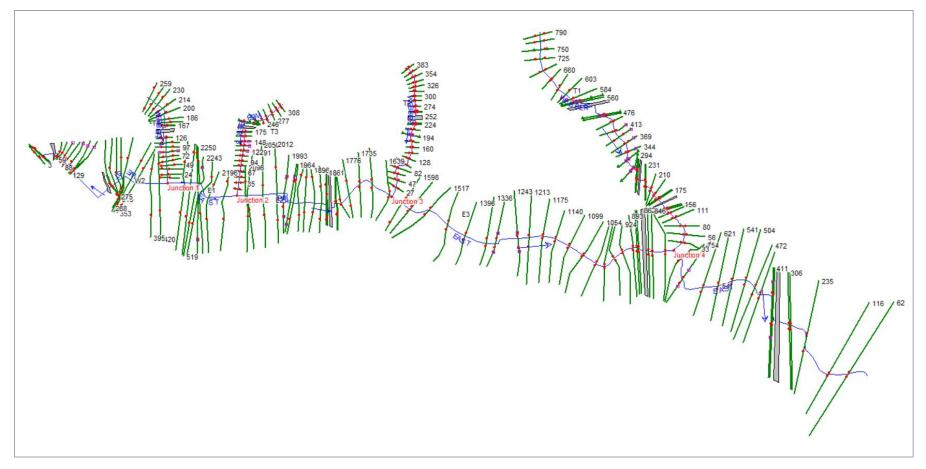


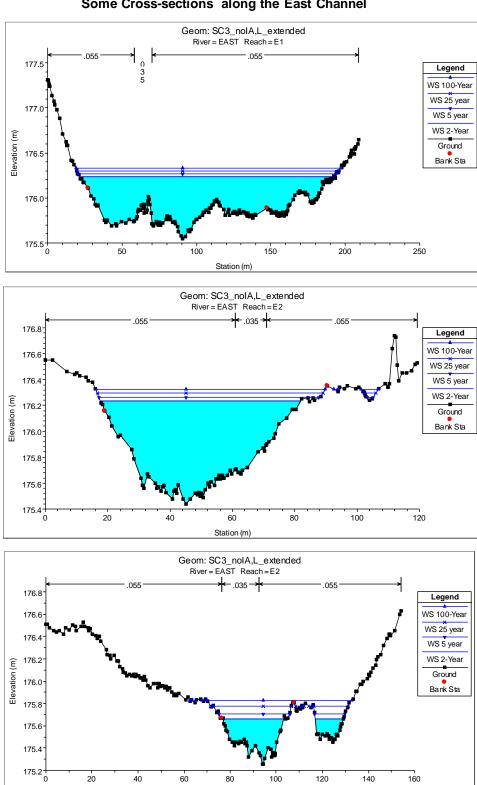
Figure 1: Geometric Data Developed in HEC-RAS



Appendix G: Cross-sections of the Channel

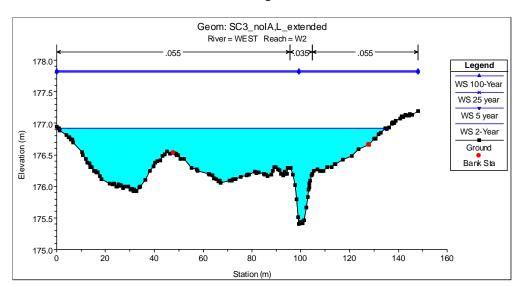
Station (m)



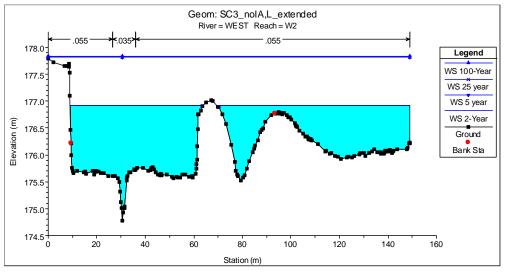


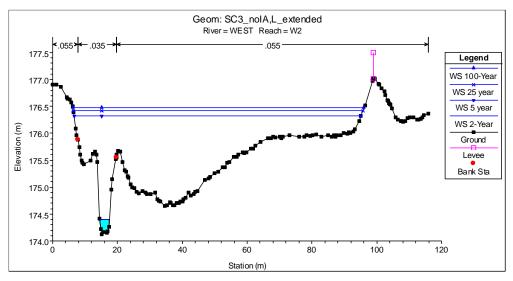
Some Cross-sections along the East Channel





Some Cross-sections along the West Channel









Appendix H: HEC-RAS Model Inundation Maps



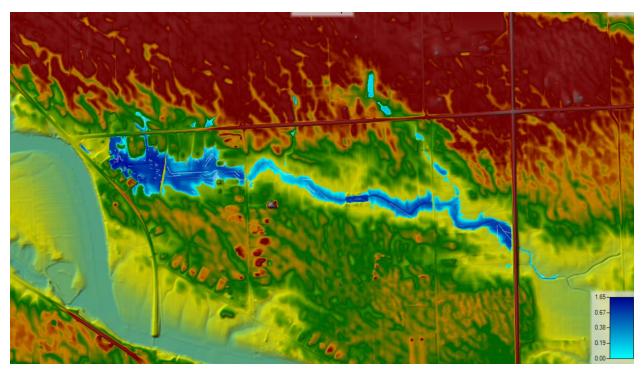


Figure H1: Inundation Map for 2-Year Return period flood event

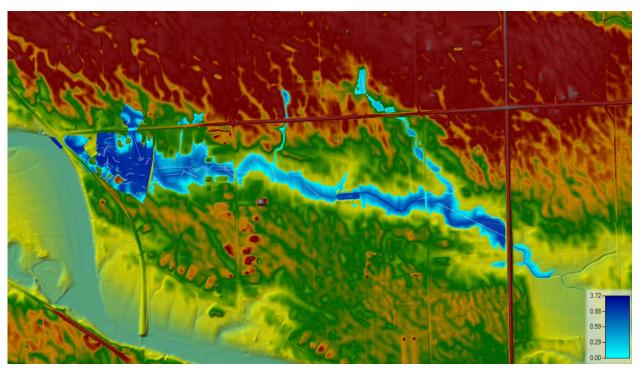


Figure H2: Inundation Map for 100-Year Return period flood event



Appendix I: HEC-RAS Model Output Summary Table



						Outpu	it Summa	ry Table					
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
WEST	W1	519	2Year	0.22	175.4	176.92	175.55	176.92	0	0	182.23	202.63	0
WEST	W1	519	5 -Year	0.32	175.4	177.81	175.6	177.81	0	0	372.36	215.52	0
WEST	W1	519	25 - Year	0.5	175.4	177.82	175.63	177.82	0	0	374.66	215.52	0
			100										
WEST	W1	519	Year	0.65	175.4	177.83	175.65	177.83	0	0	376.31	215.52	0
WEST	W1	504	2Year	0.22	175.4	176.92		176.92	0	0	145.68	185.78	0
WEST	W1	504	5 -Year	0.32	175.4	177.81		177.81	0	0	327.4	209.8	0
WEST	W1	504	25 - Year	0.5	175.4	177.82		177.82	0	0	329.64	209.8	0
WEST	W1	504	100 Year	0.65	175.4	177.83		177.83	0	0	331.24	209.8	0
WEST	W1	485	2Year	0.22	175.45	176.92		176.92	0	0	161.75	167.8	0
WEST	W1	485	5 -Year	0.32	175.45	177.81		177.81	0	0	311.5	167.8	0
WEST	W1	485	25 - Year	0.5	175.45	177.82		177.82	0	0	313.29	167.8	0
WEST	W1	485	100 Year	0.65	175.45	177.83		177.83	0	0	314.57	167.8	0
WEST	W2	420	2Year	0.43	175.4	176.92		176.92	0	0.01	85.17	135.11	0
WEST	W2	420	5 -Year	0.69	175.4	177.81		177.81	0	0	215.25	148	0
WEST	W2	420	25 - Year	1.14	175.4	177.82		177.82	0	0.01	216.83	148	0
WEST	W2	420	100 Year	1.53	175.4	177.83		177.83	0	0.01	217.96	148	0
WEST	W2	395	2Year	0.43	175.34	176.92		176.92	0	0	87.29	107.42	0
WEST	W2	395	5 -Year	0.69	175.34	177.81		177.81	0	0	197.77	145.1	0
WEST	W2	395	25 - Year	1.14	175.34	177.82		177.82	0	0.01	199.31	145.1	0
WEST	W2	395	100 Year	1.53	175.34	177.83		177.83	0	0.01	200.43	145.1	0
WEST	W2	353	2Year	0.43	175.28	176.92		176.92	0	0.01	58.21	60.84	0
WEST	W2	353	5 -Year	0.69	175.28	177.81		177.81	0	0.01	123.83	89.3	0 03 of 544



						Outpu	it Summa	ary Table					
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
WEST	W2	353	25 - Year	1.14	175.28	177.82		177.82	0	0.01	124.79	89.3	0
WEST	W2	353	100 Year	1.53	175.28	177.83		177.83	0	0.01	125.47	89.3	0
WEST	W2	340	2Year	0.43	175.26	176.92		176.92	0	0.01	64.17	68.72	0
WEST	W2	340	5 -Year	0.69	175.26	177.81		177.81	0	0.01	135.62	93.3	0
WEST	W2	340	25 - Year	1.14	175.26	177.82		177.82	0	0.01	136.61	93.3	0
WEST	W2	340	100 Year	1.53	175.26	177.83		177.83	0	0.01	137.32	93.3	0
WEST	W2	317	2Year	0.43	175.11	176.92		176.92	0	0.01	79.12	86.79	0
WEST	W2	317		0.69	175.11	177.81		177.81	0	0	160.83	93.8	0
WEST	W2	317	25 - Year	1.14	175.11	177.82		177.82	0	0.01	161.82	93.8	0
WEST	W2	317	100 Year	1.53	175.11	177.83		177.83	0	0.01	162.54	93.8	0
WEST	W2	313	2Year	0.43	175.08	176.92		176.92	0	0.01	79.44	87.51	0
WEST	W2	313	5 -Year	0.69	175.08	177.81		177.81	0	0	161.87	96.3	0
WEST	W2	313	25 - Year	1.14	175.08	177.82		177.82	0	0.01	162.89	96.3	0
WEST	W2	313	100 Year	1.53	175.08	177.83		177.83	0	0.01	163.63	96.3	0
WEST	W2	300	2Year	0.43	175.11	176.92		176.92	0	0.01	98.3	119.5	0
WEST	W2	300	5 -Year	0.69	175.11	177.81		177.81	0	0	208.48	128.2	0
WEST	W2	300	25 - Year	1.14	175.11	177.82		177.82	0	0.01	209.84	128.2	0
WEST	W2	300	100 Year	1.53	175.11	177.83		177.83	0	0.01	210.82	128.2	0
WEST	W2	288		0.43	175.05	176.92		176.92	0	0.01	85.53	81.66	0
WEST	W2	288	5 -Year 25 -	0.69	175.05	177.81		177.81	0	0	170.58	105.8	0
WEST	W2	288	25 - Year	1.14	175.05	177.82		177.82	0	0.01	171.71	105.8	0



						Outpu	it Summa	ry Table					
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
WEST	W2	288	100 Year	1.53	175.05	177.83		177.83	0	0.01	172.52	105.8	0
WEST	W2	275	2Year	0.43	175	176.92		176.92	0	0.01	112.01	119.36	0
WEST	W2	275	5 -Year 25 -	0.69	175	177.81		177.81	0	0.01	236.44	149	0
WEST	W2	275	Year	1.14	175	177.82		177.82	0	0.01	238.03	149	0
WEST	W2	275	100 Year	1.53	175	177.83		177.83	0	0.01	239.17	149	0
WEST	W2	273	2Year	0.43	174.77	176.92	175.16	176.92	0	0	123.72	134.2	0
WEST	W2	273		0.69	174.77	177.81	175.24	177.81	0	0	249.41	149	0
WEST	W2	273	25 - Year	1.14	174.77	177.82	175.34	177.82	0	0	250.99	149	0
WEST	W2	273	100 Year	1.53	174.77	177.83	175.41	177.83	0	0.01	252.14	149	0
WEST	W2	200		Culvert									
WEST	W2	129	2Year	0.43	174.09	174.41		174.43	0.003179	0.61	0.71	2.91	0.39
WEST	W2	129		0.69	174.09	176.33		176.33	0	0.01	59.76	46.1	0
WEST	W2	129		1.14	174.09	176.43		176.43	0	0.02	64.24	46.33	0.01
WEST	W2	129	100 Year	1.53	174.09	176.48		176.48	0.000001	0.03	66.72	46.45	0.01
WEST	W2	128	2Year	0.43	174.13	174.4	174.31	174.43	0.005145	0.7	0.61	2.94	0.49
WEST	W2	128		0.69	174.13	176.33	174.37	176.33	0	0.01	78.62	88.43	0
WEST	W2	128		1.14	174.13	176.43	174.44	176.43	0	0.02	87.24	89.32	0.01
WEST	W2	128	100 Year	1.53	174.13	176.48	174.5	176.48	0.000001	0.03	92.03	89.83	0.01
WEST	W2	123	2Year	0.43	174.13	174.3	174.3	174.37	0.023354	1.18	0.36	2.53	0.99
WEST	W2	123	5 -Year	0.69	174.13	176.33	174.35	176.33	0	0.02	64.74	80.36	0
WEST	W2	123	25 - Year	1.14	174.13	176.43	174.44	176.43	0.000001	0.03	72.89	84.6	0.01



						Outpu	it Summa	ary Table					
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
WEST	W2	123	100 Year	1.53	174.13	176.48	174.49	176.48	0.000001	0.03	77.42	84.79	0.01
WEST	W2	107	2Year	0.43	173.86	174.28	174.05	174.28	0.00055	0.22	1.94	8.81	0.15
WEST	W2	107	5 -Year	0.69	173.86	176.33	174.09	176.33	0	0.02	52.25	69.64	0
WEST	W2	107	25 - Year	1.14	173.86	176.43	174.14	176.43	0	0.02	59.76	80.85	0.01
WEST	W2	107	100 Year	1.53	173.86	176.48	174.18	176.48	0.000001	0.03	64.1	81.49	0.01
WEST	W2	88	2Year	0.43	173.5	174.28		174.28	0.000049	0.11	4.01	10.04	0.05
WEST	W2	88		0.69	173.5	176.33		176.33	0	0.02	57.49	70.28	0
WEST	W2	88		1.14	173.5	176.43		176.43	0	0.03	64.44	73.05	0.01
WEST	W2	88	100 Year	1.53	173.5	176.48		176.48	0	0.03	68.38	75	0.01
WEST	W2	78	2Year	0.43	173.37	174.28	173.55	174.28	0.000027	0.08	5.07	11.46	0.04
WEST	W2	78		0.69	173.37	176.33	173.61	176.33	0	0.01	67.14	62.7	0
WEST	W2	78		1.14	173.37	176.43	173.68	176.43	0	0.02	73.26	63.46	0
WEST	W2	78	100 Year	1.53	173.37	176.48	173.74	176.48	0	0.03	76.66	63.86	0.01
WEST	W2	65	2Year	0.43	173.1	174.28		174.28	0.000014	0.07	6.11	11.29	0.03
WEST	W2	65		0.69	173.1	176.33		176.33	0	0.01	65.23	54.42	0
WEST	W2	65	25 - Year	1.14	173.1	176.43		176.43	0	0.02	70.54	55.07	0
WEST	W2	65	100 Year	1.53	173.1	176.48		176.48	0	0.03	73.49	55.3	0.01
WEST	W2	59	2Year	0.43	172.95	174.28	173.31	174.28	0.00001	0.06	6.96	11.79	0.03
WEST	W2	59	5 -Year	0.69	172.95	176.33	173.39	176.33	0	0.02	58.55	47.71	0
WEST	W2	59		1.14	172.95	176.43	173.5	176.43	0	0.02	63.21	48.27	0
WEST	W2	59	100 Year	1.53	172.95	176.48	173.55	176.48	0	0.03	65.81	48.9	0.01



						Outpu	t Summa	ry Table					
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
WEST	W2	40		Culvert									
WEST	W2	16	2Year	0.43	171.33	171.65		171.66	0.001867	0.3	1.45	6.18	0.2
WEST	W2	16		0.69	171.33	171.73		171.74	0.00185	0.35	1.98	6.49	0.2
WEST	W2	16	25 - Year	1.14	171.33	171.84		171.85	0.0019	0.42	2.71	6.84	0.21
WEST	W2	16	100 Year	1.53	171.33	175.06		175.06	0	0.02	118.76	66.8	0
WEST	W2	12	2Year	0.43	171.3	171.55	171.55	171.63	0.059023	1.25	0.34	2.23	1.01
WEST	W2	12	5 -Year	0.69	171.3	171.61	171.61	171.71	0.054768	1.4	0.49	2.53	1.01
WEST	W2	12		1.14	171.3	171.7	171.7	171.82	0.051088	1.57	0.72	2.94	1.01
WEST	W2	12	100 Year	1.53	171.3	175.06		175.06	0	0.01	166.57	77.4	0
WEST	W2	3		0.43	171.33	171.4	171.36	171.4	0.005709	0.27	1.84	32.37	0.39
WEST	W2	3	5 -Year 25 -	0.69	171.33	171.42	171.38	171.42	0.0057	0.33	2.5	34.37	0.41
WEST	W2	3	Year	1.14	171.33	171.45	171.39	171.45	0.005699	0.4	3.5	38.3	0.43
WEST	W2	3	100 Year	1.53	171.33	175.06	171.41	175.06	0	0.01	232.4	65	0
WEBBE													
R 4 WEBBE	T4	259	2Year	0.21	176.95	177.03	177.01	177.04	0.009164	0.36	0.6	13.39	0.54
R 4	T4	259	5 -Year	0.37	176.95	177.89	177.03	177.89	0	0.01	28.4	43.94	0.01
WEBBE	TA	250	25 - Xaar	0.04	470.05	477.04	477.05	477.04	0.000001	0.00	20.00	44.04	0.04
R 4 WEBBE	T4	259	Year 100	0.64	176.95	177.91	177.05	177.91	0.000001	0.02	29.08	44.24	0.01
R 4	T4	259	Year	0.88	176.95	177.92	177.06	177.92	0.000003	0.03	29.39	44.37	0.01
WEBBE R 4	T4	246	2Year	0.21	176.87	177.01		177.01	0.000658	0.15	1.45	17.1	0.16
WEBBE	14	240	2 (eal	0.21	170.07	177.01		177.01	0.000038	0.15	1.40	17.1	0.10
R 4	T4	246	5 -Year	0.37	176.87	177.89		177.89	0	0.01	32.44	51.06	0



						Outpu	it Summa	ary Table					
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
WEBBE R 4	T4	246	25 - Year	0.64	176.87	177.91		177.91	0.000001	0.02	33.24	51.57	0.01
WEBBE R 4	T4	246	100 Year	0.88	176.87	177.92		177.92	0.000002	0.03	33.59	51.7	0.01
WEBBE R 4	T4	230	2Year	0.21	176.77	177		177	0.001004	0.21	1	8.72	0.2
WEBBE R 4	T4	230	5 -Year	0.37	176.77	177.89		177.89	0.000001	0.02	25.6	46.09	0.01
WEBBE R 4	T4	230	25 - Year	0.64	176.77	177.91		177.91	0.000002	0.03	26.32	46.41	0.01
WEBBE R 4	T4	230	100 Year	0.88	176.77	177.92		177.92	0.000003	0.04	26.64	46.56	0.01
WEBBE													
R 4 WEBBE	T4	214	2Year	0.21	176.75	176.99		176.99	0.000221	0.11	1.92	14.58	0.1
R 4 WEBBE	T4	214	5 -Year 25 -	0.37	176.75	177.89		177.89	0	0.02	31.83	53.68	0
R 4	T4	214	Year	0.64	176.75	177.91		177.91	0.000001	0.03	32.66	53.87	0.01
WEBBE R 4	T4	214	100 Year	0.88	176.75	177.92		177.92	0.000002	0.04	33.03	53.95	0.01
WEBBE R 4	T4	200	2Year	0.21	176.66	176.99		176.99	0.000126	0.1	2.73	27.46	0.08
WEBBE R 4	T4	200	5 -Year	0.37	176.66	177.89		177.89	0	0.01	45.53	62.4	0
WEBBE R 4	T4	200	25 - Year	0.64	176.66	177.91		177.91	0.000001	0.02	46.49	62.4	0.01
WEBBE R 4	T4	200	100 Year	0.88	176.66	177.92		177.92	0.000001	0.03	46.92	62.4	0.01
WEBBE R 4	T4	186	2Year	0.21	176.64	176.99		176.99	0.000238	0.15	1.47	7.69	0.11
WEBBE R 4	T4	186		0.37	176.64	177.89		177.89	0.000001	0.02	26.39	57.55	0.01
WEBBE R 4	T4	186	25 - Year	0.64	176.64	177.91		177.91	0.000002	0.03	27.28	58.1	0.01
WEBBE R 4	T4	186	100 Year	0.88	176.64	177.92		177.92	0.000003	0.04	27.68	58.1	0.01



						Outpu	it Summa	ary Table					
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
WEBBE R 4	T4	175	2Year	0.21	176.53	176.99		176.99	0.000063	0.08	2.82	16.47	0.06
WEBBE R 4	T4	175	5 -Year	0.37	176.53	177.89		177.89	0	0.01	37.93	53.76	0
WEBBE R 4	T4	175	25 - Year	0.64	176.53	177.91		177.91	0.000001	0.02	38.76	54.19	0.01
WEBBE R 4	T4	175	100 Year	0.88	176.53	177.92		177.92	0.000001	0.03	39.13	54.38	0.01
WEBBE R 4	T4	167	2Year	0.21	176.32	176.99		176.99	0.000012	0.04	7.35	33.69	0.02
WEBBE R 4	T4	167	5 -Year	0.37	176.32	177.89		177.89	0	0.01	47.35	49.6	0
WEBBE R 4	T4	167	25 - Year	0.64	176.32	177.91		177.91	0	0.02	48.11	49.6	0.01
WEBBE R 4	T4	167	100 Year	0.88	176.32	177.92		177.92	0.000001	0.03	48.45	49.6	0.01
WEBBE R 4	T4	166	2Year	0.21	175.99	176.99	176.34	176.99	0.000012	0.04	7.16	32.45	0.02
WEBBE R 4	T4	166		0.37	175.99	177.89	176.42	177.89	0	0.01	46.27	49.3	0
WEBBE R 4	T4	166	25 - Year	0.64	175.99	177.91	176.53	177.91	0	0.02	47.03	49.3	0.01
WEBBE R 4	T4	166	100 Year	0.88	175.99	177.92	176.61	177.92	0.000001	0.03	47.37	49.3	0.01
WEBBE R 4	T4	145		Culvert									
WEBBE R 4	T4	126	2Year	0.21	175.86	176.92		176.92	0.000003	0.03	8.1	28.57	0.01
WEBBE R 4	T4	126	5 -Year	0.37	175.86	177.81		177.81	0	0.01	43.91	42.9	0
WEBBE R 4	T4	126	25 - Year	0.64	175.86	177.82		177.82	0	0.02	44.37	42.9	0.01
WEBBE R 4	T4	126	100 Year	0.88	175.86	177.83		177.83	0.000001	0.03	44.7	42.9	0.01
WEBBE R 4	T4	124	2Year	0.21	175.8	176.92		176.92	0.000004	0.03	6.34	17.09	0.02



						Outpu	it Summa	ry Table					
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
WEBBE R 4	T4	124	5 -Year	0.37	175.8	177.81		177.81	0	0.01	41.34	44	0
WEBBE R 4	T4	124	25 - Year	0.64	175.8	177.82		177.82	0	0.02	41.81	44	0.01
WEBBE R 4	T4	124	100 Year	0.88	175.8	177.83		177.83	0.000001	0.03	42.15	44	0.01
WEBBE													
R 4 WEBBE	T4	110	2Year	0.21	175.79	176.92		176.92	0.000002	0.03	7.57	13.08	0.01
R 4 WEBBE	T4	110	5 -Year 25 -	0.37	175.79	177.81		177.81	0	0.02	30.1	35.8	0
R 4 WEBBE	T4	110		0.64	175.79	177.82		177.82	0.000001	0.03	30.48	35.8	0.01
R 4	T4	110		0.88	175.79	177.83		177.83	0.000001	0.04	30.75	35.8	0.01
WEBBE													
R 4 WEBBE	T4	97		0.21	175.77	176.92		176.92	0.000001	0.03	8	12.39	0.01
R 4 WEBBE	T4	97	5 -Year 25 -	0.37	175.77	177.81		177.81	0	0.02	27.17	32.32	0
R 4 WEBBE	T4	97	Year 100	0.64	175.77	177.82		177.82	0.000001	0.03	27.51	32.43	0.01
R 4	T4	97	Year	0.88	175.77	177.83		177.83	0.000001	0.04	27.76	32.51	0.01
WEBBE R 4	T4	84	2Year	0.21	175.74	176.92	175.89	176.92	0.000004	0.03	6.45	10.85	0.01
WEBBE R 4	T4	84		0.37	175.74	177.81	175.94	177.81	0	0.02	22.83	28.48	0.01
WEBBE R 4	T4	84	25 - Year	0.64	175.74	177.82	176	177.82	0.000001	0.03	23.13	29.01	0.01
WEBBE R 4	T4	84	100 Year	0.88	175.74	177.83	176.05	177.83	0.000003	0.04	23.35	29.39	0.01
WEBBE R 4	T4	72	2Year	0.21	175.76	176.92		176.92	0	0.01	19.3	28.76	0
WEBBE R 4	T4	72		0.37	175.76	177.81		177.81	0	0.01	48.07	39.3	0
WEBBE R 4	T4	72	25 -	0.64	175.76	177.82		177.82	0	0.02	48.48	39.3	0
WEBBE R 4	T4	72	100	0.88	175.76	177.83		177.83	0	0.02	48.79	39.3	0.01
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						Outpu	it Summa	ary Table					
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
MEDDE													
WEBBE R 4	T4	59	2Year	0.21	175.57	176.92		176.92	0	0.01	29.34	36.67	0
WEBBE													
R 4	T4	59	5 -Year	0.37	175.57	177.81		177.81	0	0.01	69.47	47.4	0
WEBBE R 4	T4	59	25 - Year	0.64	175.57	177.82		177.82	0	0.01	69.98	47.4	0
WEBBE			100										
R 4	T4	59	Year	0.88	175.57	177.83		177.83	0	0.02	70.34	47.4	0
WEBBE													
R 4	T4	49	2Year	0.21	175.64	176.92		176.92	0	0.01	37.11	44.42	0
WEBBE R 4	T4	49		0.37	175.64	177.81		177.81	0	0.01	80.89	49.3	0
WEBBE R 4	T4	49	25 - Year	0.64	175.64	177.82		177.82	0	0.01	81.41	49.3	0
WEBBE			100										
R 4	T4	49	Year	0.88	175.64	177.83		177.83	0	0.01	81.79	49.3	0
WEBBE													
R 4	T4	38	2Year	0.21	175.5	176.92		176.92	0	0.01	43.86	50.3	0
WEBBE R 4	T4	38		0.37	175.5	177.81		177.81	0	0	88.75	50.3	0
WEBBE R 4	T4	38	25 - Year	0.64	175.5	177.82		177.82	0	0.01	89.28	50.3	0
WEBBE			100										<u> </u>
R 4	T4	38	Year	0.88	175.5	177.83		177.83	0	0.01	89.67	50.3	0
WEBBE													
R 4	T4	24	2Year	0.21	175.45	176.92		176.92	0	0	46.44	45.8	0
WEBBE R 4	T4	24	5 -Year	0.37	175.45	177.81		177.81	0	0	87.32	45.8	0
WEBBE		<u> </u>	25 -							0	01.02	10.0	
R 4	T4	24	Year	0.64	175.45	177.82		177.82	0	0.01	87.81	45.8	0
WEBBE R 4	T4	24	100 Year	0.88	175.45	177.83		177.83	0	0.01	88.16	45.8	0
WEBBE R 4	T4	16	2Year	0.21	175.44	176.92		176.92	0	0.01	34.92	36.6	0
WEBBE R 4	T4		5 -Year	0.37	175.44	177.81		177.81	0	0.01	67.58	36.6	
κ4	14	01	o-rear	0.37	1/5.44	177.81		177.81	0	0.01	67.58	30.0	0



						Outpu	it Summa	ary Table					
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
WEBBE R 4	T4	16	25 - Year	0.64	175.44	177.82		177.82	0	0.01	67.97	36.6	0
WEBBE R 4	T4	16	100 Year	0.88	175.44	177.83		177.83	0	0.01	68.25	36.6	0
WEBBE R 3	Т3	308	2Year	0.24	177.68	177.84	177.8	177.85	0.009484	0.53	0.44	5.28	0.59
WEBBE R 3	ТЗ	308	5 -Year	0.4	177.68	177.87	177.84	177.89	0.010034	0.6	0.67	7.06	0.62
WEBBE R 3	ТЗ	308	25 - Year	0.7	177.68	177.91	177.88	177.94	0.010871	0.71	0.98	8.37	0.66
WEBBE R 3	Т3	308	100 Year	0.97	177.68	177.94	177.91	177.97	0.011305	0.8	1.22	9.07	0.69
WEBBE													
R 3 WEBBE	T3	294	2Year	0.24	177.49	177.59	177.59	177.63	0.029932	0.82	0.29	4.26	1.01
R 3 WEBBE	Т3	294	5 -Year 25 -	0.4	177.49	177.63	177.63	177.67	0.028872	0.84	0.48	6.75	1
R 3 WEBBE	Т3	294	Year 100	0.7	177.49	177.66	177.66	177.71	0.026141	0.94	0.76	8.79	0.99
R 3	Т3	294	Year	0.97	177.49	177.69	177.69	177.74	0.025117	1.03	0.97	9.59	1
WEBBE R 3	ТЗ	277	2Year	0.24	177.26	177.37	177.22	177.37	0.000318	0.06	2.7	25.1	0.1
WEBBE R 3	Т3	277	5 -Year	0.4	177.26	177.45	177.24	177.45	0.000153	0.09	4.93	29.98	0.08
WEBBE R 3	ТЗ	277	25 - Year	0.7	177.26	177.54	177.27	177.54	0.000122	0.11	7.68	34.41	0.08
WEBBE R 3	Т3	277	100 Year	0.97	177.26	177.58	177.29	177.58	0.000141	0.13	9.16	36.47	0.09
WEBBE													
R 3 WEBBE	T3	259	2Year	0.24	177.06	177.37		177.37	0.000043	0.06	4.21	20.24	0.05
R 3 WEBBE	T3	259	5 -Year 25 -	0.4	177.06	177.45		177.45	0.000044	0.08	5.93	22.23	0.05
R 3 WEBBE	T3	259	Year 100	0.7	177.06	177.54		177.54	0.000056	0.11	7.99	24.81	0.06
R 3	Т3	259	Year	0.97	177.06	177.58		177.58	0.000076	0.14	9.04	25.76	0.07



						Outpu	it Summa	ary Table					
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
WEBBE R 3	Т3	246	2Year	0.24	177.04	177.36		177.37	0.002449	0.31	0.75	3.56	0.22
WEBBE R 3	Т3	246	5 -Year	0.4	177.04	177.44		177.45	0.002981	0.38	1.07	4.72	0.25
WEBBE R 3	Т3	246	25 - Year	0.7	177.04	177.53		177.53	0.00314	0.43	1.63	8.88	0.32
WEBBE R 3	Т3	246	100 Year	0.97	177.04	177.56		177.58	0.003731	0.49	1.99	10.34	0.35
WEBBE R 3	ТЗ	230	2Year	0.24	176.95	177.29		177.31	0.00649	0.67	0.35	2.27	0.52
WEBBE R 3	Т3	230	5 -Year	0.4	176.95	177.34		177.37	0.008338	0.83	0.54	5.38	0.61
WEBBE R 3	Т3	230	25 - Year	0.7	176.95	177.37	177.37	177.44	0.014751	1.17	0.76	7.89	0.82
WEBBE R 3	Т3	230	100 Year	0.97	176.95	177.48		177.5	0.005149	0.8	1.89	14.14	0.5
WEBBE R 3	ТЗ	216	2Year	0.24	176.87	177.1	177.1	177.14	0.03072	0.8	0.29	26.93	1.01
WEBBE R 3	Т3	216		0.4	176.87	177.14	177.14	177.18	0.027563	0.9	0.45	29.54	1
WEBBE R 3	Т3	216	25 - Year	0.7	176.87	177.29	177.18	177.3	0.00221	0.27	3	43.43	0.29
WEBBE R 3	T3	216	100 Year	0.97	176.87	177.49		177.49	0.000067	0.1	11.48	45.04	0.06
WEBBE R 3	ТЗ	213	2Year	0.24	176.46	176.89	176.76	176.91	0.003978	0.6	0.39	9.36	0.41
WEBBE R 3	ТЗ	213	5 -Year	0.4	176.46	177.05	176.83	177.06	0.00387	0.52	0.78	23.61	0.41
WEBBE R 3	ТЗ	213	25 - Year	0.7	176.46	177.29	176.93	177.29	0.000675	0.19	4.09	40.57	0.17
WEBBE R 3	Т3	213	100 Year	0.97	176.46	177.49	176.99	177.49	0.000047	0.09	12.32	42.52	0.05
WEBBE R 3	ТЗ	195		Culvert									
WEBBE R 3	ТЗ	175	2Year	0.24	176.31	176.55	176.54	176.61	0.020015	1.03	0.23	1.71	0.9



						Outpu	it Summa	ary Table					
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
WEBBE R 3	Т3	175		0.4	176.31	176.62	176.6	176.69	0.019085	1.17	0.34	2.04	0.91
WEBBE R 3	Т3	175	25 - Year	0.7	176.31	176.72	176.68	176.79	0.014405	1.2	0.59	2.72	0.82
WEBBE R 3	Т3	175	100 Year	0.97	176.31	176.81		176.87	0.012417	1.1	0.89	4.25	0.77
WEBBE													
R 3 WEBBE	Т3	173	2Year	0.24	176.3	176.52		176.58	0.018703	1.02	0.23	1.65	0.87
R 3 WEBBE	Т3	173	5 -Year 25 -	0.4	176.3	176.59	176.57	176.66	0.017922	1.18	0.34	1.91	0.89
R 3 WEBBE	Т3	173	Year 100	0.7	176.3	176.67	176.65	176.77	0.016868	1.35	0.52	2.23	0.89
R 3	Т3	173	Year	0.97	176.3	176.75		176.85	0.014213	1.38	0.7	2.53	0.84
WEBBE													
R 3 WEBBE	T3	162	2Year	0.24	176.16	176.4		176.43	0.009122	0.78	0.3	1.85	0.62
R 3 WEBBE	T3	162	5 -Year 25 -	0.4	176.16	176.48		176.52	0.008548	0.88	0.46	2.23	0.63
R 3 WEBBE	T3	162	Year 100	0.7	176.16	176.6		176.64	0.006438	0.91	0.77	2.89	0.57
R 3	T3	162	Year	0.97	176.16	176.65		176.71	0.01015	1.03	0.94	4.24	0.7
WEBBE R 3	Т3	148	2Year	0.24	176.03	176.32	176.23	176.34	0.004627	0.6	0.39	2.17	0.45
WEBBE R 3	Т3	148	5 -Year	0.4	176.03	176.4	176.29	176.43	0.004921	0.7	0.58	2.68	0.48
WEBBE R 3	Т3	148	25 - Year	0.7	176.03	176.52	176.37	176.54	0.007451	0.71	0.99	7.04	0.57
WEBBE R 3	T3	148	100 Year	0.97	176.03	176.59	176.43	176.61	0.004343	0.67	1.55	9.28	0.46
WEBBE													
R 3 WEBBE	T3	136		0.24	175.96	176.29	176.15	176.3	0.002724	0.5	0.47	2.34	0.35
R 3 WEBBE	T3	136	5 -Year 25 -	0.4	175.96	176.36	176.22	176.38	0.003673	0.62	0.65	2.93	0.42
R 3 WEBBE	T3	136	Year 100	0.7	175.96	176.45	176.3	176.48	0.004246	0.7	1	4.13	0.46
R 3	T3	136	Year	0.97	175.96	176.53	176.36	176.56	0.004591	0.68	1.44	7.55	0.47



						Outpu	it Summa	ary Table					
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
WEBBE R 3	ТЗ	122	2Year	0.24	175.86	176.27	176.07	176.28	0.001103	0.35	0.67	2.89	0.23
WEBBE	15	122	21601	0.24	173.00	170.27	170.07	170.20	0.001103	0.00	0.07	2.03	0.23
R 3	Т3	122	5 -Year	0.4	175.86	176.33	176.13	176.34	0.001758	0.47	0.85	3.31	0.3
WEBBE	то	400	25 -	0.7	475.00	470.40	470.04	470.40	0.000.400	0.50	1.40	4.05	0.00
R 3 WEBBE	T3	122	Year 100	0.7	175.86	176.42	176.21	176.43	0.002496	0.59	1.18	4.25	0.36
R 3	Т3	122	Year	0.97	175.86	176.48	176.26	176.51	0.002903	0.64	1.51	5.4	0.39
WEBBE													
R 3	T3	109	2Year	0.24	175.85	176.26		176.26	0.000833	0.32	0.75	3.01	0.2
WEBBE R 3	Т3	109	5 -Year	0.4	175.85	176.31		176.32	0.001452	0.45	0.9	3.28	0.27
WEBBE R 3	Т3	109	25 - Year	0.7	175.85	176.38		176.4	0.002229	0.6	1.16	3.72	0.34
WEBBE	_		100										
R 3	T3	109	Year	0.97	175.85	176.44		176.47	0.002686	0.69	1.4	4.18	0.38
WEBBE													
R 3	Т3	94	2Year	0.24	175.81	176.25		176.25	0.000789	0.31	0.75	2.96	0.2
WEBBE R 3	Т3	94	5 -Year	0.4	175.81	176.28		176.3	0.001575	0.46	0.87	3.19	0.28
WEBBE R 3	ТЗ	94	25 - Year	0.7	175.81	176.34		176.36	0.002807	0.66	1.07	3.55	0.38
WEBBE			100										
R 3	T3	94	Year	0.97	175.81	176.39		176.42	0.003663	0.78	1.24	3.9	0.44
WEBBE													
R 3 WEBBE	T3	82	2Year	0.24	175.81	176.24		176.24	0.000562	0.27	0.89	3.48	0.17
R 3	T3	82	5 -Year	0.4	175.81	176.27		176.28	0.001205	0.4	1	3.67	0.25
WEBBE			25 -										
R 3	T3	82	Year	0.7	175.81	176.31		176.33	0.002416	0.6	1.16	3.95	0.36
WEBBE R 3	Т3	82	100 Year	0.97	175.81	176.35		176.38	0.003484	0.74	1.31	4.28	0.43
WEBBE R 3	Т3	67	2Year	0.24	175.54	176.24		176.24	0.000182	0.15	1.61	6.7	0.1
WEBBE R 3	Т3	67	5 -Year	0.4	175.54	176.26		176.27	0.000439	0.22	1.81	7.72	0.15



						Outpu	it Summa	ary Table					
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
WEBBE R 3	Т3	67	25 - Year	0.7	175.54	176.3		176.3	0.001022	0.33	2.11	9.43	0.22
WEBBE R 3	Т3	67	100 Year	0.97	175.54	176.33		176.34	0.00139	0.4	2.45	13.72	0.26
WEBBE R 3	Т3	51	2Year	0.24	175.57	176.24		176.24	0.000018	0.05	5.95	27.5	0.03
WEBBE R 3	ТЗ	51	5 -Year	0.4	175.57	176.26		176.26	0.000037	0.08	6.7	27.5	0.05
WEBBE R 3	Т3	51	25 - Year	0.7	175.57	176.3		176.3	0.000075	0.12	7.69	27.5	0.07
WEBBE R 3	Т3	51	100 Year	0.97	175.57	176.33		176.33	0.000104	0.15	8.56	27.5	0.08
WEBBE	то	0.5	0. Y	0.04	475.40	470.04		470.04		0.00	40.70		0.04
R 3 WEBBE	T3	35	2Year	0.24	175.49	176.24		176.24	0.000003	0.03	10.72	28.9	0.01
R 3 WEBBE	T3	35	5 -Year 25 -	0.4	175.49	176.26		176.26	0.000008	0.05	11.51	28.9	0.02
R 3	Т3	35	Year	0.7	175.49	176.3		176.3	0.000019	0.07	12.54	28.9	0.03
WEBBE R 3	Т3	35	100 Year	0.97	175.49	176.33		176.33	0.000028	0.1	13.45	28.9	0.04
WEBBE R 3	ТЗ	18	2Year	0.24	175.4	176.24		176.24	0.000004	0.03	9.25	23.3	0.02
WEBBE R 3	Т3	18	5 -Year	0.4	175.4	176.26		176.26	0.000009	0.05	9.88	23.3	0.02
WEBBE R 3	Т3	18	25 - Year	0.7	175.4	176.3		176.3	0.000021	0.08	10.7	23.3	0.04
WEBBE R 3	Т3	18	100 Year	0.97	175.4	176.33		176.33	0.000032	0.11	11.43	23.3	0.05
WEBBE R 2	T2	383	2Year	0.25	177.66	177.87	177.88	177.93	0.026008	1.09	0.23	1.92	1.01
WEBBE R 2	T2	383	5 -Year	0.23	177.66	177.94	177.94	178.01	0.026008	1.18	0.23	2.6	1.01
WEBBE R 2	T2	383	25 - Year	0.76	177.66	178.11	178.03	178.14	0.004525	0.66	1.18	6.35	0.47
WEBBE R 2	T2	383	100 Year	1.05	177.66	178.27	178.06	178.28	0.001374	0.49	2.44	10.03	0.28



						Outpu	it Summa	ry Table					
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
WEBBE R 2	T2	368	2Year	0.25	177.33	177.83	177.48	177.83	0.000045	0.09	2.8	8.87	0.05
WEBBE R 2	T2	368	5 -Year	0.43	177.33	177.95	177.5	177.95	0.000055	0.11	4.04	11.81	0.06
WEBBE R 2	T2	368	25 - Year	0.76	177.33	178.13		178.13	0.000044	0.12	6.39	14.81	0.05
WEBBE R 2	T2	368	100 Year	1.05	177.33	178.27		178.28	0.000037	0.13	8.93	20.92	0.05
WEBBE	то	254	0.)/	0.05	477.00	477.00		477.00	0.000004	0.07	0.55	10.50	0.04
R 2 WEBBE	T2	354	2Year	0.25	177.39	177.83		177.83	0.000024	0.07	3.55	10.56	0.04
R 2 WEBBE	T2	354	5 -Year 25 -	0.43	177.39	177.95		177.95	0.000027	0.09	4.97	13.17	0.04
R 2 WEBBE	T2	354	Year 100	0.76	177.39	178.13		178.13	0.000027	0.11	7.95	19.56	0.04
R 2	T2	354	Year	1.05	177.39	178.27		178.28	0.000024	0.12	11.49	28.15	0.04
WEBBE R 2	T2	339	2Year	0.25	177.42	177.82		177.83	0.000428	0.23	1.07	4.89	0.15
WEBBE R 2	T2	339	5 -Year	0.43	177.42	177.95		177.95	0.000369	0.23	2.18	12.59	0.14
WEBBE R 2	T2	339	25 - Year	0.76	177.42	178.12		178.13	0.000161	0.21	4.97	19.37	0.1
WEBBE R 2	T2	339	100 Year	1.05	177.42	178.27		178.27	0.000093	0.2	8.31	24.73	0.08
WEBBE R 2	T2	326	2Year	0.25	177.42	177.82		177.82	0.000466	0.24	1.02	3.99	0.15
WEBBE R 2	T2	326	5 -Year	0.43	177.42	177.94		177.94	0.000417	0.27	1.7	7.09	0.15
WEBBE R 2	T2	326	25 - Year	0.76	177.42	178.12		178.12	0.000262	0.26	3.95	17.05	0.13
WEBBE R 2	T2	326	100 Year	1.05	177.42	178.27		178.27	0.00014	0.23	6.89	22.19	0.1
WEBBE R 2	T2	314	2Year	0.25	177.43	177.81		177.81	0.000678	0.3	0.81	2.93	0.18
WEBBE R 2	T2	314		0.43	177.43	177.93		177.94	0.000704	0.36	1.19	3.38	0.19
WEBBE R 2	T2	314	25 - Year	0.76	177.43	178.11		178.12	0.000637	0.41	1.86	4.05	0.19



						Outpu	t Summa	ary Table					
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
WEBBE R 2	T2	314	100 Year	1.05	177.43	178.26		178.27	0.000578	0.4	2.76	10.18	0.19
WEBBE R 2	T2	300	2Year	0.25	177.38	177.79		177.8	0.001619	0.44	0.56	2.19	0.28
WEBBE R 2	T2	300	5 -Year	0.43	177.38	177.91		177.92	0.001599	0.51	0.84	2.57	0.28
WEBBE R 2 WEBBE	T2	300	25 - Year 100	0.76	177.38	178.09		178.11	0.001337	0.55	1.37	3.25	0.27
R 2	T2	300	Year	1.05	177.38	178.24		178.26	0.001172	0.55	1.92	4.17	0.26
WEBBE R 2	T2	288	2Year	0.25	177.43	177.76		177.77	0.003155	0.56	0.44	2.05	0.38
WEBBE R 2	T2	288	5 -Year 25 -	0.43	177.43	177.88		177.9	0.002532	0.6	0.72	2.48	0.35
WEBBE R 2 WEBBE	T2	288	25 - Year 100	0.76	177.43	178.07		178.09	0.001745	0.6	1.26	3.24	0.31
R 2	T2	288	Year	1.05	177.43	178.23		178.24	0.001321	0.58	1.83	4.07	0.27
WEBBE R 2	T2	274	2Year	0.25	177.4	177.72		177.73	0.00269	0.51	0.48	2.26	0.35
WEBBE R 2 WEBBE	T2	274	5 -Year 25 -	0.43	177.4	177.85		177.86	0.001847	0.53	0.81	2.64	0.31
R 2 WEBBE	T2	274	Year 100	0.76	177.4	178.05		178.06	0.001299	0.54	1.41	3.39	0.27
R 2	T2	274	Year	1.05	177.4	178.21		178.23	0.000979	0.52	2.04	4.65	0.24
WEBBE R 2	T2	260	2Year	0.25	177.33	177.69		177.7	0.001592	0.42	0.59	2.48	0.28
WEBBE R 2 WEBBE	T2	260	5 -Year 25 -	0.43	177.33	177.83		177.84	0.001166	0.44	0.98	2.99	0.25
R 2 WEBBE	T2	260	25 - Year 100	0.76	177.33	178.04		178.05	0.000907	0.44	1.72	4.44	0.23
R 2	T2	260	Year	1.05	177.33	178.2		178.21	0.000652	0.41	2.57	5.8	0.2
WEBBE R 2	T2	257	2Year	0.25	177.25	177.65	177.58	177.69	0.01014	0.9	0.27	1.34	0.64



						Outpu	it Summa	ry Table					
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
WEBBE R 2	T2	257	5 -Year	0.43	177.25	177.8	177.66	177.83	0.006101	0.81	0.53	2.14	0.52
WEBBE R 2	T2	257	25 - Year	0.76	177.25	178.03	177.77	178.04	0.00264	0.59	1.29	4.73	0.36
WEBBE R 2	T2	257	100 Year	1.05	177.25	178.2	177.86	178.21	0.001064	0.46	2.31	6.74	0.24
WEBBE R 2	T2	252		Culvert									
WEBBE R 2	T2	227	2Year	0.25	177.14	177.5		177.51	0.003365	0.56	0.44	2.12	0.39
WEBBE R 2	T2	227	5 -Year	0.43	177.14	177.56		177.59	0.004854	0.72	0.59	2.55	0.48
WEBBE R 2	T2	227	25 - Year	0.76	177.14	177.63		177.67	0.007729	0.98	0.77	2.99	0.62
WEBBE R 2	T2	227	100 Year	1.05	177.14	177.67		177.74	0.010393	1.17	0.9	3.35	0.72
WEBBE R 2	T2	224	2Year	0.25	177.16	177.49		177.5	0.003041	0.49	0.5	2.78	0.37
WEBBE R 2	T2	224	5 -Year	0.43	177.16	177.55		177.57	0.004128	0.61	0.7	3.54	0.44
WEBBE R 2	T2	224	25 - Year	0.76	177.16	177.61		177.65	0.006041	0.8	0.95	4.3	0.54
WEBBE R 2	T2	224	100 Year	1.05	177.16	177.65		177.7	0.007481	0.93	1.13	4.79	0.61
WEBBE R 2 WEBBE	T2	210	2Year	0.25	177.19	177.44		177.45	0.005173	0.48	0.51	4.42	0.45
R 2	T2	210	5 -Year	0.43	177.19	177.48		177.5	0.006849	0.57	0.76	6.39	0.53
WEBBE R 2 WEBBE	T2	210	25 - Year 100	0.76	177.19	177.54		177.56	0.006695	0.66	1.16	8.36	0.54
R 2	T2	210	Year	1.05	177.19	177.57		177.6	0.006401	0.73	1.5	9.72	0.55
WEBBE R 2	T2	194	2Year	0.25	177.16	177.37	177.3	177.38	0.003519	0.41	0.65	8.73	0.38
WEBBE R 2	T2	194	5 -Year	0.43	177.16	177.42	177.34	177.43	0.002763	0.44	1.23	13.1	0.35



						Outpu	it Summa	ary Table					
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
WEBBE R 2	T2	194	25 - Year	0.76	177.16	177.49	177.39	177.5	0.002192	0.46	2.3	19.5	0.33
WEBBE R 2	T2	194	100 Year	1.05	177.16	177.54	177.42	177.54	0.001899	0.47	3.31	23.33	0.31
WEBBE R 2	T2	176	2Year	0.25	177.03	177.26		177.28	0.008513	0.64	0.38	3.13	0.59
WEBBE R 2	T2	176	5 -Year	0.43	177.03	177.33		177.35	0.007842	0.69	0.62	4.28	0.58
WEBBE R 2	T2	176	25 - Year	0.76	177.03	177.4		177.43	0.0075	0.77	0.98	5.62	0.59
WEBBE R 2	T2	176	100 Year	1.05	177.03	177.44		177.48	0.007694	0.84	1.26	6.83	0.61
WEBBE													
R 2	T2	160	2Year	0.25	176.9	177.13		177.15	0.007522	0.65	0.38	2.76	0.56
WEBBE R 2	T2	160	5 -Year	0.43	176.9	177.2		177.23	0.007481	0.69	0.63	4.23	0.57
WEBBE R 2	T2	160	25 - Year	0.76	176.9	177.28		177.31	0.00751	0.75	1.01	6.05	0.58
WEBBE R 2	T2	160	100 Year	1.05	176.9	177.33		177.36	0.007114	0.78	1.34	7.16	0.58
WEBBE													
R 2 WEBBE	T2	144	2Year	0.25	176.7	176.99	176.94	177.01	0.009403	0.72	0.34	2.54	0.62
R 2	T2	144	5 -Year	0.43	176.7	177.06	177	177.09	0.009784	0.77	0.56	3.85	0.65
WEBBE R 2	T2	144	25 - Year	0.76	176.7	177.13	177.07	177.17	0.009448	0.83	0.91	5.42	0.65
WEBBE R 2	T2	144	100 Year	1.05	176.7	177.17		177.22	0.010773	0.92	1.15	6.57	0.7
WEBBE													
R 2 WEBBE	T2	128	2Year	0.25	176.53	176.75		176.8	0.019282	0.98	0.25	2.01	0.88
R 2 WEBBE	T2	128	5 -Year 25 -	0.43	176.53	176.82		176.88	0.018082	1.07	0.4	2.65	0.88
R 2	T2	128	Year	0.76	176.53	176.9		176.96	0.017112	1.09	0.69	4.32	0.87
WEBBE R 2	T2	128	100 Year	1.05	176.53	176.97		177.02	0.013076	1.01	1.04	5.94	0.77



						Outpu	it Summa	ry Table					
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
WEBBE R 2	T2	109	2Year	0.25	176.31	176.57		176.59	0.006999	0.65	0.38	2.58	0.55
WEBBE R 2	T2	109	5 -Year	0.43	176.31	176.64		176.67	0.007098	0.74	0.58	3.34	0.57
WEBBE R 2	T2	109	25 - Year	0.76	176.31	176.72		176.76	0.007183	0.83	0.92	4.53	0.59
WEBBE R 2	T2	109	100 Year	1.05	176.31	176.8		176.83	0.007754	0.74	1.42	8.76	0.59
WEBBE R 2	T2	82	2Year	0.25	176.07	176.29		176.32	0.014487	0.85	0.29	2.28	0.77
WEBBE R 2	T2	82	5 -Year	0.43	176.07	176.35		176.39	0.015066	0.98	0.44	2.92	0.8
WEBBE R 2	T2	82	25 - Year	0.76	176.07	176.42	176.4	176.48	0.015629	1.07	0.71	4.27	0.83
WEBBE R 2	T2	82	100 Year	1.05	176.07	176.46	176.44	176.53	0.016258	1.16	0.91	4.92	0.87
WEBBE R 2	Т2	65	2Year	0.25	175.89	176.11		176.13	0.008547	0.62	0.4	3.42	0.59
WEBBE R 2	T2	65	5 -Year	0.43	175.89	176.16		176.18	0.009513	0.72	0.59	4.45	0.63
WEBBE R 2	T2	65	25 - Year	0.76	175.89	176.22		176.25	0.010403	0.84	0.9	5.75	0.68
WEBBE R 2	T2	65	100 Year	1.05	175.89	176.26		176.3	0.010561	0.92	1.15	6.59	0.7
WEBBE R 2	T2	47	2Year	0.25	175.81	176	175.95	176.01	0.004584	0.41	0.61	6.32	0.42
WEBBE R 2	T2	47	5 -Year	0.43	175.81	176.04	175.98	176.05	0.005206	0.49	0.87	7.42	0.46
WEBBE R 2	T2	47	25 - Year	0.76	175.81	176.09	176.02	176.11	0.005946	0.61	1.24	8.47	0.51
WEBBE R 2	T2	47	100 Year	1.05	175.81	176.12	176.05	176.15	0.006575	0.69	1.54	10.14	0.55
WEBBE R 2	T2	27	2Year	0.25	175.7	175.79	175.79	175.81	0.033734	0.65	0.38	8.87	0.99
WEBBE R 2	T2	27	5 -Year	0.43	175.7	175.81	175.81	175.84	0.030617	0.75	0.58	10	0.99
WEBBE R 2	T2	27	25 - Year	0.76	175.7	175.84	175.84	175.88	0.028531	0.9	0.85	11.13	1.01



						Outpu	it Summa	ary Table					
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
WEBBE R 2	T2	27	100 Year	1.05	175.7	175.86	175.86	175.91	0.026841	0.95	1.14	13.24	1
WEBBE R 1	т	700	2Year	0.2	177.34	177.5	177.38	177.5	0.000060	0.06	3.22	23.27	0.05
WEBBE	T1	790	Z rear	0.2	177.34	C.111	177.30	C. 111	0.000069	0.06	3.22	23.21	0.05
R 1	T1	790	5 -Year	0.35	177.34	177.55	177.38	177.55	0.000067	0.08	4.52	23.65	0.06
WEBBE R 1	T1	790	25 - Year	0.6	177.34	177.61	177.4	177.61	0.000089	0.1	5.81	24.12	0.07
WEBBE		700	100										
R 1	T1	790	Year	0.84	177.34	177.64	177.41	177.64	0.000108	0.13	6.69	24.42	0.08
WEBBE	T1	773	2Year	0.2	177.34	177.40		177.5	0.000154	0.08	2.64	25.8	0.08
R 1 WEBBE		113	2 rear	0.2	177.34	177.49		177.5	0.000154	0.08	2.04	25.8	0.08
R 1	T1	773	5 -Year	0.35	177.34	177.55		177.55	0.000107	0.09	4.08	26.09	0.07
WEBBE R 1	T1	773	25 - Year	0.6	177.34	177.6		177.6	0.000121	0.11	5.48	26.37	0.08
WEBBE			100										
R 1	T1	773	Year	0.84	177.34	177.64		177.64	0.000137	0.13	6.43	26.58	0.08
WEBBE R 1	T1	750	2Year	0.2	177.37	177.49		177.49	0.000106	0.07	3.01	27.11	0.07
WEBBE	11	750	ZTear	0.2	111.31	177.49		177.49	0.000100	0.07	3.01	27.11	0.07
R 1	T1	750	5 -Year	0.35	177.37	177.55		177.55	0.00008	0.08	4.55	27.39	0.06
WEBBE R 1	T1	750	25 - Year	0.6	177.37	177.6		177.6	0.000096	0.1	6.02	27.92	0.07
WEBBE	T4	750	100	0.04	477.07	477.04		477.04	0.000110	0.40	7.04	20.20	0.00
R 1	T1	750	Year	0.84	177.37	177.64		177.64	0.000112	0.12	7.01	30.28	0.08
WEBBE													
R 1 WEBBE	T1	725	2Year	0.2	177.32	177.49		177.49	0.000125	0.07	2.81	25.82	0.07
R 1	T1	725	5 -Year	0.35	177.32	177.55		177.55	0.00009	0.08	4.3	26.31	0.06
WEBBE	TA	705	25 -		477.00	477.0		477.0	0.0004.07	0.44	5 70	00.04	0.07
R 1 WEBBE	T1	725	Year 100	0.6	177.32	177.6		177.6	0.000107	0.11	5.73	28.61	0.07
R 1	T1	725	Year	0.84	177.32	177.63		177.64	0.000123	0.13	6.85	33.87	0.08
WEBBE													
R 1	T1	692	2Year	0.2	177.31	177.49		177.49	0.000119	0.09	2.55	21.24	0.07



						Outpu	it Summa	ary Table					
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
WEBBE R 1	T1	692	5 -Year	0.35	177.31	177.54		177.54	0.000107	0.1	3.8	21.88	0.07
WEBBE R 1	T1	692	25 - Year	0.6	177.31	177.59		177.6	0.000147	0.14	5.04	28.88	0.09
WEBBE R 1	T1	692	100 Year	0.84	177.31	177.63		177.63	0.000184	0.17	6.15	35.37	0.1
WEBBE													
R 1 WEBBE	T1	660	2Year	0.2	177.23	177.41	177.41	177.47	0.023377	1.03	0.21	2.31	0.96
R 1	T1	660	5 -Year	0.35	177.23	177.48	177.48	177.53	0.019284	0.99	0.41	4.03	0.89
WEBBE R 1	T1	660	25 - Year	0.6	177.23	177.53	177.53	177.57	0.027006	0.98	0.69	7.46	1.01
WEBBE R 1	T1	660	100 Year	0.84	177.23	177.55	177.55	177.6	0.030414	1.08	0.87	8.81	1.08
WEBBE													
R 1 WEBBE	T1	628	2Year	0.2	177	177.17	177.07	177.17	0.000449	0.15	1.37	12.09	0.14
R 1 WEBBE	T1	628	5 -Year 25 -	0.35	177	177.21	177.08	177.21	0.000475	0.19	1.94	13.34	0.15
R 1 WEBBE	T1	628	Year 100	0.6	177	177.26	177.11	177.26	0.00069	0.24	2.72	17.69	0.18
R 1	T1	628	Year	0.84	177	177.32	177.13	177.33	0.000481	0.24	3.96	22.3	0.16
WEBBE	T 4		0.)/		470.04	477.47		477.47	0.000000	0.05	4.40	05.45	0.00
R 1 WEBBE R 1	T1 T1	603 603	2Year 5 -Year	0.2	176.94 176.94	177.17 177.21		177.17 177.21	0.000026	0.05	4.43 5.59	25.15 25.67	0.03
WEBBE R 1	T1	603	25 - Year	0.6	176.94	177.26		177.26	0.000059	0.09	6.84	26.63	0.04
WEBBE R 1	T1	603	100 Year	0.84	176.94	177.32		177.32	0.000057	0.1	8.59	28.71	0.06
		000	ioui	0.04					0.000007	0.1	0.00	20.71	0.00
WEBBE R 1	T1	584	2Year	0.2	176.93	177.16		177.16	0.000067	0.07	3.05	20.67	0.06
WEBBE R 1	T1	584	5 -Year	0.35	176.93	177.21		177.21	0.000089	0.09	4.02	23.45	0.07
WEBBE R 1	T1	584	25 - Year	0.6	176.93	177.26		177.26	0.000128	0.13	5.24	26.99	0.08
WEBBE R 1	T1	584	100 Year	0.84	176.93	177.32		177.32	0.000109	0.14	7.06	29.88	0.08



						Outpu	it Summa	ry Table					
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
WEBBE R 1	T1	566	2Year	0.2	176.9	177.11	177.11	177.16	0.026348	0.95	0.21	2.27	0.99
WEBBE R 1	T1	566	5 -Year	0.35	176.9	177.16	177.16	177.2	0.026764	0.93	0.38	4.21	0.99
WEBBE R 1	T1	566	25 - Year	0.6	176.9	177.23	177.23	177.25	0.009875	0.67	1.43	41.3	0.63
WEBBE R 1	T1	566	100 Year	0.84	176.9	177.31	177.24	177.32	0.000931	0.28	5.03	42.68	0.21
WEBBE													
R 1 WEBBE	T1	560	2Year	0.2	176.53	176.79	176.83	176.92	0.055804	1.6	0.13	0.97	1.41
R 1	T1	560	5 -Year	0.35	176.53	176.98	176.9	177.03	0.009456	0.94	0.37	1.65	0.63
WEBBE R 1	T1	560	25 - Year	0.6	176.53	177.16	177	177.19	0.005263	0.64	0.98	36.9	0.48
WEBBE R 1	T1	560	100 Year	0.84	176.53	177.31	177.11	177.31	0.000682	0.24	5.12	40.35	0.18
WEBBE													
R 1	T1	520		Culvert									
WEBBE R 1	T1	476	2Year	0.2	176.48	176.57	176.55	176.58	0.010597	0.48	0.43	6.46	0.6
WEBBE R 1	T1	476	5 -Year	0.35	176.48	176.62	176.57	176.63	0.004922	0.45	0.78	7.27	0.44
WEBBE R 1	T1	476	25 - Year	0.6	176.48	176.72	176.6	176.73	0.002489	0.36	1.85	31.68	0.32
WEBBE R 1	T1	476	100 Year	0.84	176.48	176.79	176.62	176.79	0.000822	0.27	4.11	34.59	0.2
WEBBE													
R 1 WEBBE	T1	469	2Year	0.2	176.11	176.39	176.39	176.47	0.02553	1.24	0.16	3.1	1.03
R 1 WEBBE	T1	469 469	5 -Year 25 -	0.35	176.11	176.46	176.46	176.56	0.022432	1.39	0.25	3.64	1.01
R 1 WEBBE R 1	T1 T1	469	Year 100 Year	0.6	176.11 176.11	176.56 176.62	176.56 176.62	176.68 176.76	0.020753	1.56 1.67	0.39	4.54	1.01
N I	11	409	IEal	0.04	170.11	170.02	170.02	170.70	0.019090	1.07	0.5	14.10	1.01



						Outpu	it Summa	ry Table					
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
WEBBE R 1	T1	440	2Year	0.2	175.98	176.21	176.12	176.22	0.002444	0.39	0.53	3.67	0.32
WEBBE R 1	T1	440	5 -Year	0.35	175.98	176.26	176.15	176.27	0.002942	0.48	0.73	4.19	0.37
WEBBE R 1	T1	440	25 - Year	0.6	175.98	176.44	176.21	176.45	0.000921	0.37	1.64	5.78	0.22
WEBBE R 1	T1	440	100 Year	0.84	175.98	176.47	176.24	176.48	0.001381	0.47	1.79	6.03	0.27
WEBBE R 1	T1	413	2Year	0.2	175.99	176.15	176.09	176.15	0.002533	0.31	0.66	6.62	0.31
WEBBE R 1	T1	413	5 -Year	0.35	175.99	176.22	176.11	176.22	0.001263	0.31	1.15	7.29	0.24
WEBBE R 1	T1	413	25 - Year	0.6	175.99	176.44	176.14	176.44	0.000229	0.21	3.04	9.77	0.12
WEBBE R 1	T1	413	100 Year	0.84	175.99	176.46	176.17	176.46	0.000361	0.27	3.25	9.99	0.15
WEBBE R 1	T1	393	2Year	0.2	175.97	176.15	176.01	176.15	0.000032	0.05	4.35	27.7	0.04
WEBBE R 1	T1	393	5 -Year	0.35	175.97	176.22	176.01	176.22	0.000027	0.06	6.35	28.06	0.04
WEBBE R 1	T1	393	25 - Year	0.6	175.97	176.44	176.03	176.44	0.000009	0.05	12.52	29.08	0.02
WEBBE R 1	T1	393	100 Year	0.84	175.97	176.46	176.03	176.46	0.000014	0.06	13.18	29.19	0.03
WEBBE R 1	T1	369	2Year	0.2	175.96	176.15	176.02	176.15	0.000222	0.12	1.66	10.7	0.1
WEBBE R 1	T1	369	5 -Year	0.35	175.96	176.22	176.03	176.22	0.00019	0.14	2.44	11.11	0.1
WEBBE R 1	T1	369	25 - Year	0.6	175.96	176.44	176.06	176.44	0.000062	0.12	4.96	12.25	0.06
WEBBE R 1	T1	369	100 Year	0.84	175.96	176.46	176.07	176.46	0.000102	0.16	5.22	12.53	0.08
WEBBE R 1	T1	344	2Year	0.2	175.88	176.13	176.02	176.13	0.002408	0.4	0.5	3.2	0.33
WEBBE R 1	T1	344	5 -Year	0.35	175.88	176.2	176.06	176.21	0.002457	0.46	0.76	4	0.34
WEBBE R 1	T1	344	25 - Year	0.6	175.88	176.43	176.12	176.43	0.00054	0.29	2.13	7.98	0.17



						Outpu	it Summa	ry Table					
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
WEBBE R 1	T1	344	100 Year	0.84	175.88	176.44	176.16	176.45	0.000862	0.38	2.27	8.25	0.22
WEBBE R 1	T1	322	2Year	0.2	175.81	175.99	175.97	176.02	0.015729	0.78	0.26	2.51	0.78
WEBBE		522					175.97	170.02				2.01	
R 1	T1	322		0.35	175.81	176.02	176.02	176.07	0.024401	1.07	0.33	2.78	0.99
WEBBE R 1	T1	322	25 - Year	0.6	175.81	176.42	176.07	176.42	0.000224	0.2	3.93	17.85	0.11
WEBBE	TA	000	100	0.04	475.04		470.44	470.44	0.000000				
R 1	T1	322	Year	0.84	175.81	176.44	176.11	176.44	0.000368	0.26	4.17	18.11	0.14
WEBBE R 1	T1	294	2Year	0.2	175.53	175.85	175.73	175.86	0.002832	0.45	0.47	5.36	0.35
WEBBE		234	21601	0.2	175.55	175.00	175.75	175.00	0.002032	0.40	0.47	0.00	0.00
R 1	T1	294	5 -Year 25 -	0.35	175.53	176.02	175.79	176.02	0.000335	0.19	2.7	20.81	0.13
WEBBE R 1	T1	294	25 - Year	0.6	175.53	176.42	175.88	176.42	0.00001	0.06	15.8	42.88	0.03
WEBBE	Тл	204	100	0.04	475 50	470 44	475.0	470 44	0.000010	0.08	40.4	44.07	0.04
R 1	T1	294	Year	0.84	175.53	176.44	175.9	176.44	0.000018	0.08	16.4	44.37	0.04
WEBBE R 1	T1	282	2Year	0.2	175.54	175.84		175.84	0.000825	0.17	1.17	11.98	0.18
WEBBE R 1	T1	282		0.35	175.54	176.02		176.02	0.000091	0.09	4.2	27.78	0.07
WEBBE R 1	T1	282	25 - Year	0.6	175.54	176.42		176.42	0.000004	0.04	20.47	55.7	0.02
WEBBE R 1	T1	282	100 Year	0.84	175.54	176.44		176.44	0.000007	0.05	21.23	56.16	0.02
WEBBE													
R 1 WEBBE	T1	266	2Year	0.2	175.33	175.84	175.49	175.84	0.000019	0.05	4.33	18.48	0.03
R 1	T1	266		0.35	175.33	176.02	175.52	176.02	0.00001	0.04	8.39	30.24	0.02
WEBBE R 1	T1	266	25 - Year	0.6	175.33	176.42	175.56	176.42	0.000001	0.03	28.82	65.5	0.01
WEBBE	11		100										
R 1	T1	266	Year	0.84	175.33	176.44	175.58	176.44	0.000003	0.04	29.71	66.16	0.01
WEBBE													
R 1	T1	250		Culvert									



Rver ch Sta Profile (m3/s) (m) Elev(m) WLS(m) Elev(m) Stope(m/m) Chm(m/s) Area(m2) Witht(m) Ch WEBBE R 1 T1 231 2-Year 0.2 175.17 175.77 175.77 0.000021 0.05 5.2 33.58 WEBBE R 1 T1 231 5-Year 0.35 175.17 175.72 175.75 0.00011 0.05 5.2 33.58 WEBBE R 1 T1 231 5-Year 0.6 175.17 175.76 175.75 0.000111 0.12 6.26 35.2 WEBBE R 1 T1 223 Year 0.84 175.17 175.76 175.76 0.000163 0.15 6.88 36.57 WEBBE R 1 T1 228 2-Year 0.2 175.15 175.71 175.72 0.000163 0.09 4.68 30.88 WEBBE R 1 T1 228 Year 0.6 175.15 175.71 175.74 0.00051							Outpu	it Summa	ary Table					
R 1 T1 231 2-Year 0.2 175.17 175.71 175.71 0.00021 0.05 5.2 33.58 WEBBE R 1 T1 231 5-Year 0.35 175.17 175.72 175.72 0.00051 0.07 5.57 34.11 WEBBE R 1 T1 231 Year 0.6 175.17 175.76 0.000111 0.12 6.26 35.2 WEBBE R 1 T1 231 Year 0.84 175.17 175.76 0.000163 0.15 6.88 36.57 WEBBE R 1 T1 228 2-Year 0.2 175.15 175.71 175.72 0.00067 0.05 4.38 29.47 WEBBE R 1 T1 228 2-Year 0.2 175.15 175.71 175.72 0.00067 0.05 4.38 29.47 WEBBE R 1 T1 228 Year 0.6 175.75 175.74 175.74 0.00057 0.13 5.3 33.69 WEBBE R 1<	River			Profile										Froude # Chl
R 1 T1 231 2-Year 0.2 175.17 175.71 175.71 0.00021 0.05 5.2 33.58 WEBBE R 1 T1 231 5-Year 0.35 175.17 175.72 175.72 0.00051 0.07 5.57 34.11 WEBBE R 1 T1 231 Year 0.6 175.17 175.76 0.000111 0.12 6.26 35.2 WEBBE R 1 T1 231 Year 0.84 175.17 175.76 0.000163 0.15 6.88 36.57 WEBBE R 1 T1 228 2-Year 0.2 175.15 175.71 175.72 0.00067 0.05 4.38 29.47 WEBBE R 1 T1 228 2-Year 0.2 175.15 175.71 175.72 0.00067 0.05 4.38 29.47 WEBBE R 1 T1 228 Year 0.6 175.75 175.74 175.74 0.00057 0.13 5.3 33.69 WEBBE R 1<														
WEBBE R1 T1 231 5 - Year 0.35 175.17 175.72 175.72 0.000051 0.07 5.57 34.11 WEBBE R1 T1 231 Year 0.6 175.17 175.72 175.75 0.000111 0.12 6.26 35.2 WEBBE R1 T1 231 Year 0.84 175.17 175.76 0.000183 0.15 6.88 36.57 WEBBE R1 T1 228 -Year 0.2 175.15 175.71 175.72 0.000167 0.05 4.35 29.47 WEBBE R1 T1 228 5-Year 0.35 175.15 175.71 175.72 0.000163 0.09 4.68 30.88 WEBBE R1 T1 228 Fyar 0.6 175.15 175.74 175.74 0.000514 0.17 5.89 34.72 WEBBE R1 T1 228 Year 0.2 175.29 175.71 175.76 0.000514 0.17 5.89 34.72		T1	221	2 Voor	0.2	175 17	175 71		175 71	0.000021	0.05	5.2	22.59	0.03
R 1 T1 231 5-Year 0.35 175.17 175.72 175.72 0.000051 0.07 5.57 34.11 WEBBE R 1 T1 231 Year 0.6 175.17 175.74 175.75 0.000111 0.12 6.26 35.2 WEBBE R 1 T1 231 Year 0.84 175.17 175.76 0.776 0.000163 0.15 6.88 36.57 WEBBE R 1 T1 228 2-Year 0.2 175.15 175.71 175.77 0.000067 0.05 4.35 29.47 WEBBE R 1 T1 228 5-Year 0.35 175.15 175.72 175.72 0.000163 0.09 4.68 30.88 WEBBE R 1 T1 228 Year 0.6 175.15 175.74 175.74 0.000051 0.13 5.3 33.69 WEBBE R 1 T1 228 Year 0.6 175.15 175.71 175.76 0.000014 0.17 5.99		11	201	21601	0.2	175.17	175.71		175.71	0.000021	0.05	5.2	33.30	0.03
R 1 T1 231 Year 0.6 175.17 175.74 175.75 0.000111 0.12 6.26 35.2 R 1 T1 231 Year 0.84 175.17 175.76 175.76 0.00113 0.15 6.88 36.57 R 1 T1 231 Year 0.2 175.15 175.71 175.77 0.00067 0.05 4.35 29.47 WEBBE T1 228 5-Year 0.35 175.15 175.72 175.72 0.00067 0.05 4.35 29.47 WEBBE T1 228 5-Year 0.35 175.15 175.72 175.74 0.00057 0.13 5.3 33.69 WEBBE T1 228 Year 0.6 175.15 175.76 175.76 0.000514 0.17 5.9 34.72 WEBBE T1 210 2-Year 0.2 175.71 175.74 175.76 0.000514 0.17 5.9 34.72	R 1	T1	231		0.35	175.17	175.72		175.72	0.000051	0.07	5.57	34.11	0.05
WEBBE R1 T1 231 Year 0.84 175.17 175.76 175.76 0.000163 0.15 6.88 36.57 WEBBE R1 T1 228 2-Year 0.2 175.15 175.71 175.76 0.000163 0.15 6.88 36.57 WEBBE R1 T1 228 2-Year 0.2 175.15 175.71 175.72 0.000163 0.09 4.88 30.88 WEBBE R1 T1 228 5-Year 0.35 175.15 175.72 175.72 0.000163 0.09 4.68 30.88 WEBBE R1 T1 228 Year 0.6 175.15 175.74 175.76 0.000357 0.13 5.3 33.69 WEBBE R1 T1 210 2-Year 0.2 175.79 175.71 175.76 0.000051 0.11 5.89 34.72 WEBBE R1 T1 210 2-Year 0.2 175.29 175.71 175.72 0.000016 0.04 7.8 <														
R1 T1 231 Year 0.84 175.77 175.76 175.76 0.000163 0.15 6.88 36.57 WEBBE R1 T1 228 2-Year 0.2 175.15 175.71 175.71 0.000067 0.05 4.35 29.47 WEBBE R1 T1 228 5-Year 0.35 175.15 175.71 175.72 0.000163 0.09 4.68 30.88 WEBBE 25- 25- 25- 33.69 33.69 33.69 33.69 33.69 WEBBE 25- 25- 26- 33.69 34.72 33.69 34.72 R1 T1 228 Year 0.64 175.15 175.76 175.76 0.000514 0.17 5.89 34.72 WEBBE 11 210 2-Year 0.2 175.29 175.71 175.72 0.0000514 0.17 5.89 34.72 WEBBE 11 210 2-Year 0.2 175.29 175.71 175.72 0.000016 0.006 8.11 29.89 <t< td=""><td></td><td>11</td><td>231</td><td></td><td>0.6</td><td>1/5.1/</td><td>1/5./4</td><td></td><td>1/5./5</td><td>0.000111</td><td>0.12</td><td>6.26</td><td>35.2</td><td>0.08</td></t<>		11	231		0.6	1/5.1/	1/5./4		1/5./5	0.000111	0.12	6.26	35.2	0.08
R1 T1 228 2-Year 0.2 175.15 175.71 175.71 0.00067 0.05 4.35 29.47 WEBBE R1 T1 228 5-Year 0.35 175.15 175.72 175.72 0.00163 0.09 4.68 30.88 WEBBE R1 T1 228 Year 0.6 175.15 175.74 175.74 0.000357 0.13 5.3 33.69 WEBBE R1 T1 228 Year 0.6 175.15 175.74 175.74 0.000357 0.13 5.3 33.69 WEBBE R1 T1 228 Year 0.84 175.15 175.74 175.76 0.000514 0.17 5.89 34.72 WEBBE R1 T1 210 2-Year 0.2 175.79 175.71 175.77 0.00006 0.04 7.8 29.63 WEBBE R1 T1 210 5-Year 0.2 175.79 175.74 175.77 0.000016 0.04 8.11 29.89 <td></td> <td>T1</td> <td>231</td> <td></td> <td>0.84</td> <td>175.17</td> <td>175.76</td> <td></td> <td>175.76</td> <td>0.000163</td> <td>0.15</td> <td>6.88</td> <td>36.57</td> <td>0.09</td>		T1	231		0.84	175.17	175.76		175.76	0.000163	0.15	6.88	36.57	0.09
R1 T1 228 2-Year 0.2 175.15 175.71 175.71 0.00067 0.05 4.35 29.47 WEBBE R1 T1 228 5-Year 0.35 175.15 175.72 175.72 0.000163 0.09 4.68 30.88 WEBBE R1 T1 228 Year 0.66 175.15 175.74 175.74 0.000357 0.13 5.3 33.69 WEBBE R1 T1 228 Year 0.84 175.15 175.74 175.74 0.000357 0.13 5.3 33.69 WEBBE R1 T1 228 Year 0.84 175.15 175.74 175.76 0.000514 0.17 5.89 34.72 WEBBE R1 T1 210 2-Year 0.2 175.79 175.72 175.72 0.000016 0.04 8.11 29.89 WEBBE R1 T1 210 5-Year 0.35 175.29 175.74 175.74 0.000010 0.04 8.11 29.														
R1 T1 228 5-Year 0.35 175.15 175.72 175.72 0.000163 0.09 4.68 30.88 WEBBE R1 T1 228 Year 0.6 175.15 175.74 175.74 0.000357 0.13 5.3 33.69 WEBBE R1 T1 228 Year 0.84 175.15 175.76 175.76 0.000514 0.17 5.89 34.72 WEBBE R1 T1 228 Year 0.2 175.79 175.71 175.76 0.000514 0.17 5.89 34.72 WEBBE R1 T1 210 2-Year 0.2 175.29 175.71 175.71 0.00006 0.04 7.8 29.63 WEBBE R1 T1 210 S-Year 0.35 175.29 175.74 175.74 0.000016 0.04 7.8 29.63 WEBBE R1 T1 210 Year 0.6 175.29 175.76 175.76 0.000010 0.11 8.67 30.44 <td>R 1</td> <td>T1</td> <td>228</td> <td>2Year</td> <td>0.2</td> <td>175.15</td> <td>175.71</td> <td></td> <td>175.71</td> <td>0.000067</td> <td>0.05</td> <td>4.35</td> <td>29.47</td> <td>0.04</td>	R 1	T1	228	2Year	0.2	175.15	175.71		175.71	0.000067	0.05	4.35	29.47	0.04
WEBBE R 1 T1 228 Year 0.6 175.15 175.74 175.74 0.000367 0.13 5.3 33.69 R 1 T1 228 Year 0.6 175.15 175.76 175.76 0.000367 0.13 5.3 33.69 R 1 T1 228 Year 0.84 175.15 175.76 175.76 0.000367 0.13 5.3 33.69 WEBBE R 1 T1 228 Year 0.84 175.75 175.76 175.76 0.000514 0.17 5.89 34.72 WEBBE R 1 T1 210 2-Year 0.2 175.29 175.71 175.72 0.000016 0.04 7.8 29.63 WEBBE R 1 T1 210 S-Year 0.6 175.29 175.74 175.74 0.000016 0.06 8.11 29.89 WEBBE R 1 T1 210 Year 0.6 175.29 175.74 175.76 0.000041 0.1 8.67 30.44		T1	228	5 -Year	0.35	175 15	175 72		175 72	0.000163	0.09	4.68	30.88	0.06
WEBBE R1 T1 228 Year 0.84 175.15 175.76 175.76 0.000514 0.17 5.89 34.72 WEBBE R1 T1 210 2-Year 0.2 175.29 175.71 175.72 0.00006 0.04 7.8 29.63 WEBBE R1 T1 210 5-Year 0.2 175.29 175.72 175.72 0.00016 0.06 8.11 29.89 WEBBE R1 T1 210 5-Year 0.6 175.29 175.74 175.74 0.000041 0.1 8.67 30.44 WEBBE R1 100 R1 1 0.00 0.00 0.01 8.67 30.44 WEBBE R1 11 210 Year 0.6 175.29 175.76 175.76 0.000066 0.13 9.17 30.92 WEBBE R1 T1 193 2-Year 0.2 175.23 175.71 175.72 0.00017 0.07 7.69 28.56 WEBBE R1 T1 193			220		0.00	170.10	110.12		110.12	0.000100	0.00	4.00	00.00	0.00
R 1 T1 228 Year 0.84 175.15 175.76 175.76 0.000514 0.17 5.89 34.72 WEBBE T1 210 2-Year 0.2 175.76 175.77 175.71 0.0000514 0.17 5.89 34.72 WEBBE T1 210 2-Year 0.2 175.72 175.71 0.00006 0.04 7.8 29.63 WEBBE T1 210 5-Year 0.35 175.29 175.72 175.72 0.000016 0.06 8.11 29.89 WEBBE T1 210 5-Year 0.6 175.29 175.74 175.76 0.000016 0.06 8.11 29.89 WEBBE T1 210 Year 0.6 175.29 175.74 175.76 0.000041 0.1 8.67 30.44 WEBBE T1 210 Year 0.6 175.29 175.76 175.76 0.000066 0.13 9.17 30.92 WEBBE T1 T1 193 2-Year 0.2 175.73 175.71 1	R 1	T1	228	Year	0.6	175.15	175.74		175.74	0.000357	0.13	5.3	33.69	0.09
R 1 T1 210 2Year 0.2 175.79 175.71 175.71 0.000006 0.04 7.8 29.63 WEBBE R 1 T1 210 5 -Year 0.35 175.29 175.72 175.72 0.000016 0.06 8.11 29.89 WEBBE R 1 T1 210 5 -Year 0.6 175.29 175.72 175.74 175.74 0.000016 0.06 8.11 29.89 WEBBE R 1 T1 210 Year 0.6 175.29 175.74 175.74 0.000041 0.1 8.67 30.44 WEBBE R 1 T1 210 Year 0.84 175.29 175.76 175.76 0.000066 0.13 9.17 30.92 WEBBE R 1 T1 193 2Year 0.2 175.23 175.71 175.72 0.000017 0.07 7.69 28.56 WEBBE R 1 T1 193 5 -Year 0.35 175.23 175.74 175.74 0.000017 0.07 7.69 28.56 WEBBE R 1 T1 193 Year 0.6<		T1	228		0.84	175.15	175.76		175.76	0.000514	0.17	5.89	34.72	0.1
R 1 T1 210 2Year 0.2 175.29 175.71 175.71 0.000006 0.04 7.8 29.63 WEBBE R 1 T1 210 5-Year 0.35 175.29 175.72 175.72 0.000016 0.06 8.11 29.89 WEBBE R 1 T1 210 5-Year 0.6 175.29 175.72 175.74 175.74 0.000016 0.06 8.11 29.89 WEBBE R 1 T1 210 Year 0.6 175.29 175.74 175.74 0.000041 0.1 8.67 30.44 WEBBE R 1 T1 210 Year 0.84 175.29 175.76 175.76 0.000066 0.13 9.17 30.92 WEBBE R 1 T1 193 2Year 0.2 175.23 175.71 175.72 0.000017 0.07 7.69 28.56 WEBBE R 1 T1 193 5-Year 0.35 175.23 175.74 175.74 0.000017 0.07 7.69 28.56 WEBBE R 1 T1 193 Year 0.6 <td></td>														
WEBBE R 1 T1 210 5-Year 0.35 175.29 175.72 175.72 0.000016 0.06 8.11 29.89 WEBBE R 1 T1 210 Year 0.6 175.29 175.72 175.74 0.000016 0.06 8.11 29.89 WEBBE R 1 T1 210 Year 0.6 175.29 175.74 175.74 0.000041 0.1 8.67 30.44 WEBBE R 1 T1 210 Year 0.84 175.29 175.76 175.76 0.000066 0.13 9.17 30.92 WEBBE R 1 T1 193 2-Year 0.2 175.73 175.71 0.000006 0.04 7.4 27.58 WEBBE R 1 T1 193 5-Year 0.35 175.23 175.72 175.74 0.000017 0.07 7.69 28.56 WEBBE R 1 T1 193 Year 0.6 175.23 175.74 175.74 0.000017 0.07 7.69 28.56 </td <td></td> <td>T1</td> <td>210</td> <td>2Year</td> <td>0.2</td> <td>175 29</td> <td>175 71</td> <td></td> <td>175 71</td> <td>0 000006</td> <td>0.04</td> <td>7.8</td> <td>29.63</td> <td>0.02</td>		T1	210	2Year	0.2	175 29	175 71		175 71	0 000006	0.04	7.8	29.63	0.02
WEBBE R 1 T1 210 25 - Year 0.6 175.29 175.74 175.74 0.000041 0.1 8.67 30.44 WEBBE R 1 T1 210 Year 0.84 175.29 175.76 175.76 0.000066 0.13 9.17 30.92 WEBBE R 1 T1 210 Year 0.2 175.73 175.76 0.000066 0.13 9.17 30.92 WEBBE R 1 T1 193 2Year 0.2 175.73 175.71 0.000006 0.04 7.4 27.58 WEBBE R 1 T1 193 5 -Year 0.35 175.23 175.72 175.72 0.000017 0.07 7.69 28.56 WEBBE R 1 T1 193 5 -Year 0.6 175.23 175.74 175.74 0.000017 0.07 7.69 28.56 WEBBE R 1 T1 193 Year 0.84 175.23 175.76 175.76 0.000072 0.14 8.68 29.97	WEBBE													
R 1 T1 210 Year 0.6 175.29 175.74 175.74 0.000041 0.1 8.67 30.44 WEBBE T1 210 Year 0.84 175.29 175.76 175.76 0.000041 0.1 8.67 30.44 WEBBE T1 210 Year 0.84 175.29 175.76 175.76 0.000066 0.13 9.17 30.92 WEBBE T1 193 2Year 0.2 175.73 175.71 0.000006 0.04 7.4 27.58 WEBBE T1 193 5-Year 0.2 175.23 175.72 175.72 0.000017 0.07 7.69 28.56 WEBBE T1 193 5-Year 0.6 175.23 175.74 175.74 0.000017 0.07 7.69 28.56 WEBBE T1 193 Year 0.64 175.23 175.74 175.74 0.000017 0.07 7.69 28.56 WEBBE T1 193 Year 0.84 175.23 175.76 175.76 <th< td=""><td></td><td>11</td><td>210</td><td></td><td>0.35</td><td>175.29</td><td>1/5./2</td><td></td><td>1/5./2</td><td>0.000016</td><td>0.06</td><td>8.11</td><td>29.89</td><td>0.03</td></th<>		11	210		0.35	175.29	1/5./2		1/5./2	0.000016	0.06	8.11	29.89	0.03
R 1 T1 210 Year 0.84 175.29 175.76 175.76 0.000066 0.13 9.17 30.92 WEBBE T1 193 2Year 0.2 175.23 175.71 175.71 0.000066 0.04 7.4 27.58 WEBBE T1 193 5-Year 0.35 175.23 175.71 175.71 0.000017 0.07 7.69 28.56 WEBBE Z5-	R 1	T1	210	Year	0.6	175.29	175.74		175.74	0.000041	0.1	8.67	30.44	0.05
WEBBE R 1 T1 193 2Year 0.2 175.23 175.71 175.71 0.000006 0.04 7.4 27.58 WEBBE R 1 T1 193 5 -Year 0.2 175.23 175.71 175.72 0.000017 0.07 7.69 28.56 WEBBE R 1 T1 193 5 -Year 0.6 175.23 175.74 175.74 0.000017 0.07 7.69 28.56 WEBBE R 1 T1 193 Year 0.6 175.23 175.74 175.74 0.000044 0.11 8.21 29.32 WEBBE R 1 T1 193 Year 0.84 175.23 175.76 175.76 0.000072 0.14 8.68 29.97 WEBBE R 1 T1 193 Year 0.2 175.15 175.71 175.71 0.000002 0.02 13.39 36.97		Та	010		0.04	475.00	475 70		475 70	0.000000	0.40	0.47	20.02	0.06
R 1 T1 193 2Year 0.2 175.23 175.71 175.71 0.000006 0.04 7.4 27.58 WEBBE R 1 T1 193 5-Year 0.35 175.23 175.72 175.72 0.000017 0.07 7.69 28.56 WEBBE R 1 T1 193 5-Year 0.6 175.23 175.74 175.74 0.000017 0.07 7.69 28.56 WEBBE R 1 T1 193 Year 0.6 175.23 175.74 175.74 0.000044 0.11 8.21 29.32 WEBBE R 1 T1 193 Year 0.84 175.23 175.76 175.76 0.000072 0.14 8.68 29.97 WEBBE R 1 T1 175 2Year 0.2 175.75 175.71 175.71 0.000072 0.02 13.39 36.97	K I		210	real	0.64	175.29	175.76		175.76	0.000066	0.13	9.17	30.92	0.06
WEBBE R 1 T1 193 5 -Year 0.35 175.23 175.72 175.72 0.000017 0.07 7.69 28.56 WEBBE R 1 T1 193 5 -Year 0.6 175.23 175.74 175.74 0.000044 0.11 8.21 29.32 WEBBE R 1 T1 193 Year 0.64 175.23 175.74 175.74 0.000044 0.11 8.21 29.32 WEBBE R 1 T1 193 Year 0.84 175.23 175.76 175.76 0.000072 0.14 8.68 29.97 WEBBE R 1 T1 175 2Year 0.2 175.15 175.71 175.71 0.000002 0.02 13.39 36.97														
R 1 T1 193 5 -Year 0.35 175.23 175.72 175.72 0.000017 0.07 7.69 28.56 WEBBE R 1 T1 193 Year 0.6 175.23 175.74 175.74 0.000044 0.11 8.21 29.32 WEBBE R 1 T1 193 Year 0.64 175.23 175.74 175.76 0.000044 0.11 8.21 29.32 WEBBE R 1 T1 193 Year 0.84 175.23 175.76 175.76 0.000072 0.14 8.68 29.97 WEBBE R 1 T1 193 Year 0.2 175.75 175.71 175.77 0.000072 0.14 8.68 29.97 WEBBE R 1 T1 175 2Year 0.2 175.75 175.71 175.71 0.000002 0.02 13.39 36.97		T1	193	2Year	0.2	175.23	175.71		175.71	0.000006	0.04	7.4	27.58	0.02
WEBBE T1 193 25 - Year 0.6 175.23 175.74 175.74 0.000044 0.11 8.21 29.32 WEBBE 100 100 0.84 175.23 175.76 175.76 0.000072 0.14 8.68 29.97 WEBBE T1 193 Year 0.84 175.23 175.76 175.76 0.000072 0.14 8.68 29.97 WEBBE T1 193 Year 0.2 175.75 175.71 175.77 0.000072 0.14 8.68 29.97 WEBBE T1 175 2Year 0.2 175.75 175.71 175.71 0.000002 0.02 13.39 36.97		T1	193	5 -Year	0.35	175.23	175.72		175.72	0.000017	0.07	7.69	28.56	0.03
WEBBE R 1 T1 193 100 Year 0.84 175.23 175.76 175.76 0.000072 0.14 8.68 29.97 WEBBE R 1 T1 175 2Year 0.2 175.15 175.71 175.71 0.000002 0.02 13.39 36.97	WEBBE			25 -										
R 1 T1 193 Year 0.84 175.23 175.76 175.76 0.000072 0.14 8.68 29.97 WEBBE R 1 T1 175 2Year 0.2 175.15 175.71 175.71 0.000002 0.02 13.39 36.97		T1	193		0.6	175.23	175.74		175.74	0.000044	0.11	8.21	29.32	0.05
R 1 T1 175 2Year 0.2 175.15 175.71 175.71 0.000002 0.02 13.39 36.97		T1	193		0.84	175.23	175.76		175.76	0.000072	0.14	8.68	29.97	0.07
R 1 T1 175 2Year 0.2 175.15 175.71 175.71 0.000002 0.02 13.39 36.97														
	R 1	T1	175	2Year	0.2	175.15	175.71		175.71	0.000002	0.02	13.39	36.97	0.01
	WEBBE													0.02



						Outpu	t Summa	ry Table					
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
WEBBE R 1	T1	175	25 - Year	0.6	175.15	175.74		175.74	0.000011	0.06	14.44	38.03	0.03
WEBBE R 1	T1	175	100 Year	0.84	175.15	175.76		175.76	0.000019	0.08	15.04	38.6	0.04
WEBBE													
R 1	T1	173	2Year	0.2	175.16	175.71	175.23	175.71	0.000003	0.02	12.89	34.4	0.01
WEBBE R 1	T1	173	5 -Year	0.35	175.16	175.72	175.25	175.72	0.000007	0.03	13.24	34.73	0.01
WEBBE R 1	T1	173	25 - Year	0.6	175.16	175.74	175.26	175.74	0.000018	0.05	13.87	35.31	0.02
WEBBE R 1	T1	173	100 Year	0.84	175.16	175.76	175.27	175.76	0.000031	0.06	14.42	35.81	0.03
WEBBE R 1	T1	165		Culvert									
WEBBE R 1	T1	156	2Year	0.2	175.01	175.15		175.16	0.019569	0.44	0.52	9.31	0.52
WEBBE R 1	T1	156	5 -Year	0.35	175.01	175.18		175.19	0.016249	0.38	0.94	14.69	0.47
WEBBE R 1	T1	156	25 - Year	0.6	175.01	175.22		175.23	0.011184	0.41	1.54	17.53	0.42
WEBBE R 1	T1	156	100 Year	0.84	175.01	175.25		175.26	0.007333	0.41	2.21	19.51	0.36
WEBBE	T4	450	0. Veer	0.0	474.04	475 40		475 40	0.000750	0.40	1.2	40.00	0.0
R 1 WEBBE R 1	T1 T1	152 152	2Year 5 -Year	0.2	174.94 174.94	175.13 175.16		175.13 175.17	0.002756	0.19	1.78	16.03 18.13	0.2
WEBBE R 1	T1	152	25 - Year	0.6	174.94	175.2		175.21	0.002384	0.21	2.5	20.22	0.22
WEBBE R 1	T1	152	100 Year	0.84	174.94	175.24		175.25	0.002221	0.26	3.37	22.75	0.2
WEBBE R 1	T1	135	2Year	0.2	174.9	175.02	175.02	175.05	0.030558	0.8	0.26	4	1.01
WEBBE R 1	T1	135	5 -Year	0.35	174.9	175.05	175.05	175.09	0.027316	0.88	0.41	6.07	0.99
WEBBE R 1	T1	135	25 - Year	0.6	174.9	175.13		175.15	0.007624	0.54	1.32	16.71	0.54



						Outpu	it Summa	ary Table					
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
WEBBE R 1	T1	135	100 Year	0.84	174.9	175.22		175.22	0.001697	0.38	2.96	24.08	0.28
		100	Teal	0.04	174.5	110.22		110.22	0.001037	0.00	2.30	24.00	0.20
WEBBE R 1	T1	111	2Year	0.2	174.74	174.85	174.89	174.97	0.137202	1.57	0.13	2.28	2.09
WEBBE R 1	T1	111	5 -Year	0.35	174.74	175	174.92	175.01	0.005915	0.44	0.8	9.11	0.47
WEBBE R 1	T1	111	25 - Year	0.6	174.74	175.14		175.14	0.000514	0.23	3.46	27.33	0.16
WEBBE R 1	T1	111	100 Year	0.84	174.74	175.22		175.22	0.000268	0.2	5.76	31.74	0.12
WEBBE R 1	T1	80	2Year	0.2	174.6	174.88	174.71	174.88	0.000164	0.1	2.05	15.6	0.08
WEBBE R 1	T1	80		0.35	174.6	175		175	0.000054	0.09	4.43	22.28	0.05
WEBBE R 1	T1	80	25 - Year	0.6	174.6	175.14		175.14	0.000036	0.09	8.02	29.55	0.05
WEBBE R 1	T1	80	100 Year	0.84	174.6	175.22		175.22	0.000035	0.1	10.41	32.46	0.05
WEBBE R 1	T1	56	2Year	0.2	174.52	174.87		174.88	0.00005	0.07	3.37	20.37	0.05
WEBBE R 1	T1	56		0.35	174.52	175		175	0.000027	0.07	6.54	29.53	0.04
WEBBE R 1	T1	56	25 - Year	0.6	174.52	175.14		175.14	0.000021	0.08	11.1	36.54	0.04
WEBBE R 1	T1	56	100 Year	0.84	174.52	175.22		175.22	0.000022	0.09	14.13	42.16	0.04
WEBBE R 1	T1	33	2Year	0.2	174.38	174.87		174.87	0.000009	0.04	7.69	39.23	0.02
WEBBE R 1	T1	33		0.35	174.38	175		175	0.000007	0.04	13.32	49.34	0.02
WEBBE R 1	T1	33	25 - Year	0.6	174.38	175.14		175.14	0.000006	0.05	20.84	61.56	0.02
WEBBE R 1	T1	33	100 Year	0.84	174.38	175.22		175.22	0.000007	0.06	25.94	69.32	0.02
EAST	E1	2250	2Year	0.43	175.55	176.24	175.66	176.24	0	0.01	64.19	171.76	0
EAST	E1	2250	5 -Year	0.65	175.55	176.26	175.68	176.26	0.000001	0.01	68.89	173.29	0



						Outpu	it Summa	ary Table					
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
EAST	E1	2250	25 - Year	1	175.55	176.3	175.72	176.3	0.000001	0.01	75.1	176.14	0.01
EAST	E1	2250	100 Year	1.29	175.55	176.33	175.73	176.33	0.000002	0.02	80.67	178.05	0.01
EAST	E1	2243	2Year	0.43	175.43	176.24	175.57	176.24	0	0.01	62.26	141.82	0
EAST	E1	2243	5 -Year	0.65	175.43	176.26	175.6	176.26	0.000001	0.01	66.14	142.95	0
EAST	E1	2243	25 - Year	1	175.43	176.3	175.63	176.3	0.000001	0.01	71.25	144.87	0.01
EAST	E1	2243	100 Year	1.29	175.43	176.33	175.64	176.33	0.000002	0.02	75.83	146.29	0.01
EAST	E1	2223	2Year	0.43	175.41	176.24		176.24	0	0.01	58.35	143.55	0
EAST	E1	2223		0.65	175.41	176.26		176.26	0.000001	0.01	62.28	145.47	0.01
EAST	E1	2223	25 - Year	1	175.41	176.3		176.3	0.000001	0.02	67.46	146.36	0.01
EAST	E1	2223	100 Year	1.29	175.41	176.33		176.33	0.000002	0.02	72.09	147.97	0.01
EAST	E1	2196	2Year	0.43	175.42	176.24		176.24	0	0.01	51.63	117.37	0
EAST	E1	2196	5 -Year 25 -	0.65	175.42	176.26		176.26	0.000001	0.01	54.85	119.03	0.01
EAST	E1	2196		1	175.42	176.3		176.3	0.000002	0.02	59.13	121.9	0.01
EAST	E1	2196	100	1.29	175.42	176.33		176.33	0.000002	0.02	62.98	123.13	0.01
EAST	E1	2155	2Year	0.43	175.37	176.24		176.24	0	0.01	60.43	138.35	0
EAST	E1	2155	5 -Year	0.65	175.37	176.26		176.26	0.000001	0.01	64.2	138.93	0
EAST	E1	2155		1	175.37	176.3		176.3	0.000001	0.01	69.15	139.9	0.01
EAST	E1	2155	100 Year	1.29	175.37	176.33		176.33	0.000002	0.02	73.55	141.42	0.01
EAST	E2	2096		0.94	175.41	176.24		176.24	0.000001	0.02	66.22	162.47	0.01
EAST	E2	2096	5 -Year 25 -	1.44	175.41	176.26		176.26	0.000003	0.02	70.69	166.48	0.01
EAST	E2	2096		2.25	175.41	176.3		176.3	0.000006	0.03	76.7	170.91	0.01



						Outpu	it Summa	ary Table					
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
EAST	E2	2096	100 Year	2.95	175.41	176.33		176.33	0.000008	0.04	82.08	172.89	0.02
EAST	E2	2091	2Year	0.94	175.42	176.24		176.24	0.000001	0.02	65.93	145.55	0.01
EAST	E2	2091	5 -Year 25 -	1.44	175.42	176.26		176.26	0.000002	0.02	69.97	151.3	0.01
EAST	E2	2091	Year	2.25	175.42	176.3		176.3	0.000005	0.03	75.6	168.22	0.01
EAST	E2	2091	100 Year	2.95	175.42	176.33		176.33	0.000007	0.04	80.91	170.73	0.02
EAST	E2	2050	2Year	0.94	175.44	176.24		176.24	0.000001	0.02	70.24	156.72	0.01
EAST	E2	2050	5 -Year	1.44	175.44	176.26		176.26	0.000003	0.02	74.5	157.75	0.01
EAST	E2	2050	25 - Year	2.25	175.44	176.3		176.3	0.000005	0.03	80.12	160.34	0.01
EAST	E2	2050	100 Year	2.95	175.44	176.33		176.33	0.000007	0.04	85.14	162.02	0.02
EAST	E2	2012	2Year	0.94	175.45	176.24		176.24	0.000002	0.02	65.83	168.36	0.01
EAST	E2	2012	5 -Year	1.44	175.45	176.26		176.26	0.000003	0.02	70.39	168.63	0.01
EAST	E2	2012	25 - Year	2.25	175.45	176.3		176.3	0.000006	0.03	76.35	169.73	0.01
EAST	E2	2012	100	2.95	175.45	176.33		176.33	0.000009	0.04	81.64	170.22	0.02
EAST	E2	1993	2Year	0.94	175.43	176.24	175.62	176.24	0.000011	0.04	23.13	60.7	0.02
EAST	E2	1993	5 -Year	1.44	175.43	176.26	175.65	176.26	0.000021	0.06	24.77	61.66	0.03
EAST	E2	1993	25 - Year	2.25	175.43	176.3	175.69	176.3	0.000041	0.09	26.94	62.33	0.04
EAST	E2	1993	100 Year	2.95	175.43	176.33	175.73	176.33	0.000058	0.11	28.87	62.91	0.05
EAST	E2	1964	2Year	0.94	175.45	176.24	175.6	176.24	0.000008	0.03	27.36	61.99	0.02
EAST	E2 E2	1964	5 -Year	1.44	175.45	176.24	175.63	176.24	0.000008	0.03	27.36	62.43	0.02
			25 -										
EAST	E2	1964	Year 100	2.25	175.45	176.3	175.66	176.3	0.000031	0.07	31.18	62.99	0.03
EAST	E2	1964		2.95	175.45	176.33	175.7	176.33	0.000044	0.09	33.1	63.48	0.04



						Outpu	it Summa	ary Table					
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
EAST	E2	1954	2Year	0.94	175.44	176.24		176.24	0.00006	0.03	31.32	82.65	0.01
EAST	E2	1954	5 -Year	1.44	175.44	176.26		176.26	0.000012	0.04	33.56	85.55	0.02
EAST	E2	1954	25 - Year	2.25	175.44	176.3		176.3	0.000023	0.07	36.52	86.23	0.03
EAST	E2	1954	100 Year	2.95	175.44	176.33		176.33	0.000033	0.08	39.14	86.33	0.03
EAST	E2	1938	2Year	0.94	175.44	176.23		176.23	0.000006	0.03	30.16	64.61	0.01
EAST	E2	1938	5 -Year	1.44	175.44	176.26		176.26	0.000012	0.05	31.96	72.62	0.02
EAST	E2	1938	25 - Year	2.25	175.44	176.3		176.3	0.000024	0.07	34.5	75.98	0.03
EAST	E2	1938	100 Year	2.95	175.44	176.33		176.33	0.000034	0.08	36.86	80.84	0.04
EAST	E2	1922	2Year	0.94	175.47	176.23		176.23	0.000006	0.03	27.68	51.95	0.01
EAST	E2	1922	5 -Year	1.44	175.47	176.26		176.26	0.000012	0.05	29.05	52.47	0.02
EAST	E2	1922	25 - Year	2.25	175.47	176.3		176.3	0.000024	0.07	30.86	53.63	0.03
EAST	E2	1922	100 Year	2.95	175.47	176.33		176.33	0.000036	0.09	32.48	55.81	0.04
EAST	E2	1896	2Year	0.94	175.47	176.23		176.23	0.000006	0.03	28.28	56.61	0.02
EAST	E2	1896	5 -Year	1.44	175.47	176.26		176.26	0.000012	0.05	29.78	57.67	0.02
EAST	E2	1896	25 - Year	2.25	175.47	176.29		176.29	0.000025	0.07	31.75	59.08	0.03
EAST	E2	1896	100 Year	2.95	175.47	176.32		176.32	0.000036	0.09	33.51	60.31	0.04
EAST	E2	1876	2Year	0.94	175.43	176.23		176.23	0.000005	0.03	34.61	88.22	0.01
EAST	E2	1876	5 -Year	1.44	175.43	176.26		176.26	0.000009	0.04	36.92	88.85	0.02
EAST	E2	1876	25 - Year	2.25	175.43	176.29		176.29	0.000018	0.06	39.9	89.67	0.03
EAST	E2	1876	100 Year	2.95	175.43	176.32		176.32	0.000026	0.07	42.57	91.36	0.03
	<u> </u>												
EAST	E2	1861	2Year	0.94	175.3	176.23		176.23	0.000004	0.03	35.64	89.26	0.01 32 of 544



	Output Summary Table												
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
EAST	E2	1861	5 -Year	1.44	175.3	176.26		176.26	0.00008	0.04	37.98	90.09	0.02
EAST	E2	1861	25 - Year	2.25	175.3	176.29		176.29	0.000016	0.05	41.02	92.43	0.03
EAST	E2	1861	100 Year	2.95	175.3	176.32		176.32	0.000023	0.07	43.76	93.32	0.03
EAST	E2	1857	2Year	0.94	175.2	176.23	175.57	176.23	0.000003	0.03	35.3	81.65	0.01
EAST	E2	1857	5 -Year	1.44	175.2	176.26	175.59	176.26	0.000007	0.04	37.46	83.65	0.02
EAST	E2	1857	25 - Year	2.25	175.2	176.29	175.62	176.29	0.000014	0.06	40.31	87.23	0.02
EAST	E2	1857	100 Year	2.95	175.2	176.32	175.64	176.32	0.00002	0.07	42.92	90.49	0.03
EAST	E2	1840		Culvert									
EAST	E2	1821	2Year	0.94	175.17	175.66		175.66	0.000337	0.17	5.79	31.26	0.12
EAST	E2	1821	5 -Year	1.44	175.17	175.71		175.71	0.000337	0.17	7.32	33.58	0.12
EAST	E2	1821	25 - Year	2.25	175.17	175.78		175.78	0.000506	0.25	9.82	44.88	0.15
EAST	E2	1821	100 Year	2.95	175.17	175.83		175.83	0.000495	0.26	12.5	56.88	0.15
EAST	E2	1819	2Year	0.94	175.26	175.66		175.66	0.000233	0.14	7.75	38.86	0.09
EAST	E2	1819	5 -Year	1.44	175.26	175.71		175.71	0.000297	0.16	9.74	43.96	0.1
EAST	E2	1819	25 - Year	2.25	175.26	175.78		175.78	0.000318	0.2	12.99	54.59	0.11
EAST	E2	1819	100 Year	2.95	175.26	175.83		175.83	0.000335	0.22	16.17	66.33	0.12
EAST	E2	1807	2Year	0.94	175.25	175.66		175.66	0.000342	0.2	6.68	47.33	0.13
EAST	E2	1807	5 -Year	1.44	175.25	175.7		175.7	0.000379	0.24	8.95	52.85	0.14
EAST	E2	1807	25 - Year	2.25	175.25	175.77		175.77	0.000369	0.27	12.82	58.47	0.15
EAST	E2	1807	100 Year	2.95	175.25	175.82		175.83	0.000351	0.29	16.05	62.99	0.15
EAST	E2	1776	2Year	0.94	175.31	175.65		175.65	0.000109	0.09	10.94	55.46	0.06



	Output Summary Table												
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
EAST	E2	1776	5 -Year	1.44	175.31	175.7		175.7	0.000141	0.11	13.6	61.17	0.07
EAST	E2	1776	25 - Year	2.25	175.31	175.76		175.76	0.00016	0.13	17.9	66.2	0.08
EAST	E2	1776	100 Year	2.95	175.31	175.82		175.82	0.000165	0.14	21.49	69.26	0.08
LAST		1770	Teal	2.95	175.51	175.02		175.02	0.000103	0.14	21.45	09.20	0.00
EAST	E2	1735	2Year	0.94	175.2	175.65		175.65	0.000049	0.1	14.54	66.87	0.05
EAST	E2	1735	5 -Year	1.44	175.2	175.69		175.69	0.000069	0.13	17.57	70.12	0.07
EAST	E2	1735	25 - Year	2.25	175.2	175.76		175.76	0.000088	0.16	22.52	76.84	0.08
EAST	E2	1735	100 Year	2.95	175.2	175.81		175.81	0.000096	0.18	26.72	81.88	0.08
EAST	E2	1697	2Year	0.94	175.27	175.64		175.65	0.000166	0.14	8.35	45.59	0.09
EAST	E2	1697	5 -Year	1.44	175.27	175.69		175.69	0.000208	0.18	10.36	48.24	0.11
EAST	E2	1697	25 - Year	2.25	175.27	175.75		175.76	0.000238	0.22	13.92	67.04	0.12
EAST	E2	1697	100 Year	2.95	175.27	175.81		175.81	0.000247	0.25	17.66	76.63	0.12
EAST	E2	1639	2Year	0.94	175.43	175.58	175.58	175.61	0.023482	0.9	1.3	18.72	0.94
EAST	E2	1639	5 -Year	1.44	175.43	175.63		175.65	0.011937	0.66	2.83	39.97	0.68
EAST	E2	1639	25 - Year	2.25	175.43	175.71		175.72	0.003047	0.48	6.64	56.01	0.37
EAST	E2	1639	100 Year	2.95	175.43	175.77		175.78	0.001593	0.43	10.16	61.74	0.28
EAST	E3	1598	2Year	1.83	175.31	175.55	175.46	175.56	0.002834	0.28	6.45	51.98	0.26
EAST	E3	1598	5 -Year 25 -	2.98	175.31	175.62	175.49	175.62	0.002084	0.3	9.9	57.26	0.23
EAST	E3	1598	Year	4.9	175.31	175.7	175.52	175.7	0.001719	0.33	14.98	66.07	0.22
EAST	E3	1598	100 Year	6.63	175.31	175.76	175.55	175.77	0.001556	0.35	19.13	71.47	0.21
EAST	E3	1571	2Year	1.83	175.23	175.5		175.5	0.001536	0.39	6.27	40.15	0.28
EAST	E3	1571	5 -Year	2.98	175.23	175.57		175.58	0.001401	0.46	9.38	49.13	0.28



	Output Summary Table												
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
EAST	E3	1571	25 - Year	4.9	175.23	175.65		175.66	0.001289	0.53	14.01	56.77	0.28
EAST	E3	1571	100 Year	6.63	175.23	175.72		175.73	0.001221	0.57	17.73	60.25	0.28
EAST	E3	1517	2Year	1.83	175.1	175.47		175.48	0.000256	0.2	12.78	62.38	0.12
EAST	E3	1517	5 -Year	2.98	175.1	175.55		175.55	0.000282	0.24	17.29	64.83	0.13
EAST	E3	1517	25 - Year	4.9	175.1	175.63		175.63	0.000338	0.3	23.12	71.28	0.15
EAST	E3	1517	100 Year	6.63	175.1	175.69		175.7	0.000377	0.35	27.7	76.44	0.16
EAST	E3	1452		1.83	175	175.46		175.46	0.000151	0.17	14.87	62.34	0.09
EAST	E3	1452	5 -Year 25 -	2.98	175	175.53		175.53	0.000194	0.22	19.35	67.68	0.11
EAST	E3	1452	25 - Year	4.9	175	175.61		175.61	0.000253	0.28	24.99	71.64	0.13
EAST	E3	1452	100 Year	6.63	175	175.67		175.67	0.000295	0.32	29.38	75.25	0.14
EAST	E3	1396	2Year	1.83	174.91	175.45		175.45	0.000139	0.18	14.25	56.8	0.09
EAST	E3	1396	5 -Year	2.98	174.91	175.52		175.52	0.000205	0.24	18.2	64.45	0.11
EAST	E3	1396	25 - Year	4.9	174.91	175.59		175.6	0.000293	0.32	23.44	71.59	0.14
	50	4000	100										
EAST	E3	1396	Year	6.63	174.91	175.65		175.66	0.000352	0.38	27.66	77.11	0.16
EAST	E3	1336	2Year	1.83	174.87	175.45		175.45	0.000115	0.17	14.05	57.22	0.08
EAST	E3	1336	5 -Year	2.98	174.87	175.51		175.51	0.000176	0.23	17.7	62.89	0.11
EAST	E3	1336	25 - Year	4.9	174.87	175.58		175.58	0.000267	0.32	22.39	69.35	0.14
EAST	E3	1336	100 Year	6.63	174.87	175.63		175.64	0.000334	0.37	26.12	72.76	0.15
EAST	E3	1310	2Year	1.83	174.65	175.44	175.06	175.44	0.000091	0.15	14.25	48.26	0.08
EAST	E3	1310	5 -Year	2.98	174.65	175.5	175.11	175.5	0.000152	0.22	18.04	73.55	0.1
EAST	E3	1310	25 - Year	4.9	174.65	175.57	175.17	175.58	0.000234	0.29	23.57	84.97	0.13



	Output Summary Table												
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
EAST	E3	1310	100 Year	6.63	174.65	175.62	175.21	175.63	0.000291	0.35	28.16	93.01	0.14
EAST	E3	1243		1.83	174.32	175.44	174.52	175.44	0.00001	0.08	23.84	29.64	0.03
EAST	E3	1243	5 -Year 25 -	2.98	174.32	175.5	174.56	175.5	0.000021	0.12	25.58	30.17	0.04
EAST	E3	1243	Year	4.9	174.32	175.57	174.62	175.57	0.000045	0.18	27.62	30.97	0.06
EAST	E3	1243	100 Year	6.63	174.32	175.62	174.66	175.62	0.00007	0.23	29.15	31.53	0.07
EAST	E3	1213	2Year	1.83	174.31	175.44		175.44	0.000005	0.06	31.78	42.89	0.02
EAST	E3	1213	5 -Year	2.98	174.31	175.5		175.5	0.00001	0.09	34.32	44.72	0.03
EAST	E3	1213	25 - Year	4.9	174.31	175.57		175.57	0.000022	0.14	37.72	56.9	0.04
EAST	E3	1213	100 Year	6.63	174.31	175.62		175.62	0.000034	0.18	40.77	67.6	0.05
EAST	E3	1175	2Year	1.83	174.31	175.44		175.44	0.000043	0.14	24.95	86.14	0.06
EAST	E3	1175	5 -Year	2.98	174.31	175.5		175.5	0.000072	0.2	30.01	90.39	0.07
EAST	E3	1175	25 - Year	4.9	174.31	175.56		175.57	0.000122	0.27	36.04	94.54	0.1
EAST	E3	1175	100 Year	6.63	174.31	175.61		175.61	0.000165	0.33	40.63	98.3	0.11
EAST	E3	1140	2Year	1.83	174.34	175.44		175.44	0.000051	0.15	20.73	66.28	0.06
EAST	E3	1140	5 -Year	2.98	174.34	175.5		175.5	0.000092	0.21	24.56	71.67	0.08
EAST	E3	1140	25 - Year	4.9	174.34	175.56		175.56	0.000162	0.29	29.29	79.46	0.11
EAST	E3	1140	100 Year	6.63	174.34	175.6		175.61	0.000224	0.36	32.98	82.95	0.13
FACT	F 2	1000	0. Veer	4.00	474.05	475 44		475 44	0.0000.40	0.45	40.00	54.00	0.00
EAST EAST	E3 E3	1099 1099	2Year 5 -Year	1.83 2.98	174.35 174.35	175.44 175.49		175.44 175.49	0.000046	0.15 0.21	19.86 22.93	54.89 58.1	0.06
			25 -										
EAST	E3	1099	Year 100	4.9	174.35	175.55		175.55	0.000164	0.31	26.51	62.21	0.11
EAST	E3	1099		6.63	174.35	175.59		175.6	0.000238	0.39	29.2	65.45	0.14



	Output Summary Table												
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
EAST	E3	1054	2Year	1.83	174.29	175.44		175.44	0.000029	0.13	25.42	63.06	0.05
EAST	E3	1054	5 -Year	2.98	174.29	175.49		175.49	0.000057	0.19	28.86	66.17	0.07
EAST	E3	1054	25 - Year	4.9	174.29	175.55		175.55	0.000112	0.28	32.73	70.04	0.09
EAST	E3	1054	100 Year	6.63	174.29	175.59		175.59	0.000169	0.36	35.6	74.25	0.12
EAST	E3	1012	2Year	1.83	174.34	175.44		175.44	0.000013	0.09	37	80.73	0.03
EAST	E3	1012	5 -Year	2.98	174.34	175.49		175.49	0.000026	0.13	41.32	83.79	0.05
EAST	E3	1012	25 - Year	4.9	174.34	175.54		175.55	0.000053	0.2	46.09	86.97	0.07
EAST	E3	1012	100 Year	6.63	174.34	175.58		175.58	0.000081	0.25	49.49	89.19	0.08
EAST	E3	988	2Year	1.83	174.34	175.44		175.44	0.000017	0.1	33.68	79.7	0.04
EAST	E3	988	5 -Year	2.98	174.34	175.49		175.49	0.000035	0.15	37.99	84.87	0.05
EAST	E3	988	25 - Year	4.9	174.34	175.54		175.54	0.000069	0.22	42.8	89.18	0.07
EAST	E3	988	100 Year	6.63	174.34	175.58		175.58	0.000103	0.28	46.22	91.82	0.09
EAST	E3	953	2Year	1.83	174.29	175.43		175.43	0.00002	0.11	29.81	71.12	0.04
EAST	E3	953	5 -Year	2.98	174.29	175.49		175.49	0.00002	0.16	33.58	75.02	0.04
EAST	E3	953	25 - Year	4.9	174.29	175.54		175.54	0.00008	0.23	37.76	79.2	0.08
EAST	E3	953	100 Year	6.63	174.29	175.58		175.58	0.00012	0.29	40.71	81.15	0.1
EAST	E3	024	2Year	1 0 2	174.26	175 42		175 42	0.000022	0.12	20.19	69.72	0.04
EAST EAST	E3	924 924	5 -Year	1.83 2.98	174.26 174.26	175.43 175.49		175.43 175.49	0.000022	0.12	29.18 32.78	68.73 71.95	0.04
EAST	E3	924	25 - Year	4.9	174.26	175.49		175.49	0.000044	0.17	36.69	76.13	0.08
EAST	E3	924	100 Year	6.63	174.26	175.57		175.58	0.000137	0.32	39.45	79.42	0.1
EAST	E3	893	2Year	1.83	174.33	175.43		175.43	0.000016	0.11	32.82	76.83	0.04 37 of 54



	Output Summary Table												
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
EAST	E3	893	5 -Year	2.98	174.33	175.48		175.48	0.000033	0.16	36.86	82.23	0.05
EAST	E3	893	25 - Year	4.9	174.33	175.54		175.54	0.000068	0.23	41.27	87.65	0.07
EAST	E3	893	100 Year	6.63	174.33	175.57		175.57	0.000105	0.3	44.34	92.34	0.09
EAST	E3	882	2Year	1.83	174.27	175.43		175.43	0.00001	0.08	42.71	97.58	0.03
EAST	E3	882	5 -Year	2.98	174.27	175.48		175.48	0.00002	0.00	47.82	103.31	0.03
EAST	E3	882	25 - Year	4.9	174.27	175.54		175.54	0.000041	0.18	53.29	107.49	0.06
EAST	E3	882	100 Year	6.63	174.27	175.57		175.57	0.000063	0.22	57.04	109.9	0.07
EAST	E3	877	2Year	1.83	174.04	175.43	174.54	175.43	0.000011	0.08	40.28	93.45	0.03
EAST	E3	877	5 -Year	2.98	174.04	175.48	174.65	175.48	0.000023	0.12	45.14	98.9	0.04
EAST	E3	877	25 - Year	4.9	174.04	175.54	174.82	175.54	0.000047	0.18	50.44	105.1	0.06
EAST	E3	877	100 Year	6.63	174.04	175.57	174.93	175.57	0.000071	0.23	54.09	108.23	0.08
EAST	E3	862		Culvert									
EAST	E3	850	2Year	1.83	173.95	174.88		174.88	0.000129	0.19	15.53	61.63	0.09
EAST	E3	850	5 -Year 25 -	2.98	173.95	175.01		175.01	0.000113	0.21	23.81	69.59	0.09
EAST	E3	850	Year 100	4.9	173.95	175.15		175.15	0.000118	0.24	33.98	78.13	0.09
EAST	E3	850	Year	6.63	173.95	175.22		175.23	0.000135	0.28	40.46	90.24	0.1
EAST	E3	846	2Year	1.83	174.32	174.88		174.88	0.000086	0.15	19.04	64.5	0.07
EAST	E3	846	5 -Year	2.98	174.32	174.88		174.88	0.000088	0.13	28.02	76.93	0.07
EAST	E3	846	25 - Year	4.9	174.32				0.000093	0.10	40.56		0.08
			100			175.15		175.15				102.18	
EAST	E3	846	Year	6.63	174.32	175.22		175.23	0.000103	0.25	48.65	106.15	0.09
EAST	E3	805	2Year	1.83	174.32	174.87		174.88	0.000451	0.3	7.96	34.38	0.16



	Output Summary Table												
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
EAST	E3	805	5 -Year	2.98	174.32	175		175	0.000371	0.34	13.02	49.25	0.16
EAST	E3	805	25 - Year	4.9	174.32	175.14		175.14	0.000349	0.39	21.33	69.67	0.16
EAST	E3	805	100 Year	6.63	174.32	175.21		175.22	0.000368	0.43	26.94	74.77	0.16
EAST	E4	754	2Year	2.92	174.2	174.87		174.87	0.000118	0.18	24.75	72.72	0.09
EAST	E4	754	5 -Year	4.84	174.2	175		175	0.000127	0.22	34.37	80.67	0.09
EAST	E4	754	25 - Year	8.09	174.2	175.13		175.14	0.000158	0.29	45.85	89.25	0.11
EAST	E4	754	100 Year	10.53	174.2	175.21		175.21	0.000182	0.33	52.93	101.31	0.12
EAST	E4	695	2Year	2.92	174.12	174.86	174.5	174.86	0.000205	0.25	16.54	66.07	0.12
EAST	E4	695	5 -Year	4.84	174.12	174.99	174.56	174.99	0.0002	0.29	25.51	74.48	0.12
EAST	E4	695	25 - Year	8.09	174.12	175.12	174.62	175.13	0.00024	0.37	36.46	90.54	0.13
EAST	E4	695	100 Year	10.53	174.12	175.2	174.68	175.2	0.000269	0.41	43.83	107.88	0.14
EAST	E4	621	2Year	2.92	174.04	174.85		174.85	0.000161	0.23	16.96	49.06	0.1
EAST	E4	621	5 -Year	4.84	174.04	174.97		174.98	0.0002	0.3	23.95	65.48	0.12
EAST	E4	621	25 - Year	8.09	174.04	175.1		175.11	0.000264	0.39	33.44	80.63	0.14
EAST	E4	621	100 Year	10.53	174.04	175.18		175.18	0.000292	0.43	39.44	83.56	0.15
EAST	E4	580	2Year	2.92	174.05	174.84		174.85	0.000091	0.2	23.41	74.88	0.08
EAST	E4	580	5 -Year	4.84	174.05	174.97		174.97	0.000105	0.24	33.04	80.07	0.09
EAST	E4	580	25 - Year	8.09	174.05	175.1		175.1	0.000141	0.31	43.66	85.84	0.11
EAST	E4	580	100 Year	10.53	174.05	175.17		175.17	0.000168	0.36	50	90.13	0.12
EAST	E4	541	2Year	2.92	173.94	174.84		174.84	0.000069	0.18	21.75	43.95	0.07
EAST	E4	541	5 -Year	4.84	173.94	174.96		174.97	0.000101	0.25	27.54	50.12	0.09



	Output Summary Table												
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
EAST	E4	541	25 - Year	8.09	173.94	175.09		175.09	0.000164	0.35	34.91	71.13	0.12
EAST	E4	541	100 Year	10.53	173.94	175.16		175.17	0.000236	0.44	40.54	89.32	0.14
EAST	E4	504	2Year	2.92	173.97	174.84		174.84	0.000029	0.13	34.1	67.59	0.05
EAST	E4	504	5 -Year	4.84	173.97	174.96		174.96	0.000044	0.17	42.75	75.16	0.06
EAST	E4	504	25 - Year	8.09	173.97	175.09		175.09	0.000074	0.24	52.67	84.57	0.08
EAST	E4	504	100 Year	10.53	173.97	175.16		175.16	0.0001	0.3	58.76	94.95	0.09
EAST	E4	472	2Year	2.92	173.91	174.84		174.84	0.000016	0.1	39.91	73.06	0.04
EAST	E4	472	5 -Year 25 -	4.84	173.91	174.96		174.96	0.000026	0.14	49.36	81.54	0.05
EAST	E4	472	Year	8.09	173.91	175.09		175.09	0.000044	0.2	59.92	89.07	0.06
EAST	E4	472	100 Year	10.53	173.91	175.15		175.16	0.000059	0.24	66.16	96.45	0.07
EAST	E4	447	2Year	2.92	173.87	174.84		174.84	0.000017	0.1	45.86	94.12	0.04
EAST	E4	447	5 -Year	4.84	173.87	174.96		174.96	0.000026	0.14	57.69	100.16	0.05
EAST	E4	447	25 - Year	8.09	173.87	175.09		175.09	0.000044	0.2	71.07	117.77	0.06
EAST	E4	447	100 Year	10.53	173.87	175.15		175.15	0.000056	0.23	79.28	123.8	0.07
EAST	E4	411	2Year	2.92	173.7	174.84	173.94	174.84	0.000002	0.04	83.51	110.63	0.01
EAST	E4	411	5 -Year	4.84	173.7	174.96	173.97	174.96	0.000004	0.05	97.24	114.13	0.02
EAST	E4	411	25 - Year	8.09	173.7	175.09	174.01	175.09	0.000007	0.08	111.66	118.41	0.02
EAST	E4	411	100 Year	10.53	173.7	175.15	174.03	175.15	0.000009	0.1	119.72	119.89	0.03
EAST	E4	387	2Year	2.92	173.53	174.84	173.7	174.84	0.000002	0.04	85.8	119.19	0.01
EAST	E4	387	5 -Year 25 -	4.84	173.53	174.96	173.75	174.96	0.000003	0.05	101.44	135.27	0.02
EAST	E4	387	25 - Year	8.09	173.53	175.09	173.81	175.09	0.000006	0.08	118.95	146.66	0.02



						Outpu	it Summa	ry Table					
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
EAST	E4	387	100 Year	10.53	173.53	175.15	173.85	175.15	0.000008	0.09	129.2	156.66	0.03
EAST	E4	345		Culvert									
ГЛОТ		306	2 Veer	2.02	172.20	174.02		174.00	0.0061	1.05	2.04	0.14	0.50
EAST	E4		2Year	2.92	173.38	174.03		174.08	0.0061	1.05	2.81	9.14	0.59
EAST	E4	306	5 -Year 25 -	4.84	173.38	174.17		174.24	0.006168	1.16	4.33	14.37	0.6
EAST	E4	306	Year 100	8.09	173.38	174.27	174.21	174.36	0.010769	1.41	6.21	23.26	0.78
EAST	E4	306	Year	10.53	173.38	174.3	174.28	174.43	0.012608	1.64	7.08	24.44	0.86
EAST	E4	301	2Year	2.92	173.31	173.86	173.86	174.03	0.018539	1.81	1.62	4.94	1.01
EAST	E4	301	5 -Year	4.84	173.31	174.08	174.08	174.19	0.017505	1.43	3.58	20.26	0.94
EAST	E4	301	25 - Year	8.09	173.31	174.17	174.17	174.3	0.016173	1.6	5.79	27.65	0.94
			100										
EAST	E4	301	Year	10.53	173.31	174.22	174.22	174.37	0.015291	1.73	7.27	30.8	0.94
EAST	E4	235	2Year	2.92	173.02	173.76	173.26	173.76	0.00017	0.22	13.05	27.98	0.1
EAST	E4	235	5 -Year	4.84	173.02	173.92	173.32	173.92	0.000203	0.26	19.02	44.17	0.12
EAST	E4	235	25 - Year	8.09	173.02	174.09	173.41	174.1	0.000278	0.3	29.48	79.19	0.14
FAOT	F 4	005	100	40.50	470.00	47447	470.40	474.40	0.000074	0.00	00.00	05.40	0.1.1
EAST	E4	235	Year	10.53	173.02	174.17	173.46	174.18	0.000274	0.33	36.29	85.46	0.14
EAST	E4	116	2Year	2.92	172.73	173.64		173.7	0.004166	1.07	2.75	7.14	0.5
EAST	E4	116	5 -Year	4.84	172.73	173.76	173.55	173.84	0.006323	1.32	4.25	18.3	0.62
EAST	E4	116	25 - Year	8.09	172.73	173.88	173.83	173.99	0.006754	1.56	7.14	26.47	0.66
FACT	-4	110	100	40.52	470.70	472.00		474.00	0.000500	4.05	0.00	20.40	0.00
EAST	E4	116	Year	10.53	172.73	173.96		174.08	0.006522	1.65	9.32	29.16	0.66
EAST	E4	62	2Year	2.92	172.64	173.55	173.16	173.57	0.001282	0.64	6.01	33.87	0.29
EAST	E4	62	5 -Year	4.84	172.64	173.67	173.36	173.69	0.001281	0.71	10.98	44.36	0.29
EAST	E4	62	25 - Year	8.09	172.64	173.81	173.57	173.83	0.001279	0.78	17.48	49.39	0.3
-													41 of 544

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	Output Summary Table												
River	Rea ch	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev(m)	Crit W.S.(m)	E.G. Elev(m)	E.G. Slope(m/m)	Vel Chnl(m/s)	Flow Area(m2)	Top Width(m)	Froude # Chl
EAST	E4	62	100 Year	10.53	172.64	173.89	173.65	173.92	0.00128	0.81	21.74	51.86	0.3



Appendix J: Terms of Refernce



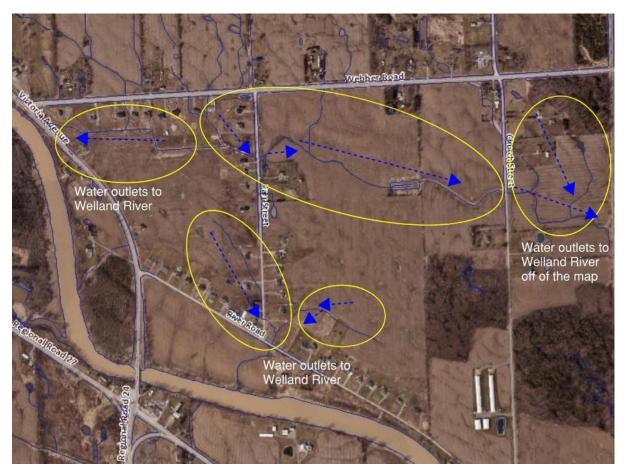
Terms of Reference

Drainage Study Farr, Webber and River Road Area

The Town of Pelham is seeking consulting engineering services to undertake a Drainage Study for the Farr, Webber and River Road area of the Town. Residential and farm property in the area has been experiencing drainage issues, i.e. flooding, from unplanned rural residential development and wet weather. There is no stormwater management plan associated with the rural residential uses and the area is not serviced by a municipal drain.

Drainage in the area is associated with overland flows being directed towards a series of natural and constructed drainage channels that outlet to the Welland River. Some of the natural watercourses are regulated by the Niagara Peninsula Conservation Authority. The area is characterized by a mix of rural and agricultural land uses. The Town does not have any geotechnical or soil reports of the area.

The purpose of the Drainage Study is to confirm the drainage patterns and flows of the area, identify areas experiencing drainage issues and identify potential options to resolve the drainage issues.



Farr and River Roads are under the jurisdiction of the Town of Pelham and Webber Road and Victoria Avenue are under the jurisdiction of the Region of Niagara.

Project Task/Scope of Work

The following major tasks shall be undertaken by the proponent in completing the Drainage Study for the Farr, Webber and River Road area.

- 1. Background Information and Data Collection
 - Project kick off meeting with Municipal staff to gain understanding of the project scope and of the drainage issues in the area
 - Obtain available background information and mapping of the area
 - ✓ Obtain historic air photos of the area in order to identify any changes to the local drainage regime.
 - ✓ Obtain any engineering drawings that may exist for the roads in the study area including details regarding the culvert crossings for the areas of interest.

- Collect and review agency information and policies including Niagara Peninsula Conservation Authority, Region of Niagara
- Conduct site visit (including obtaining permission from private landowners within the study area to inspect as much of the study area as possible).
- ✓ Public consultation including virtual and in-person open house format consultations and interviews with affected landowners and use of the Town on-line engagement platform.
- 2. Draft Drainage Study
 - ✓ Undertake a topographic survey of critical areas in order to conclusively determine the flow directions of the water features.
 - ✓ Analysis of drainage issues.
 - ✓ Determine if the water features within the study area meet the NPCA definition of a watercourse namely: `an identifiable depression in the ground which a flow of water regularly or continuously occurs'.
 - ✓ Identify and analyze potential options and best practices for addressing drainage issues on municipal and private property
 - ✓ Input from Town staff and agencies on draft report
 - ✓ Public Information Session to present the draft report
- 3. Final Drainage Study
 - ✓ Review and assess feedback received
 - ✓ Finalize Drainage Study findings and recommendations
 - $\checkmark~$ Public consultation to present the final report.
 - ✓ Presentation to Council

Evaluation Criteria

Evaluation Criteria	Points
Firm's Qualifications and Similar	10
Work Experience	
Project Team Experience	20
Project Understanding and Approach	25
Work Plan, Methodology and Quality	25
Assurance	
Project Schedule	10
Fees	10
Total	100

Schedule

It is expected that the Town would receive the final Drainage Study by July 31, 2022.

The proponent should include the anticipated start and completion date for each date, list of deliverables and submission dates to the Town and external agencies.

Deliverables

A final Drainage Study of the area that confirms the drainage patterns and flow of the area and provides options for private property owners to address drainage issues and municipal responsibilities and improvements that may be required to improve drainage in the area.

Budget

The upset budget for this project is \$50,000.

2022-CS-05 - Drainage Study, Farr, Webber and River Road Area

Opening Date: March 17, 2022 10:00 AM

Closing Date: April 7, 2022 2:00 PM

Schedule of Prices

The Bidder hereby Bids and offers to enter into the Contract referred to and to supply and do all or any part of the Work which is set out or called for in this Bid, at the unit prices, and/or lump sums, hereinafter stated. HST is additional. In lawful money of Canada.

The first table is a Summary Table which provides your Sub-Total for each pricing table and also indicates whether or not the table is mandatory or not. Asterisk's within the table denotes a "**MANDATORY**" line item.

If the line item and/or table is "**NON-MANDATORY**" and you are not bidding on it, leave the table and/or line item blank. Do not enter a \$0.00 dollar value unless you are prepared to provide the line item at zero dollars to the Owner.

If a table is "**NON-MANDATORY**" and you are bidding on it, you must bid on all line items with an asterisk.

If there are multiple tables, you must click the "**EDIT PRICING**" button inside the Summary Table to display the applicable Pricing Table that you wish to bid on.

Pricing

With completion of this pricing list you have carefully examinded the documents enclosed and have a clear and comprehensive knowledge of the Goods and/or services required. By submitting the information, you agree and concent to therewith to have the aurhoization to bind.

Line Item	Description	Quantity	lunit nrico *	UNIT OF MEASURE	TOTAL	
	Pricing, complete scope (Full submission package to be uploaded to electronic folder provided)	1		LOT		*
				Subtotal:		

Summary Table

Bid Form	Amount
Pricing	
Subtotal Contract Amount:	

Specifications

Acknowledgement

Description	Yes - No *
ACKNOWLEDGEMENT: It is expected that the Town would receive the final Drainage Study by July 31, 2022.	∩Yes ∩No

References

All references stated shall be for the same or similar scope as the one described in this Bid.

For newly formed business entity including, corporations, partnerships and sole proprietors or a Contractor teaming arrangement you shall state below in the Client Column that you were not the "Contractor" for the named project and should state whose past experience on the named project is relevant to that reference.

The Town of Pelham may NOT be used as a reference

Reference Form

Minimum three (3) References

Line Item	Company Name *	Contact Name *	Telephone # *	email *	Date Work Undertaken: (eg: May 2018) *	Nature of Assignment *	
1							*
2							*
3							*
4							
5							

Subcontractors

The Bidder shall state all Subcontractor(s) and type of Work proposed to be used for this project. Bidders shall not indicate "TBD" (To Be Determined) or "TBA" (To Be Announced) or similar wording and shall not indicate multiple choices of Subcontractor names for any Subcontractor category in their list of Subcontractors.

List of Subcontractors

The tenderer shall list hereunder the names of all sub-contractors intended to be used in the execution of this work subject to the approval of the Contract Administrator.

All work not performed directly by the Contractor's forces shall be included in this list. Unless this list is properly completed, the Tender may be disqualified. All changes to this list must be approved by the Contract Administrator.

SUB-TRADE	ADDRESS OF SUB- CONTRACTOR	
		*

Documents

Ensure your Bid submission document(s) conforms to the following:

1. Documents should be in PDF format. Documents should NOT be provided in any other format.

2. Documents should NOT have a security password, as the Owner may not be able to open the file. It is the Bidder's sole responsibility to ensure that their uploaded document(s) are not either defective, corrupted or blank and that the documents

can be opened and viewed by the Owner.

3. The Owner may reject any Bid where any document(s) cannot be opened and viewed by the Owner.

4. If a Bidder requires to upload more than one (1) document, the Bidder should combine the documents into one Zipped file, as per instructions stated below.

If uploading a zipped file containing more than one (1) document, please ensure each document is named, in relation to the submission format item responding to, for example, if responding to the Previous Experience category save the document as "Previous Experience".

• Submission (FULL) One PDF document * (mandatory)

To compress (or zip) a file or folder, follow these steps

- 1. Locate the file or folder that want to compress.
- 2. Right-click the file or folder, point to **Send to**, and then click **Compressed (zipped) folder**.

A new compressed folder is created in the same location. To rename it, right-click the folder, click **Rename**, and then type the new name.

To upload a document follow these steps

- 1. Click on the browse button to locate the file on your computer or network
- 2. Click the upload button

3. After the file has been successfully uploaded, a link to the document will appear on the screen, along with the time/date that it was uploaded.

4. If you have completed your document upload and are ready to finalize your submission then click the "Continue with Submission" button at the bottom of the screen. Or you may save and come back later.

5. If you need to remove the document, click the remove button next to the document name.

Addenda, Terms and Conditions

The Bidder has carefully examined the Bid Call documents and has a clear and comprehensive knowledge of the Goods and/or Services required under the Bid Call Documents. By submitting the Bid, the Bidder agrees and consents to the terms, conditions and provisions of the Bid Call Document, and offers to provide the Goods and/or Services in accordance therewith and the person signing below is authorized to bind the Bidder

The Bidder hereby acknowledges and agrees:

1. To provide all goods, services and construction, as more specifically set out and in accordance with the Owner's Bid Call Document, including but not limited to the scope of work, specifications, drawings, Addenda (if issued by the Owner), the terms and conditions, etc. stated therein, which are expressly acknowledged and made part of this Contract.

2. This Bid is made without any connections, knowledge, comparison of figures or arrangements with any other company, firm or person making a Bid for the same Work and is in all respects fair and without collusion or fraud.

3. I/WE do hereby Bid and offer to enter into a Contract to do all the Work as specified in the Bid Call Document(s) which shall include all costs but not limited to; freight, duty, currency, etc. in accordance with the prices and terms as submitted by the Bidder herein.

4. If I/WE withdraw this Bid before the formal Contract is executed by the Awarded Bidder for the said Work or Ninety (90) Calendar Days, whichever event first occurs, the amount of the Bid Deposit accompanying this Bid (if applicable to this bid) shall be forfeited to the Owner.

5. If the Bid is accepted, I/WE agree to furnish all required documentation, as required by the Bid Call Document(s) within Ten (10) Calendar Days after notification of Award.

6. I/We acknowledge and agree that any issued Addendum/Addenda forms part of the Bid Call Document.

7. I/We, certify that we are in full compliance with Section 6 of Ontario Regulation 429/07, Accessibility Standards for Customer Service, made under the Accessibility for Ontarian's with Disabilities Act, 2005. If requested, we are able to provide written proof that all employees have been trained as required under the act. I/We shall be aware and sensitive to accessibility and disability issues.

8. I/WE (including any related or affiliated entities and any principal thereof) have no unresolved litigation with the Owner.

9. I/WE have read and agree to the WSIB DECLARATION and if awarded, shall submit to the Town at the time of entering into the Contract, and every sixty (60) days thereafter a satisfactory Certificate of Clearance from the Ontario WSIB. Ontario WSIB Clearance Certificates and updates will continue to be retained by the Town. Such clearance certificates shall indicate that the Contractor and any prior approved Sub-Contractor(s) have complied with the requirements of the Ontario WSIB and is (are) in good standing on the books of the Ontario WSIB. The Board may, at any time during the performance or upon completion of the Contract, require a further declaration that all such assessments or compensations have been paid.

10. I/WE have read and agree to the following Agreement to Abide by the Established Process.

The Town is advising each of the Towns Council Members, staff, volunteers and agents that the integrity of the bidding process requires observance of the following ground rules:

1. All communications, including requests for information, between Bidders and the Town must be between only the representatives of the Town and each Bidder, named below, who have been authorized and designated for that particular purpose.

2. Apart from the communications between and among the designated representatives, there must be no communication between the Town and any representative of the Bidder, and no giving of information with respect to the Bid Call Document and the Contract.

3. Any attempt on the part of any Bidder, or any of its employees, agents, contractors, subcontractors or representatives to contact any persons other than the designated representatives with respect to the Bid Call Document, or any action or

violation of the above requirements, will be grounds for disgualification, and the Town may, in its discretion, in addition to any other rights or remedies available at law, reject any potential or actual Bid submitted by that Bidder.

4. Proponents must accept and agree to observe the contents of this "Agreement to Abide by Established Process", inform their staff thereof, and ensure their compliance therewith.

11. I/WE acknowledge and agree that should it be determined that any statements provided in our / my Bid are false or in error, the Town may reject my Bid as non-compliant.

12. I/WE acknowledge and agree to be bound by the General Terms and Conditions

Γ

I/WE agree to be bound by the terms and conditions contained in the Bid Document and any applicable Addenda, and the person named below has the authority to submit this bid on behalf of the Bidder.

Conflict of Interest

Each Bidder shall declare in its Bid any situation that may be a conflict of interest or a potential or perceived conflict of interest of the Proponent, including but not limited to its obligations to the Board, the Contract, the Contract Price or any Customer.

Section 5(1) of the Municipal Conflicts of Interest Act states; where a member, either on his or her own behalf or while acting for, by, with or through another, has any pecuniary interest, direct or indirect, in any matter and is present at a meeting of the council or local board at which the matter is the subject of consideration, the member.

(a) shall, prior to any consideration of the matter at the meeting, disclose the interest and the general nature thereof;

(b) shall not take part in the discussion of, or vote on any question in respect of the matter; and

(c) shall not attempt in any way whether before, during or after the meeting to influence the voting on any such question.

The Town has a fiduciary responsibility to ensure that such behaviour is not permitted and reserves the right to remove from eligibility, the name of any Bidder for failure to comply with the above conditions. The Bidder declares that this Bid is not made in connection with any other Bidder submitting an offer for the same commodity/service and is, in all respects, fair and without collusion or fraud. Based on the above, do you believe your firm may be in possible conflict of interest? Please check appropriate answer

Yes No

The Bidder acknowledges and agrees that the addendum/addenda below form part of the Bid Document. The Bidder acknowledges receipt of the addenda and the price(s) quoted incorporate such addenda.

Please check the box in the column "I have reviewed this addendum" below to acknowledge each of the addenda.

File Name	I have reviewed the below addendum and attachments (if applicable)	Pages
There have not been any addenda issued for this bid.		

mere have not been any addenda issued for this bid.



Subject: Lease Agreement with Fonthill Platform Tennis Club

Recommendation:

BE IT RESOLVED THAT Council receive Report #2023-0105 – Lease Agreement with Fonthill Platform Tennis Club, for information;

AND THAT Council approve the proposed lease agreement between the Town of Pelham and Fonthill Platform Tennis Club;

AND THAT Council approve the by-law authorizing the Town of Pelham to enter into the said lease agreement and further authorizing the Mayor and the Town Clerk to sign the lease agreement.

Background:

On March 22, 2023, Council provided direction to staff to negotiate a lease agreement with Fonthill Platform Tennis Club for the lands and clubhouse facility at 1120 Haist Street. The Town Solicitor has coordinated with the President of the Club to prepare the attached draft agreement agreed to by the parties, subject to Council approval.

Analysis:

Fonthill Platform Tennis Club is a longstanding community organization that provides a valuable recreational opportunity in the Town. It has been located at 1120 Haist Street since 1988. There was previously a written lease agreement between the Town and the Club, which was not renewed or replaced when it expired; however, the Club has continued to operate on Town property at 1120 Haist Street. It is in the best interests of both the Club and the Town to formalize their arrangements through a written lease. In addition, the Club intends to apply to the Ontario Trillium Foundation for funding to make improvements to the facility and has been advised that there must be a lease of at least five years between the Club and the Town for this application to be successful. The Club requested a longer lease term and Council was supportive of a term of more than five years. Consequently, the attached draft lease contemplates an initial term of seven years with an option to renew for a further three years upon mutual agreement. This will allow the Club to pursue Ontario Trillium Foundation funding in the short term and provide flexibility to modify the lease in the long term if required.

Financial Considerations:

The Town will lease the premises to the Club for the nominal amount of \$1.00 per year and thus will not derive a direct financial benefit from entering into the proposed lease agreement. However, the proposed lease will facilitate the Club's application for facility improvement funding from the Ontario Trillium Foundation which, if successful, will benefit the Town as the facility owner.

Alternatives Reviewed:

Council could provide direction not to enter into a lease agreement with the Club. Staff do not recommend this option as the certainty of a formal written lease agreement is in the best interests of both the Club and the Town.

Council could also provide direction to make changes to the proposed lease agreement. Staff do not recommend this option as (i) the draft lease has been agreed to by the Club; and (ii) the lease must be signed as soon as possible to facilitate the Club's application to the Ontario Trillium Foundation.

Strategic Plan Relationship: Community Development and Growth

Fonthill Platform Tennis Club offers an outdoor recreational activity that supports a high quality of life for Town residents. The Club operates on Town property and intends to make improvements to facilities on the premises. The proposed lease promotes the strategic use of Town lands for the next seven to ten years by supporting the Club's current operations and future plans.

Consultation:

Terry Molkoski, President, Fonthill Platform Tennis Club

Town of Pelham Senior Leadership Team

Other Pertinent Reports/Attachments:

Draft Lease Agreement

Prepared and Recommended by:

Jennifer Stirton, BSc(Hons), LL.B. Town Solicitor

Approved and Submitted by:

David Cribbs, BA, MA, JD, MPA Chief Administrative Officer



THIS LEASE dated this _____ day of _____, 2023 and made in pursuance of the *Short Forms of Leases Act*, R.S.O. 1990, c. S.11 ("the Lease")

BETWEEN:

THE CORPORATION OF THE TOWN OF PELHAM

("the Town")

- and -

FONTHILL PLATFORM TENNIS CLUB

("the Club")

WHEREAS the Town is the owner of a property in the Town of Pelham municipally known as 1120 Haist Street and as illustrated in Schedule "A", including all buildings and structures located thereon ("the Premises"); and

WHEREAS the Club desires to lease the Premises for the purpose of operating a platform tennis facility; and

WHEREAS the Town desires to lease the Premises to the Club for the said purpose, subject to the terms and conditions contained herein; and

WHEREAS the Club is a corporation, duly incorporated pursuant to the laws of Ontario, and has properly authorized the entering into of this Lease; and

WHEREAS By-law No. XX-2023 was passed by the Council of the Town on [date], authorizing the Town to enter into this Lease;

NOW THEREFORE, IN CONSIDERATION of the covenants and agreements contained herein, the Town demises and leases unto the Club, and the Club leases from the Town, the Premises on the following terms:

1. TERM

1.1. The Town demises and leases the Premises to the Club for a term of seven (7) years commencing on the first (1st) day of January 2023 and ending on the thirty-first (31st) day of December 2029 ("the Term"), unless terminated earlier pursuant to the provisions of this Lease.

- 1.2. The Town and the Club shall consider a renewal of this Lease for a further term of three (3) years, on the same or different terms as contained herein, and subject to the following conditions:
 - (a) not less than six (6) months and not more than eighteen (18) months prior to the end of the Term, the Club shall provide written notice to the Town of its desire to renew this Lease;
 - (b) within thirty (30) days of receiving such notice, the Town shall advise the Club as to whether it is prepared to enter into discussions to renew the Lease;
 - (c) the terms and conditions of the Lease renewal shall be mutually agreeable to the Town and the Club; and
 - (d) the renewal of the Lease shall be approved by the Council of the Town.
- 1.3. If the Club remains in possession of the Premises after the end of the Term or an earlier termination as provided for in this Lease, there shall be no tacit renewal of this Lease notwithstanding any statutory provision to the contrary.
- 1.4. If the Town consented in writing to the overholding described in subsection 1.3, then the Club shall be deemed to be occupying the Premises as a monthly tenant and such tenancy may be terminated by either the Town or the Club on thirty (30) days' notice and otherwise on the same terms as contained herein. Any acceptance by the Town of the Lease Fee or other consideration shall not imply consent to any overholding by the Club.
- 1.5. Nothing in this Lease shall limit the liability of the Club in damages or otherwise for any overholding and the Club shall forthwith indemnify and hold the Town harmless from and against any and all claims incurred by the Town as a result of the Club overholding after the expiry of the Term or after earlier termination as provided for in this Lease.

2. LEASED PREMISES

- 2.1. The Premises are illustrated in Schedule "A", which is appended hereto and forms part of this Lease.
- 2.2. During the Term of this Lease, the Club shall be entitled to the use and enjoyment of the Premises as follows:
 - (a) the Club shall have exclusive use of the building and the two (2) enclosed platform tennis court structures on the Premises as shown in Schedule "A"; and
 - (b) the Club shall have non-exclusive use of the remainder of the Premises as shown in Schedule "A", including but not limited to the lands surrounding the building and the enclosed platform tennis court structures, and the parking area at the Premises.

3. AMOUNTS PAYABLE BY THE CLUB

- 3.1. The Club shall pay to the Town annual rent in the amount of one dollar (\$1.00) plus any applicable taxes, payable in advance and in full on or before the first (1st) day of January in each year of the Term ("the Lease Fee").
- 3.2. The Club shall pay all utility charges, including any penalties or interest that may accrue, for electricity, water, gas and any other services or utilities supplied to the Premises at any time during the Term.

- 3.3. The Club shall pay all taxes assessed to the Premises and/or the business or operations of the Club, including but not limited to municipal property taxes.
- 3.4. All sums payable by the Club to the Town under this Lease for rent, municipal taxes or otherwise, that remain unpaid over ninety (90) days from the date on which the payment is due, shall bear interest in accordance with the Fees and Charges By-law of the Town.

4. USE AND CONDITION OF THE LEASED PREMISES

- 4.1. The Club covenants and agrees that it shall use the Premises solely to operate a platform tennis facility and for no other purpose.
- 4.2. The Club shall be permitted to provide food and refreshments to club members and other persons using its facilities but shall not be permitted at any time to operate a concession at the Premises, provided that all applicable public health and fire safety requirements are met.
- 4.3. Subject to the terms and conditions of this Lease, the Club accepts the Premises in the condition existing on the first day of the Term.
- 4.4. Other than as expressly set out in this Lease, the Town shall have no responsibility for any repair, renovation or maintenance of the Premises or of any equipment or fixtures contained therein.
- 4.5. Other than as expressly set out in this Lease, the Club shall undertake no improvements, alterations or works at the Premises without first obtaining written consent from the Town, which shall not be unreasonably withheld.
- 4.6. In addition to the obtaining the consent of the Town as required by subsection 4.5, the Club shall obtain all permits, consents, approvals and inspections required by law for any repairs, renovations, maintenance, improvements, alterations or works undertaken at the Premises.
- 4.7. Upon termination of this Lease by expiry or otherwise, the Club shall not be entitled to reimbursement by the Town for any costs incurred by the Club relating to any alterations, improvements or works it may undertake at the Premises either by virtue of its obligations under this Lease or of its own initiative.
- 4.8. The Town shall have no responsibility for damage to the chattels, fixtures, improvements, alterations or works of the Club at the Premises during the Term except to the extent that it is caused by the conduct of the Town or any person for whom it is in law responsible.

5. OBLIGATIONS OF THE TOWN

- 5.1. The Town covenants and agrees:
 - (a) to promptly review and consider requests for consent to improvements, alterations or works submitted by the Club under subsection 4.5;
 - (b) to complete periodic snow removal at the parking lot of the Premises in accordance with Town policies and procedures for snow removal in municipal parks;

- (c) to complete periodic grass cutting on lands surrounding the building and enclosed platform tennis court structures in accordance with Town policies and procedures for grass cutting in municipal parks; and
- (d) subject to subsection 2.2, to provide the Club with exclusive use and quiet enjoyment of the Premises during the Term.

6. OBLIGATIONS OF THE CLUB

- 6.1. The Club covenants and agrees:
 - (a) to pay the Lease Fee, utility charges and taxes in accordance with section 3;
 - (b) to operate and manage the platform tennis facility at the Premises;
 - (c) to operate its programs and activities at the Premises in such a manner that they are available to any resident of the Town who satisfies the ordinary requirements of the Club for membership and use of its facilities;
 - (d) to ensure that all outside activities at the Premises cease no later than 11:00 p.m. and that all indoor activities at the Premises cease no later than 1:00 a.m.;
 - (e) to comply with all Town by-laws applicable to its operations including but not limited to the Noise Control By-law;
 - (f) to undertake reasonable and necessary routine maintenance and minor repairs of the Premises during the Term, which shall not require the consent of the Town under subsection 4.5 provided that no permits are required for same;
 - (g) at the end of the Term, to remove from the Premises any fixtures, goods or chattels belonging to the Club unless the Town and the Club agree that certain fixtures, goods and/or chattels may remain;
 - (h) to repair any damage caused by the removal of its fixtures, goods and/or chattels and to leave the Premises in a neat and clean condition, all to the satisfaction of the Town;
 - (i) to maintain insurance coverage in accordance with section 7; and
 - (j) not to assign this Lease or any part of it without the Town's prior written approval.

7. INSURANCE AND INDEMNITY

- 7.1. During the Term, the Club shall maintain in full force and effect one or more policies of commercial general liability insurance with aggregate limits of not less than five million dollars (\$5,000,000.00) per occurrence. The policy or policies shall include coverage for bodily injury, death and property damage and shall contain cross-liability and severability of interest clauses. The policy or policies shall name the Town as an additional insured with respect to this Lease and shall contain an undertaking by the insurer(s) to give thirty (30) days prior written notice to the Town of any material change to the coverages and/or the cancellation or expiry of the said policy or policies. The Club shall provide the Town with proof of such insurance upon request.
- 7.2. The Town and the Club shall each indemnify and save harmless the other and its officers, employees, volunteers and agents from and against all losses, claims, actions, demands and liabilities for personal injury or property damage arising as a direct or indirect result of this Lease, where such claims are caused wholly or in part by the negligence of the Town or the Club, as the case may be, or by anyone for whom it is in law responsible.

8. DEFAULT AND TERMINATION

- 8.1. This Lease is conditional upon the Club obtaining all permits, consents, approvals and funding necessary to undertake any improvements, alterations or works at the Premises and to operate at the Premises. If the Club is unable to obtain any such permit, consent, approval or funding, the Town shall be entitled, in its sole discretion, to terminate this Lease without further liability.
- 8.2. Failure to comply with any of the terms and conditions of this Lease shall be just cause for its termination. If either of the Town or the Club defaults in the performance of any of its obligations under this Lease, the non-defaulting party shall give written notice of the default and shall provide thirty (30) days to remedy it, failing which the non-defaulting party may terminate this Lease by written notice.
- 8.3. The Town and the Club shall each have the option to terminate this Lease at any time by giving eighteen (18) months' written notice to the other party. Upon such termination, the Club shall promptly remove any fixtures, equipment, goods or chattels it may have installed or placed in or upon the Premises and shall repair any damage to the Premises resulting from such removal.
- 8.4. This Lease may be revised, amended or terminated at any time during the Term by mutual agreement of the Town and the Club. Any such agreement shall be made in writing, signed by the parties, and appended to this Lease.
- 8.5. The termination of this Lease by expiry or otherwise shall not affect the liability of either of the Town or the Club to the other with respect to any obligation under this Lease which has accrued up to the date of such termination but has not been properly satisfied or discharged.

9. DISPUTE RESOLUTION

- 9.1. In case of any dispute between the parties during the Term as to any matter arising under this Lease, the party that disputes the other's position or conduct shall immediately provide written notice to the other party.
- 9.2. Where a notice of dispute is received in accordance with section 9.1, the Town and the Club shall attempt to resolve the dispute through negotiation. If a dispute cannot be resolved through negotiation, it shall be arbitrated in accordance with the *Arbitration Act*, *1991*, S.O. 1991, c. 17. The arbitrator's decision shall be final and binding on the parties.
- 9.3. The Town and the Club shall each bear their own costs associated with the determination of disputes arising under this Lease, including but not limited to legal costs and arbitration costs.

10. GENERAL

10.1. This Lease constitutes the entire agreement between the Town and the Club in relation to the matters set out herein. There are no other representations, warranties, covenants, agreements or terms relating to the subject matter of this Lease. This Lease supersedes any prior discussions, understandings or agreements between the Town and the Club in relation to its subject matter.

- 10.2. The invalidity or unenforceability of any particular term of this Lease shall not limit the validity or enforceability of the remaining terms, each of which is distinct and severable from all other terms of this Lease.
- 10.3. Waiver by a party of any provision of this Lease shall not constitute a waiver in any other instance and any such waiver must be made in writing. Moreover, any delay or failure on the part of either party to exercise or enforce any right, power or remedy conferred by this Lease shall not constitute a waiver of same and shall not operate as a bar to that party exercising or enforcing such right, power or remedy at any subsequent time.
- 10.4. This Lease shall be binding upon and enure to the benefit of the Town and the Club and to their respective successors and permitted assigns.
- 10.5. This Lease shall be governed by and construed in accordance with the laws of the Province of Ontario and laws of Canada applicable therein.
- 10.6. The Town and the Club both represent and warrant that:
 - (a) they are corporations validly subsisting under the laws of the Province of Ontario and have full corporate power and capacity to enter into this Lease and any documents arising from this Lease; and
 - (b) all necessary corporate action has been taken to authorize the entry into, execution and delivery of this Lease.
- 10.7. All communications or notices required under or contemplated by this Lease shall be considered to have been sufficiently given if delivered by hand, sent by registered mail or sent by email to the party to which such notice is directed as set forth below:

If to the Town:	The Corporation of the Town of Pelham P.O. Box 400 20 Pelham Town Square Fonthill ON L0S 1E0
	Attention: Town Clerk
If to the Club:	Fonthill Platform Tennis Club 1120 Haist Street Fonthill ON L0S 1E2
	Attention: Terry Molkoski, President tmolkoski@gmail.com

or such other address of which either party has notified the other, in writing, and any such notice mailed or delivered shall be deemed good and sufficient notice under the terms of the Lease.

10.8. Notices delivered or sent by prepaid registered mail are deemed to be effective on the date of receipt. Notices sent by email are deemed to be effective on the day the email is sent or, if sent after 4:00 p.m., on the following day.

10.9. This Lease may be signed in counterpart, each of which is an original, and all of which taken together constitute one single document. Counterparts may be executed on different dates and in original or electronic form and may be exchanged by way of mail or PDF file delivered by email.

IN WITNESS WHEREOF the parties have executed this Lease by their authorized representatives and agree to be bound thereby as of the first day of the Term.

By: Name: Title:
By: Name: Title:
I/We have authority to bind the Corporation.
Date:
FONTHILL PLATFORM TENNIS CLUB
Ву:
Name: Title:
Name:
Name: Title: By: Name:
Name: Title: By: Name: Title:

THE CORPORATION OF THE TOWN OF PELHAM



SCHEDULE "A"



0 12.5 25 50 75 100 Meters



Recreation, Culture and Wellness Department

Wednesday, April 19, 2023

Subject: Pelham Summerfest 2023

Recommendation:

BE IT RESOLVED THAT Council receive Report #2023-0098 – Pelham Summerfest 2023, for information;

AND THAT the Clerk be authorized to make an application for a Special Occasion Permit for Pelham Summerfest on Thursday, July 13, 2023, Friday, July 14, 2023, Saturday, July 15, 2023 and Sunday July 16, 2023;

AND THAT staff be directed to bring the necessary festival licensing by-laws for Council's consideration at the next regular meeting of Council;

AND THAT Council authorize a variance to the Town of Pelham Bylaw No. 4454(2022), being a By-law to regulate and control noise in the Town of Pelham for the purpose of facilitating the Summerfest musical venues being conducted as part of the event from 4:00 pm Friday, July 14, 2023, until 1:00 am on Sunday, July 16, 2023;

AND THAT Council authorize the following road closures:

Pelham Town Square from the rear entrance to the Fonthill Plaza to 60 m west from 4:00 pm Thursday, July 13, 2023 to 10:00 pm of the same day;

Pelham Town Square entrance off Pelham Street from 7:00 am Friday, July 14, 2023 to noon, Monday, July 17, 2023;

Pelham Street from Regional Road #20 (Hwy 20) to the south property line of 1419 Pelham Street from 7:00 am Friday, July 14, 2023 to 12:00 pm on Sunday, July 16, 2023; Pelham Street from the south property line of 1419 Pelham Street to College Street from 7:00 am Saturday, July 15, 2023, to 6:00 pm on the same day;

Pelham Town Square from 150 m west of Station Street to its termination at the Fonthill Plaza entrance from 7:00 am Sunday, July 16, 2023 to 5:00 pm of the same day.

Background:

Summerfest has been held annually on the third weekend in July since 2011. This 4-day celebration has become Pelham's signature event and has been recognized as one of the Top 100 Festivals or Events in Ontario since 2015. It has become a homecoming of sorts, seeing many former residents return, families reunite and guests and new residents introduced to our great community.

Summerfest 2023 will mark the 11_{th} year, taking place from Thursday, July 13 until Sunday, July 16, 2023, following the same award-winning line up as past years.

Authorizations & Designations:

Special Occasion Permit, Festival Licensing and Agreements with Licensed Establishments

On behalf of the festival, the Town will make application for a Special Occasion Permit with festival licensing from the Alcohol and Gaming Commission of Ontario (AGCO). In order to do so, the event must be designated as "Municipally Significant". This designation was last approved in Report #2022-0244 -Recreation. Festival licensing permits patrons to move freely between areas with a single serving of alcohol. The festival area will be fenced with monitored access points.

In accordance with AGCO regulations, the Town of Pelham must enter into an agreement with those licensed establishments located within the festival area that wish to participate in the festival licensing to ensure that there is no unreasonable risk of non-compliance with the Act and Regulations. 1856 Social (operating as Hillfire SMK & BBQ), The Butcher and Banker Fonthill, Kame & Kettle and Gelato Village have indicated that they wish to participate and will request an outdoor patio with liquor licence extensions. The agreements include specifics regarding hours of operation, controlled entrances/exits, patio aesthetics, decorative fencing, etc. The goal is to establish and maintain a family friendly atmosphere. Certificates of Insurance naming the Town of Pelham as an additional insured must be supplied by all participating establishments.

Authorized Variance to By-law No. 4454(2022)

The Summerfest working group is requesting a variance to the Town of Pelham Bylaw No. 4454(2022), being a By-law to regulate and control noise for the purpose of facilitating the Summerfest musical venues being conducted as part of the event from 4 pm until 11 pm on Friday, July 14 and from 10 am until midnight on Saturday, July 15, 2023.

Road Closures

The following road closures are requested:

Pelham Town Square from the rear entrance to the Fonthill Plaza to 60 m west from 4:00 pm Thursday, July 13, 2023 to 10:00 pm of the same day;

Pelham Town Square entrance off Pelham Street from 7:00 am Friday, July 14, 2023 to noon, Monday, July 17, 2023;

Pelham Street from Regional Road #20 (Hwy 20) to the south property line of 1419 Pelham Street from 7:00 am Friday, July 14, 2023 to 12:00 pm on Sunday, July 16, 2023;

Pelham Street from the south property line of 1419 Pelham Street to College Street from 7:00 am Saturday, July 15, 2023 to 6:00 pm on the same day;

Pelham Town Square from 150 m west of Station Street to its termination at the Fonthill Plaza entrance from 7:00 am Sunday, July 16, 2023 to 5:00 pm of the same day.

Financial Considerations:

The 2023 Budget estimates \$182,000 in revenue and expenditures of \$176,000. Of that revenue, \$50,000 in donations to the event is anticipated. The Town's contribution would be \$15,000.

Alternatives Reviewed:

No other alternatives were reviewed

Strategic Plan Relationship: Community Development and Growth

Pelham Summerfest provides a great opportunity for residents, friends and neighbours to get together in a public setting to enjoy many different activities and events. It has become somewhat of a homecoming event with many adult children of current residents make a point of coming home for the Summerfest weekend to see family and catch up with friends. New residents are able to experience the community, find out about cultural assets and local businesses and meet other residents.

Summerfest focuses on sourcing vendors, entertainers, supplies and materials locally.

Consultation:

Pelham Summerfest Working Group AGCO

Other Pertinent Reports/Attachments:

2023 Road Closures

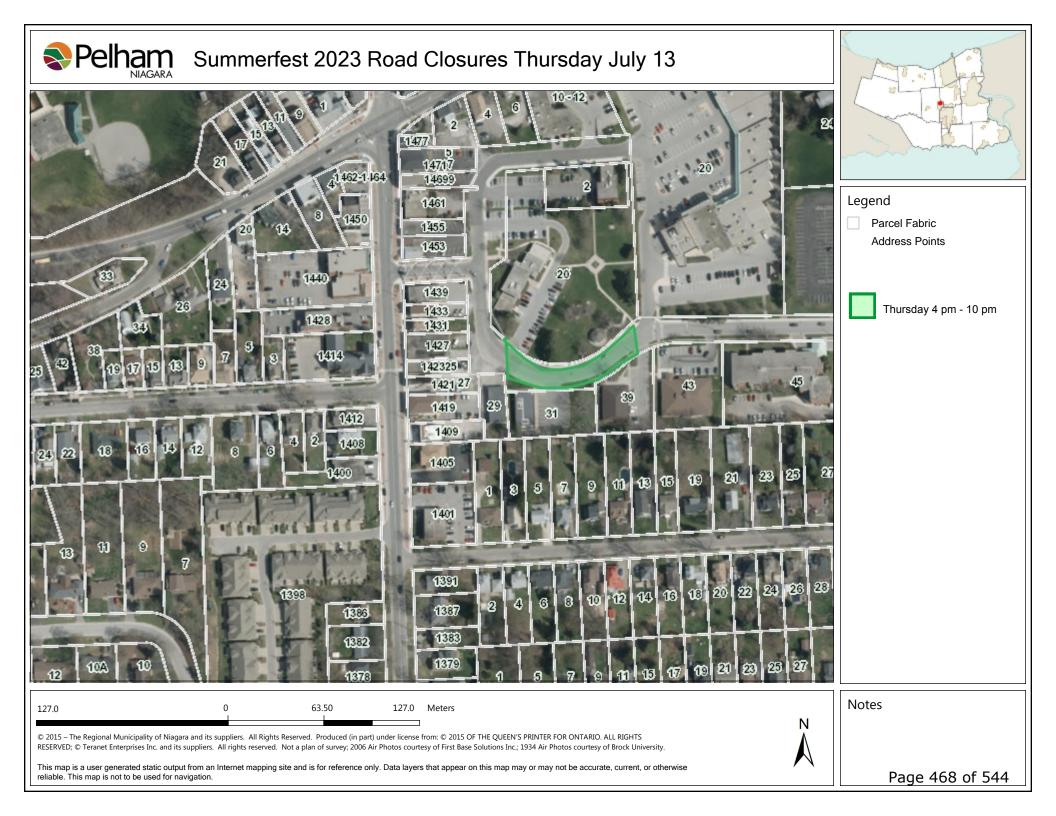
Prepared and Recommended by:

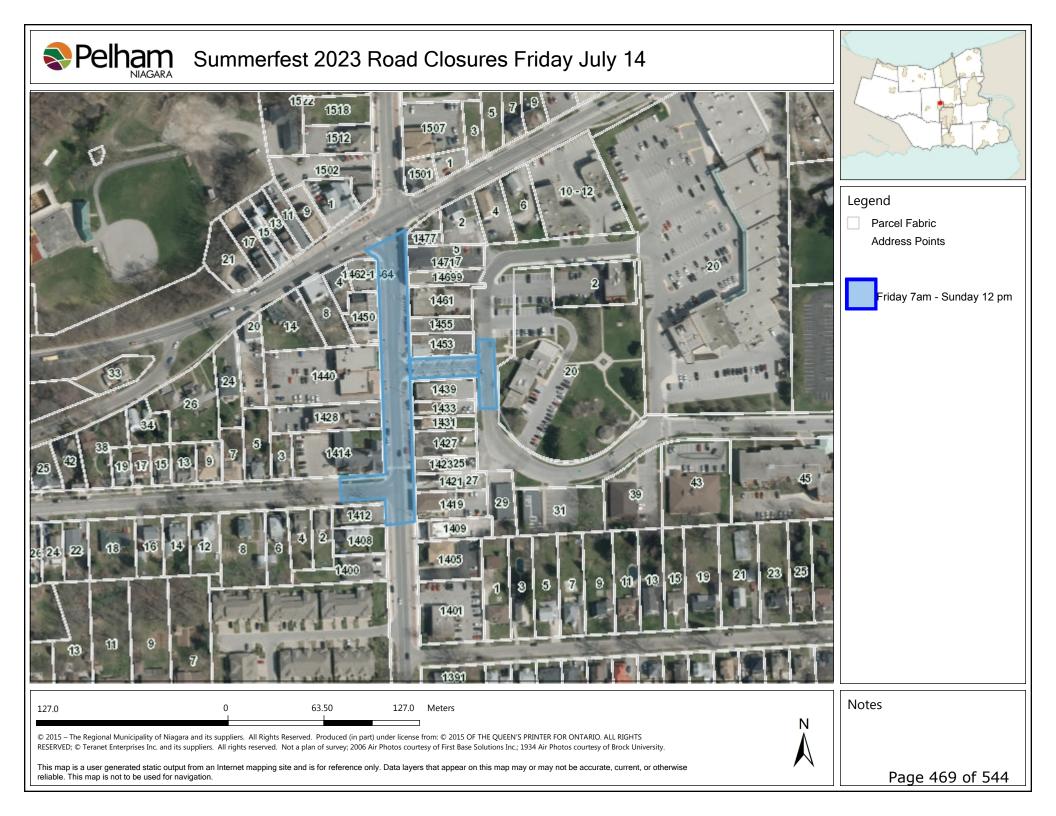
Jodi Shishkov, Festivals & Events Programmer

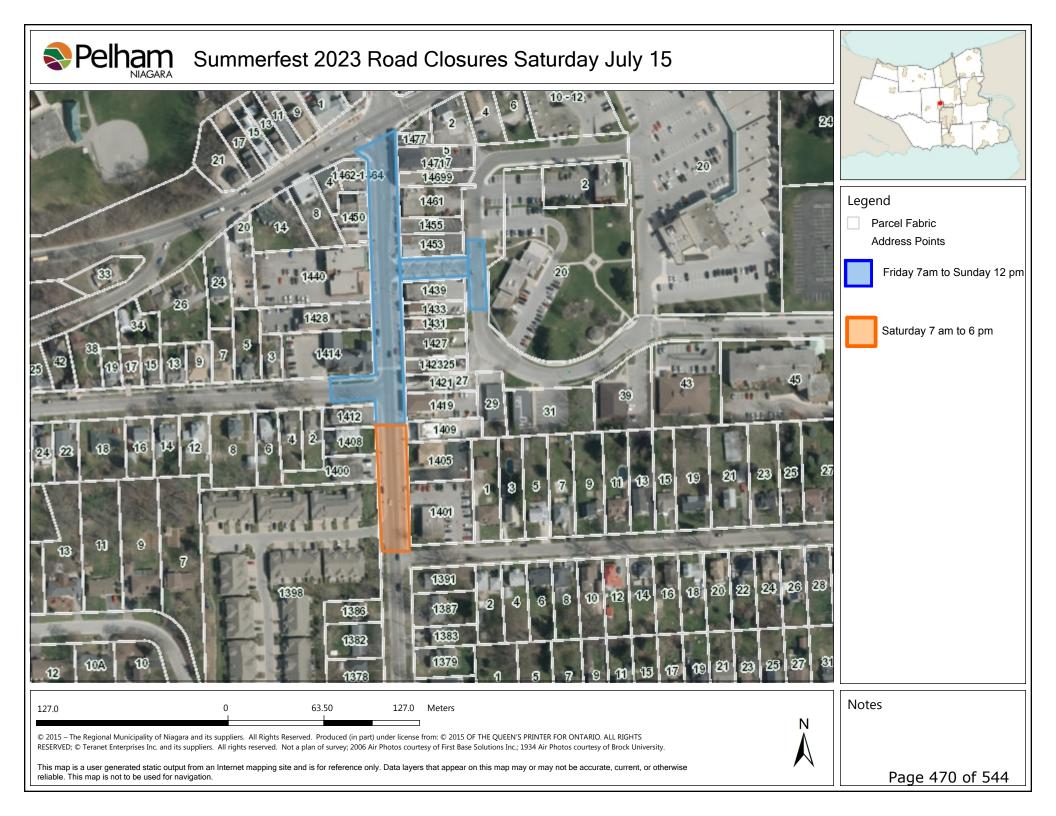
Vickie vanRavenswaay, RRFA Director of Recreation, Culture and Wellness

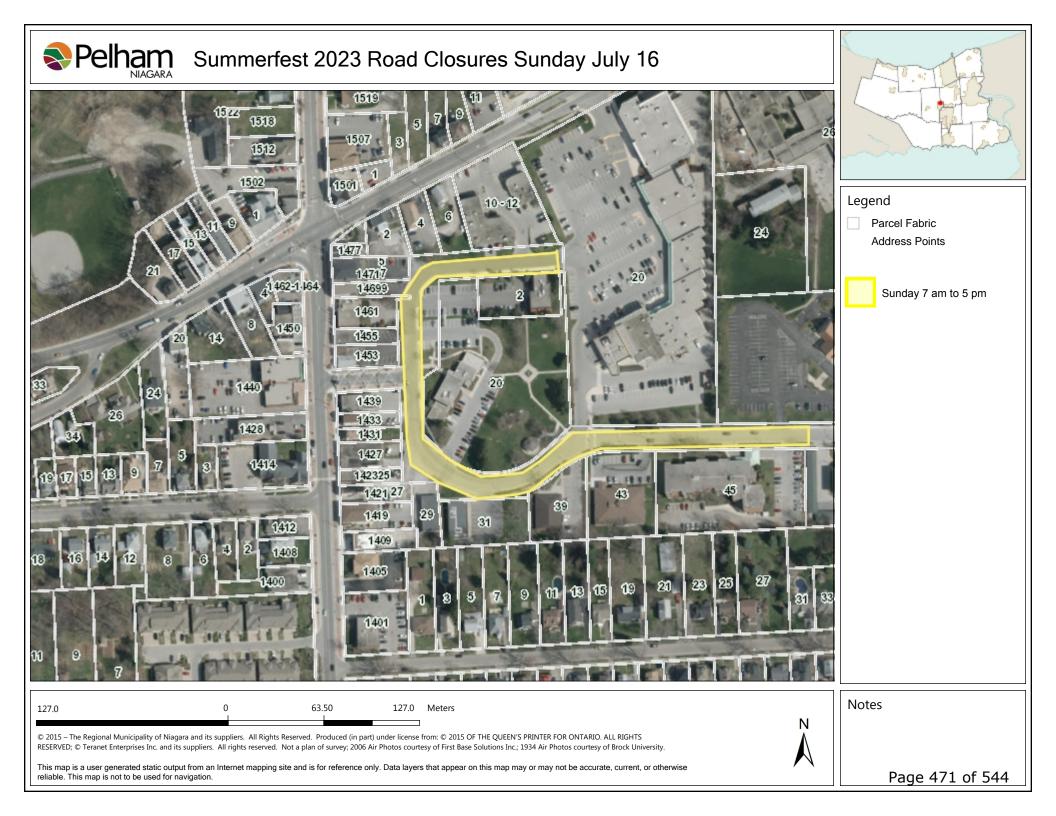
Prepared and Submitted by:

David Cribbs, BA, MA, JD, MPA Chief Administrative Officer











Subject: 2023 Review of Delegation of Powers and Duties – Administrative Authority By-Law Update

Recommendation:

BE IT RESOLVED THAT Council receive Report #2023-0093 – 2023 Review of Delegation of Powers and Duties – Administrative Authority By-law Update, for information;

AND THAT Council consider the draft amendments to the Administrative Authority By-Law to delegate additional authority to various municipal staff positions;

AND THAT the Clerk be directed to present the By-law for Council approval at the next regular meeting.

Background:

Under the *Municipal Act*, 2001, Council has the general authority to delegate its powers under this Act or any Act with jurisdiction to a person or body to exercise its powers or duties.

On January 11, 2021, Council passed By-law No. 4307(2021) being an Administrative Authority By-law, delegating certain powers and duties to staff as outlined in the attached schedules.

The Administrative Authority By-law has allowed for many routine matters to be efficiently and effectively handled without having to bring the matters before Council. This has allowed Administration to be nimbler and act in time sensitive matters permitting quicker and better service delivery. While the existing bylaw has generally been successful, staff have identified further matters which are of routine nature and/or of very limited community or political level of interest and which therefore are good candidates for delegation.

Analysis:

Since the passing of this By-law, staff have identified several additional municipal tasks and functions, which could benefit from delegated authority. In an effort to

find continuous improvements in the services the Town delivers, staff once again have reviewed and identified areas where further delegation of Council's power would enhance customer service. The new schedule attached, as Appendix A, identifies and recommends including additional delegated powers and duties.

Financial Considerations:

None.

Alternatives Reviewed:

Council has the authority to not approve the additional requested delegated powers and duties as outlined in the attached appendix. However, this will continue to lead to administrative matters being brought to Council's agenda, with business that can be handled more efficiently at the staff level.

Council has the authority to amend the requested delegated powers and duties as outlined in the attached appendix. In preparing this document staff members were considered in review of the list. Staff believe that the requests and the additional authority requested will lead to more effective Council agendas, and improve customer service, while still recognizing the unchallenged role of Council as the governing body of the Town.

Strategic Plan Relationship: Strong Organization

Delegating powers and duties to staff strengthens the organization's ability to streamline routine corporate business and improve customer service, while respecting Council's Role as the elected representatives of the Town.

Consultation:

Each member of the Senior Leadership Team was consulted.

Other Pertinent Reports/Attachments:

Appendix A – Recommended Additional Delegation of Powers and Duties

Prepared and Recommended by:

William Tigert, Town Clerk

Prepared and Submitted by:

David Cribbs, BA, MA, JD, MPA Chief Administrative Officer

Schedule A – Delegation of Powers and Duties

Chief Administrative Officer

#	Delegation	Delegate(s)	Legislative Authority	Conditions/ Restrictions
1.	Approve execution of agreements for acquisition of temporary and permanent easements as required for approved capital projects or other municipal purposes, together with such other documents as may be required in connection with such acquisitions provided value of consideration does not exceed \$100,000	Chief Administrative Officer	Municipal Act, 2001, S.O. 2001, C. 25, as amended, s 23.1 and 270(1)	Terms and conditions of such agreements and related documents must be acceptable to Town Solicitor.
2.	Approve execution of agreements for disposition of temporary and permanent easements as required for approved capital projects or other municipal purposes, together with such other documents as may be required in connection with such disposition acquisitions, provided the value of consideration does not exceed \$100,000	Chief Administrative Officer	Municipal Act, 2001, S.O. 2001, C. 25, as amended, s 23.1 and 270(1)	Terms and conditions of such agreements and related documents must be acceptable to Town Solicitor.
3.	Approve execution of agreements for acquisition of fee simple lands as required for municipal purposes, together with such other documents as may be required in connection with such acquisitions provided value of consideration does not exceed \$100,000	Chief Administrative Officer	Municipal Act, 2001, S.O. 2001, C. 25, as amended, s 23.1 and 270(1)	Terms and conditions of such agreements and related documents must be acceptable to Town Solicitor.
4.	Approve execution of agreements for disposition of fee simple lands as required for municipal purposes, together with such other documents as may be required in connection with such acquisitions provided value of consideration does not exceed \$100,000	Chief Administrative Officer	Municipal Act, 2001, S.O. 2001, C. 25, as amended, s 23.1 and 270(1)	Terms and conditions of such agreements and related documents must be acceptable to Town Solicitor.
5.	Develop, approve and implement administrative policies, procedures and practices in the exercise of authority under section 229 of the Act.	Chief Administrative Officer	Municipal Act, 2001, S.O. 2001, C. 25, as amended, s 23.1	Consultation and/or Delegation to Appropriate Department Director
6.	Pay Equity Adjustments, Grid Movement Approvals	Chief Administrative Officer; HR Specialist; Director	Municipal Act, 2001, S.O. 2001, C. 25, as amended, s 23.1	Consultation with Human Resources Specialist and Appropriate Department Director
7.	Negotiate and settle claims against the municipality within insurance deductible limit	Chief Administrative Officer; Town Solicitor	Municipal Act, 2001, S.O. 2001, C. 25, as amended, s 23.1	Consultation with Appropriate Department Director
8.	Responsible for legislative requirements under	Chief Administrative	Occupational Health and	

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	the Ontario Health and Safety Act legislation.	Officer; Director responsible for Health and Safety Committee; Human Resources; CEMC and/or Emergency Operations Committee	<i>Safety Act,</i> R.S.O. 1990, c. 0.1	
9.	Carry out annual performance evaluation of each Director and advise Council on performance and recommend to Council any appointment, promotion, demotion, suspension or dismissal of Directors reporting to him/her.	Chief Administrative Officer	Municipal Act, 2001, S.O. 2001, C. 25, as amended, s 23.1	
10.	Appoint, employ, promote, demote, suspend, discipline and dismiss all employees below the rank of Director of the Corporation.	Chief Administrative Officer	<i>Municipal Act, 2001</i> , S.O. 2001, C. 25, as amended, s 23.1	
11.	Authority to approve temporary staff positions (2 year duration or less) or to adapt existing part- time positions to full-time positions, or the reverse, provided that: a) Funds are available within current budgetary allocations; b) All expenditures deemed essential for purpose of achieving objectives of the Town; c) Alternate methods of achieving objectives have been evaluated and proven more costly or less effective than staffing a position;	Chief Administrative Officer	Municipal Act, 2001, S.O. 2001, C. 25, as amended, s 23.1 and 270(1)	
12.	Authority to delegate authority when positions identified in the By-law are changed no longer exist.	Chief Administrative Officer	Municipal Act, 2001, S.O. 2001, C. 25, as amended, s 23.1 and 270(1)	
13.	Declaration of Internal Conflicts relating to Human Resources, Staff Code of Conduct, and Legal Issues	Chief Administrative Officer		
14.	Approval of all emergency expenditures deemed essential to mitigate the emergency incident.	Chief Administrative Officer; Consultation with Community Emergency Management Co- Ordinator and Treasurer.		
15.	Approve execution of leases and licenses and agreements to lease and license real property provided the value of consideration does not exceed \$100,000.00 \$10,000.00.	Chief Administrative Officer; Town Clerk	Municipal Act, 2001, S.O. 2001, C. 25, as amended, s23.1 and 270(1)	Terms and conditions of such agreements and related documents must be acceptable to Town Solicitor
16.	Approve execution of Agreements and Amending	Chief Administrative	Municipal Act, 2001, S.O.	Terms and conditions of such

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	Agreements for the acquisition of goods and services or other Town activities, works or services that are ordinary to the business of the Town provided the value of consideration does not exceed \$100,000.00 \$10,000.00	Officer; Town Clerk	2001, C. 25, as amended, s23.1 and 270(1)	agreements and related documents must be acceptable to Town Solicitor
17.	Reject bids / tenders based on criteria as stipulated in the Procurement Policy – Purchasing Goods and Services S402-00, as amended and on supplier's past performance			Pursuant and based on criteria as stipulated in the Procurement Policy – Purchasing Goods and Services S402-00, as amended and on suppliers past performance

Schedule B – Delegation of Powers and Duties

Town Clerk

#	Delegation	Delegate(s)	Legislative Authority	Conditions/ Restrictions
1.	Signing Authority for Agreements Under By-law and/or Pursuant to Tender Awards	Mayor Town Clerk		All Agreements Authorized by Municipal By-law; Affix Corporate Seal; Two Signatures Required Note: Deputy Mayor in Absence of Mayor; Deputy Clerk or Chief Administrative Officer in Absence of Clerk.
2.	Returning Officer, Responsible for Administration of all Municipal General Elections and All By- Elections for the Town of Pelham	Town Clerk	<i>Municipal Elections Act,</i> 1996, S.O. 1996, c. 32	Prepare and update forms and written procedures for all components of conducting an election.
3.	Designate an event as event of municipal significance for purpose of prescribing it as a special event occasion where an application has been made.	Town Clerk	<i>Liquor Licence Act</i> R.S.O. 1990, c. L. 19	Compliance with all applicable AGCO Regulations; Consultation with applicable Town and/or Regional approvals for licensing.
4.	Issuance of "Letters of No Objection" for temporary liquor licence extensions.	Town Clerk	<i>Liquor Licence Act</i> R.S.O. 1990, c. L. 19	Consultation with applicable Town Departments.
5.	Liquor Licence Municipal Clearance (Wet/Dry Status)	Town Clerk	<i>Liquor Licence Act</i> R.S.O. 1990, c. L. 19	Issue subject to municipal clearance by all Agencies/ Departments as per AGCO Regulations
6.	Issuance of "Tag Day" approvals for non-profit organizations.	Town Clerk		Repeals Policy S203-17
7.	Issuance of Lottery Licenses	Town Clerk; Deputy Clerk	Criminal Code (Canada) Order-in-Council 1413/08 Gaming Control Act, 1992	Compliance with all applicable AGCO Regulations. Associated Policy Defines Criteria, S203-05.
8.	Records Management Oversight	Town Clerk	Municipal Act, 2001, S.O. 2001, C. 25, as amended, s. 254	By-law #3900(2017) or successor and associated Retention Schedule
9.	Freedom of Information and MFIPPA Co-ordinator; All powers and duties under said Act	Town Clerk; Deputy Clerk; Chief Administrative Officer and Town Solicitor	Municipal Freedom of Information and Protection of Privacy Act, R.S.O. 1990 as amended.	Associated Policy.
10.	By Virtue of Office: Division Registrar Commissioner of Oaths Marriage Officiant* Licensing of Marriage**	Town Clerk	<i>Commissioner for Taking</i> <i>Affidavits Act</i> , R.S.O. 1990, c. C. 17 <i>Marriage Act</i> , R.S.O. 1990, c. M. 3	Marriage Officiant as Authorized by By- law 14-2023 Licensing of Marriage Authorized by By- law 3577(2015)

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			<i>Vital Statistics Act</i> , R.S.O. 1990, c. V.4	
11.	Municipal Licensing	Town Clerk, Deputy Clerk	Municipal By-laws Authorizing Licensing	Subject to all applicable By-laws and policies; consultation with applicable departmental authorities.
12.	Approval of Proclamations	Town Clerk*	Policy S201-17	*Initial Proclamation or Flag Raising Subject to Council Approval; Subsequent in accordance with Policy S201-17 Proclamations S203-14 – Flag Raising
13.	Approval of Flag Raisings	Town Clerk*	Policy S203-14	*Initial Proclamation or Flag Raising Subject to Council Approval; Subsequent in accordance with Policy S203-14 – Flag Raising
14.	Maintenance of Policy Manual	Town Clerk	Municipal Act, 2001, S.O. 2001, C. 25, as amended, s. 270	Update and maintain Policy Manual upon Council adoption; maintain supporting Procedural Manual
15.	Signing Authority for Transfer Payment Agreements (for grants and other funding being received by the municipality)	Mayor; Town Clerk; Treasurer		Application of Grant and / or Funding having been approved by Council resolution; Two Signatures Required Note: Deputy Mayor in Absence of Mayor; Deputy Clerk or Chief Administrative Officer in Absence of Clerk.
16.	Appoint Non-Statutory Positions (example - By- Law Officer, Weed Inspector, AMPS and Non- AMPS Appeal Officer and AMPS and Non-AMPS Hearing Officer)	Town Clerk		Subject to the approval of the Chief Administrative Officer Note: Deputy Clerk in Absence of Clerk.
17.	Execute Consent to Release Interest in Land, Transfer Release and Abandonment of Easements and Agreements, Inhibiting Orders and associated documents related to the Inhibiting Order and other nominal and routine title documents	Town Clerk; Chief Administrative Officer; Town Solicitor; Mayor		Subject to approval of applicable internal client department (Director of Public Works and/or Director of Community Planning and Development)
18.	Approval of 'Apple Days' and other such minimal fundraising events	Town Clerk; Deputy Clerk		
19.	Apply for special occasions permit on behalf of the Town of Pelham	Town Clerk		
20.	Approval of Special Event Permit Applications	Town Clerk; Deputy Clerk		Subject to approval of applicable internal client departments (Director of Public Works, Director of Community Planning and Development, Fire Chief

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				and Director of By-Law Services) and applicable external agencies Note: Events expecting to receive 1,000 or more attendees requires Council approval
21.	Issuance of Temporary Patio Permits	Town Clerk; Deputy Clerk	Policy 201-04	Subject to all applicable By-laws and policies; consultation with applicable departmental authorities.
22.	Issuance of Itinerant Sellers Licences	Town Clerk; Deputy Clerk		Subject to all applicable By-laws and policies; consultation with applicable departmental authorities.

Schedule C – Delegation of Powers and Duties

Director, Corporate Services (Treasurer)

#	Delegation	Delegate(s)	Legislative Authority	Conditions/ Restrictions
Gen	eral Finance			
1.	Disposition of Land Proceeds Where Not Council Specified for Use of Funds	Treasurer		
2.	Mediate and settle proceedings at the Assessment Review Board and Execute Minutes of Settlement of Assessment Review Board	Treasurer; Consultation with Tax Clerk		MoS must be in best interest of the Town, in opinion of signing officer
3.	Approval of Tax and/or Water Write-Offs and Increases relating to gross manifest errors	Treasurer		
4.	Authority to enter into agreements with the Municipal Property Assessment Corporation (MPAC) for electronic download of property assessment information.	Treasurer Consultation with Town Solicitor for Agreement		
5.	Authority to approve agreements entered into pursuant to the Town of Pelham Development Charge By-law	Treasurer; Consultation with Director of Planning and/or Public Works		
6.	Transfer funds to the appropriate reserves and reserve funds above what is listed in the Reserve and Reserve Fund Policy when funds are available	Treasurer		Note: Deputy Treasurer in Absence of Treasurer
Pur	chasing/Procurement			
1.	Oversight of Procurement of Goods and Services	Treasurer; Purchasing Co-Ordinator	Policy S402-00	
Info	ormation Technology			
1.	Authority to enter into recurring annual agreements with respect to continuance of technical software support services, and or data licence agreements, subject to annual review and budget approval.	Information Technology Manager		Review with Treasurer for budget compliance
2.	Authority to enter into OECM Client/Supplier agreements for IT professional services or technical support, as required, subject to project requirements, budget availability and review by and in a form satisfactory to Town Solicitor; and authority to review, approve and release future software source code developed and owned by the Town to the Open Source community under	Information Technology Manager		Review with Treasurer for budget compliance

appropriate licensing terms, where there is likely		
to be benefit to the corporation, partners and/or		
the community.		

Schedule D – Delegation of Powers and Duties

Director, Community Planning and Development

#	Delegation	Delegate(s)	Legislative Authority	Conditions/ Restrictions
Plan	ning Division			
1.	Condominium Approval and Part Lot Control –	Director of Community Planning & Development	By-law 4274(2020) Or successor thereto	By-law enacted August 24, 2020
2.	Approve Site Plan Control Agreements*	Director of Community Planning & Development	<i>Planning Act, R.S.O.</i> 1990, c. P. 13, s. <u>541(4.0.</u> 1)	*Approval pertains only to Agreements where application is in full compliance with Zoning By-law. Council still has authority over site plan where zoning amendment is required.
3.	Amendments to Site Plan Agreements*	Director of Community Planning & Development	<i>Planning Act, R.S.O.</i> 1990, c. P. 13, s. <u>541(4.0</u> 1)	*Amendment must be in compliance with Zoning By-law.
4.	Final Subdivision Approval and Subdivision Agreements and Approve minor amendments to Subdivision Agreements (non-financial; conditions)	Director of Community Planning & Development	<i>Planning Act, R.S.O.</i> 1990, c. P. 13, s. 5 <u>1.2(14</u>)	<u>Technical clearances of draft plan</u> <u>conditions have been received from all</u> <u>agencies/departments</u>
5.	Extension of Draft Plan Approval	Director of Community Planning & Development	<i>Planning Act,</i> R.S.O. 1990, c. P. 13, s. 51.2	Extensions required when all draft plan conditions have not been fulfilled
6.	Authority for Development Agreements for Temporary Second Dwelling Units	Director of Community Planning & Development	By-law 3614(2015)	Agreements acceptable to Town Solicitor
7.	Removal or Lifting of Holding Zone when conditions have been fulfilled	Director of Community Planning & Development	<i>Planning Act, R.S.O.</i> 1990, c. P. 13, s. 5(1)	Subsequent By-law to Council for Adoption to Repeal Holding Provision
8.	Authority to approve Heritage Permits for alternations, additions or changes to Designated heritage structure	Director of community Planning & Development	<i>Ontario Heritage Act,</i> R.S.O. 1990, c. 0.18	
9.	Approve minor alternations to Designated properties without a Heritage Permit	Director of Community Planning & Development	<i>Ontario Heritage Act,</i> R.S.O. 1990, c. 0.18	
10.	Authority to approve Development Agreements that are a condition of Committee of Adjustment decision	Director of Community Planning & Development	<i>Planning Act,</i> R.S.O. 1990, c. P. 13, s. 51.2(4)	Agreements acceptable to Town Solicitor
11.	Minor Zoning By-law Amendments	Director of Community Planning & Development	Planning Act, R.S.O. 1990, c. P. 13, s. 39(2) and Town Official Plan Policy Part E – Plan Implementation and Administration	Subsequent By-law to Council for Adoption to Repeal Holding Provision

Build	Building Division				
1.	Authority to enter into Limiting Distance Agreements	Chief Building Official	<i>Building Code Act</i> , 1992, S.O 1992, c. 23	Agreements acceptable to Town Solicitor	
2.	Authority to enter into Conditional Building Permit Agreements	Chief Building Official	<i>Building Code Act</i> , 1992, S.O 1992, c. 23	Agreements acceptable to Town Solicitor	

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Schedule E – Delegation of Powers and Duties

Fire Chief/Director of Fire and By-law Services/

Community Emergency Management Co-Ordinator

#	Delegation	Delegate	Legislative Authority	Conditions/ Restrictions
Fire	and Emergency Services Division			
1.	Enter into Fire Service Agreements for provision of fire protection services to lands located outside Pelham or receive services from a fire department located outside of Pelham	Fire Chief/Director of Fire and By-law Services		Agreement acceptable to Town Solicitor. Provide an information report following execution of agreement to Council.
2.	Activate an emergency plan and implement municipal emergency control group notification	CEMC	Emergency Management Plan By-law #4179(2019) or Successor Thereto	Decision to be made in accordance with Town Emergency Plan. Mayor and CAO advised as soon as possible.
3.	Enter into agreements for mutual or automatic aid management operations or emergency response outside scope of Emergency response such as but not limited to CBRNE, Hazmat, confined space, high angle rescue.	Fire Chief/Director of Fire and By-law Services	Emergency Management Plan By-law #4179(2019) or Successor Thereto	Agreement acceptable to Town Solicitor. Report to Council.
4.	Execute agreements for emergency management and emergency response for services such as Red Cross, Transit, Niagara Region Police, Ontario Provincial Police, etc.	Fire Chief/Director of Fire and By-law Services	Emergency Management Plan By-law #4179(2019) or Successor Thereto	Agreement acceptable to Town Solicitor. Report to Council.
5.	Process and issue permits pertaining to fireworks displays.	Fire Chief/Director of Fire and By-law Services	By-law 2951(2008) or Successor Thereto	Refer to By-law #2951(2008)or Successor Thereto re Sale and Setting Off Fireworks
6.	Designate Fire Routes once satisfied requirements have been complied with and submit By-law for approval.	Fire Chief/Director of Fire and By-law Services	By-law #97-2030, as Amended or Successor Thereto	Council to approve designation by-law. Council pre-approval not required.
7.	Authority to take all proper measures for prevention, control and extinguishment of fires and protection of life and property and shall exercise all powers mandated by legislation.	Fire Chief/Director of Fire and By-law Services	<i>Fire Protection and Prevention Act</i> , 1997, S.O. 1997, c. 4	
8.	Approval and signing authority to execute agreements and documents to provide fire and public safety training, facility and equipment rentals, and other related fees for services to external clients. aw Enforcement Division	Fire Chief/Director of Fire and By-law Services		

1.	Approve minor variances to the sign by-law	Fire Chief/Director of Fire	Report to Council
	including, but not limited to extensions and minor	and By-law Services; and	
	technical non-compliance.	Manager of By-law	
		Enforcement	

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Schedule F – Delegation of Powers and Duties

Director of Public Works

#	Delegation	Delegate	Legislative Authority	Conditions/ Restrictions
Beau	utification			
1.	Authorization to close municipal parks due to seasonal restrictions, inclement weather, and emergencies which could affect the health and well-being of the community	Director of Public Works		
2.	Authorization to manage and perform maintenance, removals, and planting of trees within the Town's right-of-way and property	Manager of Public Works	Policy No. S802-01	
Cem	eteries			
1.	Authorization to control and manage each cemetery under the jurisdiction of the Town of Pelham subject to the requirements and regulations set out in the Town's cemetery by-law and the <i>Cemeteries Act</i> .	Director of Public Works /Manager of Public Works	By-law 3091 (2010) Cemeteries Act	
2.	Authorization to enter into agreements for the sale of interment rights	Director of Public Works/Manager of Public Works	By-law 3091 (2010) Cemeteries Act	
Engi	neering Services			
1.	Authority to execute applications for new entrance permits and culvert installations; provide written confirmation to applicant of diameter of culvert required	Manager of Engineering or Manager of Public Works	Municipal Act, By-law and Fee Schedule	
2.	Enter into Front-Ending Agreements	Director of Public Works; Consultation with Director of Community Planning and Development		
3.	Authority to enter into water and waste-water service connection agreements	Manager of Engineering or Manager of Public Works	Municipal Act, By-law and Fee Schedule	
4.	Issuance of Road Occupancy Permits and Municipal Consent for utility maintenance and works within road right-of-way, and/or for Special Event Road Closures	Director of Public Works	Utility Franchise Agreements	
	ls/Transportation Services		T	1
1.	May temporarily close any highway or portion of a highway:	Director of Public Works; Consultation with	By-law #1827(1996) or Successor Thereto	

	 a) For construction, repair or improvement of the highway or portion of the highway, or construction or repair of any works, under, over, along, across, or upon the highway or portion of highway; b) Social, recreational, community, athletic or cinematographic purpose, or combination thereof; c) For any request under emergency services; d) For construction purposes when public safety may be impacted 	Applicable Directors and/or External Agencies.		
2.	Designate construction zones where municipal permit involves construction or repair of a highway or works near a highway, including authority to designate a lower rate of speed for vehicles traveling in construction zones.	Director of Public Works	<i>Highway Traffic Act,</i> R.S.O 1990, c. H.8	
3.	Agreements, including cost sharing agreements between the Town of Pelham, the Niagara Region and Local Area Municipalities in Niagara Region, regarding road construction and/or road maintenance, provided the value of consideration does not exceed \$100,000.	Director of Public Works		Agreements acceptable to Town Solicitor
4.	Temporary Reduction or Lifting of Load Limits on Highways, including designation of alternate routes where applicable.	Director of Public Works; Consultation with Fire Chief/Director of Fire and By-law Services	By-law 1272(1989)	
5.	Authority to declare a significant weather event in order to extend the response time to achieve Minimum Maintenance Standards	Director of Public Works	Ontario Regulation 239/02 minimum Maintenance Standards for Municipal Highways	
6.	Enter into Encroachment Agreements on road allowances and over easements	Director of Public Works; Consultation with By-law and Planning		Agreements acceptable to Town Solicitor; Conditional on conditions such as survey, covenants to protect the Town;
7.	Authority to sign agreements with Railway Authorities for cost sharing of warning systems and maintenance at level railway crossings, provided the value of consideration does not exceed \$100,000.	Director of Public Works		Agreements acceptable to Town Solicitor.

8.	Authority to negotiate with the Region of Niagara for the installation and maintenance for traffic control signal and safety systems.	Director of Public Works		
9.	Authority to amend the schedules that regulate stopping prohibition, stop controlled intersections, parking prohibition, limited parking restrictions, parking meter zones, commercial vehicle load permits, loading prohibitions, yield signs, prohibited turns, one-way highways and speed limits on highways under the jurisdiction of the Town of Pelham.	Director of Public Works	By-law 89-2000	
10.	Authority to approve encroachment over easements with private property owners.	Director of Public Works		In consultation with Town Solicitor
11.	Authority to provide reciprocal assistance to Public Works Departments in other Local Area Municipalities	Director of Public Works	Mutual Aid Agreement between Local Area Municipalities in Niagara Region	
Wat	er and Wastewater	1		
1.	Authority to sign applications to the Ministry of Environment and Climate Change under the Ontario Water Resources Act on behalf of the Town of Pelham	Director of Public Works	Ontario Water Resources Act	
2.	Delegation of authority to provide reciprocal assistance to Public Works Departments in other Local Area Municipalities	Director of Public Works	Memorandum of Understanding between the Region of Niagara and the Town of Pelham for Water and Wastewater servicing.	
3.	Authority to designate the Overall Responsible Operator (ORO) and the Drinking Water Quality Management System Representative for the Town's Water Distribution System	Director of Public Works in consultation with the Manager of Public Works	Town of Pelham DWQMS Operational Plan Safe Drinking Water Act, O.Reg. 170-03	

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Schedule H – Delegation of Powers and Duties

Town Solicitor

#	Delegation	Delegate(s)	Legislative Authority	Conditions/ Restrictions
1.	Commence any action, application or other legal proceeding on behalf of the Town where monetary value of claim is below \$100,000 excluding interest and costs.	Town Solicitor	Municipal Act, 2001, S.O. 2001, C.25, as amended, section s 9, 11 and 23.1	Report to Council from time to time on all actions or other legal proceedings, including description of settlement
2.	Where monetary value of a claim is \$100,000 or more, excluding interest and costs, commence any action, application or other legal proceeding on behalf of the Town to ensure no limitation period or other time restriction expires before Council instructions can be obtained.	Town Solicitor	Municipal Act, 2001, S.O. 2001, C.25, as amended, section s 9, 11 and 23.1	Obtain instructions of Council as soon as practicable thereafter.
3.	Take all steps necessary to defend any action, application or other legal proceeding commenced against the Town.	Town Solicitor	Municipal Act, 2001, S.O. 2001, C.25, as amended, section s 9, 11 and 23.1	Report to Council from time to time on all actions or other legal proceedings, including description of settlement.
4.	Commence any counterclaim, cross-claim or third party claim as part of the Town's defense to any action or other legal proceeding	Town Solicitor	Municipal Act, 2001, S.O. 2001, C.25, as amended, section s 9, 11 and 23.1	Report to Council from time to time on all actions or other legal proceedings including description of settlement.
5.	Retain external counsel, any expert or other person to assist in an actual or potential action or other legal proceeding or to obtain legal advice on behalf of the Town.	Town Solicitor	Municipal Act, 2001, S.O. 2001, C.25, as amended, section s 9, 11 and 23.1	Cost or retainer shall fall within approved Town budget.
6.	Accept service of any legal document on behalf of the Town.	Town Solicitor or Town Clerk or CAO	Rules of Civil Procedure; or Municipal Act, 2001, S.O. 2001, C.25, as amended, section s 9, 11 and 23.1	
7.	Obtain standing or participate in any administrative proceeding on behalf of the Town.	Town Solicitor	Municipal Act, 2001, S.O. 2001, C.25, as amended, section s 9, 11 and 23.1	Obtain instructions of Council as soon as practicable thereafter.
8.	Take all steps necessary to protect or pursue the rights of the Town in its capacity as an owner, occupier, landlord or tenant of property.	Town Solicitor	Municipal Act, 2001, S.O. 2001, C.25, as amended, section s 9, 11 and 23.1	Report to Council from time to time on all actions or other legal proceedings, including description of settlement.
9.	Take all steps necessary to collect debts and outstanding accounts, enforce orders, decisions, awards and judgements made in favour of the Town, including commencement of claims or other legal proceedings. Enter into settlement with any person or entity on	Town Solicitor	Various Acts and Regulations, including Courts of Justice Act, Rules of Civil Procedure and Small Claims Court Rules. Municipal Act, 2001, S.O.	Report to Council from time to time on all actions or other legal proceedings, including description of settlement. Sufficient funds available within

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	behalf of the Town where the monetary amount of the settlement is below \$100,000 inclusive of interest or costs or below Town deductible pursuant to current Insurance policy.		2001, C.25, as amended, section s 9, 11 and 23.1	approved budget. Report to Council from time to time on all actions or other legal proceedings, including description of settlement.
11.	Execute any agreement or other legal document on behalf of the Town that is necessary to carry out the Town Solicitor's authority as set out herein, including releases, receipts, waivers, indemnities and minutes of settlement.	Town Solicitor or Town Clerk	Municipal Act, 2001, S.O. 2001, C.25, as amended, section 23.1	
12.	Support Committee of Adjustment approvals before Ontario Land Tribunal where Town staff have no objections or are in support of the application.	Town Solicitor	Municipal Act, 2001, S.O. 2001, C.25, as amended, section 23.1	
13.	Support Committee of Adjustment refusals before the Ontario Land Tribunal where Town staff support refusal of application.	Town Solicitor	<i>Municipal Act, 2001,</i> S.O. 2001, C.25, as amended, section 23.1	
14.	Where Committee of Adjustment decisions are contrary to Town staff position, that staff attend before the Ontario Land Tribunal to request conditions, if any, only.	Town Solicitor	Municipal Act, 2001, S.O. 2001, C.25, as amended, section 23.1	
15.	Where a Committee of Adjustment decision does not have significant impacts or broader implications, or where the parties are represented by lawyers and/or planners, that staff only attend before the Ontario Land Tribunal to request conditions, if any.	Town Solicitor	Municipal Act, 2001, S.O. 2001, C.25, as amended, section 23.1	
16.	Where an appeal of a Committee of Adjustment matter results in a revised proposal or a settlement proposal that is supported by the parties and staff or there are no objections, that the Ontario Land Tribunal be advised that the Town supports the revised or settlement proposal.	Town Solicitor	<i>Municipal Act, 2001</i> , S.O. 2001, C.25, as amended, section 23.1	
17.	Decision not to attend appeal hearing from a decision of the Committee of Adjustment where an appeal has been filed with the Ontario Land Tribunal.	Town Solicitor		In consultation with Director, Community Planning and Development; where there is significant inconsistency between C of A decision and staff recommendation, staff will report to Council for direction.
18.	Take all steps necessary to respond to appeals filed with the Ontario Land Tribunal in accordance	Town Solicitor and Director of Community	<i>Municipal Act, 2001</i> , S.O. 2001, C.25, as amended,	

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	with Council Decisions, including retention of external lawyers and experts, as required, and filing or responding to procedural matters as deemed necessary.	Planning and Development	section 23.1	
19.	Where time does not allow for obtaining Council authority, all steps necessary to respond to appeals before the Ontario Land Tribunal prior to expiry of any time restrictions or limitations periods be taken, in accordance with recommendations of CAO and Director of community Planning and Development.	Town Solicitor, CAO and Director of Community Planning and Development	Municipal Act, 2001, S.O. 2001, C.25, as amended, section 23.1	
20.	Participate in and/or give notice of intention to use mediation, conciliation or other dispute resolution techniques to all appellants before the Ontario Land Tribunal and to invite participants to dispute resolution process as deemed necessary.	Town Solicitor and Director of Community Planning and Development.	Municipal Act, 2001, S.O. 2001, C.25, as amended, section 23.1	
21.	Approve execution of agreements for the acquisition of temporary and permanent easements as required for approved capital projects or other municipal purposes, together with such other documents as may be required in connection with such acquisitions, provided the value of consideration does not exceed \$50,000	Town Solicitor	Municipal Act, 2001, S.O. 2001, C.25, as amended, section 23.1 and 270(1)	Terms and conditions of agreements and related documents must be acceptable to Town Solicitor.
22.	Approve execution of agreements for the disposition of temporary and permanent easements as required for approved capital projects or other municipal purposes, together with such other documents as may be required in connection with such acquisitions, provided the value of consideration does not exceed \$50,000.	Town Solicitor	<i>Municipal Act, 2001</i> , S.O. 2001, C.25, as amended, section 23.1 and 270(1)	Terms and conditions of such agreements and related documents must be acceptable to Town Solicitor.
23.	Approve execution of agreements for the amendment, extension, renewal, and/or revival of leases and licenses on substantially the same terms and conditions of the original agreements	Town Solicitor	Municipal Act, 2001, S.O. 2001, C. 25, as amended, s 23.1 and 270(1)	Terms and conditions of such agreements and related documents must be acceptable to Town Solicitor.
24.	Commence any legal proceeding or step in a legal proceeding in Small Claims Court, on behalf of the Town	Town Solicitor		



Subject: 2023 Updated Code of Conduct for Elected and Appointed Officials Policy and a Complaint Protocol

Recommendation:

BE IT RESOLVED THAT Council receive Report #2023-99 - 2023 Updated Code of Conduct for Elected and Appointed Officials Policy and a Complaint Protocol, for information;

AND THAT Council adopt Policy S201-15, Code of Conduct for Elected and Appointed Officials, as revised;

AND THAT Council adopt Policy S201-16, being a Complaint Protocol for use under Policy S201-15 for Elected and Appointed Officials and Municipal Conflict of Interest Complaints.

Background:

Section 223.2(1) of the *Municipal Act, 2001*, as amended (the "Act") requires that a municipality shall establish codes of conduct for members of council and its local boards.

On May 6, 2019, Council approved Policy No. S201-15, being a Code of Conduct for Members of Council. This Code was drafted by the previous administration, jointly with the Town's preceding Integrity Commissioner. On October 18, 2021, Council amended Policy No S201-15 to include mandatory COVID-19 vaccination for Elected Officials.

An updated Code of Conduct has been identified by Council as a strategic priority.

This Code of Conduct is intended to set a high standard of conduct for all members of Council and local boards in the individual discharge of their official duties in pursuit of good governance and a high level of public confidence.

The appended Code of Conduct represents the latest version of the document, which has been based on the continuous evolution of municipal governance and the lived experience of the Town over those last few years. Also attached is the Complaint Protocol, will be used in the event of a complaint under the Code, or under the *Municipal Conflict of Interest Act*.

Analysis:

The Chief Administrative Officer, Town Solicitor, Clerk and Deputy Clerk have reviewed numerous Codes of Conduct from municipalities throughout Ontario. This review occurred to identify proper practice, common approaches and to ensure the Town of Pelham adopts a document that reflects the highest standard of ethical conduct.

Over the course of the last term of Council, members of Council identified various items covered by the Code for improvement. As well, the lived experience of utilizing the Code's process itself identified a few minor, but important adjustments.

Staff are confident the updated Code of Conduct and Complaint Protocol captures the requirements of the legislation and the needs of the Town.

It shall be noted that the Code of Conduct and Complaint Protocol are now proposed as two (2) separate policies. Previously, the Complaint Protocol existed as an appendix to the Code of Conduct. As a standalone document, the Complaint Protocol can be utilized to address complaints under the *Municipal Conflict of Interest Act.*

Financial Considerations:

There are no direct cost considerations attached with the adoption of the revised Code of Conduct or the Complaints Protocol. However, as Council is aware, with complaints and referral to the Integrity Commissioner appointed by the Town, there will be associated costs for any investigation and reports generated there from.

Alternatives Reviewed:

As a Code of Conduct is a statutory requirement for municipalities, there is no alternative recourse for the Town. It is a best practice to continually monitor the Town's Policies and ensure that they are up to date and reflective of the needs for the Organization.

Strategic Plan Relationship: Enhanced Capacity and Future Readiness

Enhanced Capacity and Future Readiness was identified as part of the Strategic Planning process just recently undertaken and adopted by Council. With an initiative-taking approach of an updated code, this will ensure that the Town will be able to meet the needs of its community. An updated Code of Conduct, as a measurable marker for Council meeting this vision for its residents is a proactive approach demonstrating a progressive Council providing accountable governance.

Consultation:

The report was prepared in concert with participation of the Town Solicitor, Deputy Clerk, and the Chief Administrative Officer

Other Pertinent Reports/Attachments:

- 1. Proposed Policy No. S201-15 Code of Conduct
- 2. Proposed Policy No. S201-16 Complaints Protocol

Prepared and Recommended by:

William Tigert Town Clerk

Prepared and Submitted by:

David Cribbs, BA, MA, JD, MPA Chief Administrative Officer



Policy Name: Code of Conduct for Members of Council and Local Boards	Policy No: S201-15
Committee approval date:	April 15, 2019
Council approval date:	May 6, 2019
Revision date(s):	October 2021
Department/Division:	Council

1. Purpose

1.1. The purpose of this policy is to establish a Code of Conduct pursuant to and in accordance with the *Municipal Act, 2001*, S.O. 2001, c. 25 ("*Municipal Act, 2001*"), Part V.1 – Accountability and Transparency.

2. Policy Statement

- 2.1. This Code of Conduct is intended to set a high standard of conduct for all Members of Council in the individual discharge of their Official Duties in pursuit of good governance and a high level of public confidence. The Town's elected and appointed representatives should operate with integrity, transparency, honesty and courtesy.
- 2.2. This Code of Conduct applies to the Mayor, Members of Council and, with necessary modifications, to Members of Local Boards as defined herein.
- 2.3. This Code of Conduct does not apply to Town staff.

3. Definitions

3.1. In this policy:

"Chief Administrative Officer" or "CAO" means the Chief Administrative Officer of the Corporation of the Town of Pelham.

"**Complaint**" means a written request received by the Town for an investigation of an alleged contravention of this Code of Conduct.

"Complainant" means a person who submits a Complaint.

"**Complaint Protocol**" means Town Policy No. S201-16, Advice Complaint and Investigation Protocol, as amended from time to time.

"**Confidential Information**" means information or records in the possession or custody of or under the control of the Town that must be kept confidential and/or cannot be disclosed under the *Municipal Act, 2001* or other applicable legislation including but not

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limited to the *Municipal Freedom of Information and Protection of Privacy Act*, R.S.O. 1990, c. M. 56 ("*MFIPPA*"), and/or the procedural by-law of the Town or any of its other by-laws, policies, rules or procedures.

"**Council**" means the council of the Town of Pelham and includes Committees of Council.

"Election Period" means the period that begins on nomination day for a regular election and ends on voting day for a regular election as set out in the *Municipal Elections Act, 1996*, S.O. 1996, c. 32 ("*MEA*").

"Family Member" means a child, parent or spouse of a Member as those terms are defined in the *Municipal Conflict of Interest Act*, R.S.O. 1990, c. M.50 (*"MCIA"*).

"Frivolous" or "Vexatious" means a Complaint that is initiated with malicious intent, is without merit or is part of a pattern of conduct by a Complainant that amounts to an abuse of the Complaint process.

"Gift or Benefit" means cash, fees, admission fees, advances, vouchers, invitations, services, hospitality, travel and accommodation, entertainment or other thing or consideration, given, donated, transferred or otherwise conveyed to a Member, unless the giver, donor, transferor, or conveying person receives payment or other or other consideration of goods property, of equal or greater value to the value of what was so provided.

"Incidental Personal Use" means a Member's use of a Town-issued electronic device in relation to personal matters provided that such use is infrequent, brief, reasonable and ethical, does not interfere with the Official Duties of the Member or the functions of the Town, and does not contravene this Code of Conduct or any other applicable bylaws, policies and/or procedures of the Town.

"Integrity Commissioner" means the person appointed by Council as the Town's Integrity Commissioner and responsible to perform the functions of an integrity commissioner under Part V.1 of the *Municipal Act, 2001*.

"Local Board" means the Committee of Adjustment of the Town, Humberstone Landfill Site Public Committee, Lincoln-Pelham Union Public Library Board, Niagara Central Dorothy Rungeling Airport Commission, Niagara Transit Commission, Niagara Peninsula Energy Inc., Peninsula West Power Inc. and any other local board that may be established or that exercises any statutory power with respect to the purposes or affairs of the Town.

"**Member**" means a member of Council, including the Mayor and Deputy Mayor, or a member of a Local Board.

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"Non-Pecuniary Interest" means a private or personal interest that a Member may have that is non-financial in nature, but that arises from a relationship with a person or entity that would be considered by a reasonable person, apprised of all the circumstances, as being likely to influence the Member's decision in any matter in which the interest arises.

"Official Duties" means the public duties or responsibilities of a Member and includes functions performed by Members necessary to demonstrate responsible and accountable governance with respect to matters within the jurisdiction of Council or a Local Board, as the case may be, and are done for the purpose of providing good governance in relation to such matters.

"**Social Media**" means web-based applications and online forums that allow users to interact, share and publish content such as text, links, photographs, audio files and videos.

"Staff" means the Chief Administrative Officer ("CAO"), officers, directors, managers, volunteers, supervisors, and employees of the Town, including full-time, part-time, casual, temporary and seasonal staff, students, and any agents or consultants retained by the Town to act on its behalf.

"Town" means the Corporation of the Town of Pelham.

4. Role of Council

- 4.1. The role of Council is to provide effective and responsible government for the public in the Town in an open, accountable and transparent manner. There is a fiduciary relationship between Council and residents of the Town and between Council and the municipal corporation.
- 4.2. Council as a whole has the authority to provide direction to Staff; however, individual Members do not direct or oversee the administration of the Town or the functions of Staff.
- 4.3. Council as a whole approves budgets, policies, processes and governance of the Town through by-laws and resolutions. Individual Members do not have authority to act on behalf of Council unless authority has been delegated to the Member by Council or in law.
- 4.4. Neither Council as a whole nor its individual Members are Staff of the Town.

5. Role of Staff

5.1. The role of Staff is to serve Council and to work for the Town as a corporate body, under the direction of the CAO.

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- 5.2. Staff provide advice and make policy recommendations in accordance with their applicable professional ethics, expertise and obligations. Staff carry out their duties with political neutrality and without influence from individual Members.
- 5.3. Staff will direct inquiries from Members to the CAO or appropriate senior Staff as directed by the CAO.

6. General Obligations of Members

- 6.1. Members shall serve and be seen to serve the public in a conscientious and diligent manner.
- 6.2. Members shall perform their Official Duties with integrity, accountability and transparency and shall avoid the improper use of the influence of their office and conflicts of interest, both apparent and real.
- 6.3. Members shall not extend favour or preferential treatment in the discharge of their Official Duties to Family Members or to organizations or groups in which they or their Family Members have a direct or indirect pecuniary interest.
- 6.4. Members shall perform their Official Duties in a manner that promotes public confidence and will bear public scrutiny.
- 6.5. Members shall be cognizant that they are at all times representatives of the Town and of Council or a Local Board, as the case may be. Members shall recognize the importance of their Official Duties, take into account the public character of their function and maintain and promote public trust in the Town.
- 6.6. Members shall accurately and adequately communicate decisions of Council, even if they disagree with a decision, so as to foster respect for the decision-making processes of Council.
- 6.7. Members shall refrain from making statements that they know or ought to know are false or with the intent to mislead Council or the public.
- 6.8. Members shall refrain from making disparaging comments about any other Member(s) or unfounded accusations about the conduct or motives of any other Member(s).
- 6.9. Members shall respect the individual rights, values and beliefs of any other person, including members of the public, Staff and Members.

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- 6.10. Members shall treat all members of the public, other Members and Staff with respect and without abuse, bullying, violence or intimidation and shall make reasonable efforts to ensure that the Town's work environment is free from discrimination, harassment and violence.
- 6.11. Members shall endeavour to work in a collective and cooperative manner to address matters brought to Council, including to consider, deliberate, make decisions and provide direction to Staff.
- 6.12. Members shall seek to serve the public interest by upholding both the letter and the spirit of laws and policies established by the Government of Canada, the Government of Ontario and the Town.
- 6.13. Members shall conduct themselves in accordance with this Code of Conduct and other sources of applicable law, including but not limited to:
 - i. Municipal Act, 2001;
 - ii. MCIA;
 - iii. MEA;
 - iv. MFIPPA;
 - v. Ontario Human Rights Code, R.S.O. 1990, c. H.19 ("Human Rights Code");
 - vi. Public Inquiries Act, 2009, S.O. 2009, c. 33, Sched. 6;
 - vii. Occupational Health and Safety Act, R.S.O. 1990, c. O.1 ("Occupational Health and Safety Act");
 - viii. Provincial Offences Act, R.S.O. 1990, c. P.33;
 - ix. Criminal Code of Canada, R.S.C. c. C-46; and
 - x. By-laws, policies and procedures of the Town as adopted and amended by Council from time to time that are applicable to Council.
- 6.14. Members shall comply with the procedural by-law of the Town as adopted, amended or replaced from time to time, which governs the conduct of Members during meetings of Council, and shall conduct themselves in a civil manner and with decorum at meetings of Council and all other meetings.

7. Member Obligations in Relation to Staff

7.1. Members shall respect the role of Staff in the administration of the business affairs of the Town, as set out in section 5 of this Code of Conduct, and shall not attempt to influence Staff in the performance of their duties.

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- 7.2. No Member shall maliciously, falsely, negligently, recklessly or otherwise improperly injure the professional or ethical reputation, or the prospects or practice, of any member of Staff.
- 7.3. No Member shall make disparaging comments or publicly criticize Staff. If a Member has a concern or complaint about a member of Staff, the Member shall refer the matter to the CAO, who shall review the concern or complaint and take appropriate action.
- 7.4. No Member shall request, expect or attempt to compel any member of Staff to engage in any partisan political activity or subject any member of Staff to threat, discrimination or reprisal for refusing to do so.
- 7.5. No Member shall use or attempt to use the Member's authority or influence for the purpose of intimidating, threatening, coercing or otherwise improperly influencing any member of Staff with the intent of interfering with his or her duties, including the duty to disclose improper activity.
- Members shall comply with the *Human Rights Code*, the *Occupational Health and Safety Act* and related Town policies, including but not limited to Policy No. S201-21, Council-Staff Relations, and Policy No. S101-16, Workplace Violence, Harassment and Discrimination Policy.

8. Election Activity

- 8.1. Members shall comply with the *MEA* and related Town policies, including but not limited to Policy No. S201-11, Use of Corporate Resources for Election Purposes.
- 8.2. Members shall not use Town facilities, equipment, supplies, services, Staff or other resources for election-related activity, including a Member's campaign or any other election campaigns for municipal, provincial or federal office.
- 8.3. During the Election Period, Incidental Personal Use that would otherwise be permitted under this Code of Conduct is prohibited.

9. Town Assets and Equipment

- 9.1. Council is the custodian of the assets of the Town. The public places its trust in Council to make decisions for the public good in relation to those assets.
- 9.2. Members shall not use or permit the use of Town land, facilities, equipment, supplies, services, technology, Staff or other resources for activities other than carrying out Official Duties.

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- 9.3. Notwithstanding section 9.2, Incidental Personal Use is permitted; however, Members shall reimburse the Town for any expenses incurred for Incidental Personal Use.
- 9.4. Members shall not seek financial gain for themselves, Family Members or friends from the use or sale of Town-owned intellectual property, computer programs, technological innovations or other items that have been or are capable of being patented, trademarked and/or copyrighted by the Town.

10. Social Media

- 10.1. Subject to section 10.2, Members are permitted and encouraged to access, engage and interact with the Town's official Social Media.
- 10.2. When accessing, engaging and/or interacting with the Town's official Social Media, Members shall at all times adhere to any and all Town policies for Social Media use and shall always identify themselves with no attempt to conceal or mislead as to their identity or their status as an elected representative of the Town.

11. Gifts and Benefits

- 11.1. Gifts or Benefits to Members risk the appearance of improper influence and may create a real or perceived incentive for Members to make decisions on the basis of relationships rather than the best interests of the Town.
- 11.2. In order to avoid any appearance of improper influence or incentive, no Member shall accept a Gift or Benefit that is connected, directly or indirectly, to the performance of their Official Duties. Similarly, no Member shall accept a Gift or Benefit that would, to a reasonable member of the public, appear to be in gratitude for influence, to induce influence, or where the Gift or Benefit is related to a public function, would exceed what a reasonable member of the public would consider to be appropriate in the circumstances.
- 11.3. A Gift or Benefit provided with the Member's knowledge to a Family Member, an employee of the Member, any other person related to the Member or to any other person, corporation or body with which the Member is associated, and that is connected, directly or indirectly, to the fact or performance of the Member's Official Duties, is deemed to be a Gift or Benefit to the Member.
- 11.4. Any doubt concerning the propriety of a Gift or Benefit should be resolved by the Member not accepting the Gift or Benefit.
- 11.5. Notwithstanding sections 11.2 and 11.3, Members are not precluded by this Code of Conduct from accepting:

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- i. compensation authorized by law;
- ii. Gifts or Benefits that normally accompany the duties of office and are received as an incident of protocol or social obligation;
- iii. a political contribution that is accepted and reported in accordance with applicable law;
- iv. services that are provided without compensation by persons volunteering their time;
- v. a suitable memento of a function honouring the Member;
- vi. admission to a widely-attended event, such as a convention, conference, symposium, forum, panel discussion, dinner, viewing, reception or similar event, offered by the entity responsible for organizing and presenting the event and unsolicited by the Member, if attending or participating in the Member's official capacity as a Member, including:
 - a. participation as a speaker or panel participant by presenting information related to Town matters;
 - b. performance of a ceremonial function appropriate to the Member's office; and/or
 - c. attendance at an event that is appropriate to the official capacity of the Member;
- vii. admission to a charity or community organization event, for whose benefit the event is being held, and unsolicited by the Member;
- viii. admission to a training or education program, including meals and refreshments furnished to all attendees, if such training or education is related to the Member's official duties and in the interests of the Town;
- ix. food, lodging, transportation and entertainment provided by federal, provincial, regional and local governments or agencies or subdivisions of them or by a foreign government within a foreign country, or by a conference, seminar or event organizer where the Member is either speaking or attending in an official capacity;
- x. entrance fees or food and beverages consumed at banquets, receptions or similar events, if:
 - a. attendance serves a legitimate municipal business purpose related to the normal business of the Town;
 - b. the person that extends the invitation or a representative of the person's organization is in attendance; and
 - c. the value is reasonable and the invitations are infrequent;

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- xi. Gifts or Benefits of nominal value (for example, a baseball cap, t-shirt, flash drive, book, etc.); and
- xii. any Gift or Benefit, if the Integrity Commissioner is of the opinion, before it has been accepted by the Member, that it is unlikely that receipt of the Gift or Benefit gives rise to a reasonable presumption that it was given in order to influence the Member in the performance of their Official Duties.
- 11.6. A Member who has received and accepted a Gift or Benefit with an estimated value of fifty dollars (\$50.00) or more shall file a written disclosure of the Gift or Benefit with the Town Clerk indicating the person, organization or entity from which it was received together with the estimated value.
- 11.7. All disclosure statements filed or required to be filed under section 11.6 shall be a matter of public record and made available to the public in accordance with *MFIPPA* and all applicable Town policies and procedures.

12. Confidential Information

- 12.1. Members receive Confidential Information in the course of their Official Duties, including information provided in confidence to the Town that falls under *MFIPPA* and information received during closed meetings of Council.
- 12.2. Members shall not collect, use or disclose Confidential Information except in accordance with applicable legislation including the *Municipal Act, 2001* and *MFIPPA* and all applicable Town by-laws, policies and procedures, even if the Member ceases to be a Member of Council or a Local Board.
- 12.3. Members shall comply with the *Municipal Act, 2001, MCIA, MFIPPA* and any other applicable legislation regarding open meetings, accountability and transparency.
- 12.4. Notwithstanding section 12.3, Members shall hold in strict confidence all Confidential Information concerning matters dealt with any meeting closed to the public under the *Municipal Act, 2001* or other legislation.
- 12.5. For the purposes of section 12.4, Confidential Information includes, but is not limited to documents, records, advice, information, discussion, deliberation and direction. Members shall not, directly or indirectly, release, disclose, make public or in any way divulge Confidential Information to any person unless authorized by Council to do so or as required by law.
- 12.6. Members shall not, directly or indirectly, release, disclose, make public or in any way divulge information that is subject to solicitor-client privilege, unless solicitor-client privilege has been expressly waived by Council or as required by law.

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12.7. Members are only entitled to information in the possession of the Town that is relevant to matters before Council or a Local Board to which the Member is appointed. Otherwise, Members enjoy the same access rights to information as any other member of the public and must follow the same processes as any third party to obtain such information.

13. Improper Use of Influence

- 13.1. Members shall not use the influence of their office or appointment for any purpose other than the performance of the Member's Official Duties in the public interest.
- 13.2. Members shall not use the status or influence of their office or appointment to influence the decision of another person to the Non-Pecuniary Interest of the Member or a Family Member, or for the purpose of creating a disadvantage to another person.
- 13.3. Members shall not hold out the prospect or promise of future advantage through or related to the status or influence of their office or appointment in return for any action, inaction, decision or vote.
- 13.4. Members who are asked to support charitable activity within the Town may do so by accepting honorary roles, lending their names to organizations or events and encouraging public support of events. At all times, however, Members shall ensure that the requested support does not conflict with their Official Duties and does not give rise to a conflict between any private interest of the Member and their obligations to the public.
- 13.5. Members may, if requested, solicit funds on behalf of a charitable event or organization (including the Town), provided that the request to solicit funds does not conflict with their Official Duties and does not give rise to a conflict between any private interest of the Member and their obligations to the public.
- 13.6. When soliciting funds in accordance with section 13.5, Members shall disclose the name of the charitable event or organization and the purpose for which the funds are requested.

14. Conflicts of Interest

14.1. Members shall take appropriate and proactive steps to avoid or mitigate conflicts of interest, both apparent and real, in order to maintain public confidence in the Town and its elected and appointed officials.

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14.2. Members authorized by the *Municipal Act, 2001* to consult the Integrity Commissioner are encouraged to consult the Integrity Commissioner and/or seek legal advice when they become aware that they may have a conflict or potential conflict between any private interest, Non-Pecuniary Interest or other personal interest, and their duties to the public.

15. Code of Conduct

- 15.1. Members shall adhere to all requirements of this Code of Conduct and shall respect the process for Complaints made under this Code of Conduct or through any process for complaints adopted by the Town, including but not limited to the Complaint Protocol.
- 15.2. As part of their adherence to this Code of Conduct and their respect for the Complaint process, Members who observe, witness or otherwise become aware of a contravention of this Code of Conduct by another Member are under a positive obligation to submit a Complaint.

16. Integrity Commissioner

- 16.1. Members shall not obstruct the Integrity Commissioner in the conduct of his or her duties and responsibilities. For greater certainty, obstruction includes any conduct that is contrary to or prohibited by sections 16.2, 16.3, 16.4 and 16.5 of this Code of Conduct.
- 16.2. Members shall not act in reprisal or threaten reprisal against a person who makes a Complaint or provides information to the Integrity Commissioner during an investigation.
- 16.3. Members shall interact courteously and respectfully with the Integrity Commissioner and with any person acting under his or her direction.
- 16.4. Members shall cooperate with requests for information from the Integrity Commissioner and any person acting under his or her direction during any investigations or inquiries under this Code of Conduct.
- 16.5. Members shall not destroy documents or erase electronic communications or refuse to respond to the Integrity Commissioner where a Complaint has been made under this Code of Conduct or any process for Complaints adopted by the Town.

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17. Penalties for Non-Compliance with Code of Conduct

- 17.1. Following an investigation of a Complaint, including any Complaint found to be Frivolous or Vexatious, the Integrity Commissioner shall provide a final report to the Town Clerk. Council shall consider the report within thirty (30) days of receipt by the Town Clerk and, subject to sections 17.2, 17.3, 17.4 and 17.5, shall take such action as it considers appropriate with regard to the recommendation(s) of the Integrity Commissioner.
- 17.2. Where Council receives a final report from the Integrity Commissioner that there has been a violation of this Code of Conduct and recommends that a penalty be imposed, Council may impose the recommended penalty or, in accordance with section 223.4(5) of the *Municipal Act, 2001* may impose either:
 - i. a reprimand; or
 - ii. a suspension of the remuneration paid to the Member for a period of up to ninety (90) days.
- 17.3. Where Council imposes a penalty under section 223.4(5) of the *Municipal Act,* 2001 that differs from the recommendation(s) made by the Integrity Commissioner, Council shall provide reasons for its decision.
- 17.4. The Integrity Commissioner may also recommend that Council impose one or more of the following sanctions:
 - i. provide a written or verbal apology;
 - ii. return property or make reimbursement of its value or of monies spent;
 - iii. removal from membership of a Committee of Council; and/or
 - iv. removal as Chair of a Committee of Council.
- 17.5. Council may not impose any of the sanctions set out in section 17.4 in the absence of a recommendation from the Integrity Commissioner.

18. Complaint Protocol

18.1. The procedure for Complaints under this Code of Conduct shall be governed by the Complaint Protocol..

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Policy Name: Advice, Complaint and Investigation Protocol	Policy No: S201-16
Committee approval date:	-
Council approval date:	-
Revision date(s):	-
Department/Division:	Council

1. Purpose

- 1.1. The purpose of this policy is to establish a protocol:
 - i. for Members of Council and Local Boards to request and receive advice from the Integrity Commissioner appointed by the Town; and
 - ii. for the submission, investigation and disposition of allegations that a Member of Council or a Local Board has contravened any applicable Code of Conduct, legislation, procedure, rule or policy described herein.

2. Policy Statement

2.1. The Town of Pelham has appointed an Integrity Commissioner to carry out the functions described in section 223.3 of the *Municipal Act, 2001*, S.O. 2001, c. 25 ("*Municipal Act, 2001*"). This Advice, Complaint and Investigation Protocol sets clear and consistent standards for all submissions to the Integrity Commissioner.

3. Definitions

3.1. In this policy:

"Applicant" means a person who submits an Application.

"Application" means a written request submitted to the Integrity Commissioner for an inquiry into an alleged contravention of section 5, 5.1, 5.2 or 5.3 of the *Municipal Conflict of Interest Act*, R.S.O. 1990, c. M.50 (*"MCIA"*).

"Chief Administrative Officer" or "CAO" means the Chief Administrative Officer of the Corporation of the Town of Pelham.

"**Code of Conduct**" means Town Policy No. S201-15, Code of Conduct for Members of Council and Local Boards, as amended and approved by Council from time to time.

"**Complaint**" means a written request received by the Town for an investigation of an alleged contravention of the Code of Conduct.

"Complainant" means a person who submits a Complaint.

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"**Council**" means the council of the Town of Pelham and includes Committees of Council.

"Election Period" means the period that begins on nomination day for a regular election and ends on voting day for a regular election as set out in the *Municipal Elections Act, 1996*, S.O. 1996, c. 32 ("*MEA*").

"Frivolous" or "Vexatious" means a Complaint or Application that is initiated with malicious intent, is without merit or is part of a pattern of conduct by a Complainant or Applicant that amounts to an abuse of the Complaint or Application process, as the case may be.

"Integrity Commissioner" means the person appointed by Council as the Town's Integrity Commissioner and responsible to perform the functions of an integrity commissioner under Part V.1 of the *Municipal Act, 2001*.

"Local Board" means the Committee of Adjustment of the Town, Humberstone Landfill Site Public Committee, Lincoln-Pelham Union Public Library Board, Niagara Central Dorothy Rungeling Airport Commission, Niagara Transit Commission, Niagara Peninsula Energy Inc., Peninsula West Power Inc. and any other local board that may be established or that exercises any statutory power with respect to the purposes or affairs of the Town.

"**Member**" means a member of Council, including the Mayor and Deputy Mayor, or a member of a Local Board.

"Town" means the Corporation of the Town of Pelham.

4. Requests for Advice

- 4.1. Pursuant to subsection 233.3(1) of the *Municipal Act, 2001*, the Town has appointed an Integrity Commissioner who is responsible for receiving and responding, in an independent manner, to the following requests:
 - i. requests from Members for advice respecting their obligations under the Code of Conduct;
 - ii. requests from Members for advice respecting their obligations under a procedure, rule or policy of the Town, of Council or of the Local Board, as the case may be, governing the ethical behaviour of Members; and
 - iii. requests from Members for advice respecting their obligations under the *MCIA*.
- 4.2. Requests by Members for advice from the Integrity Commissioner shall be made in writing.

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- 4.3. Requests by Members of Council for advice from the Integrity Commissioner may be drafted by the Chief Administrative Officer, the Town Solicitor or the Town Clerk, according to the preference of the Member.
- 4.4. If the Integrity Commissioner provides advice to a Member in response to a request under section 4.1, the advice shall be in writing.
- 4.5. The Integrity Commissioner shall provide an annual report to Council on activities ("Annual Activity Report"), which shall include a summary of advice given by the Integrity Commissioner but shall not include information that could identify the receiving Member or any other person concerned.
- 4.6. The Annual Activity Report shall be a matter of public record and shall be made available to the public in accordance with the *Municipal Freedom of Information and Protection of Privacy Act*, R.S.O. 1990, c. M.56 ("*MFIPPA*") and all applicable Town policies and procedures.

5. Request(s) for Investigation or Inquiry

- 5.1. Pursuant to subsection 223.3(1) of the *Municipal Act, 2001*, the Town has appointed an Integrity Commissioner who is responsible for performing, in an independent manner, the following functions:
 - i. the application of the Code of Conduct to Members;
 - ii. the application of any procedures, rules or policies of the Town or a Local Board governing the ethical behaviour of Members;
 - iii. the application of sections 5, 5.1, 5.2 and 5.3 of the *MCIA* to Members.
- 5.2. A request to investigate an allegation that a Member has contravened the Code of Conduct or any applicable procedure, rule or policy governing the ethical behaviour of Members may be initiated by any person, including a Member, and shall be made within sixty (60) days after the Complainant became aware of the alleged contravention.
- 5.3. A Complaint that a Member has contravened the Code of Conduct may be initiated by Council by way of a public motion made within sixty (60) days after Council became aware of the alleged contravention.
- 5.4. Complaints shall be made in writing and, other than a complaint initiated by Council under section 5.3 of this protocol, shall be signed by an identifiable individual.

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- 5.5. Where the person who initiates a Complaint is an employee of the Town, the Chief Administrative Officer may be identified as the Complainant and may sign and submit the complaint on behalf of the employee, if that is the preference of the employee.
- 5.6. Where the Complainant is an organization or entity other than an individual, the Complaint shall be signed by an identifiable individual duly authorized to act on behalf of the Complainant.
- 5.7. Complaints shall be sent directly to the office of the Town Clerk and may be submitted by regular or registered mail, personal delivery, courier or e-mail. Where applicable, a Complaint shall be accompanied by the requisite filing fee prescribed by the Town's Fees and Charges By-law as adopted, amended or replaced from time to time.
- 5.8. Complaints shall include one or more affidavits setting out reasonable and probable grounds for the allegation that a Member has contravened the Code of Conduct. Affidavits must be in the prescribed form, which is attached as Appendix "A" hereto and forms part of this policy and, upon request and payment of any applicable fee by the Complainant, may be sworn or affirmed before a Commissioner of Oaths in the office of the Town Clerk.
- 5.9. Without limiting the generality of section 5.8, complaints shall include:
 - i. the facts constituting the alleged contravention of the Code of Conduct;
 - ii. the provision(s) of the Code of Conduct allegedly contravened;
 - iii. an explanation as to why the facts set out in the complaint are alleged to be a contravention of the Code of Conduct;
 - iv. the names of any witnesses who can support the allegation; and
 - v. any documentary or other evidence in support of the complaint.
- 5.10. Upon receipt of a Complaint and any applicable filing fee, the Town Clerk shall refer the matter to the Integrity Commissioner and shall provide the Integrity Commissioner with all materials submitted by the Complainant.
- 5.11. An Application to inquire into an allegation that a Member has contravened section 5, 5.1, 5.2 or 5.3 of the *MCIA* may be made by an elector as defined in the *MCIA* or by a person demonstrably acting in the public interest and, subject to section 223.4.1 of the *Municipal Act, 2001*, shall be made within six (6) weeks after the Applicant became aware of the alleged contravention.

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- 5.12. Applications shall be made in writing and signed by an identifiable individual. Where the Applicant is an organization or entity other than an individual, the Application shall be signed by an individual duly authorized to act on behalf of the Applicant.
- 5.13. Applications shall be sent by the Applicant directly to the office of the Integrity Commissioner and may be submitted by regular or registered mail, courier or e-mail.
- 5.14. Applications shall include:
 - i. the facts constituting the alleged contravention of the MCIA;
 - ii. the provision(s) of the MCIA allegedly contravened;
 - iii. an explanation as to why the facts set out in the Application are alleged to be a contravention of the *MCIA*;
 - iv. the names of any witnesses who can support the allegation; and
 - v. a statutory declaration attesting that the Applicant became aware of the alleged contravention not more than six (6) weeks prior to the date of the Application in accordance with section 223.4.1 of the *Municipal Act*, 2001.

6. Initial Review by Integrity Commissioner

- 6.1. Upon receipt of a Complaint, the Integrity Commissioner shall undertake an initial review to determine if the Complaint relates to an alleged contravention of the Code of Conduct by a Member and to confirm that it includes one or more sworn or affirmed affidavits in support of the Complaint.
- 6.2. Upon receipt of an Application, the Integrity Commissioner shall undertake an initial review to determine if the Application relates to an alleged contravention of section 5, 5.1, 5.2 or 5.3 of the *MCIA* by a Member.
- 6.3. The Integrity Commissioner shall have no power or jurisdiction to investigate or otherwise deal with a Complaint or Application if it does not allege a contravention of the Code of Conduct or section 5, 5.1, 5.2 or 5.3 of the *MCIA*, as the case may be.
- 6.4. If a Complaint does not include one or more supporting affidavits, the Integrity Commissioner shall defer any further review of the Complaint and shall not commence an investigation until one or more such affidavits are received.
- 6.5. Where section 6.3 applies, the Integrity Commissioner shall proceed as follows:



- i. if the Complaint or Application relates to an allegation of a criminal nature consistent with the *Criminal Code of Canada*, the Integrity Commissioner shall advise the Complainant in writing that any pursuit of the allegation must be through the appropriate police service;
- ii. if the Complaint or Application relates to non-compliance with *MFIPPA*, the Integrity Commissioner shall advise the Complainant in writing that the matter will be referred to the Town Clerk for review; and
- iii. if the Complaint or Application relates to non-compliance with a policy of Council that is more specific than the Code of Conduct and prescribes a complaint procedure for alleged contraventions, the Integrity Commissioner shall advise the Complainant in writing that the matter will be processed under that procedure.
- 6.6. If a Complaint relates to a matter that is subject to an outstanding complaint under another process, such as a complaint under the *Human Rights Code*, R.S.O. 1990, c. H.19 or similar process, the Integrity Commissioner may, in his or her sole discretion and in accordance with the applicable legislation, defer or suspend any investigation pending the result of the other process and shall advise the parties in writing accordingly.
- 6.7. Without limiting the generality of section 6.3, if the Integrity Commissioner determines that all or any part of a Complaint or Application is not within the jurisdiction of the Integrity Commissioner for any reason, the Integrity Commissioner shall advise the Complainant or Applicant in writing that the matter, or part of the matter, is not within the jurisdiction of the Integrity Commissioner to process and shall provide any additional reasons and/or referrals as he or she considers appropriate.
- 6.8. The Integrity Commissioner may, but is not required to, report to Council that a Complaint is not within the jurisdiction of the Integrity Commissioner to process, with any additional reasons that he or she considers appropriate, but the Integrity Commissioner shall not disclose any information that could identify the Complainant or any other person referenced in or related to the Complaint.
- 6.9. If, upon completion of the initial review, the Integrity Commissioner is of the opinion that a Complaint or Application is Frivolous, Vexatious or not made in good faith or that there are no grounds or insufficient grounds for an investigation or inquiry, the Integrity Commissioner shall not commence an investigation or inquiry.

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- 6.10. Where section 6.9 applies, the Integrity Commissioner shall advise the Complainant or Applicant in writing that an investigation or inquiry will not be commenced.
- 6.11. Notwithstanding any other provision of this protocol, the Annual Activity Report shall set out the number of Complaints and Applications that were disposed of pursuant to sections 6.3, 6.5, 6.6, 6.7 and/or 6.9 of this protocol.

7. Integrity Commissioner Investigations and Inquiries

- 7.1. Where the Integrity Commissioner determines that a Complaint is within the Integrity Commissioner's jurisdiction and is not subject to section 6.9, the Integrity Commissioner shall conduct an investigation.
- 7.2. Where the Integrity Commissioner determines that an Application is within the Integrity Commissioner's jurisdiction and is not subject to section 6.9, the Integrity Commissioner may conduct such inquiry as he or she considers necessary and may exercise all powers prescribed by section 223.4.1 of the *Municipal Act, 2001*. The Integrity Commissioner shall complete the inquiry within one hundred and eighty (180) days after receiving the Application unless the inquiry is terminated in accordance with this protocol or pursuant to subsection 233.4.1(12) of the *Municipal Act, 2001*.
- 7.3. Pursuant to subsections 223.4(2) and 223.4.1(9) of the *Municipal Act, 2001*, the Integrity Commissioner may elect to exercise the powers under sections 33 and 34 of the *Public Inquiries Act, 2009*, S.O. 2009, c. 33, Sched. 6 ("*Public Inquiries Act, 2009*"), in which case those sections apply to the investigation or inquiry, as the case may be.
- 7.4. Where sections 33 and 34 the *Public Inquiries Act, 2009* apply, the Integrity Commissioner shall follow the procedures prescribed by the statute and this protocol; however, in the event that there is a conflict between a provision of this protocol and a provision of the *Public Inquiries Act, 2009*, the statutory provision shall prevail.
- 7.5. If at any point during a Complaint investigation or an Application inquiry, the Integrity Commissioner comes to the opinion that the Complaint or Application is Frivolous, Vexatious or not made in good faith or that there are no grounds or insufficient grounds to continue the investigation or inquiry, the Integrity Commissioner shall terminate the investigation or inquiry, as the case may be.
- 7.6. Where section 7.5 applies, the Integrity Commissioner shall:
 - i. notify the Complainant or Applicant in writing that the investigation or inquiry is terminated;

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- ii. notify the Member(s) whose conduct is in question that the investigation or inquiry is terminated; and
- iii. notify the Town that the investigation or inquiry is terminated.
- 7.7. The Integrity Commissioner may, but is not required to, advise Council that the investigation of a specific Complaint or the inquiry into a specific Application has been terminated on the basis that it is Frivolous, Vexatious or not made in good faith or that there are no grounds or insufficient grounds to continue the investigation or inquiry, but the Integrity Commissioner shall not disclose any information that could identify the Complainant, the Applicant or any other person referenced in or related to the Complaint or Application.
- 7.8. Notwithstanding any other provision of this protocol, the Annual Activity Report shall set out the number of Complaints and Applications that were disposed of pursuant to section 7.5 of this protocol.
- 7.9. To investigate a Complaint, unless otherwise required by the *Public Inquiries Act, 2009*, the Integrity Commissioner shall proceed as follows:
 - i. provide a copy of the Complaint and all supporting evidence supplied by the Complainant to the Member(s) whose conduct is in question;
 - ii. require the Member(s) to provide a written response to the Complaint within seven (7) days or such other period as the Integrity Commissioner may specify in writing;
 - iii. provide a copy of the response supplied by the Member(s) to the Complainant; and
 - iv. require the Complainant to provide a written reply to the response within seven (7) days or such other period as the Integrity Commissioner may specify in writing.
- 7.10. The Integrity Commissioner shall review the written materials submitted in accordance with section 7.9 and, if the Integrity Commissioner is of the opinion that further information is necessary for the purposes of investigation, the Integrity Commissioner may speak to anyone relevant to the Complaint, access and examine any documents, information or records described in subsections 223.4(3) and (4) of the *Municipal Act, 2001*, and/or enter any Town workplace relevant to the Complaint.
- 7.11. If, upon completion of a Complaint investigation, the Integrity Commissioner is of the opinion that there has been a contravention of the Code of Conduct by the Member(s) whose conduct is in question, the Integrity Commissioner shall proceed as follows:

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- i. provide the Member(s) with reasonable notice of the basis for the proposed finding and any recommended sanction(s);
- ii. provide the Member(s) with an opportunity to comment, in person or in writing at the option of the Member(s), on the proposed finding and/or recommended sanction(s); and
- iii. consider the comments of the Member(s), if any, prior to issuing a final report in accordance with section 8 of this protocol.
- 7.12. For greater certainty, the Integrity Commissioner shall not issue a final report with a finding that there has been a contravention of the Code of Conduct unless and until the procedure in section 7.11 has been completed.
- 7.13. Upon conclusion of an Application inquiry the Integrity Commissioner may, if he or she considers it appropriate, apply to a judge for a determination as to whether a Member has contravened section 5, 5.1, 5.2 or 5.3 of the *MCIA*. The Integrity Commissioner shall notify in writing the Applicant, the Member(s) whose conduct is in question and the Town of the decision made in this regard.
- 7.14. At any point during a Complaint investigation or an Application inquiry, the Integrity Commissioner may make such interim reports to Council as the Integrity Commissioner considers appropriate, including in response to a request from Council for an interim report, and as required to address any instances of interference, obstruction or retaliation encountered during an investigation or inquiry. The Integrity Commissioner has sole discretion to determine if an interim report will be provided and whether it is presented verbally or in writing.
- 7.15. The Integrity Commissioner shall retain all records related to a Complaint and any resulting investigation. The Integrity Commissioner shall further retain all records related to an Application and any resulting inquiry.

8. Final Report

- 8.1. Subject to section 8.2 of this protocol, the Integrity Commissioner shall complete the investigation of a Complaint and prepare a final report within ninety (90) days of the date on which the Complaint was submitted to the Integrity Commissioner.
- 8.2. Notwithstanding section 8.2, if the Integrity Commissioner requires more than ninety (90) days to complete an investigation, the Integrity Commissioner shall proceed as follows:

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- i. notify the Complainant and the Member(s) whose conduct is in question of the date(s) on which the Integrity Commissioner will complete the investigation and issue the final report; and
- ii. provide an interim report to Council that sets out why the Integrity Commissioner requires more than ninety (90) days to complete the investigation and provides the date(s) on which the Integrity Commissioner will complete the investigation and issue the final report.
- 8.3. Where the Integrity Commissioner sustains a Complaint, in whole or in part, the Integrity Commissioner shall issue a final report that sets out the findings of the Integrity Commissioner and any recommended sanction(s).
- 8.4. Any recommended corrective action or sanction must be permitted in law and shall be designed to ensure that the behaviour or activity that resulted in the Integrity Commissioner sustaining all or part of the Complaint does not continue and is not repeated.
- 8.5. Where the Integrity Commissioner determines that there has been no contravention of the Code of Conduct, or that a contravention occurred but that the Member(s) took all reasonable measures to prevent it, or that a contravention occurred that was trivial or committed through inadvertence or an error in judgment made in good faith, the Integrity Commissioner shall issue a final report that sets out the findings of the Integrity Commissioner and may recommend that no sanction(s) be imposed.
- 8.6. The Integrity Commissioner shall prepare no more than one (1) final report in relation to a Complaint.
- 8.7. The Integrity Commissioner shall provide a copy of the final report to the Town Clerk and the Member(s) whose conduct is in question when the report is issued.
- 8.8. The Town Clerk shall place the final report on the public agenda for a regular meeting of Council that is held no more than thirty (30) days after receipt of the final report by the Town Clerk.
- 8.9. Where Council receives a final report from the Integrity Commissioner that confirms a contravention of the Code of Conduct and recommends that one or more sanctions be imposed, Council may impose the recommended sanction(s) or, in accordance with subsection 223.4(5) of the *Municipal Act, 2001* may impose either:
 - i. a reprimand; or
 - ii. a suspension of remuneration paid to the Member(s) for a period of up to ninety (90) days.

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- 8.10. The Integrity Commissioner may also recommend that Council impose one or more of the following sanctions:
 - i. provide a written or verbal apology;
 - ii. return property or make reimbursement of its value or of monies spent;
 - iii. removal from membership of a Committee of Council; and/or
 - iv. removal as Chair of a Committee of Council.
- 8.11. Council may not impose any of the sanctions set out in section 8.10 in the absence of a recommendation from the Integrity Commissioner; however, Council is not required to impose any or all such sanctions recommended by the Integrity Commissioner.
- 8.12. Where Council imposes a sanction under subsection 223.4(5) of the *Municipal Act, 2001* or section 8.10 of this protocol that differs from the recommendation(s) made by the Integrity Commissioner, Council shall provide verbal or written reasons for its decision. Where Council provides verbal reasons, they shall be documented in writing by the Town Clerk and approved by Council at its next meeting.

9. Election Blackout Period

- 9.1. During the Election Period and for six (6) weeks after voting day:
 - i. no Complaints or Applications shall be filed;
 - ii. no Complaint investigation or Application inquiry shall be commenced or continued by the Integrity Commissioner;
 - iii. any pending investigations or inquiries by the Integrity Commissioner shall be terminated;
 - iv. the Integrity Commissioner shall not report to Council respecting any investigation or inquiry; and
 - v. Council shall not consider imposing sanctions regarding a Complaint.
- 9.2. Where a Complaint investigation is terminated on nomination day, the Integrity Commissioner shall not commence another investigation in respect of the matter unless, within six (6) weeks after voting day, the Complainant or the Member(s) alleged to have contravened the Code of Conduct submits a written request to the Town Clerk to resume the investigation.

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9.3. Where an Application inquiry is terminated on nomination day, the Integrity Commissioner shall not commence another inquiry in respect of the matter unless, within six (6) weeks after voting day, the Applicant or the Member(s) alleged to have contravened section 5, 5.1, 5.2 or 5.3 of the *MCIA* submits a written request to the Integrity Commissioner that the inquiry be commenced.

10. Confidentiality

- 10.1. Pursuant to sections 223.5 and 223.6 of the *Municipal Act, 2001,* the Integrity Commissioner and every person acting under the instructions of the Integrity Commissioner shall preserve secrecy with respect to all matters that come to his or her knowledge in the course of his or her duties.
- 10.2. Notwithstanding the foregoing, the Integrity Commissioner and every person acting under the instructions of the Integrity Commissioner:
 - i. may disclose information in a criminal proceeding as required by law or in accordance with Part V.1 of the *Municipal Act, 2001*;
 - ii. may release advice provided to a Member under section 4 of this protocol with the written consent of the Member;
 - iii. if a Member releases only part of the advice provided by the Integrity Commissioner under section 4 of this protocol, may release part or all of the advice without the consent of the Member; and
 - iv. if the Integrity Commissioner reports his or her opinion as to whether a Member has contravened the Code of Conduct, may disclose such matters as in the opinion of the Integrity Commissioner are necessary for the purposes of the report.

11. Amendments to Protocol

11.1. This protocol is subject to amendment in accordance with the policies of Council from time to time.

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APPENDIX "A"

AFFIDAVIT

, _	(first and last name), of the Municipality o
	in the Province of Ontario, MAKE OATH AND SAY
	I have reasonable and probable grounds to believe that
	(name of Member), a Member of the Council of the Town of Pelham or a Local Board, has
	contravened section(s) of the Code of Conduct of the Town
	of Pelham.
	The facts constituting the contravention are as follows (use separate page if required):
5.	I am aware of the following witnesses who can support the contravention:

- 4. Attached as Exhibit "A" are all supporting documents and other evidence in my possession at the time of making this affidavit.
- 5. This affidavit is made for the purpose of requesting that the contravention described herein be investigated by the Integrity Commissioner for the Town of Pelham and for no other or improper purpose.

)

)

)

SWORN (or AFFIRMED) before me at the the Town of Pelham, Region of Niagara on _____ (date)

)	 	 	 	

(Signature)

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Subject: Sidewalk Patio Encroachment Policy Update and New Approval Framework for Temporary Outdoor Patios

Recommendation:

BE IT RESOLVED THAT Council receive Report #2023-0094 Sidewalk Patio Encroachment Policy Update and New Approval Framework for Temporary Outdoor Patios, for information;

AND THAT Council approve Policy No. S201-04 – Temporary Outdoor Patio on Municipal or Private Property, as revised;

AND THAT Council direct staff to prepare an amendment to the Town's Fees and Charges By-law to include an annual Temporary Outdoor Patio on Municipal Property Permit fee of \$150.00.

Background:

On March 4, 2013, Council for the Town of Pelham approved Sidewalk Patio Encroachment Policy No. S201-04. The Sidewalk Patio Encroachment Policy established a licensing process and regulations for food/beverage establishments wishing to operate a seasonal patio extension on the municipal right-of-way i.e., the sidewalk. Applicants must meet policy requirements related to proof of insurance, pedestrian accessibility requirements, urban design, zoning, sign and building code requirements and any applicable provincial licensing requirements.

Historically, the Alcohol and Gaming Commission of Ontario ("AGCO") was responsible for approving temporary outdoor patios on private property in which liquor was to be served or sold. Beginning January 1, 2023, onus shifted to the municipality to review and approve temporary outdoor patios on private property.

Analysis:

This report and policy consider temporary (seasonal) outdoor patios which must comply with applicable zoning regulations and official plan guidelines to be eligible to receive a municipal permit. The term 'temporary outdoor patio' was used interchangeably during the pandemic to reference temporary 'pop-up' patios which were temporarily permitted to encroach into the establishment parking lot by six (6) spaces during the pandemic.

Under the *Liquor Licence and Control Act, 2019,* the Registrar for the AGCO will remain the licensing authority for liquor licences. Licensees must first get approval from the municipality for the temporary outdoor patio on municipal or private property, then provide the approval to the AGCO to be granted an extension to the existing liquor licence.

The AGCO has specified that the municipality may approve the operation of a temporary outdoor patio for a maximum eight (8) month period. As well, the municipality has the authority to impose conditions of approval, which the AGCO will honor. Revised Policy No. S201-04 seeks to establish a licensing process for temporary outdoor patios on private property, in addition to the current process for those on municipal property that comply with the Town Zoning By-law requirements.

Staff recommend renaming the policy from "Sidewalk Patio Encroachment Policy" to "Temporary Outdoor Patio on Municipal or Private Property". Additional housekeeping amendments are proposed to modernize and establish headings and numbered paragraphs to help readers and staff navigate and cite requirements.

Staff further recommend Council impose a permit fee of \$150.00 for temporary outdoor patios on municipal property. Currently, the Town requires no fee for the issuance of a municipal sidewalk encroachment permit. The permit process is managed through the Clerk's Office and involves the review of supporting documentation by the Planning and Development department, Fire and By-law services and Public Works department. Where the situation warrants, a site inspection may be conducted. The proposed application fee is in-line with the Planning and Development department's zoning compliance review fee.

To clarify, Staff do not recommend imposing a permit fee for temporary outdoor patios on private property. Part XII of the *Municipal Act, 2001,* governs the Town's ability to impose fees and charges for "services or activities provided or done" by the Town. Section 394 restricts the municipality from imposing a fee for "the use, purchase or consumption by a person of property other than property belonging to or under the control of the municipality".

In the past, Gelato Village, HillFire SMK & BBQ and the Travel Cafe have received approval for restaurant patio use on the municipal sidewalk. Other restaurants such as Volcano Pizza, Butcher and Banker, Mossimos, The Broken Gavel and Grill on Canboro have outdoor restaurant patios on their property but did not utilize municipal property for their outdoor patio use. It is recognized that the above listed establishments wishing to sell or serve liquor will now seek annual approval from the Town.

Financial Considerations:

The Town will require every applicant to provide a certificate of liability insurance to the Town of Pelham in the amount of \$5 million dollars for both temporary outdoor patios on municipal and private property.

The new approval framework for temporary outdoor patios will result in an influx of patio permit applications. Staff recommend a permit fee to recover staff time dedicated to reviewing the applications.

Alternatives Reviewed:

Council could direct that no permit fee be implemented. Should Council desire this approach, an amendment to strike the final paragraph within the recommendation would be required.

Strategic Plan Relationship: Enhancing Capacity and Future Readiness

As a result of the new approval framework, the Town is seeking to amend its existing patio policy to accommodate the requirements of food/beverage establishments in their pursuit of a liquor licence extension. Additionally, by requiring establishments to acquire an annual permit, the Town can ensure, as best as possible, public safety and accessibility.

Consultation:

AGCO Town Solicitor Planning and Development Department Fire and By-law Services

Other Pertinent Reports/Attachments:

Original Policy S201-04 Proposed Policy S201-04

Prepared and Recommended by:

Sarah Leach, B.A. Deputy Clerk

Prepared and Submitted by:

David Cribbs, BA, MA, JD, MPA Chief Administrative Officer



TOWN OF PELHAM POLICY MANUAL

		P201-04
Department: COUNCIL	Name of Policy: Sidewalk Encroachment	t
		Page 1 of 1

APPROVAL DATE: March 4, 2013

POLICY STATEMENT:

Council understands and is committed to the role of streets in the urban environment as places for pedestrian interaction. They should be designed with the pedestrian in mind, as well as a means for vehicles to pass through the urban environment. In order to encourage lively streetscapes and extend downtown activity and use into sidewalks, streets in all downtown areas should be designed to create destination opportunities for shopping, places to walk, and to sit and gather, such as cafés and patios.

Streets, parking lanes and sidewalks in downtown areas are public property, along with streetscape elements such as shade trees, planters, benches light standards etc. and must be considered in the use of sidewalks and parking lanes as places to sit and gather. Special non-pedestrian use of sidewalks and parking lanes must not inhibit pedestrian travel, emergency access and must be compliant with all accessibility standards and legislation.

The use of public sidewalks and parking lanes in downtown areas must apply to the Clerk's office for approval and must be compliant with, but not limited to:

- Accessibility for Ontarians with Disabilities Act, 2005 and applicable Ontario Regulations thereto;
- The Town of Pelham Urban Design Guidelines for Downtown Fenwick & Fonthill;
- Zoning By-law requirements;
- Sign By-law requirements;
- Building Code requirements.



Policy Name: Temporary Outdoor Patio on Municipal or Private Property	Policy No: S201-04
Committee approval date:	
Council approval date:	March 4, 2013
Revision date(s):	April 19, 2013
Department/Division:	Council

1. Purpose

- 1.1. The purpose of this policy is to provide application requirements and regulations for:
 - 1.1.1. Temporary Outdoor Patio Municipal Property
 - 1.1.2. Temporary Outdoor Patio Private Property

2. Policy Statement

2.1. This policy governs temporary outdoor patios on public or private property. This policy aims to support the economy while minimizing public interference and ensuring all health and safety requirements are met.

3. Definitions

"AGCO" means the Alcohol and Gaming Commission of Ontario.

"Temporary Outdoor Patio" means an outdoor seating area which operates as a seasonal extension accessory to the primary business of food and/or beverage service.

"Town" means the Corporation of the Town of Pelham.

4. General Provisions – Municipal and Private Property

4.1. Temporary Outdoor Patios shall comply with applicable smoking legislation and all other Federal, Provincial and Municipal legislation.

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- 4.2. Temporary Outdoor Patios shall be kept in good repair in a safe and secure condition.
- 4.3. Temporary Outdoor Patios shall maintain barrier-free access and comply with the *Accessibility for Ontarians with Disabilities Act, 2005* S.O. 2005, c. 11 and any applicable Regulations thereto.
- 4.4. Entrances to Temporary Outdoor Patios shall be open, unobstructed, and fully accessible to persons with disabilities, being 1.1 metres (3'7") and must comply with Ontario Building Code requirements, or the width of the patio entrance, whichever is greater.
- 4.5. Temporary Outdoor Patios shall only be established in locations where they do not obstruct required access to public utilities, service connections and access for emergency vehicles, and must be removable if emergency access if required.
- 4.6. Lands intended for Temporary Outdoor Patios must conform with applicable Zoning By-law requirements.

5. Temporary Outdoor Patio – Municipal Property

5.1. General Design Principles

- 5.1.1. The use of Town-owned land, including sidewalks and boulevards for use of a Temporary Outdoor Patio will be limited to the period of April 15th to October 31st.
- 5.1.2. The location and design of the Temporary Outdoor Patio shall strive to maintain the primacy of the public right-of-way for pedestrian and/or vehicular movement.
- 5.1.3. Temporary Outdoor Patios shall not create visibility or sightline obstruction to pedestrian or vehicular traffic.
- 5.1.4. Temporary Outdoor Patios shall not significantly obstruct on-street parking and shall comply with O. Reg 413/12 regarding maintenance of parking access aisles, and other necessary delivery access to private and public buildings.

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- 5.1.5. Residents living adjacent to a Temporary Outdoor Patio should be ensured a measure of privacy and separation.
- 5.1.6. No material shall project into the pedestrian or vehicular travelled portion.
- 5.1.7. Planter boxes are encouraged and must be contained within the approved Temporary Outdoor Patio area. Planter boxes shall be removed outside of the permitted period.
- 5.1.8. Except for municipally owned trees, permanent planting of trees or shrubs is not permitted in the Temporary Outdoor Patio area.
- 5.1.9. Waste receptacles should be situated away from the public sidewalk or boulevard.

5.2. Perimeter Fencing

- 5.2.1. Temporary Outdoor Patios must have a rigid barrier system which clearly delineates the patio area from pedestrian traffic. In certain circumstances, a second fixed barrier system may be required to separate pedestrian traffic from vehicular traffic. Costs associated with the installation and/or removal of the barrier shall be borne by the business owner.
- 5.2.2. Perimeter fencing should appear "open" and consist of materials complementary to Urban Design Guidelines and should be of a high-quality finish, compatible with the streetscape.
- 5.2.3. Perimeter fencing should be placed to permit sufficient clearance from any street furnishings such as trees, light standards, trash receptacles and benches in accordance with the applicable accessibility standards.
- 5.2.4. Perimeter fencing shall not penetrate the surface of the sidewalk or boulevard.
- 5.2.5. Perimeter fencing shall be situated to allow for unobstructed access to fire hydrants and pumper connections. Pumper connections on the side of a building shall remain clearly visible from the street view.

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- 5.2.6. Material shall not be stored on municipal property outside of the permitted period.
- 5.2.7. Failure to remove perimeter fencing outside of the permitted period will result in the Town removing it at the business owner's expense. This action may affect future approvals for a Temporary Outdoor Patio Permit.

5.3. Umbrellas, Awnings and Furnishings

- 5.3.1. The design and construction of awnings shall be in accordance with Town By-laws and may be subject to a building or sign permit.
- 5.3.2. Umbrellas and/or awnings must be retractable.
- 5.3.3. The lowest point of an awning shall be at least 2.34 metres (7'-8") above the sidewalk or boulevard floor and shall be installed in accordance with all applicable Town By-laws to the satisfaction of the Fire Chief.
- 5.3.4. A building permit is required for awnings if over 108 ft², or if attached to a building.
- 5.3.5. Awnings encroaching onto municipal property will be subject to an encroachment agreement.
- 5.3.6. Umbrellas must be free-standing and may either pass through the centre of tables and be sufficiently bottom-weighted or be free-standing and sufficiently stable to withstand local wind conditions, and when open, cannot exceed beyond the patio area.
- 5.3.7. Furnishings must be easily removable and shall not be permanently attached to the wall of the abutting building or the perimeter fence.
- 5.3.8. Furnishing must be contained within the perimeter of the patio area.
- 5.3.9. Failure to remove furnishing outside of the permitted period will result in the Town removing it at the business owner's expense. This action may affect future approvals for a Temporary Outdoor Patio Permit.

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5.3.10. Furnishing shall be situated to allow for unobstructed access to fire hydrants and pumper connections. Pumper connections on the side of a building shall remain clearly visible from the street view.

5.4. Grading

5.4.1. Temporary Outdoor Patios shall be level with the adjoining sidewalk or boulevard to allow for unobstructed access.

6. Temporary Outdoor Patio – Private Property

6.1. General Principles

- 6.1.1. Temporary Outdoor Patios may only operate for a maximum of eight (8) months per calendar year.
- 6.1.2. Upon obtaining approval from the municipality, the applicant is required to notify the AGCO before selling or serving liquor on the Temporary Outdoor Patio. This notification must include:
 - a. The start date that liquor will be sold and served on the temporary patio;
 - b. How many months per year you have been approved to operate the temporary patio;
 - c. The months that you intend to operate the temporary patio;
 - d. The expiry date of your approval (if applicable);
 - e. A description of the location and dimensions of the temporary patio;
 - f. Any conditions specified on the approval by the municipality or Band Council.
- 6.1.3. The establishment shall abide by the Liquor Licence and Control Act, 2019, its regulations, the Registrar's Interim Standards and Requirements for Liquor, Town By-laws, and policies, as well as any conditions imposed upon Page 5 of 7



the liquor licence and Temporary Outdoor Patio approval.

7. Signage and Advertising

- 7.1. Signage and advertising shall comply with the Town of Pelham Sign By-law, as amended.
- 7.2. The establishment name may appear on awning(s) or umbrella(s).
- 7.3. Menu displays may be attached to the building wall of the main establishment, but may not obstruct entrances, sidewalks, or boulevards.

8. Commercial General Liability Insurance

- 8.1. The Permit Holder shall obtain and maintain in full force and effect one or more policies of Commercial General Liability insurance underwritten by insurers licensed to conduct business in the Province of Ontario with aggregate limits of not less than five million dollars (\$5,000,000) per occurrence. The policy or policies shall include coverage for bodily injury, death, personal injury and property damage and shall contain cross-liability and severability of interest clauses. The policy or policies shall name the Town of Pelham as an additional insured and contain an undertaking by the insurer(s) to give thirty (30) days prior written notice to the Town of Pelham of any material change to the coverages provided and/or the cancellation or expiry of the said policy or policies.
- 8.2. The Permit Holder shall defend, indemnify and save harmless the Town of Pelham its elected officials, officers, employees and agents from and against any and all claims of any nature, actions, causes of action, losses, expenses, fines, costs (including legal costs), interest or damages of every nature and kind whatsoever, including but not limited to bodily injury, sickness, disease or death or to damage to or destruction of tangible property, and any consequential losses, arising out of or in any way attributable to the conduct of the Permit Holder, its directors, officers, employees, agents, contractors or any other person for whom it is in law responsible, in connection with or in any way related to the issuance or existence of this Permit or anything done or not done in accordance with or contrary to this Permit. This indemnity shall be in addition to and not in lieu of any insurance to be provided by the Permit Holder in

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accordance with the conditions of the Permit.

9. Temporary Outdoor Patio Permit Application Requirement(s)

- 9.1. Application for a Temporary Outdoor Patio on municipal or private property shall contain the following supporting documentation:
 - 9.1.1. Application fee in accordance with the Town of Pelham Fees and Charge By-law, if applicable.
 - 9.1.2. Proof of property ownership. Tenants must provide the property owner's written endorsement.
 - 9.1.3. Site Plan, to scale, including but not limited to:
 - a. Size and location of all entrances and exits from the patio;
 - b. Size of patio, including proposed table/chair layout;
 - c. Location and elevation of the perimeter fence enclosure;
 - d. Location of the patio as it relates to the existing building and any fire access routes for the property;
 - e. Location of street, sidewalk, property lines, utility poles, fire hydrants and trees;
 - f. Size and location of encroachment onto municipal property, if applicable.
 - 9.1.4. Liquor Licence issued by the AGCO, if applicable.
 - 9.1.5. Commercial General Liability insurance (refer to section 8).
 - 9.1.6. A Fire Safety Plan may be required.



The Corporation of the Town of Pelham

By-law No. 26-2023

Being a By-law to amend Zoning By-law 4481(2022), as amended, for lands located south of Port Robinson Road, east of Stella Street and west of the Steve Bauer Trail, legally described as Part of Lot 173, Geographic Township of Thorold, Now in the Town of Pelham, Regional Municipality of Niagara, from the Residential One (R1) and Environmental Protection (EP1) Zones to the site specific Residential Two – 156 (R2-156), Environmental Protection 1 (EP1) and Open Space (OS) zones.

File No. AM-03-2020

WHEREAS section 34 of the *Planning Act*, RSO 1990, c. P. 13, as amended provides that the governing body of a municipal corporation may pass bylaws to regulate the use of lands and the character, location and use of buildings and structures;

AND WHEREAS the Council of the Corporation of the Town of Pelham has recommended that such a by-law be enacted;

AND WHEREAS the Council of the Corporation of the Town of Pelham deems it to be in the public interest that such a by-law be enacted;

NOW THEREFORE the Council of the Corporation of the Town of Pelham enacts as follows:

- THAT Schedule 'C' to Zoning By-law 4481(2022), is hereby further amended by rezoning the lands identified on Schedule 'A' attached hereto and forming part of this By-law from the Residential One (R1) and Environmental Protection (EP1) Zones to a site specific Residential Two – 156, Environmental Protection (EP1) and Open Space (OS) Zones;
- 2. **AND THAT** Section 10 of Zoning By-law 4481(2022) as amended, is hereby amended by adding the following:

R2-156

Notwithstanding the requirements of Section 6.2.2 of the Residential 2 (R2) zone, 3.7 Encroachments and 4.1.4.3(a) Driveways the following regulations shall apply:

Minimum Lot Frontage Minimum Lot Area Minimum Front Yard	15.0m 450 m2 4.5 m to building face;
	6 m to garage
Maximum Front Yard	n/a
Minimum Side Yard	1.2m on one side and 3m on the
	other side where there is no
	attached carport or garage; 1.2 m
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	with an attached carport or garage
Minimum Corner Side Yard	3.0m to dwelling; 6.0 m to garage
Minimum Rear Yard	7.5 m
Maximum Building Height	10.5 m measured to the mid-point of the roof
Maximum Lot Coverage	50% two-storey; 60% bungalow

Unenclosed porches, balconies, steps and patios, covered or uncovered shall not be permitted within 2.5 m of the front lot line or exterior side lot line, and 2.0 m of the rear lot line provided that, such uses are not more than 1.3 m above ground.

Uncovered patios and decks shall not be permitted within 1.2 m of a rear or side lot line provided that, such uses are not more than 0.3 m above ground.

In any zone where a dwelling is permitted, the maximum driveway width shall be 50% of the frontage or the exterior side lot line distance, whichever is less for the entire length of the driveway;

3. **THAT** this Bylaw shall come into force and effect from and after the date of passing thereof, pursuant to Section 34(21) and 34(30) of the *Planning Act*, 1990, as amended.

Read, enacted, signed and sealed this 19th day of April 2023.

Marvin Junkin, Mayor

William Tigert, Town Clerk

Schedule 'A'





The Corporation of the Town of Pelham

By-law No. 27-2023

Being a By-law to Authorize the Execution of a Lease Agreement with Fonthill Platform Tennis Club for the lands and clubhouse facility at 1120 Haist Street.

WHEREAS Report #2023-0105 – Town Solicitor was considered and approved by Council of the Corporation of the Town of Pelham at the Regular Council Meeting held April 19, 2023;

AND WHEREAS Council of the Corporation of the Town of Pelham deems it desirable to enter into a lease agreement with Fonthill Platform Tennis Club with respect to the lands and clubhouse facility at 1120 Haist Street;

NOW THEREFORE the Council of the Corporation of the Town of Pelham enacts as follows:

- 1. That the Corporation of the Town of Pelham is authorized to enter into a lease agreement with Fonthill Platform Tennis Club for the lands and clubhouse facility at 1120 Haist Street.
- 2. That the lease agreement appended hereto as Appendix "A" is approved.
- 3. That the Mayor and the Acting Town Clerk are authorized and directed to execute the lease agreement appended hereto as Appendix "A".
- 4. That the Acting Town Clerk is authorized to effect any minor modifications or corrections solely of an administrative, clerical, numerical, grammatical, semantical or descriptive nature or kind to this By-law or to Appendix "A" as are determined to be necessary.

Read, enacted, signed and sealed this 19th day of April, 2023.

Marvin Junkin, Mayor

William Tigert, Town Clerk

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THIS LEASE dated this _____ day of _____, 2023 and made in pursuance of the *Short Forms of Leases Act*, R.S.O. 1990, c. S.11 ("the Lease")

BETWEEN:

THE CORPORATION OF THE TOWN OF PELHAM

("the Town")

- and -

FONTHILL PLATFORM TENNIS CLUB

("the Club")

WHEREAS the Town is the owner of a property in the Town of Pelham municipally known as 1120 Haist Street and as illustrated in Schedule "A", including all buildings and structures located thereon ("the Premises"); and

WHEREAS the Club desires to lease the Premises for the purpose of operating a platform tennis facility; and

WHEREAS the Town desires to lease the Premises to the Club for the said purpose, subject to the terms and conditions contained herein; and

WHEREAS the Club is a corporation, duly incorporated pursuant to the laws of Ontario, and has properly authorized the entering into of this Lease; and

WHEREAS By-law No. XX-2023 was passed by the Council of the Town on [date], authorizing the Town to enter into this Lease;

NOW THEREFORE, IN CONSIDERATION of the covenants and agreements contained herein, the Town demises and leases unto the Club, and the Club leases from the Town, the Premises on the following terms:

1. TERM

1.1. The Town demises and leases the Premises to the Club for a term of seven (7) years commencing on the first (1st) day of January 2023 and ending on the thirty-first (31st) day of December 2029 ("the Term"), unless terminated earlier pursuant to the provisions of this Lease.

- 1.2. The Town and the Club shall consider a renewal of this Lease for a further term of three (3) years, on the same or different terms as contained herein, and subject to the following conditions:
 - (a) not less than six (6) months and not more than eighteen (18) months prior to the end of the Term, the Club shall provide written notice to the Town of its desire to renew this Lease;
 - (b) within thirty (30) days of receiving such notice, the Town shall advise the Club as to whether it is prepared to enter into discussions to renew the Lease;
 - (c) the terms and conditions of the Lease renewal shall be mutually agreeable to the Town and the Club; and
 - (d) the renewal of the Lease shall be approved by the Council of the Town.
- 1.3. If the Club remains in possession of the Premises after the end of the Term or an earlier termination as provided for in this Lease, there shall be no tacit renewal of this Lease notwithstanding any statutory provision to the contrary.
- 1.4. If the Town consented in writing to the overholding described in subsection 1.3, then the Club shall be deemed to be occupying the Premises as a monthly tenant and such tenancy may be terminated by either the Town or the Club on thirty (30) days' notice and otherwise on the same terms as contained herein. Any acceptance by the Town of the Lease Fee or other consideration shall not imply consent to any overholding by the Club.
- 1.5. Nothing in this Lease shall limit the liability of the Club in damages or otherwise for any overholding and the Club shall forthwith indemnify and hold the Town harmless from and against any and all claims incurred by the Town as a result of the Club overholding after the expiry of the Term or after earlier termination as provided for in this Lease.

2. LEASED PREMISES

- 2.1. The Premises are illustrated in Schedule "A", which is appended hereto and forms part of this Lease.
- 2.2. During the Term of this Lease, the Club shall be entitled to the use and enjoyment of the Premises as follows:
 - (a) the Club shall have exclusive use of the building and the two (2) enclosed platform tennis court structures on the Premises as shown in Schedule "A"; and
 - (b) the Club shall have non-exclusive use of the remainder of the Premises as shown in Schedule "A", including but not limited to the lands surrounding the building and the enclosed platform tennis court structures, and the parking area at the Premises.

3. AMOUNTS PAYABLE BY THE CLUB

- 3.1. The Club shall pay to the Town annual rent in the amount of one dollar (\$1.00) plus any applicable taxes, payable in advance and in full on or before the first (1st) day of January in each year of the Term ("the Lease Fee").
- 3.2. The Club shall pay all utility charges, including any penalties or interest that may accrue, for electricity, water, gas and any other services or utilities supplied to the Premises at any time during the Term.

- 3.3. The Club shall pay all taxes assessed to the Premises and/or the business or operations of the Club, including but not limited to municipal property taxes.
- 3.4. All sums payable by the Club to the Town under this Lease for rent, municipal taxes or otherwise, that remain unpaid over ninety (90) days from the date on which the payment is due, shall bear interest in accordance with the Fees and Charges By-law of the Town.

4. USE AND CONDITION OF THE LEASED PREMISES

- 4.1. The Club covenants and agrees that it shall use the Premises solely to operate a platform tennis facility and for no other purpose.
- 4.2. The Club shall be permitted to provide food and refreshments to club members and other persons using its facilities but shall not be permitted at any time to operate a concession at the Premises, provided that all applicable public health and fire safety requirements are met.
- 4.3. Subject to the terms and conditions of this Lease, the Club accepts the Premises in the condition existing on the first day of the Term.
- 4.4. Other than as expressly set out in this Lease, the Town shall have no responsibility for any repair, renovation or maintenance of the Premises or of any equipment or fixtures contained therein.
- 4.5. Other than as expressly set out in this Lease, the Club shall undertake no improvements, alterations or works at the Premises without first obtaining written consent from the Town, which shall not be unreasonably withheld.
- 4.6. In addition to the obtaining the consent of the Town as required by subsection 4.5, the Club shall obtain all permits, consents, approvals and inspections required by law for any repairs, renovations, maintenance, improvements, alterations or works undertaken at the Premises.
- 4.7. Upon termination of this Lease by expiry or otherwise, the Club shall not be entitled to reimbursement by the Town for any costs incurred by the Club relating to any alterations, improvements or works it may undertake at the Premises either by virtue of its obligations under this Lease or of its own initiative.
- 4.8. The Town shall have no responsibility for damage to the chattels, fixtures, improvements, alterations or works of the Club at the Premises during the Term except to the extent that it is caused by the conduct of the Town or any person for whom it is in law responsible.

5. OBLIGATIONS OF THE TOWN

- 5.1. The Town covenants and agrees:
 - (a) to promptly review and consider requests for consent to improvements, alterations or works submitted by the Club under subsection 4.5;
 - (b) to complete periodic snow removal at the parking lot of the Premises in accordance with Town policies and procedures for snow removal in municipal parks;

- (c) to complete periodic grass cutting on lands surrounding the building and enclosed platform tennis court structures in accordance with Town policies and procedures for grass cutting in municipal parks; and
- (d) subject to subsection 2.2, to provide the Club with exclusive use and quiet enjoyment of the Premises during the Term.

6. OBLIGATIONS OF THE CLUB

- 6.1. The Club covenants and agrees:
 - (a) to pay the Lease Fee, utility charges and taxes in accordance with section 3;
 - (b) to operate and manage the platform tennis facility at the Premises;
 - (c) to operate its programs and activities at the Premises in such a manner that they are available to any resident of the Town who satisfies the ordinary requirements of the Club for membership and use of its facilities;
 - (d) to ensure that all outside activities at the Premises cease no later than 11:00 p.m. and that all indoor activities at the Premises cease no later than 1:00 a.m.;
 - (e) to comply with all Town by-laws applicable to its operations including but not limited to the Noise Control By-law;
 - (f) to undertake reasonable and necessary routine maintenance and minor repairs of the Premises during the Term, which shall not require the consent of the Town under subsection 4.5 provided that no permits are required for same;
 - (g) at the end of the Term, to remove from the Premises any fixtures, goods or chattels belonging to the Club unless the Town and the Club agree that certain fixtures, goods and/or chattels may remain;
 - (h) to repair any damage caused by the removal of its fixtures, goods and/or chattels and to leave the Premises in a neat and clean condition, all to the satisfaction of the Town;
 - (i) to maintain insurance coverage in accordance with section 7; and
 - (j) not to assign this Lease or any part of it without the Town's prior written approval.

7. INSURANCE AND INDEMNITY

- 7.1. During the Term, the Club shall maintain in full force and effect one or more policies of commercial general liability insurance with aggregate limits of not less than five million dollars (\$5,000,000.00) per occurrence. The policy or policies shall include coverage for bodily injury, death and property damage and shall contain cross-liability and severability of interest clauses. The policy or policies shall name the Town as an additional insured with respect to this Lease and shall contain an undertaking by the insurer(s) to give thirty (30) days prior written notice to the Town of any material change to the coverages and/or the cancellation or expiry of the said policy or policies. The Club shall provide the Town with proof of such insurance upon request.
- 7.2. The Town and the Club shall each indemnify and save harmless the other and its officers, employees, volunteers and agents from and against all losses, claims, actions, demands and liabilities for personal injury or property damage arising as a direct or indirect result of this Lease, where such claims are caused wholly or in part by the negligence of the Town or the Club, as the case may be, or by anyone for whom it is in law responsible.

8. DEFAULT AND TERMINATION

- 8.1. This Lease is conditional upon the Club obtaining all permits, consents, approvals and funding necessary to undertake any improvements, alterations or works at the Premises and to operate at the Premises. If the Club is unable to obtain any such permit, consent, approval or funding, the Town shall be entitled, in its sole discretion, to terminate this Lease without further liability.
- 8.2. Failure to comply with any of the terms and conditions of this Lease shall be just cause for its termination. If either of the Town or the Club defaults in the performance of any of its obligations under this Lease, the non-defaulting party shall give written notice of the default and shall provide thirty (30) days to remedy it, failing which the non-defaulting party may terminate this Lease by written notice.
- 8.3. The Town and the Club shall each have the option to terminate this Lease at any time by giving eighteen (18) months' written notice to the other party. Upon such termination, the Club shall promptly remove any fixtures, equipment, goods or chattels it may have installed or placed in or upon the Premises and shall repair any damage to the Premises resulting from such removal.
- 8.4. This Lease may be revised, amended or terminated at any time during the Term by mutual agreement of the Town and the Club. Any such agreement shall be made in writing, signed by the parties, and appended to this Lease.
- 8.5. The termination of this Lease by expiry or otherwise shall not affect the liability of either of the Town or the Club to the other with respect to any obligation under this Lease which has accrued up to the date of such termination but has not been properly satisfied or discharged.

9. DISPUTE RESOLUTION

- 9.1. In case of any dispute between the parties during the Term as to any matter arising under this Lease, the party that disputes the other's position or conduct shall immediately provide written notice to the other party.
- 9.2. Where a notice of dispute is received in accordance with section 9.1, the Town and the Club shall attempt to resolve the dispute through negotiation. If a dispute cannot be resolved through negotiation, it shall be arbitrated in accordance with the *Arbitration Act*, *1991*, S.O. 1991, c. 17. The arbitrator's decision shall be final and binding on the parties.
- 9.3. The Town and the Club shall each bear their own costs associated with the determination of disputes arising under this Lease, including but not limited to legal costs and arbitration costs.

10. GENERAL

10.1. This Lease constitutes the entire agreement between the Town and the Club in relation to the matters set out herein. There are no other representations, warranties, covenants, agreements or terms relating to the subject matter of this Lease. This Lease supersedes any prior discussions, understandings or agreements between the Town and the Club in relation to its subject matter.

- 10.2. The invalidity or unenforceability of any particular term of this Lease shall not limit the validity or enforceability of the remaining terms, each of which is distinct and severable from all other terms of this Lease.
- 10.3. Waiver by a party of any provision of this Lease shall not constitute a waiver in any other instance and any such waiver must be made in writing. Moreover, any delay or failure on the part of either party to exercise or enforce any right, power or remedy conferred by this Lease shall not constitute a waiver of same and shall not operate as a bar to that party exercising or enforcing such right, power or remedy at any subsequent time.
- 10.4. This Lease shall be binding upon and enure to the benefit of the Town and the Club and to their respective successors and permitted assigns.
- 10.5. This Lease shall be governed by and construed in accordance with the laws of the Province of Ontario and laws of Canada applicable therein.
- 10.6. The Town and the Club both represent and warrant that:
 - (a) they are corporations validly subsisting under the laws of the Province of Ontario and have full corporate power and capacity to enter into this Lease and any documents arising from this Lease; and
 - (b) all necessary corporate action has been taken to authorize the entry into, execution and delivery of this Lease.
- 10.7. All communications or notices required under or contemplated by this Lease shall be considered to have been sufficiently given if delivered by hand, sent by registered mail or sent by email to the party to which such notice is directed as set forth below:

If to the Town:	The Corporation of the Town of Pelham P.O. Box 400 20 Pelham Town Square Fonthill ON L0S 1E0
	Attention: Town Clerk
If to the Club:	Fonthill Platform Tennis Club 1120 Haist Street Fonthill ON L0S 1E2
	Attention: Terry Molkoski, President tmolkoski@gmail.com

or such other address of which either party has notified the other, in writing, and any such notice mailed or delivered shall be deemed good and sufficient notice under the terms of the Lease.

10.8. Notices delivered or sent by prepaid registered mail are deemed to be effective on the date of receipt. Notices sent by email are deemed to be effective on the day the email is sent or, if sent after 4:00 p.m., on the following day.

10.9. This Lease may be signed in counterpart, each of which is an original, and all of which taken together constitute one single document. Counterparts may be executed on different dates and in original or electronic form and may be exchanged by way of mail or PDF file delivered by email.

IN WITNESS WHEREOF the parties have executed this Lease by their authorized representatives and agree to be bound thereby as of the first day of the Term.

By: Name: Title:
By: Name: Title:
I/We have authority to bind the Corporation.
Date:
FONTHILL PLATFORM TENNIS CLUB
Ву:
Name: Title:
Name:
Name: Title: By: Name:
Name: Title: By: Name: Title:

THE CORPORATION OF THE TOWN OF PELHAM



SCHEDULE "A"



0 12.5 25 50 75 100 Meters



The Corporation of the Town of Pelham

By-law No. 28-2023

Being a by-law to adopt, ratify and confirm the actions of the Council at its regular meeting held on the 19th day of April 2023.

WHEREAS section 5(3) of the *Municipal Act, 2001,* S.O. 2001, c. 25 ("*Municipal Act, 2001*" or "the statute") provides that, unless otherwise authorized, the powers of Council shall be exercised by by-law;

AND WHEREAS it is deemed desirable and expedient that the actions of the Council as herein set forth be adopted, ratified and confirmed by by-law;

NOW THEREFORE the Council of the Corporation of the Town of Pelham enacts as Follows:

- (a) The actions of the Council at its meeting held on the 19th day of April, 2023, including all resolutions or motions approved, are hereby adopted, ratified and confirmed as if they were expressly embodied in this by-law.
 - (b) The above-mentioned actions shall not include:
 - i. any actions required by-law to be taken by resolution; or
 - ii. any actions for which prior Ontario Municipal Board approval is required, until such approval is obtained.
- The Mayor and proper officials of the Corporation of the Town of Pelham are hereby authorized and directed to do all things necessary to give effect to the above-mentioned actions and to obtain approvals where required.
- **3.** Unless otherwise provided, the Mayor and Clerk are hereby authorized and directed to execute and the Clerk to affix the seal of the Corporation of the Town of Pelham to all documents necessary to give effect to the above-mentioned actions.
- **4.** This By-law shall come into force on the date that it is enacted.

Read, enacted, signed and sealed this 19th day of April, 2023.

Marvin Junkin, Mayor

William Tigert, Town Clerk

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