

LAKE ERIE REGION SOURCE PROTECTION COMMITTEE

REPORT NO. SPC-21-04-04

DATE: April 1, 2021

TO: Members of the Lake Erie Region Source Protection Committee

SUBJECT: Growing the Greenbelt – Provincial Consultation (ERO-019-3136)

RECOMMENDATION:

THAT the Lake Erie Region Source Protection Committee receives report SPC-21-04-04 – Growing the Greenbelt – Provincial Consultation (ERO-019-3136) – for information.

AND THAT report SPC-21-04-01 Growing the Greenbelt – Provincial Consultation (ERO-019-3136) be provided to the Ministry of Municipal Affairs and Housing through the Environmental Registry.

REPORT:

The Ministry of Municipal Affairs and Housing is seeking feedback on growing the size of the Greenbelt in the area of the Paris Galt Moraine including additional Urban River Valley greenbelt designations in the City of Guelph and City of Cambridge. The provincial proposal is posted on the Environmental Registry under [ERO # 019-3136](#). Comments are due on April 19, 2021.

Source Water Protection is one of a number of important factors when considering an expansion of the Greenbelt. The Paris Galt moraine provides important hydrologic functions, including directing water on the landscape into the ground and reducing the potential for flooding. Aquifers underlying the moraine receive a portion of the infiltrated water and provide the source for municipal and private drinking water supplies. Discharges from the aquifers into the Grand River between Cambridge and Paris directly improve river water quality, increase flows, and reduce river temperature from groundwater input into the river. As a result, a number of municipal and private water supplies benefit from the hydrologic function and value the Paris Galt moraine provides. These include the City of Brantford, community of St. George, and private water supplies in the Township of Puslinch.

Other important factors to be considered include an assessment of how an expanded Greenbelt would fit into the current land use planning framework, including how this fits with Growth Plan policies that are currently being implemented in municipal Official Plans. In addition, important considerations should include the timing of a potential Greenbelt expansion, whether local more protective policies can supersede any less protective Greenbelt Plan policies, the data and information used to identify the water resource system, and further consultations with municipalities, conservation authorities, and stakeholders.

Attached to this report in **Appendix A** is the Grand River Conservation Authority board report GM-03-21-25 entitled “Province of Ontario Consultation on Growing the Size of the Greenbelt,” containing a comprehensive and detailed analysis of the proposal and recommendations for the Province. Staff recommend this report including Appendix A be sent to the Ministry of Municipal

Affairs and Housing through the Environmental Registry through Posting #019-3136.

Prepared by:



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Approved by:



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Appendix A:

GRCA Board Report GM-03-21-25
Province of Ontario Consultation on Growing the Size of the
Greenbelt

Grand River Conservation Authority

Report number: GM-03-21-25

Date: March 26, 2021

To: Members of the Grand River Conservation Authority

Subject: Province of Ontario Consultation on Growing the Size of the Greenbelt

Recommendation:

THAT Report GM-03-21-25 Province of Ontario Consultation on Growing the Size of the Greenbelt be provided to the Ministry of Municipal Affairs through Environmental Registry Posting #019-3136.

Summary:

The Government of Ontario is seeking feedback on a document '***Consultation on growing the size of the Greenbelt***' to expand the existing Greenbelt to include the Paris Galt moraine and the potential for additional Urban River Valleys including the Speed and Eramosa Rivers in the City of Guelph and City of Cambridge.

The Study Area includes Wellington County, Region of Waterloo, Brant County, City of Brantford, City of Guelph (see Appendix 1) and an area generally identified as the Paris Galt moraine. This report summarizes key factors and comments for the province to consider in any future proposals to expand the Greenbelt and Urban River Valleys.

Inclusion of a map of the Paris Galt moraine in planning documents will provide landowners, municipalities and other stakeholders with an important tool for implementation of current and future policies that protect and enhance this natural heritage and water resource area. Expansion of the Greenbelt could offer some modified policies to recognize or protect the water resource and natural heritage systems including identification of the Paris Galt moraine. Protective policies for the moraine in the Places to Grow Growth Plan for the Greater Golden Horseshoe are in the process of being incorporated into municipal Official Plans. Before the implementation of additional provincial policies for the Greenbelt, it would be beneficial to have a clear outline of the policy gaps that will exist after the Official Plans are updated. The framework of provincial and municipal policies need to work together in a streamlined manner, to help protect and enhance the water resources and natural heritage attributes of Paris Galt moraine.

This report outlines the following key items and supporting background information for the province to consider prior to further consultation on the Greenbelt Expansion.

The province should:

1. provide a policy analysis that clearly identifies the policy gaps or benefits between the current land use planning framework (with Growth Plan policies implemented in municipal Official Plans) and the Greenbelt Plan to ensure all stakeholders and the public are fully informed on the benefits or challenges with each policy framework.
2. consider policy amendments to the Greenbelt Plan to allow any official plan policies which offer more protection to Natural Heritage and Water Resource Systems to supersede any less restrictive policies of the Greenbelt Plan;

3. provide their data and information to municipalities to identify all components of Water Resource Systems including key hydrologic features and areas such as the Paris Galt moraine;
4. consider deferral of the Greenbelt expansion allowing municipalities the opportunity to incorporate the most recent protective policies for the moraine from the Growth Plan into their Official Plans;
5. work with affected municipalities, GRCA and other stakeholders within the Grand River watershed to prepare an acceptable map for municipal Official Plans of the Paris Galt moraine (as a key hydrologic area as defined by the Growth Plan and Greenbelt Plan);
6. in their review and approval of Official Plans, include an analysis of any gaps in the protection of Natural Heritage and Water Resource Systems that could be addressed by the province through future amendments to the Growth Plan or an expansion to the Greenbelt Plan;
7. implement future amendments to the Greenbelt policies to remove or clarify that conservation authority lands are not public lands;
8. review the Urban River Valley designation for some portions of the Speed River and Eramosa River taking into account difference in this study area and the GTA and the objectives of this designation may already be in place through the Provincial Policy Statement, Growth Plan policies and municipal Official Plan policies. Some of these lands are environmentally sensitive and contain hazards and some infrastructure or access by the public would not be appropriate; and
9. further consultation with the public, municipalities, conservation authorities and other stakeholders on any proposals to modify the boundaries of the existing Greenbelt and the Greenbelt Plan be provided.

Report:

The province (Ministry of Municipal Affairs and Housing) is seeking feedback on growing the size of the Greenbelt in the area of the Paris Galt Moraine including additional Urban River Valley greenbelt designations in the City of Guelph and City of Cambridge. In addition, the province is proposing that the technical criteria for the extent of the Urban River Valley designation may be modified from 60m from the waters' edge to a greater extent to include more lands defined as public lands in the Greenbelt policies. The consultation summary indicates that the maps are for discussion purposes and do not represent a proposed boundary of the Greenbelt.

The Grand River Conservation Authority's (GRCA) Board report GM-03-21-25 and responses to the questions posed by the province will be submitted through the Environmental Registry. Comments are requested by April 19, 2021.

The consultation summary includes the following provincial consultation principles for the Greenbelt expansion:

1. There is no consideration for removal requests or land exchanges
2. There are no changes to existing Greenbelt policies
3. Lands to be considered for expansion must:
 - Support the objectives, vision and goals of the Greenbelt Plan
 - Follow the amendment process in the Greenbelt Act, 2005
 - Connect physically and/or functionally to the current Greenbelt
 - Consider impacts on existing Provincial priorities in Provincial Policy Statement and Growth Plan for the Greater Golden Horseshoe

Background

The Greenbelt Plan was originally approved in 2005 and it was updated in 2017. It currently applies to areas around the Greater Golden Horseshoe (GGH) with limited areas in the

Grand River watershed. It provides policy direction on the protection of agricultural and natural resource systems (including water resource systems) in relation to population growth and expansion of urban boundaries and it outlines permitted land uses and studies that may be required with development applications within these systems. The Greenbelt Plan prohibits settlement area expansions into the Greenbelt.

A Place to Grow Growth Plan for the Greater Golden Horseshoe (Growth Plan) applies to most of the municipalities in the Grand River watershed (except the Counties of: Perth, Oxford, Norfolk and Grey) and it identifies where and how growth will occur. This plan also outlines permitted land uses and studies that may be required with development applications within the natural heritage systems and water resource areas.

In 2017, there were substantial amendments to the Growth Plan for the GGH and many of the protective policies of the Greenbelt Plan for natural heritage, water resources, and agriculture were included as policies in the Growth Plan. Watershed municipalities are in the process of completing Municipal Comprehensive Reviews (MCRs) and public consultation processes to bring their Official Plans into conformity with the updated Growth Plan policies. In 2020, the Growth Plan policies were amended to update growth projections for municipalities and extend the planning horizon for growth strategies to 2051 and this information will be included in the MCR process. The MCR process must be completed by June 2022 and plans submitted to the province for their review and approval.

In 2018, the GRCA also provided comments to the Province on their proposal for *Protecting Water for Future Generations: Growing the Greenbelt in the Outer Ring* as outlined in Report GM-02-18-09.

Moraines in the Watershed

Moraines are a prominent feature in the Grand River watershed. Three primary moraine systems in the watershed include the Waterloo, Orangeville, and Paris Galt moraines. Moraines, which are often characterized by coarse-grained materials and rolling topography, promote rainwater or snowmelt to infiltrate into the ground, and either discharge water into local wetlands and streams, or recharge water into the aquifers beneath the ground.

The general rolling topography of moraines provides the ability to direct water on the landscape into the ground. This can attenuate the amount of water on the landscape and reduce the potential for flooding. Aquifers underlying the moraines are receptors for a portion of the infiltrated surface water and in turn, provide water for municipal and private drinking water supplies, and baseflow to cold water streams which often support sensitive species and vegetation. Stream headwaters and wetlands are commonly found on the shoulders of moraines, where the water table intersects with the ground surface of the moraine.

Values of the moraines as a recharge feature

The combination of often higher topography and permeable soils of moraines creates ideal conditions for recharge to the underlying groundwater system, and also the creation of headwaters for streams and creeks. These conditions also contribute to:

- **Flood Attenuation:** Closed drainage depressions help to reduce downstream flooding by holding water on the landscape and focusing surface water into the ground. Urbanization of moraines can shift the moraines' function from recharge to runoff and result in excess surface water and flooding.
- **Grand River Water Quality and Quantity:** A portion of the water that is recharged along the Paris Galt moraines discharges as groundwater into the Grand River between Cambridge and Paris. This reach and further downstream exhibits increased flows, improved water quality, and reduced river temperatures from groundwater inputs into the river.

- **Water Supplies:**
 - The City of Brantford relies on water from the Grand River for all of its municipal water supply. Water quality improvements and augmentation through the high groundwater discharge areas in the Cambridge to Brantford reach benefit the quality of the City's drinking water supply.
 - The community of St. George obtains a portion of its municipal water supply from an aquifer located to the east of the Galt moraine. Some of the waters recharging into the moraine move deeper into the groundwater system and flow to the east towards the community of St. George, helping to maintain its groundwater supply.
 - Drinking Water Private Supply: Aquifers located across the Paris Galt moraines provide water supply to a large number of private wells for domestic and agricultural use. An example is Puslinch Township, where there are no municipal supplies; the Township's residents and businesses are reliant on private water supplies from groundwater. Often smaller groundwater takings, such as those for domestic supply, utilize the groundwater available in the shallower aquifers.
 - Commercial and Industrial Water Supply: Larger commercial and industrial takings often draw water from the deeper bedrock aquifers. Shallower water takings include aggregate operations for wash ponds.
- **Stream Baseflow** (groundwater discharge): Recharge into the Paris Galt moraines, and the subsequent groundwater flow provides significant groundwater discharge to the following reaches:
 - Eramosa River/Blue Springs Creek,
 - Mill Creek,
 - Speed River between Guelph and Cambridge,
 - Jones and Blue Creek in Brant County, and
 - Grand River near the south end of Cambridge to Brantford

Baseflow from groundwater augments streamflow, especially in summer months during drought, and provides cool groundwater temperatures that provide habitat for cold water dependent species and vegetation.

Appendix 2 includes additional information regarding the Paris Galt moraines, and other moraine characteristics including recharge functions, groundwater resilience, and their relationship to stream headwaters and wetlands.

Study Area Approach

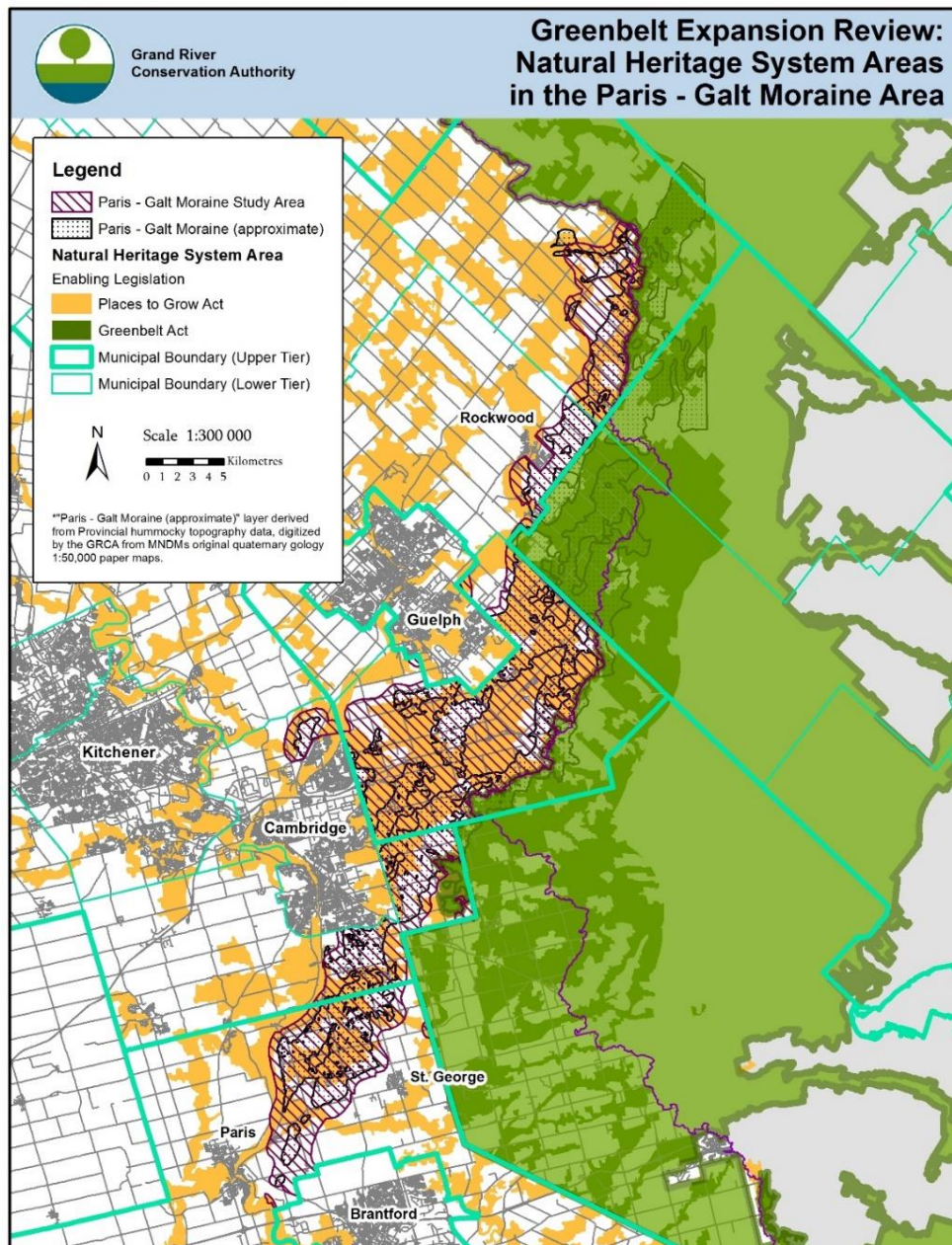
The province is seeking feedback on growing the size of the Greenbelt in the area of the Paris Galt Moraine including additional Urban River Valley greenbelt designations in the City of Guelph and City of Cambridge (see maps in Appendix 1). It appears the province may have gathered or created some new information related to the protection of water resources including the Galt Paris Moraine as part of their consultation on the proposed expansion of the Greenbelt. The individual components or data sets the province has compiled for their study area has not been provided for public review at this time. Any new information related to the mapping of the moraine would also be beneficial for municipalities for their MCR processes and associated Water Resource Systems mapping/policy development.

At this time, the province has not released a Technical Guideline on identification of the Water Resource Systems (key hydrologic areas and features) to support municipalities in their implementation of the watershed planning and other policies of the Growth Plan and/or Greenbelt Plan. GRCA review of the Paris Galt moraine includes a review of maps that include hummocky topography. This information is identified as the Paris Galt Moraine (approximate) on Map 1. This map also includes the study area boundary from the provincial consultation information. In some areas the proposed greenbelt expansion is greater than this version of the moraine mapping. There may be information the province has included or other sources of data that should be considered in mapping the moraine.

The Province, municipalities, conservation authorities and other stakeholders should work together to develop acceptable water resource and natural heritage systems maps for inclusion in municipal official plans.

The Provincial mapping of the Natural Heritage System (NHS) for the Growth Plan does not apply until it has been implemented in the applicable upper-or single-tier official plan and municipalities are reviewing this mapping through their MCR process. The Greenbelt Expansion study area appears to include portions of the proposed provincial NHS. However, there are a number of areas mapped by the province as potential NHS that are immediately adjacent to the study area (physically and/or functionally connected) and are *not* included in the approximate limit of the proposed Greenbelt area (see Map 1). It is unclear how the province is considering the NHS and associated features and areas in this review.

Map 1 – Greenbelt Study Area, Natural Heritage System and Paris Galt Moraine



Since the data and methodology the province used to develop the limits of the study area and the various components or maps that make up the study area is not publicly available, it is challenging to evaluate the proposed study area. The consultation document study area map included as Appendix 1 indicates that the moraine map was derived from various provincial sources including Ministries of: Municipal Affairs and Housing; Environment, Conservation and Parks; and Energy, Northern Development and Mines. There are a number of sources of data related to the Paris Galt and other moraines as well as other water resources such as: source water protection maps, GRCA wetland and watercourse maps etc. This information should be compiled in any future review to ensure that the most current data set for any potential expansion of the Greenbelt within the Grand River watershed is utilised.

Greenbelt Expansion

The Study Area identifies the general location of the Paris Galt Moraine and the province is seeking input on the potential expansion of the Greenbelt to include this important water resource area and other components that make up the Greenbelt.

A summary of policy differences between the Growth Plan and Greenbelt Plan with respect to water resources, natural heritage and urban river valleys is included in Appendix 3. As noted above, the policies in these two plans are very similar for Natural Heritage and Water Resource Systems. For example, the Growth Plan requires that water functions are protected from large scale development (e.g. subdivisions, condominiums and site plans), and the Greenbelt Plan requires that these functions are protected using different criteria for development proposals (e.g. buildings with a footprint of more than 500m², four or more new lots and major recreational uses). Another key difference in the two Plans is how they deal with settlement area expansions. The Growth Plan notes that settlement area expansions should avoid moving into the Natural Heritage System, whereas the Greenbelt Plan prohibits it. In addition, under the Greenbelt Plan, settlement areas outside of the Greenbelt are not permitted to expand into the Greenbelt.

In some cases, the Greenbelt Plan policies may be less restrictive than municipal policies and the areas mapped as a natural heritage system more narrowly defined e.g. use of provincially significant criteria would exclude areas defined as locally significant natural heritage features. In addition, actions or studies required under the Greenbelt Plan are already in place and are being implemented by local watershed municipalities (e.g. integrated watershed planning, natural heritage systems studies, subwatershed planning and master plans for storm water, water and wastewater).

GRCA has concerns that the Greenbelt Plan policies will supersede policies in local municipal official plans and that there may be a reduction in the protection to some sensitive features and areas.

Although the province has stated in their consultation document that they are not considering modifications to the greenbelt policies, if the Greenbelt expansion consultation process proceeds, this position should be reconsidered. The Greenbelt implementation policies should be amended to allow the most protective policies for natural heritage and Water Resource Systems – whether in the Greenbelt Plan or in municipal official plans – to apply. For example, the Region of Waterloo's Official Plan (ROP) policies currently require cumulative impact assessments for new/expanded aggregate extraction. This is a key issue in some subwatersheds covered by the Study Area such as the middle Grand River and Eramosa Rivers and other parts of the Grand River watershed.

The Water Resource System identification and review of the NHS mapping required by the Growth Plan is underway through the municipal MCR process. The updated municipal official plan policies and maps should include key hydrologic areas such as the Paris Galt moraine, significant groundwater recharge areas, vulnerable aquifers as well as key hydrologic features such as wetland and streams. The best available provincial, municipal,

conservation authority and other sources of technical information and data should be provided to develop or refine maps in these plans. Examples of other sources of information include source water protection mapping for significant groundwater recharge areas, subwatershed studies, GRCA wetland and watercourse mapping etc. The municipal MCR process and subsequent provincial review and approval of their Official Plan should be completed prior to further review of an expansion of the Greenbelt.

With the MCR reviews underway, analysis of any potential policy and mapping gaps that may be necessary to further protect water resources in the study area can be identified. Any gaps in protection may be addressed by the province through their review and approval of Official Plans or future amendments to the Growth Plan or an expansion to the Greenbelt Plan.

Urban River Valley designation

The consultation document also proposes that portions of the Speed and Eramosa rivers in the Cities of Guelph and Cambridge be considered for the Urban River Valley (URV) designation of the Greenbelt Plan. The policies in the Greenbelt plan for Urban River Valleys speak to the protection of river valleys on 'publicly' owned lands.

The Greenbelt plan states "These urban river valleys may be the setting for a network of uses and facilities, including recreational, cultural and tourist amenities and *infrastructure*, which are needed to support urban areas" and "The addition of these major watercourses and coastal wetlands has reinforced the important linkages between the Greenbelt and Lake Ontario, as well as their connections to southern Ontario's broader regional natural heritage systems." In the context of the Greenbelt and Lake Ontario and a portion of Lake Simcoe, where the urban area is predominantly between the lake and the Greenbelt, the Urban River Valleys act as a direct connection or corridor between these features.

It is important to note that river valleys are also subject to many protective policies and regulations now. These include policies in the Provincial Policy Statement, Growth Plan, Source Protection Plan, municipal and conservation authority policies and associated regulations. Municipal official plan policies include natural hazard, natural heritage features and/or systems, and local plans include provisions for parks, heritage, tourism and recreation land uses. In addition, Ontario Regulation 150/06 (Development Interference with Wetlands and Alterations to Shorelines and Watercourses regulation) that enables review of future proposals in natural hazard areas, will consider potential impacts to people and property.

The policies for the Urban River Valleys in the Greenbelt plan are included in current land use planning documents. Therefore, the inclusion of portions of the Speed and Eramosa Rivers does not appear to be necessary to achieve the desired outcomes in the Greenbelt Plan.

An important consideration of the Urban River Valley designation is the requirement that the Greenbelt policies associated with the designation apply only to 'publicly' owned lands within 60m of the waters' edge. The URV designation is implemented using current Official Plan designations and review of potential impacts associated with existing or future development activities on public or privately owned lands would be subject to the local Official plan policies. The Urban River Valley lands are often lands already designated in official plans as parks, open space, recreation, conservation and/or environmental protection.

Section 6.2 of the Greenbelt Plan states that publicly owned lands include conservation authority owned lands and the URV policies would then apply to these lands. The *Public Lands Act* does not include conservation authority owned lands. As stated in previous submissions to the province, GRCA lands along the rivers noted above should not be included within the URV designation. GRCA already carries out actions suggested through

the URV policies such as undertaking watershed planning, ecological restoration, fish habitat improvements and park and trail initiatives. Due to sensitive environmental features or hazards, some of these lands are not appropriate for access by the public, infrastructure etc.

If the province considers future amendments to the Greenbelt policies the reference to conservation authority lands as public lands should be removed or clarified in the definition section.

GRCA would be pleased to work with watershed municipalities and the province to provide technical expertise and any data or information that may assist in the implementation of the Growth Plan requirements and review of changes to the boundaries of the Greenbelt Plan.

Financial implications:

Not applicable.

Other department considerations:

Staff in the Engineering and Resource Management divisions provided input and technical input on this report.

Prepared by:

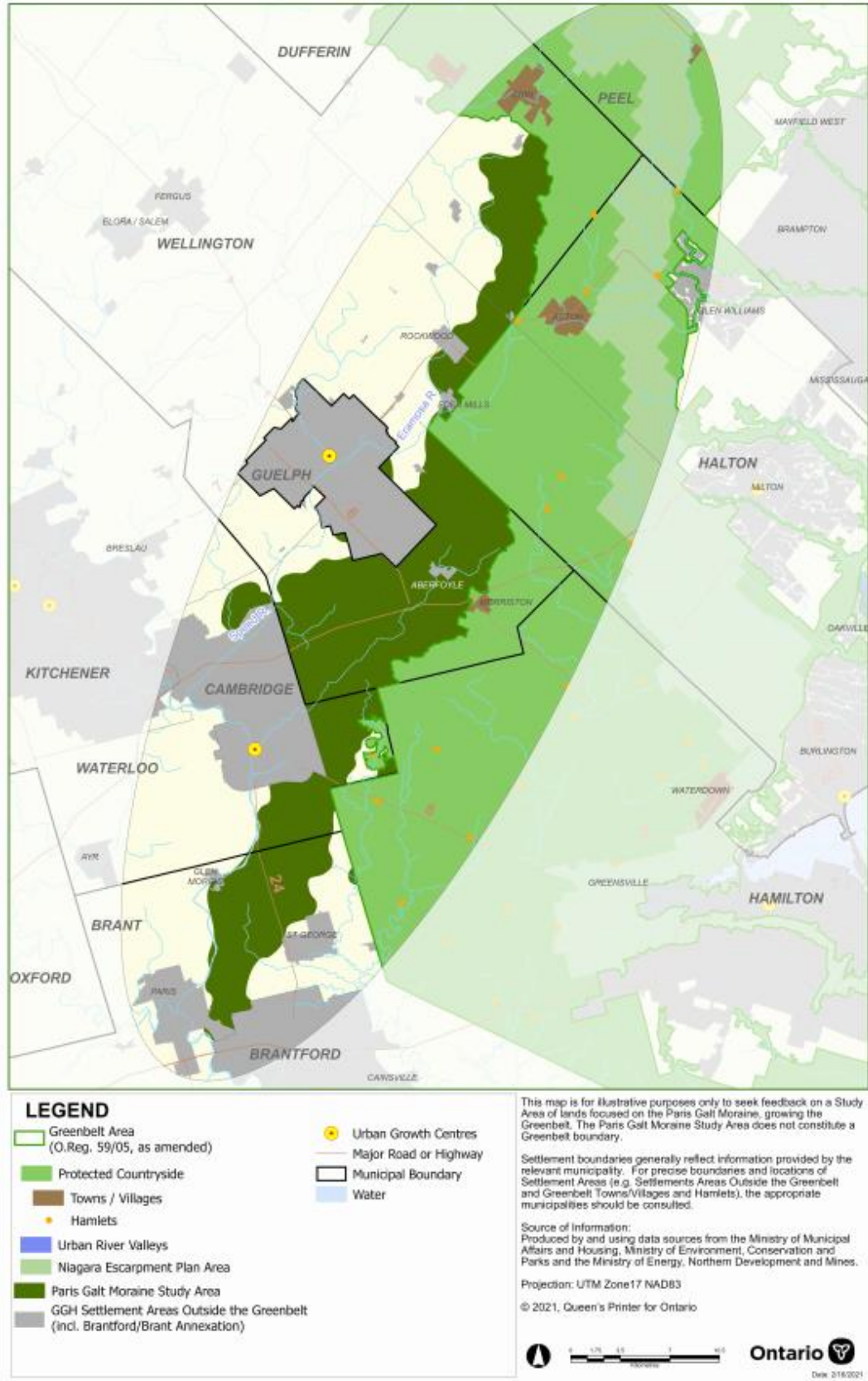
Sonja Strynatka
Senior Hydrogeologist

Approved by:

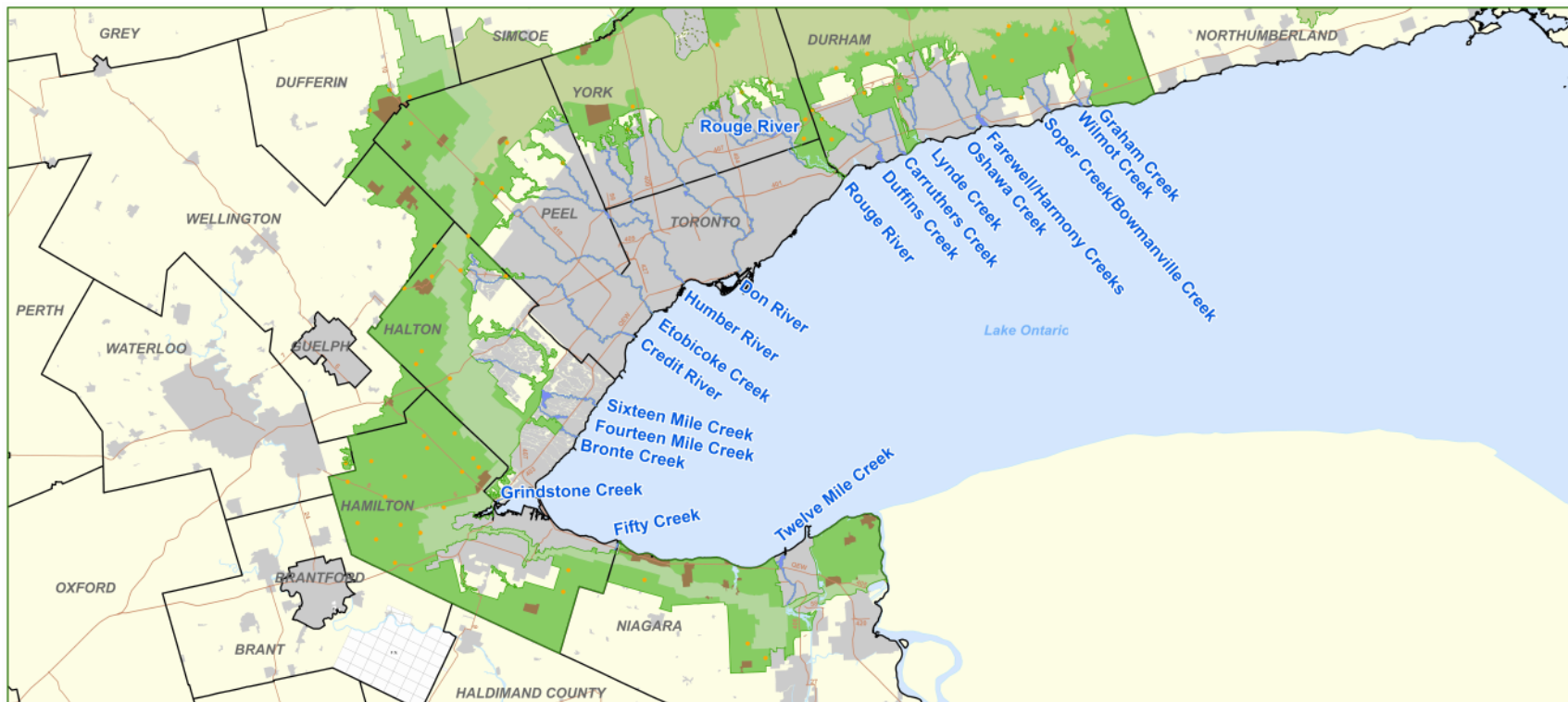
Samantha Lawson
Chief Administrative Officer

Nancy Davy
Director of Resource Management

Appendix 1 – Growing the Greenbelt Study Area and Urban River Valleys (2021)



Appendix 1 Greenbelt Area – Existing Urban River Valleys (2021)



LEGEND

- Greenbelt Area (O.Reg 59/05, as amended)
- Protected Countryside
- Towns / Villages
- Hamlets
- Urban River Valleys
- Niagara Escarpment Plan Area
- Oak Ridges Moraine Area
- GGH Settlement Areas Outside the Greenbelt (incl. Brantford/Brant Annexation)
- External Connections
- Municipal Boundary
- Major Road or Highway
- Water
- F.N. First Nations

This map is for illustrative purposes only to seek ideas for adding, expanding and further protecting Urban River Valleys.

Settlement boundaries generally reflect information provided by the relevant municipality. For precise boundaries and locations of Settlement Areas (e.g. Settlements Areas Outside the Greenbelt and Greenbelt Towns/Villages and Hamlets), the appropriate municipalities should be consulted.

Source of Information:
 Produced by and using data sources from the Ministry of Municipal Affairs and Housing, Ministry of Natural Resources and Forestry and the Ministry of Agriculture, Food and Rural Affairs.

Projection: UTM Zone17 NAD83
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Appendix 2 – GRCA Moraine Information and Consultation Questions on Growing the Greenbelt

Consultation Document Questions

The province has requested input on the questions noted below. GRCA will prepare responses to these questions using information included in the GRCA Board report and other technical information if required. These responses will be submitted through the ERO posting with this Board report.

1. What are your thoughts on the initial focus area of the Study Area of the Paris Galt Moraine?
2. What are the considerations in moving from a Study Area to a more defined boundary of the Paris Galt Moraine?
3. What are your thoughts on the initial focus area of adding, expanding and further protecting Urban River Valleys?
4. Do you have suggestions for other potential areas to grow the Greenbelt?
5. How should we balance or prioritize any potential Greenbelt expansion with the other provincial priorities mentioned above?
6. Are there other priorities that should be considered?

Moraine functions and features in the Grand River watershed

Moraines in the Watershed

Moraines are a prominent feature in the Grand River watershed. Three primary moraine systems in the watershed include the Waterloo, Orangeville, and Paris Galt moraines. Moraines, which are characterized by often coarse-grained materials and rolling topography, promote rainwater or snowmelt to infiltrate into the ground, and either discharge into local wetlands and streams, or recharge into the aquifers beneath the ground.

The general rolling topography of moraines provides the ability to direct water on the landscape into the ground which can attenuate the amount of water on the landscape and reduce the potential for flooding. Aquifers underlying the moraines are receptors for the a portion of the infiltrated surface water and in turn, provide water for municipal and private drinking water supplies, and baseflow to cold water streams which often support sensitive species and vegetation. Stream headwaters and wetlands are commonly found on the shoulders of moraines, where the water table intersects with the ground surface of the moraine.

Extent of the Paris Galt Moraines

The Paris Galt moraine system extends from the northeast, in the Caledon area of the Region of Peel, to an area southwest of Port Rowan on the Lake Erie shoreline; a distance of approximately 150 km and up to 8 km wide. In the Grand River watershed, the Paris Galt moraines are found in Region of Waterloo, Counties of Wellington, Brant, and Norfolk, and City of Guelph.

Recharge Function

The recharge capability of the Paris Galt moraines is one of its major hydrogeologic characteristics. The often sandy composition and hilly portions of the Paris Galt moraines are commonly identified as significant recharge areas within the Grand River watershed.

The rolling topography results in closed drainage depressions (no outlet to a watercourse) that trap rainfall and snowmelt, thus preventing runoff to nearby streams, and resulting in enhanced recharge.

Values of the moraines as a recharge feature

The combination of often higher topography and permeable soils of moraines creates ideal conditions for recharge to the underlying groundwater system, and also the creation of headwaters for streams and creeks. These conditions also contribute to:

- **Flood Attenuation:** Closed drainage depressions help to reduce downstream flooding by holding water on the landscape and focusing surface water into the ground. Urbanization of moraines can shift the moraines' function from recharge to runoff and result in excess surface water and flooding.
- **Grand River Water Quality and Quantity:** A portion of the water that is recharged along the Paris Galt moraines discharges as groundwater into the Grand River between Cambridge and Brantford. This reach exhibits increased flows, improved water quality, and reduced river temperatures from groundwater inputs into the river.
- **Water Supplies:**
 - The City of Brantford relies on water from the Grand River for all of its municipal water supply. Water quality improvements and augmentation through the Cambridge to Brantford reach benefit the quality of the City's drinking water supply.
 - The community of St. George obtains a portion of its municipal water supply from an aquifer located to the east of the Galt moraine. Some of the waters recharging into the moraine move deeper into the groundwater system and flow to the east towards the community of St. George, helping to maintain its groundwater supply.
 - Drinking Water Private Supply: Aquifers located across the Paris Galt moraines provide water supply to a large number of private wells for domestic and agricultural use. An example is Puslinch Township, where there are no municipal supplies; the Township's entire population and businesses are reliant on private water supplies from groundwater. Often smaller groundwater takings, such as those for domestic supply, utilize the groundwater available in the shallower aquifers.
 - Commercial and Industrial Water Supply: Larger commercial and industrial takings often draw water from the deeper bedrock aquifers. Shallower water takings include aggregate operations for wash ponds.
- **Stream Baseflow** (groundwater discharge): Recharge into the Paris Galt moraines, and the subsequent groundwater flow provides significant groundwater discharge to the following reaches:
 - Eramosa River/Blue Springs Creek,
 - Mill Creek,
 - Speed River between Guelph and Cambridge
 - Jones and Blue Creek in Brant County, and
 - Grand River near the south end of Cambridge to Brantford

Baseflow from groundwater augments streamflow, especially in summer months during drought, and provides cool groundwater temperatures that provide habitat for cold water dependent species and vegetation.

- **Groundwater Resilience:** Within the Paris Galt moraines, groundwater availability is buffered during times of drought (i.e. continued stream baseflow) because of the storage capabilities in aquifers.
- **Stream headwaters, wetlands and forests:** The Paris Galt moraine is characterized by relatively intact natural cover. Forested areas and wetlands contribute to infiltration on the moraine and help maintain significant groundwater recharge areas. Stream headwaters and wetlands are often located on the shoulders of the moraines, where the water table connects with the ground surface. Groundwater discharge to streams contributes to healthy cold water aquatic ecosystems.

Appendix 3 – Policy Comparison – Growth Plan and Greenbelt Plan

Feature/Topic	Growth Plan	Greenbelt Plan
General	Policies focused on directing growth such as where and how to grow including protection for natural heritage, water resource and agricultural systems.	Policies focused on protecting natural heritage (includes water resource systems), agriculture, open space and rural lands from impacts of growth
	Watershed planning/subwatershed planning is required to inform decisions on growth and development	
Water Resources	<p>A Water Resource System in both plans include:</p> <ol style="list-style-type: none"> 1. Key hydrologic <u>features</u> (streams, inland lakes, seepage areas, springs, wetlands) 2. Key hydrologic <u>areas</u> (significant groundwater recharge areas, highly vulnerable aquifers and significant surface water contribution areas) <p>Municipalities will undertake watershed planning to identify the Water Resource System</p>	
	Large scale development (i.e. plans of subdivision, condos, site plans) must demonstrate water functions are protected	Major development (footprint larger than 500m ² , four or more new lots or major recreational use) must demonstrate water functions are protected
Natural Heritage	<p>A Natural Heritage System includes:</p> <ol style="list-style-type: none"> 1. Key natural heritage features (habitat of endangered species and threatened species, fish habitat, wetlands, life science areas of natural and scientific interest, significant valleylands, significant woodlands, significant wildlife habitat, sand barrens, savannahs, tallgrass prairies and alvars) 2. Key hydrologic features (streams, inland lakes, seepage areas, springs and wetlands) 3. Key hydrologic areas (significant groundwater recharge areas, highly vulnerable aquifers and significant surface water contribution areas) 	
	Settlement Areas should avoid expansions into key hydrologic areas and the Natural Heritage System where possible	Settlement areas are prohibited from expanding into the Natural Heritage System
External connections/ Linkages and Urban River Valleys	<p>The Natural Heritage System and subwatershed planning support identification and protection of linkages</p> <p>Public Open Space polices encourage a system of publicly accessible parkland with access signage, trails etc.</p>	<p>External Connections and Natural System policies support linkages between prime agricultural areas and connections to external systems beyond the Greenbelt</p> <p>Urban River Valley designation applies to 'public' land and encourage support for connections and allow for infrastructure</p>

Feature/Topic	Growth Plan	Greenbelt Plan
Settlement area boundary expansions	<p>Settlement area expansions may be permitted under a municipal comprehensive review if growth cannot be accommodated by intensification and in designated greenfield areas</p> <p>Expansions must align with water and wastewater master plans, stormwater master plans and subwatershed plans</p> <p>Key hydrologic features and areas and natural heritage systems should be avoided</p>	<p>Settlement areas outside of the Greenbelt are not permitted to expand into the Greenbelt</p> <p>Expansions must maintain the rural and/or existing character of the <i>settlement area</i></p> <p>Only modest expansions of towns and villages are permitted (5% increase in size to a max of 10 ha; only 50% of added lands can be residential)</p> <p>No expansions of Hamlets are permitted</p> <p>Expansions into the Natural Heritage System of Protected Countryside is prohibited</p>
Mineral aggregates	<p>Extraction is permitted in the Natural Heritage and Water Resource Systems, but not in significant wetlands, significant woodlands and habitat of endangered and threatened species</p> <p>Aggregate operations are permitted outside of the areas noted above, as outlined in various policies</p>	<p>Municipalities cannot establish aggregate policies that are more restrictive than the Greenbelt Plan</p> <p>Aggregate operations are permitted and must set maximum allowable disturbed areas for their licences, maximize rehabilitated areas and minimize disturbed areas throughout operation</p>