

Aggregate Potential Assessment

Smithville Master Community Plan and Municipal Class Environmental Assessment

Township of West Lincoln

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1. Introduction and Purpose

1.1 Introduction

The Township of West Lincoln (or the Township) is completing a Master Community Plan Study to guide future development in the Community of Smithville, including the identification of the preferred area(s) for urban boundary expansion. A Subwatershed Study is also being undertaken to address environmental and stormwater considerations associated with the Twenty Mile Creek watershed and support the Master Community Plan Study.

The Study Area includes the current Smithville urban settlement area and 425 gross hectares (4.25 square kilometre) of potentially developable land surrounding Smithville, known as the Smithville Development Study Area.

The Smithville Master Community Plan project was commenced under the direction of the Township in collaboration with Niagara Region following an update to the Region's Growth Management Strategy, which forecasted new population and employment targets for West Lincoln and designates Smithville as the location for most of the Township's anticipated future growth.

Population and employment growth within the community will require an expansion to the urban area. The Master Community Plan process will determine the location and amount of potentially developable land.

In preparation of developing the Smithville Master Community Plan, accompanying technical studies were undertaken during the preliminary phase of the project to provide background information to understand the existing character of Smithville and the Study Area, including the opportunities and challenges that must be taken into consideration when planning for future growth inside and outside of the approved urban boundary.

This report focuses on the Aggregate Potential Assessment as a support document for the Smithville Master Community Plan and Integrated Municipal Class Environmental Assessment study.

1.2 Planning Context

The Master Community Plan is being developed under the Planning Act and is integrated with the infrastructure planning in accordance with the requirements of the Municipal Engineers Association's Municipal Class Environmental Assessment for Water, Wastewater and Roads (as amended in 2015) Master Plan Approach #4. This

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approach is desirable for long term planning where interdependent decisions which impact servicing and land use are being made and the range of servicing alternatives needs to be addressed in an integrated fashion, so as to recommend the best overall solution for the community.

Together with the Environmental Assessment Act, the Master Community Plan will include the location of arterial and collector roads, distribution and density of land uses, water and wastewater (including stormwater) servicing, environmental protection and sustainable design policies. The Plan will identify the preferred approach to phasing that will guide future development and address all infrastructure requirements for the selected urban expansion area(s). The Plan will also support amendments to the Regional Municipality of Niagara and Township of West Lincoln Official Plans.

1.3 Purpose of Aggregate Potential Assessment

The objectives of the Aggregate Potential Assessment are as follows:

- Characterize the Aggregate Potential within and outside the immediate boundary of each Smithville Designated Settlement Area Community Expansion Study Area through review of available background information;
- Assess the quantity, quality, and priority of the Aggregate Potential Area(s) within each Community Expansion Study Area;
- Review applicable provincial policies to ensure the Aggregate Potential Assessment will be consistent with policies as they relate to the protection of aggregate resources and the Community Expansion Study Area;
- Assess the capacity for extraction of any identified Aggregate Potential Area(s) within each Community Expansion Study Area and immediate surrounding area; including potential impacts on Natural Heritage Features/Systems and existing Community of Smithville, existing residential development and agricultural operations within 120 metres of each Aggregate Potential Area, and transportation infrastructure; and,
- Develop, as appropriate, an Interim Strategy for the various identified Aggregate Potential Areas.

2. Study Area

The study area, as shown in the appended figures, consists of the current Smithville urban settlement area and the Smithville Development Study Area. The Smithville Development Study Area encompasses 425 gross hectares of potentially developable land and is roughly bounded by Young Street to the north. The eastern boundary generally follows the existing Smithville Urban Boundary to the east, except where it extends further east and north of the Hydro Corridor. The Smithville Development Study Area boundary is also defined by North Creek to the south, and South Grimsby Road Six to the west.

The existing built-up area of Smithville is the Township's primary urban centre. It is characterized predominantly of residential uses with some commercial, employment, institutional and recreational uses. The Smithville Development Study Area is characterized primarily of lands currently in agricultural production. They remain predominantly undeveloped, aside from buildings and structures associated with agricultural operations and natural heritage features.

3. Background Information

The following background policies, regulations, plans, technical reports and mapping were reviewed and considered in the completion of this Aggregate Potential Assessment:

- *Aggregate Resources Act* (R.S.O. 1990);
- Niagara Peninsula Conservation Authority documentation in relation to the 20 Mile Creek watershed;
- Ontario Geological Survey and Geological Survey of Canada Physiography, Surficial Geology, Quaternary Geology and Paleozoic (Bedrock) Geology mapping;
- Ontario Geological Survey, 1985. *Aggregate Resources Inventory of Towns of Grimsby and Lincoln and the Township of West Lincoln, Regional Municipality of Niagara, Southern Ontario*. ARI Paper No. 104;
- Ontario Ministry of the Environment, Conservation and Parks' Water Well Information System, Permit to Take Water, Environmental Activity and Sector Registry, and Source Water Protection Atlas databases;
- Ontario Ministry of Natural Resources and Forestry (MNRF) Pits and Quarries Online Database;
- Provincial Policy Statement, 2014;
- Provincial Policy Statement, 2020 (comes into effect May 1st, 2020);
- Regional Municipality of Niagara, 2014. *Official Plan (Consolidated)*;
- Regional Municipality of Niagara, 2020. *Official Plan (Draft Documentation Produced To-Date)*;
- Township of West Lincoln, 2018. *Official Plan (Consolidated)*; and,
- Vos, M.A., 1969. *Stone Resources of the Niagara Escarpment*. Ontario Department of Mines, Industrial Mineral Report 31.

4. Existing Conditions

4.1 Physical Environment

The physical environment within and surrounding the Community of Smithville (and each Community Expansion Study Area), includes a mixture of various erosional and depositional geological processes / features. As such, it is prudent to initially discuss and clarify the local physical setting, such that subsequent interpretations, opinions and recommendations regarding aggregate resource potential can be more confidently formed.

The following sub-sections provide a description of the local physical setting, as derived from a review of available literature resources.

4.1.1 Physiography

The Community of Smithville and its surrounding area lies within a physiographic region known collectively as the Haldimand Clay Plain (Chapman and Putnam, 1984). This clay plain occupies an area of approximately 3,500 kilometres squared, and extends across a significant portion of the Niagara Peninsula (with exception of the fruit belt below the Niagara Escarpment) southward from the Niagara Escarpment to Lake Erie, as shown in **Figure 1**.

The Haldimand Clay Plain formed during the Late Wisconsinan Substage of the Pleistocene Epoch as the glacial ice margin retreated north-easterly to a position along the top of the Niagara Escarpment, during which time several glacial lakes occupied the area to the south (Ontario Geological Survey, 1985). Silt and clay soils were deposited across the plain in deeper waters (quiescent environment) of the historic glacial lakes. As a result of its depositional origin, topography across the plain ranges generally from rolling to nearly level.

4.1.2 Surficial Geology

Available Ontario Geological Survey (2010) mapping indicates that the local surficial geology is comprised primarily of fine-textured glaciolacustrine deposits. Exceptions occur in association with the present-day alignment of Twenty Mile Creek, where instances of bedrock outcropping and modern alluvial deposits are reported.

As shown in **Figure 2**, a series of four surficial geologic units have been reported by Ontario Geological Survey to occur within the local area, including:

- Unit 3 (Paleozoic Bedrock);
- Unit 5d (Till): Clay to Silt-Textured. Derived from Glaciolacustrine Deposits or Shale;
- Unit 8a (Glaciolacustrine Deposits): Silt and Clay, Minor Sand and Gravel. Massive to Well Laminated; and,
- Unit 19 (Modern Alluvial Deposits): Clay, Silt, Sand, Gravel. May Contain Organic Remains.

4.1.3 Quaternary Geology

The Quaternary geology of the area is described by Ontario Geological Survey (1985) to consist dominantly of finer-grained glaciolacustrine deposits, having been laid down under quiescent water conditions within a deep water environment, as shown in **Figure 3**. Silts and clays dominate the local overburden profile, although instances of coarser-grained (sand and gravel) alluvial soils are also noted to occur intermittently throughout the area, primarily in association with Twenty Mile Creek, as well as other local watercourses.

Review of the stratigraphic details contained on a number of local Ontario Ministry of the Environment, Conservation and Parks water well records confirms the geologic descriptions presented by Ontario Geological Survey, with 'clay' being reported as the dominant soil type locally. Gravel and stones also are reported to occur periodically as secondary materials within the dominantly clay soil profile. Intermittent occurrences of 'loam' or 'sandy' soils are identified for wells constructed in the vicinity of local watercourses.

4.1.4 Overburden Thickness

Thickness of the overburden atop the Paleozoic bedrock surface varies throughout the local area, as indicated in **Figure 4**. Based on a review of available Ontario Geological Survey mapping and Ontario Ministry of the Environment, Conservation and Parks Water Well Information System database, the overburden thicknesses has been determined to range locally from 0 metres (bedrock exposure at surface) at certain locations along the present-day alignment of Twenty Mile Creek, to in excess of 12 metres (40 feet) a short distance to the north of the existing developed limit of the Community of Smithville (i.e., within the northernmost Smithville Development Study Area and associated Community Expansion Study Area). Typical overburden

thicknesses in the area range between approximately 3.7 metres and 6.1 metres (12 feet to 20 feet).

4.1.5 Bedrock Geology

Ontario Geological Survey mapping (2007) indicates that two distinct Paleozoic bedrock formations of Silurian age underlie the local area, as shown in **Figure 5**, the geologic contact of which is oriented approximately northwest-southeast and through the existing Community of Smithville.

Residing to the north and east of the geologic contact is the erosion-resistant dolostone bedrock of the Lockport Formation, which forms the erosion-resistant cap rock of the Niagara Escarpment (Ontario Geological Survey, 1975). Locally, the Lockport Formation is comprised of three distinct geologic members, including (geologically from oldest to youngest):

- **Gasport Geologic Members:**

Fine to medium-grained, medium to massive-bedded, porous and fossiliferous dolostone. The Gasport geologic members is well suited for the production of a range of aggregate products. A number of quarries in the area have been developed in the Gasport geologic members.

- **Goat Island Geologic Members:**

Overlies the Gasport geologic members. and is comprised of a very fine-grained dolostone. Chert is abundant in places, and where present, usually is concentrated near the base of the formation. The Goat Island geologic members has been extracted for a range of aggregate materials across the Niagara Peninsula. Where abundant, chert may restrict high-specification use of the dolostone.

- **Eramosa Geologic Members:**

Represents the uppermost bedrock of the Lockport Formation in the Smithville area, comprising a dark brown, thin-bedded, very fine-grained dolostone. Bituminous or shaly partings are common and gypsum and chert nodules may be abundant. The Eramosa geologic members has been extracted for a wide variety of crushed stone products for use in road-building and construction. Vos (1969) reports that lithological variations in the Eramosa geologic members may prevent its use in certain areas and that sites for extraction should be thoroughly tested prior to development.

The Guelph Formation overlies the Lockport Formation to the south and west of the local geologic contact. Dolostone of the Guelph Formation is described as being

massive-bedded, fine-grained, and usually possess a high chemical purity that is valuable as a raw material for numerous industrial applications (Ontario Geological Survey, 1985). The rock typically is soft and generally not well-suited for use as load-bearing aggregate materials, however. Typically, the Guelph Formation is overlain by a thick covering of overburden, with exception of relatively small areas near its contact with the Lockport Formation where the overburden is commonly less than about 8 metres (25 feet) in thickness (Ontario Geological Survey, 1985).

4.1.6 Groundwater Resources

Given its typically fine-grained composition, Ontario Ministry of the Environment, Conservation and Parks well records indicate that the overburden is rarely targeted as a source for local groundwater supplies. Rather, groundwater resources at varying depths within the upper bedrock are targeted by the predominance of local well supplies.

4.2 Aggregate Resource Potential

4.2.1 Overburden Resources

Potential for the development of unconsolidated (i.e., sand and/or gravel) overburden aggregate resources is considered to be low within the Smithville area given the known local geologic profile and depositional origin. Where present, any sand and/or gravel resources that may exist locally would be restricted in quality, thickness, and areal extent.

Ontario Geological Survey (1985) has classified overburden sand and gravel (unconsolidated) within the area as a Tertiary Resource, and thus has not been selected for resource protection. This interpretation is supported by Schedule D2 (Potential Resource Areas: Sand and Gravel) of the Region of Niagara's (2014) Official Plan which does not identify any unconsolidated aggregate resource areas within the Township of West Lincoln, save for two isolated locales along its western boundary with the City of Hamilton.

Based on the foregoing, unconsolidated aggregate resources have not been considered further as part of the current Aggregate Potential Assessment.

4.2.2 Bedrock Resources

Locally, two specific bedrock areas have been identified by Ontario Geological Survey (1985) for protection, as illustrated by aggregate resource areas #1d / #1e in **Figure 6**. The location and extent of these aggregate resource areas generally corresponds with that which currently is presented in Schedule 'C-5' of the Township of West Lincoln's

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(2018) Official Plan, as well as Schedule D1 of the Region of Niagara's (2014) Official Plan.

The identified resource areas above pertain to dolostone bedrock of the Lockport Formation, and thus represents the focus of the current Aggregate Potential Assessment. Consideration of bedrock resources of the Guelph Formation to the south and west is not provided herein.

Within Resource Area #1 (**Figure 6**), the overburden is typically less than 8 metres (25 feet) thick, and overlies the Lockport Formation Locally, within Resource Areas #1d / #1e, the Eramosa geologic members together with part of the underlying Goat Island geologic members and Gasport geologic members have been identified by Ontario Geological Survey (1985) for possible aggregate extraction.

An average thickness of 9 metres (30 feet) has been estimated by Ontario Geological Survey for the Eramosa geologic members within the Smithville area, however, it may potentially exceed 21 metres (70 feet) as which occurs at the Lincoln Quarry situated approximately 3 kilometre northeast of the current developed limits of the Community of Smithville. Since the underlying Goat Island geologic members and Gasport geologic members also are well-suited for aggregate resource development, an 18 metres (60 feet) workable thickness estimate was adopted for Resource Areas #1d / #1e by Ontario Geological Survey (1985), a value which has been incorporated into the current Aggregate Potential Assessment, as summarized in **Table 1**.

An average unit weight of dolostone bedrock of 2.68 tonnes/m³ has been allocated for each of the three geologic members of the Lockport Formation (Ontario Geological Survey, 1985).

Review of Ontario Ministry of Natural Resources and Forestry Pits and Quarries online database has not indicated the presence of any licensed aggregate properties within or in the vicinity of the Community of Smithville; inclusive of each Community Expansion Study Area. The nearest licensed aggregate properties are the Lincoln Quarry (Nelson Aggregate Co.) and Spring Creek Aggregates (Walker Aggregates), located outside of the Township (within Town of Lincoln), at distances of approximately 3 kilometres and 3.75 kilometres to the northeast, respectively. Based on this review, a value of '0' has been allocated for existing 'extracted area' within each Community Expansion Study Area in **Table 1**.

The 'total area', 'unlicensed area' and 'natural environment setback' values in **Table 1** below have been estimated through a GIS exercise based on the proposed Community Expansion Study Area boundaries, and utilizing mapping contained in Schedule 'C' of the Township's (2018) Official Plan (**Figure 7**). As indicated in the table, cultural

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heritage setbacks have not been considered at this time based on an absence of data in this regard. It is recommended that the resource calculations determined herein be revisited in the future once when/if additional information regarding cultural heritage considerations / setbacks becomes available.

Based on the foregoing assessment, potential bedrock aggregate resource volumes ranging from 0 to 52.3 million tonnes has been estimated for each Community Expansion Study Area, as summarized in **Table 1**.

Table 1: Aggregate Resource Volume Assessment

Community Expansion Study Area No.	Total Area (hectares)	Unlicensed Area (hectares)	Cultural Heritage Setback (hectares)	Natural Environment Setback (hectares)	Extracted Area (hectares)	Available Resource Area (hectares)	Available Resources (millions of tonnes)
1	167.3	65.3	TBD	18.3	0.0	47.0	22.7
2	129.8	109.5	TBD	1.1	0.0	108.4	52.3
3	129.1	9.5	TBD	1.6	0.0	7.9	3.8
4	120.9	0.0	TBD	0.0	0.0	0.0	0.0
5	15.4	0.4	TBD	0.3	0.0	0.1	<0.1
6	76.6	42.1	TBD	18.0	0.0	24.1	11.6
TOTAL:	639.1	226.8	TBD	39.3	0.0	187.5	90.5

5. Policy Direction

This assessment requires consideration of the appropriate legislation and policies. The following sections provide a summary, discussion and interpretation of the legislative and regulatory framework relevant to the understanding of the immediate boundary of each Community Expansion Study Area as it relates to aggregate resources.

5.1 Aggregate Resources Act (R.S.O. 1990)

The *Aggregate Resources Act* (1990; *Aggregate Resources Act*) governs the management of the aggregate resources within Ontario. Most of Ontario's pits and quarries are regulated under the *Aggregate Resources Act*. The purposes of the *Aggregate Resources Act* are to:

- Provide guidelines for the management of aggregate resources in Ontario;
- Control and regulate aggregate operations on Crown and private lands;
- Require rehabilitation of land from which aggregate has been excavated; and,
- Minimize the adverse environmental impact of aggregate operations.

The *Aggregate Resources Act* was amended in May 2017 through the *Aggregate Resources and Mining Modernization Act*. Further changes to the *Aggregate Resources Act* have come into effect as a result of the passing of Omnibus Bill 132, *Better for People, Smarter for Business Act*, in the fall of 2019.

The *Aggregate Resources Act* is currently being reviewed with additional regulatory changes being proposed to amend Ontario Regulation 244/97 and the *Aggregate Resources of Ontario Provincial Standards* under the *Aggregate Resources Act*.

Relevance to Study Area: The *Aggregate Resources Act* and regulations apply to most of Ontario's pits and quarries on both Crown and private land. No *Aggregate Resources Act*-licensed pits or quarries occur within the Community of Smithville, or any of the Community Expansion Study Areas.

5.2 Provincial Policy Statement

The 2020 Provincial Policy Statement (PPS) came into effect on May 1st, 2020. The Provincial Policy Statement provides policy direction on matters related to land use planning and development, and applies to any land use planning decisions made under the *Planning Act* (1990). Regional and municipal planning decisions "shall be consistent with" the Provincial Policy Statement.

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The 2020 Provincial Policy Statement includes policies across various themes, including protecting the environment and public safety. Section 2.0 (Wise Use and Management of Resources) of the Provincial Policy Statement provides for the protection of mineral aggregate resources through the policies outlined in Section 2.5 (Mineral Aggregate Resources).

Relevance to Smithville Development Study Area Community Expansion Study

Area: All decisions regarding mineral aggregate resources are required to be consistent with the Provincial Policy Statement. **Table 2** provides a summary of key aggregate policies that impact the review of each Smithville Development Study Area Community Expansion Study Area.

Table 2: Provincial Policy Statement Aggregate Resource Policy Summary

Select Aggregate Policy – Provincial Policy Statement	Relevance to Study Area
<p>Section 1.2.1</p> <p>A co-ordinated, integrated and comprehensive approach should be used when dealing with planning matters within municipalities, across lower, single and/or upper-tier municipal boundaries, and with other orders of government, agencies and boards including:</p> <p>c) managing natural heritage, water, agricultural, mineral, and cultural heritage and archaeological resources.</p>	<p>The Master Community Plan, including the Aggregate Potential Assessment provides for a co-ordinated, integrated and comprehensive approach to the management of all resources.</p>
<p>Section 2.5.1</p> <p><i>Mineral aggregate resources</i> shall be protected for long-term use and, where provincial information is available, <i>deposits of mineral aggregate resources</i> shall be identified.</p>	<p>Completion of the Aggregate Potential Assessment evaluates the protection of aggregate resources in the context of the Smithville Development Study Area Community Expansion Study Areas, as per the Aggregate Potential Assessment objectives.</p>
<p>Section 2.5.2.1</p> <p>As much of the mineral aggregate resources as is realistically possible shall be made available as close to markets as possible.</p> <p>Demonstration of need for mineral aggregate resources, including any type of supply/demand analysis, shall not be required, notwithstanding the availability, designation or licensing for extraction of mineral aggregate resources locally or elsewhere.</p>	<p>While there are significant bedrock resources present within the local area, as identified in Table 1, their development is not considered to be realistic given the nature of the extraction processes (e.g., significant blasting, impacts related to noise, dust, and traffic) that would occur in close proximity to the existing developed limits of the Community of Smithville.</p>
<p>Section 2.5.2.5</p> <p>In known <i>deposits of mineral aggregate resources</i> and on <i>adjacent lands, development</i> and activities which would preclude or hinder the establishment of new operations or access to the resources shall only be permitted if:</p> <p>a) resource use would not be feasible; or</p> <p>b) the proposed land use or development serves a greater long-term public interest; and</p> <p>c) issues of public health, public safety and environmental impact are addressed.</p>	<p>While there are significant bedrock resources present within the local area, as identified in Table 1, their development is not considered to be realistic given the nature of the extraction processes (e.g., significant blasting, impacts related to noise, dust, and traffic) that would occur in close proximity to the existing developed limits of the Community of Smithville.</p> <p>Should any lands identified as having aggregate resource potential be impacted by the proposed Smithville Development Study Area Community Expansion Study Area desired for urbanization, then it can be contended that proposed land use or development serves a greater long-term public interest.</p>

5.3 A Place to Grow: Growth Plan for the Greater Golden Horseshoe

The Growth Plan for the Greater Golden Horseshoe (2019) was established and approved under the *Places to Grow Act* (2005). The Growth plans provides direction on where and how to grow, including population and employment forecasts, for all upper and single tier municipalities to better co-ordinate planning and accommodate growth in complete communities within the Greater Golden Horseshoe.

All decisions regarding planning matters “shall conform” with the Growth Plan. The Growth Plan’s framework supports complete communities, which includes a strong economy, a clean and healthy environment, and social equity. This includes the management and rehabilitation of mineral aggregate resources. Section 4.2.8 of the Growth Plan details key policy directives for mineral aggregate resources, including where and how aggregate resource extraction can occur.

Relevance to Study Area: The Smithville Development Study Area is situated within the within the built-up area of the Greater Golden Horseshoe Growth Plan Area. **Table 3** provides a summary of key aggregate policies that impact the review of each Smithville Development Study Area Community Expansion Study Area.

Table 3: Growth Plan Policy Summary

Select Aggregate Policy – Growth Plan	Relevance to Study Area
<p>Section 4.1 A balanced approach to the wise use and management of all resources, including those related to water, natural heritage, agriculture, cultural heritage, and mineral aggregates, will be implemented in the <i>Greater Golden Horseshoe</i>.</p>	<p>The Master Community Plan, including the Aggregate Potential Assessment, provides for a balanced approach to the wise use and management of all resources as per the Aggregate Potential Assessment objectives.</p>
<p>Section 4.2.8</p> <ol style="list-style-type: none"> 1. Municipalities will develop and implement official plan policies and other strategies to conserve <i>mineral aggregate resources</i>, including: <ol style="list-style-type: none"> a) the recovery and recycling of manufactured materials derived from <i>mineral aggregate resources</i> for reuse in construction, manufacturing, industrial, or maintenance projects as a substitute for new <i>mineral aggregate resources</i>; and b) the wise use of <i>mineral aggregate resources</i>, including utilization or extraction of on-site <i>mineral aggregate resources</i> prior to development occurring. 2. Notwithstanding the policies in subsections 4.2.1, 4.2.2, 4.2.3 and 4.2.4, within the Natural Heritage System for the Growth Plan, mineral aggregate operations and wayside pits and quarries are subject to the following: <ol style="list-style-type: none"> a) no new <i>mineral aggregate operation</i> and no new wayside pits and quarries, or any ancillary or accessory use thereto, will be permitted in the following <i>key natural heritage features</i> and <i>key hydrologic features</i>: <ol style="list-style-type: none"> i. <i>significant wetlands</i>; ii. <i>habitat of endangered species and threatened species</i>; and iii. <i>significant woodlands</i> unless the woodland is occupied by young plantation or early successional habitat, as defined by the Province, in which case, the application must demonstrate that policies 4.2.8.4 b) and c) and 4.2.8.5 c) have been addressed and that they will be met by the operation 6. Except as provided by the policies of this subsection, decisions on planning matters must be consistent with the policies in the Provincial Policy Statement that pertain to the management of <i>mineral aggregate resources</i>. 	<p>Refer to the Regional Municipality of Niagara and Township of West Lincoln Official Plans for the plans and policies and other strategies to conserve mineral aggregate resources.</p> <p>The identification of significant natural resources on top of aggregate potential areas presents an additional barrier to aggregate resource development.</p> <p>While there are significant bedrock resources present within the local area, as identified in Table 1, their development is not considered to be realistic given the nature of the extraction processes (e.g., significant blasting, impacts related to noise, dust, and traffic) that would occur in close proximity to the existing developed limits of the Community of Smithville.</p>

5.4 Regional Municipality of Niagara Official Plan (2014 Consolidation)

The Regional *Official Plan* (Regional *Official Plan*; 2014 Consolidation) is a long-range document that provides policy direction to guide the physical, economic and social development within the Region of Niagara.

Chapter 6 (Resources) of the Regional *Official Plan* includes policies and direction relating to the Region's approach for the use and management of resources. Schedules D1 to D4 identify potential resource areas and mineral resources in the Region.

Niagara Region is currently undertaking its Municipal Comprehensive Review to develop a new Official Plan.

An Aggregate Resources Background Study has been completed to support the new Official Plan to ensure that aggregate resources are available close to market, while addressing land use compatibility and environmental considerations.

Schedule D2 (Potential Resource Areas: Sand and Gravel) does not identify any unconsolidated aggregate resource areas within the Township of West Lincoln, save for two isolated locales along its western boundary with the City of Hamilton.

As per Schedule D4 (Mineral Resources), and previously identified, the Regional *Official Plan* mapping does not indicate the presence of any licensed pits, quarries or aggregate resource areas within the Smithville Development Study Area.

Relevance to Study Area: The Aggregate Potential Assessment confirms the existing aggregate resources. Schedule D1 (Potential Resource Areas: Stone) shows Silurian Formation within the Smithville Development Study Area. **Table 4** provides a summary of key aggregate policies that should be considered for the review of each Smithville Development Study Area Community Expansion Study Area.

Aggregate Potential Assessment

Township of West Lincoln, Ontario
Smithville Master Community Plan and Municipal Class Environmental Assessment

Table 4: Niagara Region Official Plan Policy Summary

Select Aggregate Policy – Regional Official Plan	Relevance to Study Area
<p>Section 6B (Objectives for Mineral Resources)</p> <p>Objective 6.B.1 - To ensure an adequate supply of mineral resources (including sand, gravel, stone and shale) for the short-term and long-term construction, chemical, and metallurgical needs within the Niagara Region.</p> <p>Objective 6.B.2 - To ensure the suitable location, operation and rehabilitation of mineral extraction activities in order to minimize conflicts with both the natural and human environment of the Region.</p>	<p>Schedule D1 (Potential Resource Areas: Stone) identifies the presence of Silurian-age bedrock within the Smithville area, and to varying degrees within the Smithville Development Study Area Community Expansion Study Areas.</p> <p>This is consistent with the Ontario Geological Survey and West Lincoln Official Plan.</p> <p>While there are significant bedrock resources present within the local area, as identified in Table 1, their development is not considered to be realistic given the nature of the extraction processes (e.g., significant blasting, impacts related to noise, dust, and traffic) that would occur in close proximity to the existing developed limits of the Community of Smithville.</p>
<p>Policy 6.C.3</p> <p>Other uses within possible aggregate areas will be restricted, insofar as possible, to existing uses plus agricultural, open space, and forestry uses which do not involve significant new building. The intent is to limit the establishment of uses or activities whose presence would either prevent or conflict with the possible development of a pit or quarry extraction operation. In addition, within the Niagara Escarpment Plan area, land uses are restricted to uses that are permitted in the Niagara Escarpment Plan policies.</p>	<p>The proposed Smithville Development Study Area Community Expansion Study Areas are not anticipated to conflict with existing aggregate uses, which are located outside the Study Area.</p> <p>None of the Smithville Development Study Area Community Expansion Study Areas are located within the Niagara Escarpment Planning area.</p>
<p>Policy 6.C.4</p> <p>Only those uses permitted under Chapter 5.B, Policies for Agriculture, and Niagara Escarpment Plan policies within the Niagara Escarpment Plan area, should be considered for areas adjacent to either licensed pits and quarries or possible aggregate areas which are outside the urban areas boundaries of local municipalities as shown in this Plan.</p> <p>Also, in areas adjacent to or in known deposits of mineral aggregate resources, <i>development</i> and activities which would preclude or hinder the establishment of new operations or the expansion of existing operations or access to the resources shall only be permitted if:</p> <ul style="list-style-type: none"> a) Resource use would not be feasible; or b) The proposed land use or <i>development</i> serves a greater long-term public interest; <i>and</i> c) Issues of public health, public safety and environmental impact are addressed. 	<p>While there are significant bedrock resources present within the local area, as identified in Table 1, their development is not considered to be realistic given the nature of the extraction processes (e.g., significant blasting, impacts related to noise, dust, and traffic) that would occur in close proximity to the existing developed limits of the Community of Smithville.</p> <p>Should any lands identified as having aggregate resource potential be impacted by the proposed Smithville Development Study Area Community Expansion Study Area desired for urbanization, then it can be contended that proposed land use or development serves a greater long-term public interest.</p>

5.5 Township of West Lincoln Official Plan (2018 Consolidation)

The Township of West Lincoln Official Plan (Official Plan; 2018 Consolidation) is a long-range policy document implemented to manage and direct future growth and development within the Township. One of the goals of the Township's Official Plan is to provide for the protection, preservation and enhancement of natural heritage features, which includes aggregate resources.

Section 15 of the Township's Official Plan provides the policies for mineral aggregate and petroleum resources. Correspondingly, Schedule 'C-5' (Aggregate & Petroleum Resource Mapping Resources) identifies the locations of these resources within the municipality, as shown in **Figure 7**.

Relevance to Study Area: Schedule 'C-5' (Aggregate & Petroleum Resource Mapping Resources) identifies potential aggregate resources with each Smithville Development Study Area Community Expansion Study Area. **Table 5** provides a summary of Township Official Plan policies that are applicable to each Smithville Development Study Area Community Expansion Study Area.

Table 5: Township of West Lincoln Policy Summary

Select Aggregate Policy – Official Plan	Relevance to Study Area
<p>Section 2.4 Goals of the Plan</p> <p>The following goals form the basis for the policies of this Plan.</p> <p>d) To protect, preserve and enhance the Natural Heritage Features of the Township including water courses, wetlands, other ground and surface water resources, woodlots, aggregate resources, fish and wildlife habitat, areas of natural and scientific interest and important corridors in recognition of significant social, economic and recreational benefits provided.</p>	<p>The Master Community Plan, including the Aggregate Potential Assessment considers the protection, preservation and enhancement of the Natural Heritage Features of the Township, including aggregate resources through the key Aggregate Potential Assessment objectives.</p>
<p>Section 5.7 Settlement Area Expansion</p> <p>c) When undertaking a Settlement Boundary Expansion Study, the Township shall consider the following matters in assessing potential areas for expansion:</p> <p>v. Alternatives for Settlement expansion shall protect existing licensed aggregate operations and/or demonstrate that the proposed expansion will not result in the preclusion or hindrance of the establishment of new mineral aggregate operations or access to mineral aggregate resources within high potential resource areas;</p>	<p>Schedule 'C-5' (Aggregate & Petroleum Resource Mapping Resources) identifies potential aggregate resources within the Smithville area, and to varying degrees within the Community Expansion Study Areas. No existing aggregate operations are located within any of the Smithville Development Study Area Community Expansion Study Areas.</p> <p>The proposed Smithville Development Study Area Community Expansion Study Areas are not anticipated to conflict with any existing aggregate uses located outside of the Study Areas.</p> <p>Completion of the Aggregate Potential Assessment evaluates the protection of aggregate resources in the context of the Smithville Development Study Area Community Expansion Study Areas.</p> <p>While there are significant bedrock resources present within the local area, as identified in Table 1, their development is not considered to be realistic given the nature of the extraction processes (e.g., significant blasting, impacts related to noise, dust, and traffic) that would occur in close proximity to the existing developed limits of the Community of Smithville.</p>
<p>Section 15.1.1 Background</p> <p>The Mineral Aggregate Areas consist of mineral aggregate resources, which require protection to allow the opportunity for future utilization of the resource. It is intended that these areas be protected for long-term use.</p>	<p>Schedule 'C-5' (Aggregate & Petroleum Resource Mapping Resources) identifies potential aggregate resources within the Smithville area, and to varying degrees within the Smithville Development Study Area Community Expansion Study Areas.</p>

Aggregate Potential Assessment

Township of West Lincoln, Ontario

Smithville Master Community Plan and Municipal Class Environmental Assessment

Select Aggregate Policy – Official Plan	Relevance to Study Area
	<p>While there are significant bedrock resources present within the local area, as identified in Table 1, their development is not considered to be realistic given the nature of the extraction processes (e.g., significant blasting, impacts related to noise, dust, and traffic) that would occur in close proximity to the existing developed limits of the Community of Smithville.</p> <p>Completion of the Aggregate Potential Assessment evaluates the protection of aggregate resources in the context of the Smithville Development Study Area Community Expansion Study Areas, as per the Aggregate Potential Assessment objectives.</p>
<p>Section 15.1.2 Objectives for Mineral Aggregate Resources</p> <ul style="list-style-type: none"> a) To recognize mineral aggregate resources that are of regional and provincial significance. b) To protect mineral aggregate resources and existing extractive resources from incompatible land uses and activities. c) To protect mineral aggregate resources for long-term use. d) To ensure that extraction takes place in a manner that minimizes social, economic, and environmental impacts. 	<p>Schedule 'C-5' (Aggregate & Petroleum Resource Mapping Resources) identifies potential aggregate resources within the Smithville area, and to varying degrees within the Smithville Development Study Area Community Expansion Study Areas.</p> <p>While there are significant bedrock resources present within the local area, as identified in Table 1, their development is not considered to be realistic given the nature of the extraction processes (e.g., significant blasting, impacts related to noise, dust, and traffic) that would occur in close proximity to the existing developed limits of the Community of Smithville.</p> <p>Completion of the Aggregate Potential Assessment evaluates the protection of aggregate resources in the context of the Smithville Development Study Area Community Expansion Study Areas, as per the Aggregate Potential Assessment objectives.</p>
<p>15.1.3 Policies for Mineral Aggregate Resources</p> <ul style="list-style-type: none"> a) The Mineral Aggregate Areas as identified on Schedule 'C-5' is an overlay designation and applies in addition to the other identified designations. b) Schedule 'C-5' illustrates the potential of Mineral Aggregate Areas as identified by the Ministry of Natural Resources. Detailed investigations may be required to determine the area and extent of the actual deposit and development may only occur in accordance with the following policies: 	<p>Schedule 'C-5' has been reviewed in the context of the Smithville Development Study Area Community Expansion Study Areas.</p> <p>While there are significant bedrock resources present within the local area, as identified in Table 1, their development is not considered to be realistic given the nature of the extraction processes (e.g., significant blasting, impacts related to noise, dust, and traffic) that would occur in close proximity to the existing developed limits of the Community of Smithville.</p> <p>Should any lands identified as having aggregate resource potential be impacted by the proposed Smithville Development Study Area</p>

Aggregate Potential Assessment

Township of West Lincoln, Ontario

Smithville Master Community Plan and Municipal Class Environmental Assessment

Select Aggregate Policy – Official Plan	Relevance to Study Area
<p>c) In areas within, or adjacent to Mineral Aggregate Areas, as shown in Schedule 'C-5', development, which could preclude or hinder the establishment of new operations or access to the resources, shall only be permitted if:</p> <ul style="list-style-type: none">i. Resource use would not be feasible; orii. The proposed land use or development serves a greater long-term public interest; andiii. Issues of public health, public safety and environmental impact are addressed; however,iv. This shall not limit the ability to construct buildings and structures for agricultural purposes.	<p>Community Expansion Study Area desired for urbanization, then it can be contended that proposed land use or development serves a greater long-term public interest.</p>

6. Stakeholder Consultation

Preliminary aggregate comments were provided by MHBC Planning on behalf of Nelson Aggregate Co. ("Nelson") and Walker Aggregates ("Walker") regarding the Smithville Master Community Plan Draft Concept Plans and the potential Settlement Area Boundary Expansion. The Study Team held a meeting on January 13, 2022 with Nelson Aggregates Co./Walker Aggregates and their consultant MHBC Planning to respond to the comments received to address concerns related to aggregates and the draft concept plan. MHBC Planning is in agreement that lands north of Young Street will not be part of the urban boundary expansion and that the proposed agricultural support and industrial uses south of Young Street are not immediately conflicting with any future uses with respect to aggregate resources. MHBC Planning may provide further comments once the concept plan is finalized.

7. Recommendations and Next Steps

This report provides a greater understanding of the aggregate potential in Smithville, including existing conditions that must be taken into consideration when planning for future growth inside and outside of the approved urban boundary.

It is recognized that lands residing north of Smithville and Yonge Street have aggregate potential. It is further recognized that growth adjacent to and closest to those areas may potentially result in land use compatibility issues with possible future aggregate operations.

Work that has been completed to-date as part of the Master Community Plan for Smithville has provided due consideration for the existing mapped aggregate resources areas and provisions of the Provincial Policy Statement, as detailed within this Aggregate Potential Assessment report.

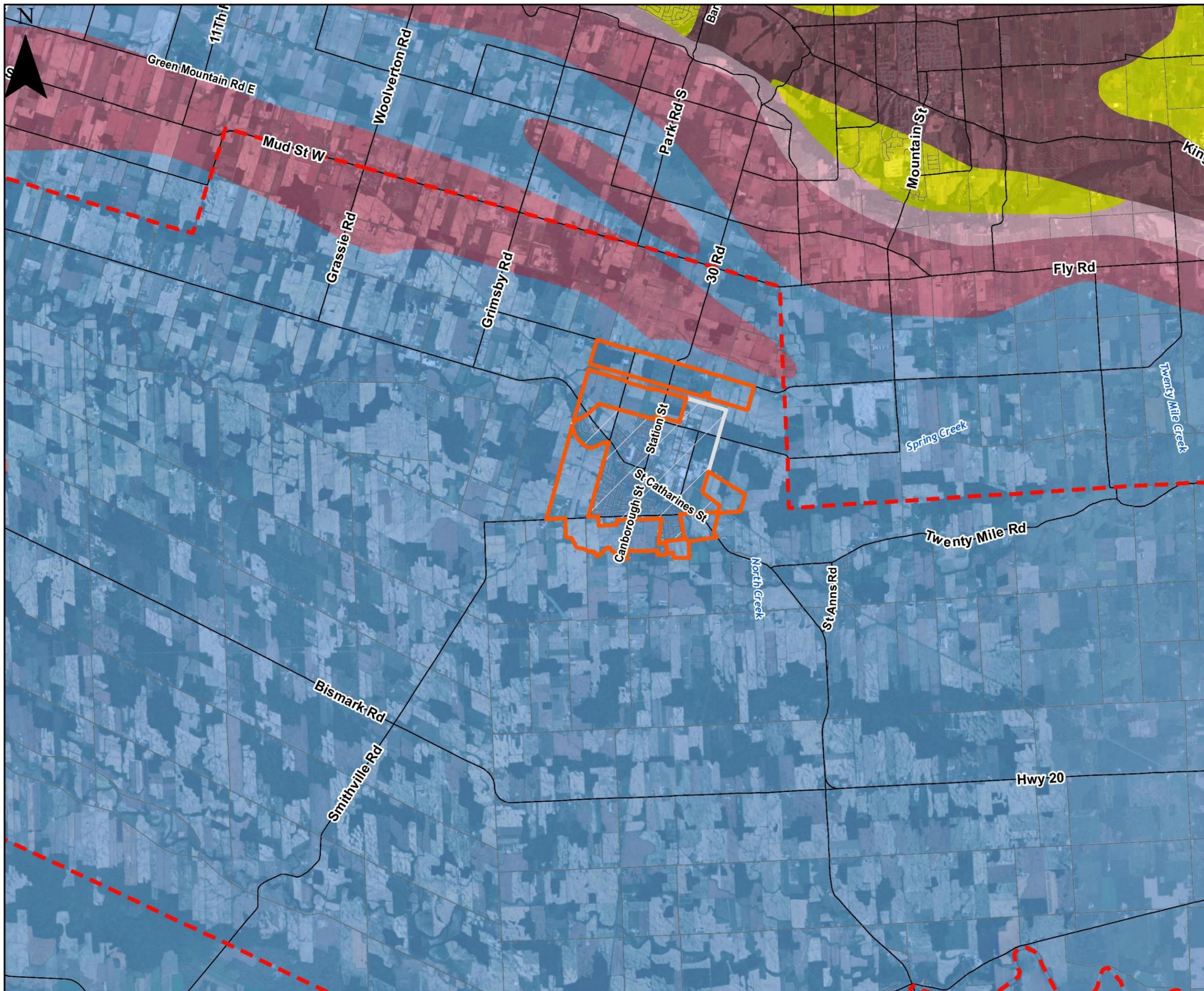
An urban use would be considered to be in the greater public interest from an aggregate resource perspective within the boundary of each Smithville Designated Settlement Area Community Expansion Study Area.

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Appendix A

Figures





Legend

- Municipal Boundary
- Community Expansion Study Area
- Existing Urban Boundary and Community Study Area

Physiography

- 12: Clay Plains
- 11: Sand Plains
- 10: Shale Plains
- 2: Till Moraines
- 1: Escarpments

0 0.5 1 2 3 4
 Kilometers

Smithville MCP
 Aggregate Potential Assessment (APA)

Physiography

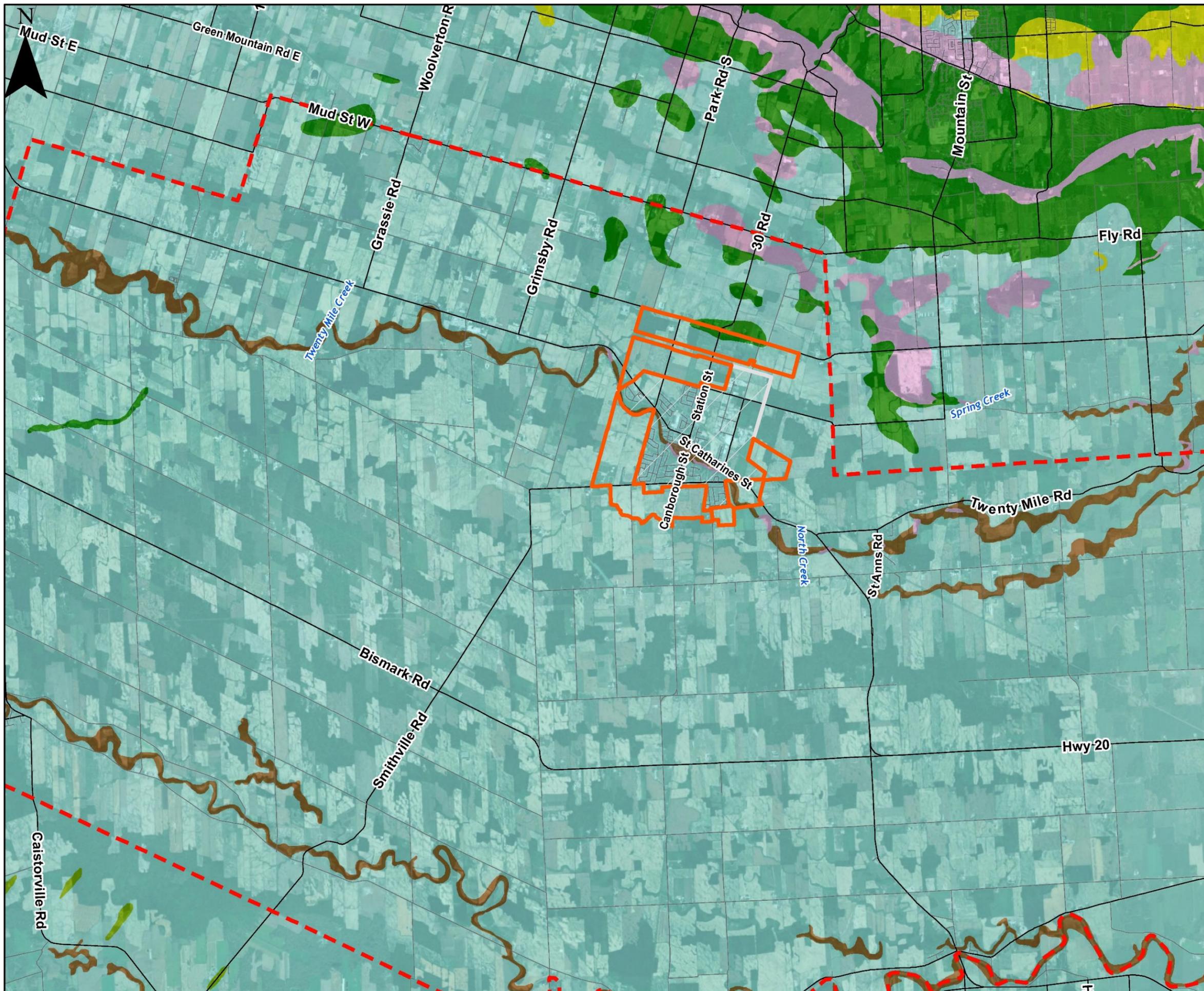
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Figure 1

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Legend

- Community Expansion Study Area
- Existing Urban Boundary and Community Study Area
- Municipal Boundary

Surficial Geology

- 3: Paleozoic bedrock
- 5b: Stone-poor, carbonate-derived silty to sandy till
- 5d: Glaciolacustrine-derived silty to clayey till
- 8a: Massive-well laminated
- 9: Coarse-textured glaciolacustrine deposits
- 9b: Littoral-foreshore deposits
- 19: Modern alluvial deposits

0 0.5 1 2 3 4
Kilometers

Smithville MCP
Aggregate Potential Assessment (APA)

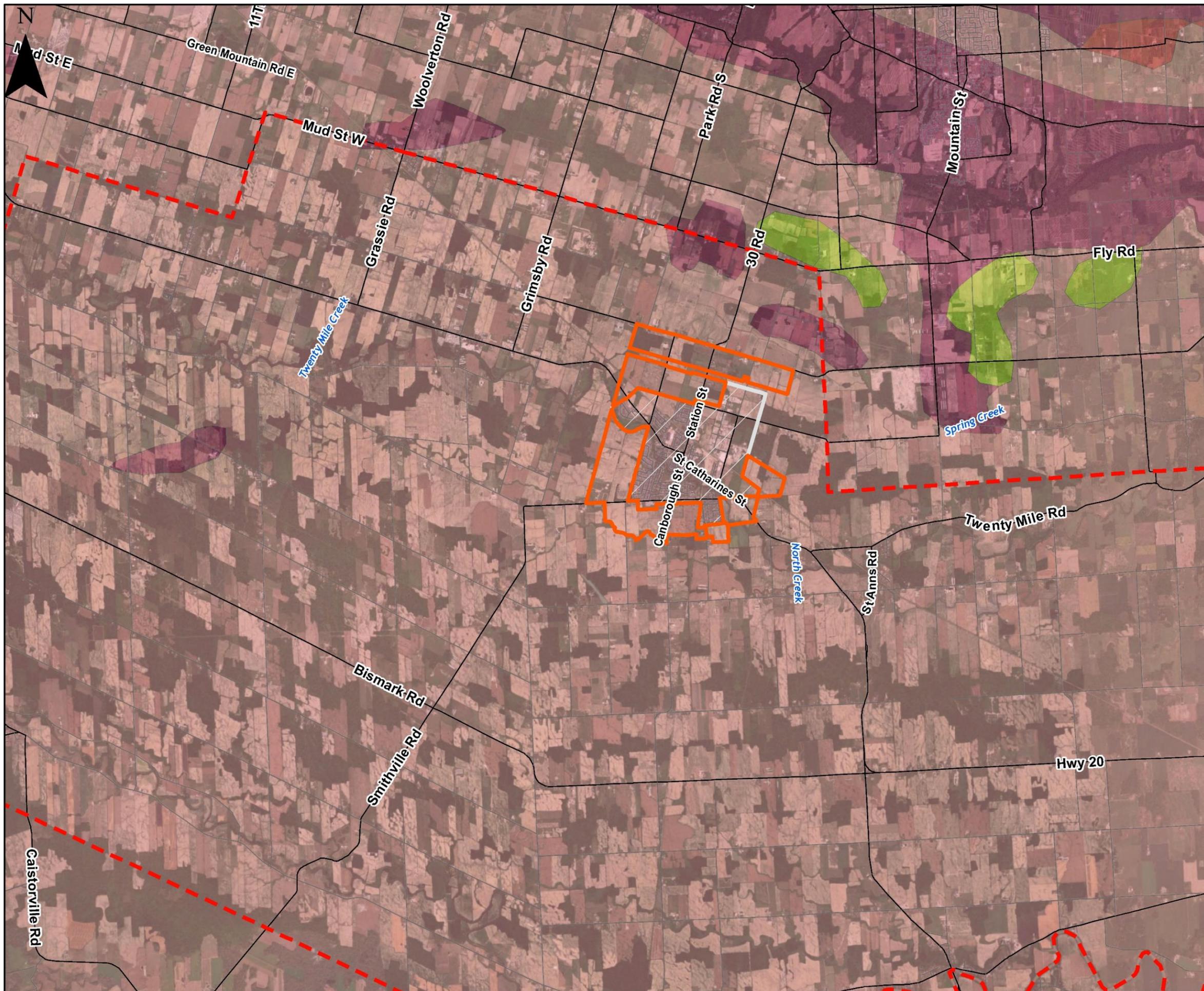
Surficial Geology

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AECOM	Figure 2
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Legend

-  Community Expansion Study Area
-  Existing Urban Boundary and Community Study Area
-  Municipal Boundary

Quaternary Geology

-  Paleozoic - Bedrock - undifferentiated carbonate and clastic sedimentary rock, exposed at surface or covered by a discontinuous, thin layer of drift
-  Pleistocene - Halton Till - predominantly silt to silty clay matrix, high in matrix carbonate content and clast poor
-  Pleistocene - Glaciolacustrine deposits - silt and clay, minor sand, basin and quiet water deposits
-  Pleistocene - Glaciolacustrine deposits - sand, gravelly sand and gravel, nearshore and beach deposits

0 0.5 1 2 3 4

Kilometers

Smithville MCP
Aggregate Potential Assessment (APA)

Quaternary Geology

May 2020

1:75,000

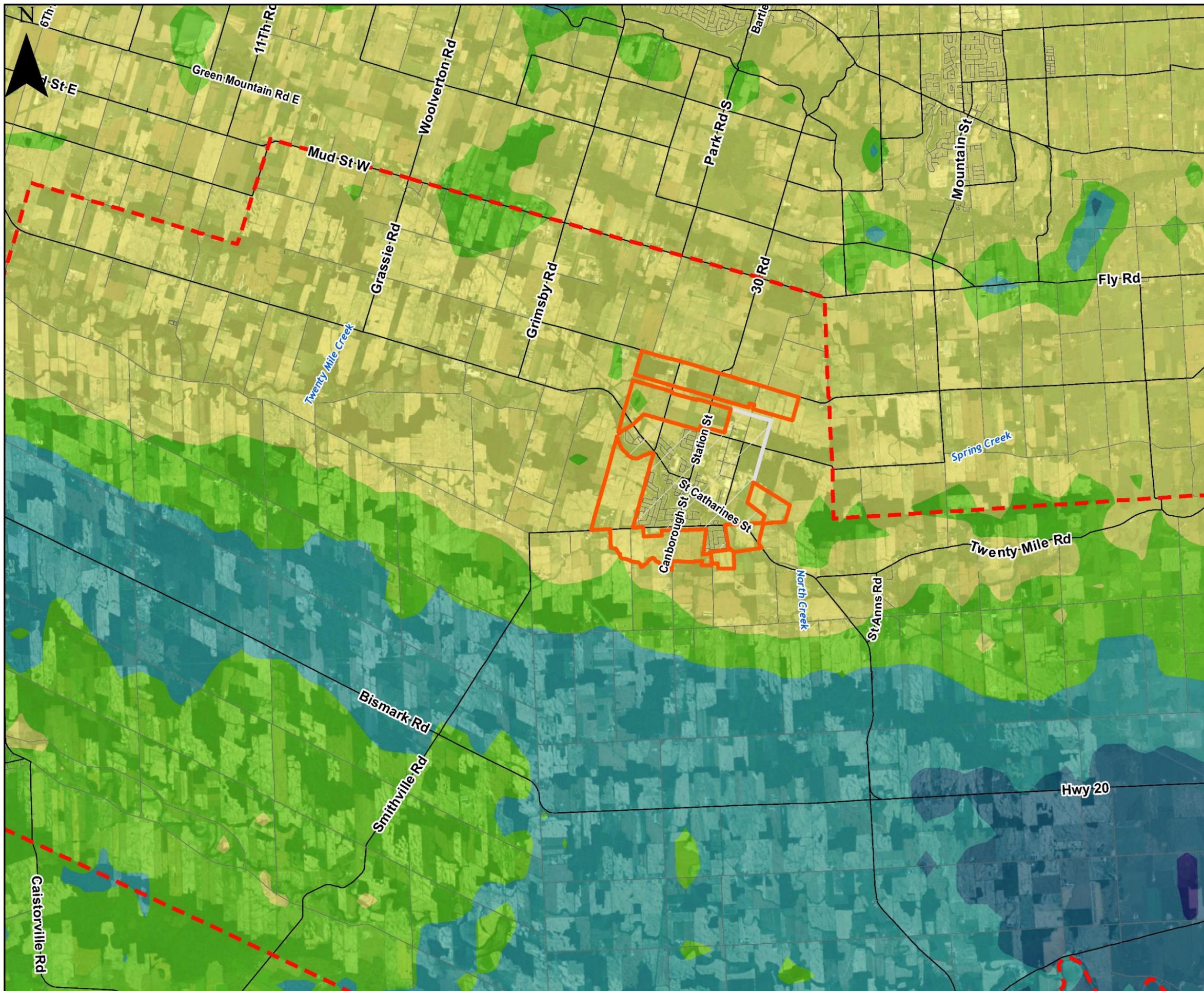
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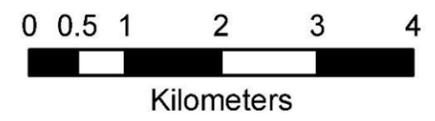
Figure 3

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- Legend**
- Community Expansion Study Area
 - Existing Urban Boundary and Community Study Area
 - Municipal Boundary
- Drift Thickness (m)**
- 0 - 10
 - 10.1 - 20
 - 20.1 - 30
 - 30.07 - 40
 - 40.01 - 50



Smithville MCP
Aggregate Potential Assessment (APA)

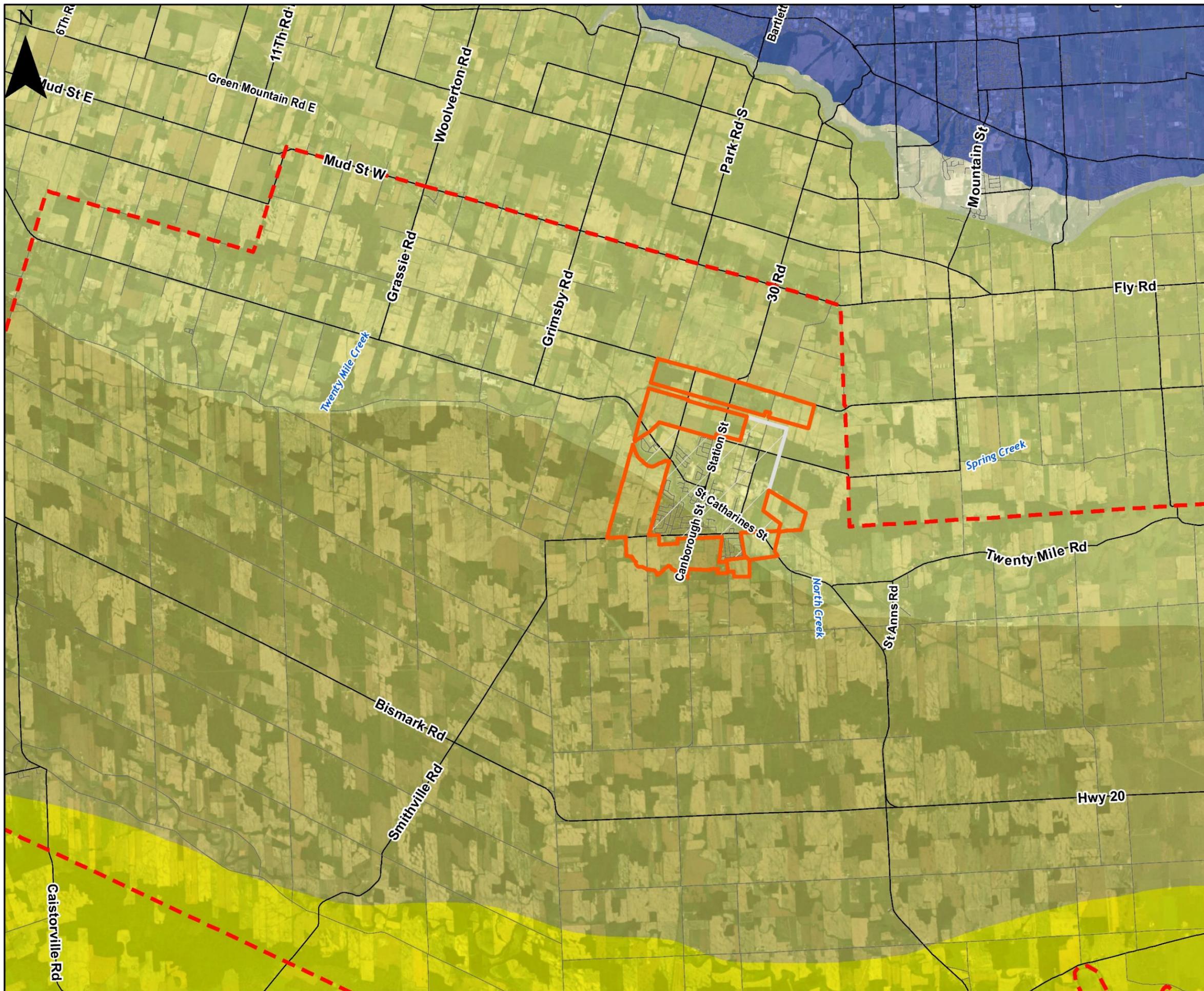
Drift Thickness

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AECOM	Figure 4
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Legend

- Community Expansion Study Area
- Existing Urban Boundary and Community Study Area
- Municipal Boundary

Paleozoic Geology

- 21: Salina
- 20: Guelph
- 18: Lockport
- 17: Clinton-Cataract Group
- 16: Queenston



Smithville MCP
Aggregate Potential Assessment (APA)

Paleozoic Geology

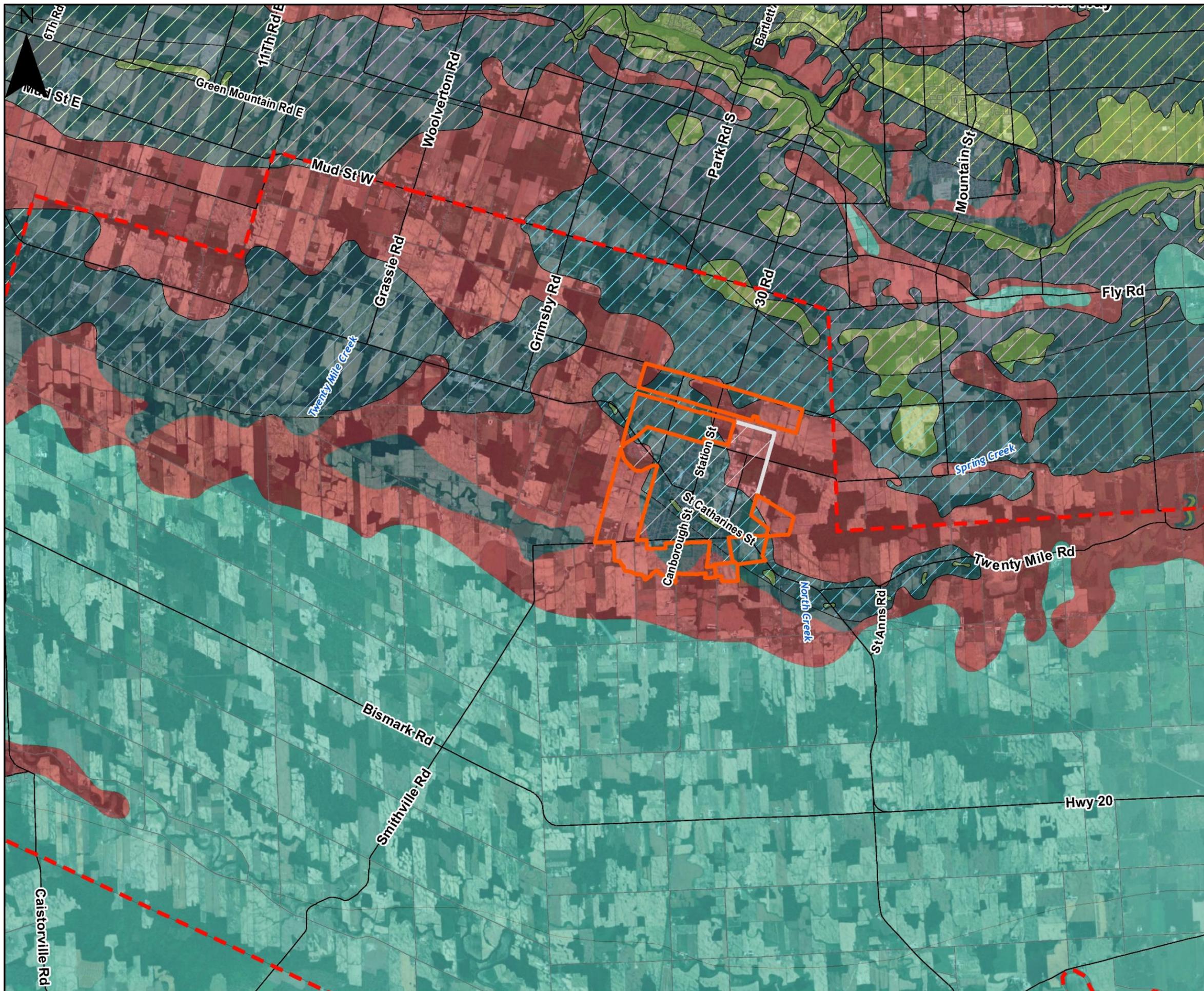
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AECOM

Figure 5

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Legend

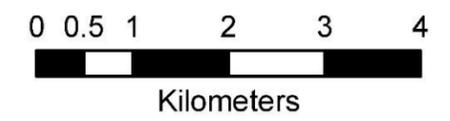
- Community Expansion Study Area
- Existing Urban Boundary and Community Study Area
- Municipal Boundary

Drift Thickness

- Bedrock outcrop; areas of exposed bedrock partially covered by a thin veneer of drift. Drift thickness is generally less than 1 m
- Bedrock outcrop covered by drift; drift thickness is generally 1 to 8 m
- Bedrock outcrop covered by drift; drift thickness is generally 8 to 15 m
- Bedrock outcrop covered by drift; drift thickness is generally greater than 15 m

Selected Bedrock Resource Area

- 1a
- 1b
- 1c
- 1d / 1e
- 2a / 2b
- 3
- 4



Smithville MCP
Aggregate Potential Assessment (APA)

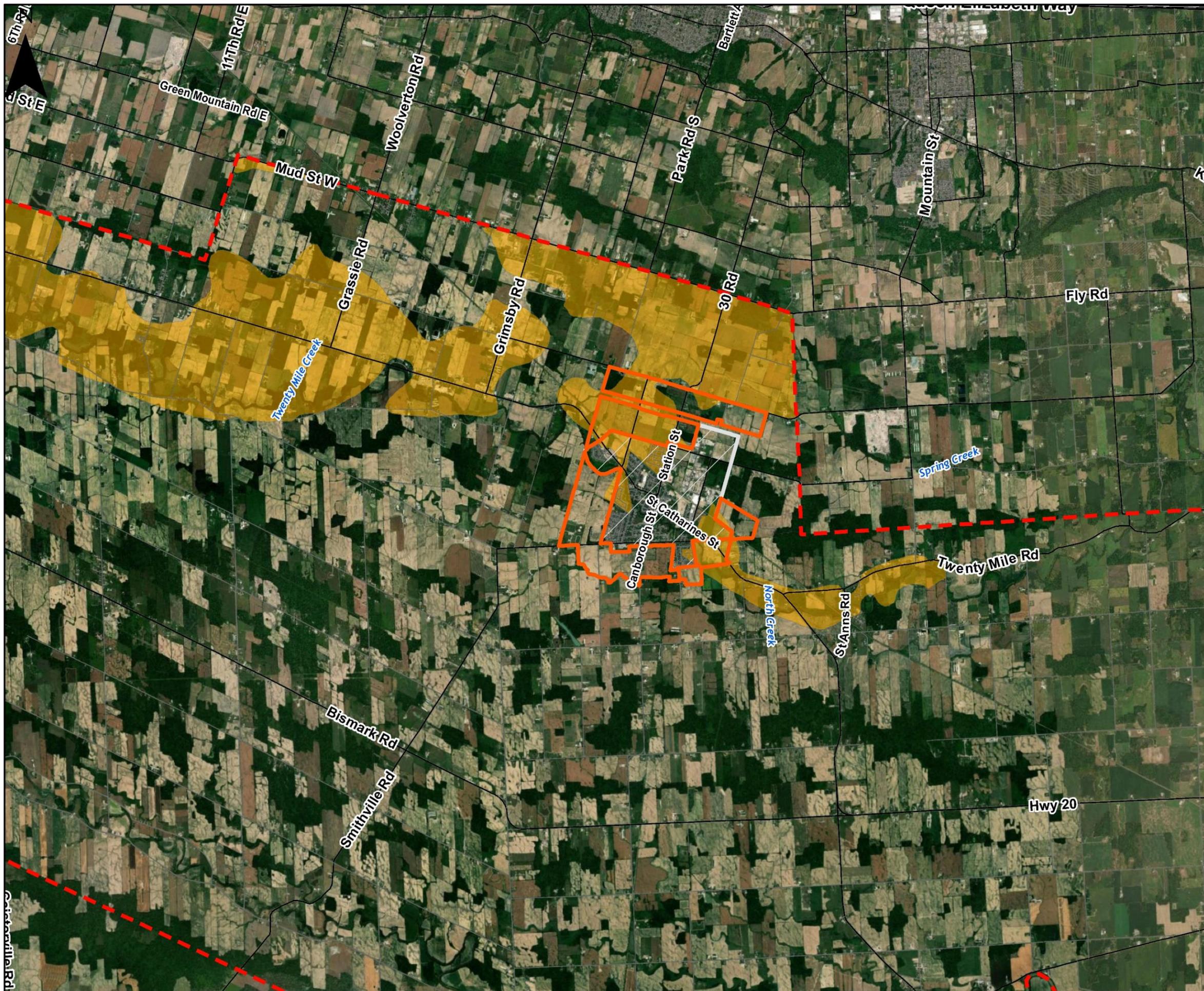
Aggregate Resources from the OGS -
Aggregate Resource Inventory

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AECOM	Figure 6
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- Legend**
- Community Expansion Study Area
 - Existing Urban Boundary and Community Study Area
 - Municipal Boundary
 - Potential Aggregate Resource



Smithville MCP
Aggregate Potential Assessment (APA)

Aggregate Resources from Schedule
'C5' of the Township's (2018) Official Plan

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