



CITY OF HAMILTON
PUBLIC WORKS DEPARTMENT
Hamilton Water Division

TO:	Chair and Members Public Works Committee
COMMITTEE DATE:	June 13, 2016
SUBJECT/REPORT NO:	Mid-Spencer Creek/Greensville Rural Settlement Area Subwatershed Study Class Environmental Assessment (PW16041) (Wards 13 & 14)
WARD(S) AFFECTED:	Wards 13 & 14
PREPARED BY:	Marco Silverio Project Manager – Sustainable Initiatives (905) 546-2424, Extension 6099
SUBMITTED BY:	Mark Bainbridge, B.Sc. Director, Water & Wastewater Planning & Capital (905) 546-2424, Extension 5929
SIGNATURE:	

RECOMMENDATION

That the General Manager, Public Works, be authorized and directed to file the Notice of Completion and issue the Mid-Spencer Creek/Greensville Rural Settlement Area (RSA) Subwatershed Study Class Environmental Assessment for the mandatory 30-day review period;

- (a) That upon completion of the 30-day agency and public review period, the General Manager, Public Works, and the General Manager of the Planning and Economic Development Department be authorized and directed to proceed with:
 - i) The implementation of the preferred alternatives within the Mid-Spencer Creek/Greensville RSA Subwatershed Study Class Environmental Assessment as presented in the Executive Summary Section of this report;
 - ii) Updating of planning policies for the Greensville RSA Secondary Plan consistent with the stormwater and subwatershed strategies recommended by the Mid-Spencer Creek/Greensville RSA Subwatershed Study as presented in the Executive Summary Section of this report;
- (b) That the General Manager, Public Works, be authorized and directed to proceed with the Greensville Municipal Backup Well Schedule “C” Municipal Class Environmental Assessment study.

EXECUTIVE SUMMARY

The Hamilton Water Division invoked the Class Environmental Assessment (EA) process for the Mid-Spencer Creek/Greensville Rural Settlement Area (RSA) Subwatershed Study in order to determine the recommended strategies for stormwater

management, natural heritage, groundwater impact and domestic water supply. The objective of the study is to provide a basis for the protection, maintenance and enhancement of surface water and groundwater quantity and quality. The resulting plan will provide recommendations as to where, and how, future development activity can safely occur so as to minimize flood risks, stream erosion, degradation of water quality and negative impacts on natural systems, including groundwater. Recommendations may also identify opportunities for ecological enhancement where deemed integral to the function of the plan. The study was carried out as a Master Plan in order to identify and evaluate a range of alternative solutions and recommend a preferred strategy. Please refer to Appendix "B" for the Study's detailed Executive Summary.

There are two distinct study areas for this project: the Greensville RSA and the Mid-Spencer Creek Subwatershed. The Mid-Spencer Creek Subwatershed is generally bounded by Governor's Road to the south, Westover Road to the west, Sixth Concession Road to the north and Brock Road to the east. The Mid-Spencer Creek drains an area of approximately 56.4 km². The dominant land use is rural, with the exception of the Greensville RSA and the former Town of Dundas which is located in the southern part of the Subwatershed. The Greensville RSA is generally bounded by CN Railway to the south, Middletown Road to the west, Dundas Street East (Highway 5) to the north and Ofield Road South to the east. Presently, there are approximately 900 residences located within the RSA. The Greensville RSA covers an area of approximately 655 ha. Please refer to Appendix "A" for a map of the study area.

For this Study there are two components that were addressed as part of the EA process, these include:

- Stormwater management
- Domestic water supply

The Stormwater Management alternatives which were considered are intended to address flooding, erosion and water balance (collectively referred to as stormwater management) for the lands to be developed within the RSA; a screening level approach was first used to narrow down the alternatives. Following the screening approach a more detailed assessment of the more viable alternatives was undertaken. The Preferred Alternative is defined as Low Impact Development Source Control and Traditional Measures which best meets the requirements related to flooding, erosion and water balance.

A number of alternatives to provide Domestic Water Supply to existing and future residents and businesses within the RSA were considered. The preferred alternative was selected based on the impact to the environment, capacity of groundwater resources, consistency with existing policy and the objective to provide a better level of service to the homes currently serviced by the municipal well; the Preferred Domestic Water Supply Alternative is to:

- continue to require individual services (wells and septic systems) on future lots;
- add a backup well to the existing Greensville Municipal Well.

As part of the second point above, the location, sizing and preliminary design of the necessary infrastructure (pumping, treatment, storage) will be subject to further assessment to be undertaken under Schedule C of the Municipal Class Environmental Assessment.

Implementation and Monitoring Plan

The final stage of the Subwatershed Plan involves the development of an Implementation and Monitoring Plan for the RSA and Mid-Spencer Creek areas.

For the Greensville RSA the plans that are proposed for implementation include:

- **Stormwater Management Strategy:** in the nine new development areas identified within the RSA the preferred strategy involves a combination of Low Impact Development (LID) measures together with traditional stormwater measures (stormwater ponds) to address issues related to flooding, erosion and water balance. Please refer to Appendix “C” for a figure that identifies the proposed future stormwater management facilities for water quality, erosion and flood control in the RSA.
- **Groundwater Strategy:** for new residential developments there are two primary considerations:
 - one being the implementation of a Stormwater Management Strategy as described above in order to protect groundwater supplies. The target for new development is to maintain or enhance pre-development groundwater recharge both on-site and off-site due to creation of impervious surfaces associated with new development.
 - the second consideration relates to lot sizes and the concerns with respect to nitrate loadings from new homes and businesses. The objective is to ensure that the estimated concentration of 10.0 mg/l of nitrate in the receiving groundwater at the individual property boundaries is not exceeded. The recommended lot size represents the minimum required and should be increased based on additions to number of bedrooms and percent imperviousness. Please refer to Appendix “D” for a figure that defines the minimum lot size for each of the nine proposed development areas within the Greensville RSA.
- **Natural Heritage:** the recommended Natural Heritage System (NHS) strategy for the Greensville RSA presents recommendations for stewardship, monitoring, ecological rehabilitation and enhancement, as well as best management practices. The characterization of the NHS and the related recommendations are presented as a means of maintaining or enhancing the NHS. The NHS strategy presents an overview of the requirements of the City of Hamilton’s Rural Official Plan. Requirements for future studies, including a list of applicable approval agencies, are also presented. Rehabilitation and enhancement recommendations follow the direction of the Mid-Spencer Creek Stewardship Action Plan. Please

refer to Appendix “E” for a figure that details the revised NHS within the Greensville RSA.

The primary focus for the Mid-Spencer Subwatershed was to define existing conditions and to establish general direction with respect to restoration/rehabilitation measures that would be undertaken by the City, Hamilton Conservation Authority, other agencies or local residents.

For the Mid-Spencer Subwatershed the study looked closely at:

- Surface Water Resources: no recommendations were made for this component of the study;
- Groundwater Resources: general recommendations are made with respect to retrofit opportunities for septic systems, private wells and general measures to promote infiltration;
- Natural Heritage System: the recommended strategy includes stewardship as well as best management practices. These recommendations are presented as a means of maintaining or enhancing the Natural Heritage System.

This study was completed using the Municipal Class Environmental Assessment (EA) process to address Master Plan projects for the protection, maintenance and enhancement of surface water and groundwater quantity and quality. The Project File Report is complete and ready to be filed on the public record for the minimum 30-day review period. Upon Council approval of the Master Plan and Class EA and subject to comments received during the review, staff will proceed with the implementation of the preferred alternatives.

Alternatives for Consideration – See Page 12

The recommendations contained in this report support the Mission Statement of the Public Works Business Plan "Innovate Now" - "Provide safe, strategic and environmentally conscious services that bring our communities to life".

FINANCIAL – STAFFING – LEGAL IMPLICATIONS

Financial: There are no financial requirements associated with the components of the EA study (stormwater management and domestic water supply) at this time. In the future, when the stormwater facilities are constructed, the City will have to budget for ongoing operation and maintenance of these stormwater facilities. The funding for the Schedule “C” Municipal Class Environmental Assessment study for the proposed Greensville Municipal Backup Well can be accommodated within a previously approved Greensville Well Capital Project account.

Staffing: The implementation of the preferred alternatives will be carried out with existing staff and as such there are no staffing implications.

Legal: Municipal undertakings such as road improvements and water and wastewater projects are subject to Ontario’s *Environmental Assessment Act (1990,*

amended 2010). The *Act* allows for the approval of Class Environmental Assessments (Class EA) and the municipality has the option of following the planning process set out in the Municipal Engineers Association Class Environmental Assessment (amended 2007 & 2011) document. The location, sizing and preliminary design of the necessary infrastructure for the Greensville Municipal Backup Well will be subject to further assessment to be undertaken under Schedule C of the Municipal Class Environmental Assessment. The City is required to file the report on the public record for a minimum 30-day review period.

The Study's Implementation and Monitoring Plan recommendations for the RSA and Mid-Spencer Creek areas include requirements for future studies (to be prepared by the development proponents), design guidance and policy considerations that will be undertaken as development proceeds. These requirements will be subject to municipal and/or provincial regulations and approvals.

HISTORICAL BACKGROUND

The Greensville RSA and Mid-Spencer Subwatershed are located in the former Town of Flamborough and the City of Hamilton. The Greensville RSA area encompasses 655 hectares and a population of approximately 2,500 persons. Residents in the Greensville RSA and the subwatershed area are currently serviced by private septic systems and groundwater sourced from both municipal and private communal systems as well as individual private wells. There is one City owned municipal well (supplying 36 homes) and the Briencrest communal well which supplies 26 homes.

A Secondary Plan was prepared for Greensville in 1992 and the land use policies and guidelines for development are outlined in Official Plan Amendment 13 (OPA 13) to the Official Plan for the Town of Flamborough. The Secondary Plan sets out requirements for stormwater drainage and hydrogeology studies to be completed prior to new development within the Greensville Settlement Area. The Secondary Plan outlines the requirement for a Comprehensive Servicing Study that is to be undertaken to "provide guidelines to determine the extent and density of residential development that can be sustained without degradation of the quality or quantity of ground or surface waters within and outside the Secondary Plan Boundary". One of the objectives of this study is to define existing environmental conditions and to determine the potential impact of proposed development within the Greensville RSA.

Within the RSA the initial concerns were related to proposed development and the potential impacts of development on the natural heritage system, water resources or groundwater regime. As the study progressed it became clear that existing development impacted existing environmental conditions, particularly after several private wells went dry during a dry period in 2007.

As a result of the above, the overall approach in the development of the Mid-Spencer Creek/Greensville RSA Subwatershed Study was to develop a strategy that would ensure that proposed development within the RSA did not adversely impact existing environmental conditions while looking for opportunities to enhance existing

environmental conditions by implementing stewardship measures within areas that are already developed. Consistent with the statement above, the focus is within the RSA.

The Mid-Spencer Creek/Greenville RSA Subwatershed Study was initiated in 2007 in order to fulfil the requirement of the Secondary Plan for a Comprehensive Servicing Study. The Subwatershed Study was carried out in three (3) stages:

- Stage I - Subwatershed Characterization: investigate and define existing environmental conditions, including evaluation of natural features and functions of the study area and their potential interrelationships with other natural features, summarize constraints and opportunities;
- Stage II – Develop and Evaluate Subwatershed Management Strategies: identify alternative subwatershed management strategies, establish criteria to evaluate the alternative strategies and selection of a preferred subwatershed management strategy;
- Stage III – Develop an Implementation and Monitoring Plan: develop an implementation and monitoring plan to ensure the long term integrity of the preferred subwatershed management strategy.

Stage I and Stage II of the Study characterized existing environmental conditions and identified opportunities and constraints to development based on background review, field investigations, and modelling. This included the following:

- Hydrologic and hydraulic modelling to define flood hazards over the study area watercourses;
- Identification of terrestrial resources, including vegetation communities, flora and fauna;
- Identification of aquatic resources, including fish habitat;
- Fluvial geomorphologic (creek forming processes) field investigations to characterize select study area streams;
- Review of background information and select field investigations to define the soils and groundwater characteristics within the study area.

The Stage I and Stage II components also assessed the potential land use impacts on the natural resources of the study areas, reviewed alternative management measures to mitigate these impacts, and concluded with a recommended Subwatershed Strategy.

The Stage III of the Study consists in the development of an Implementation and Monitoring Plan that incorporates recommendations for the RSA and Mid-Spencer Creek areas. The recommendations include stormwater management controls, protection and promotion of groundwater resources and management measures, including recommendations for stewardship as well as best management practices, to maintain, protect and enhance the study area's significant natural heritage features and

ecological functions, including the identification of a recommended Natural Heritage System (NHS).

It should be noted that the level of effort and detail in order to respond to the Secondary Plan requirements was more considerable for the RSA. Work in the RSA included a review of background information together with detailed field assessments to confirm the existing natural features. For the Subwatershed area the focus was to use existing information and augment the findings with a more limited degree of technical and field assessments.

Successful implementation of the Subwatershed Strategies will require the combined efforts of the City of Hamilton, development proponents, local residents, the Hamilton Conservation Authority and other agencies (e.g., Ministry of Natural Resources and Forestry). As such, the Stage III component of the study includes requirements for:

- Future studies;
- Phasing considerations;
- Approvals; and
- Design guidance and policy considerations following basic elements of a successful implementation plan:

The Subwatershed Study phases were conducted as a Master Plan and the study was completed following Approach 1 under the Municipal Engineers Association (MEA) *Municipal Class Environment Assessment Act (Class EA) process (October 2000, amended 2007 & 2011)* and addresses Phases 1 and 2 of the EA process for any Schedule 'B' projects that are identified and outlines additional work that will be required to implement Schedule 'C' projects.

Stakeholder consultation is an important part of the EA process and a key component of the study, the Master Plan and Class EA for this project included public and Review Agency consultation. This EA process includes problem/opportunity identification, evaluation of alternative solutions, selection of a preferred solution, assessment of the impacts of the proposed works and identification of measures to mitigate the adverse impacts. Upon completion of the study, a Project File Report documenting the planning and decision making process and preferred upgrading alternatives was prepared and is ready for public review.

POLICY IMPLICATIONS AND LEGISLATED REQUIREMENTS

The Mid-Spencer Creek/Greensville RSA Subwatershed Study, although a technical document, will guide the future Secondary Plan Policies for the Flamborough Rural Settlement Area Plan.

Other policies affecting or impacting this Report include:

- *Ontario Environmental Assessment Act (1990)*
- *Ontario Environmental Protection Act (1990)*

RELEVANT CONSULTATION

The affected Ward Councillors have been advised about the completion of the study and the recommendations of this report.

Public and Review Agency consultation is an integral and legislated component of any Municipal Class Environmental Assessment study. Stakeholders are initially notified of the study with a formal Notice of Commencement advertised in the local newspaper. Review Agencies are notified directly by mail or email.

Project Stakeholder and Review Agency lists were developed at the onset of the study and maintained throughout, thus ensuring all interested parties are kept informed. All Stakeholders were invited and encouraged to comment on the project during the study.

Categorically, the Agency and Stakeholder Contact Lists include the following groups:

- Provincial Ministries and Agencies
- Federal Agencies
- First Nations
- Others (e.g. Municipal, Utilities, School Boards, etc.)

Two Public Information Centres were held at the Flamborough Christ Church – 92 Highway No. 8 on November 21st, 2007 and January 22nd, 2015. Feedback from attendees focused on personal experiences with drinking water wells, septic systems and stormwater management in addition to the potential impact of proposed strategies. There were no objections to the strategies presented.

A Community Liaison Committee (CLC) was also created to follow and provide input on the development of the Subwatershed Study. In addition to the development of the Terms of Reference, two meetings were held on October 8th, 2008 and January 14th, 2009.

Extensive consultation with the Hamilton Conservation Authority (HCA) took place at various stages of the Subwatershed Study. The HCA requested clarification related to Floodplain Mapping, Groundwater Assessment/Water Budget, Erosion Hazards, Stormwater Management and Natural Heritage. The City provided comments and rational on these issues and HCA has indicated that they have no objection to proceed with filing of the Subwatershed Study.

Additional internal and external stakeholders were also consulted during the development of the Subwatershed Study, including Planning and Economic Development (Planning Department, Growth Management, and Natural Heritage) and Niagara Escarpment Commission (NEC) and Ministry of Natural Resources and Forestry (MNRF).

The preferred alternatives are in itself the final stage of consultation which is an inherent part of the Class EA process. The project team will receive and attempt to mitigate any Stakeholder concerns or request for a Part II Order that is initiated within the mandatory 30-day review period.

ANALYSIS AND RATIONALE FOR RECOMMENDATION

The Mid-Spencer Creek/Greensville RSA Subwatershed Study aims to protect, maintain and enhance the ecological processes, functions and significant natural features of the area, providing a framework through which future growth may be established and undertaken in a manner which is environmentally sound and socially and economically sustainable.

The Subwatershed Study addresses these goals by providing a guide for future development activity that can safely occur in the study area. The resulting plan will provide recommendations as to where and how future development activity can safely occur so as to minimize flood risks, stream erosion, degradation of water quality and negative impacts on natural systems, including groundwater. Recommendations may also identify opportunities for ecological enhancement where deemed integral to the function of the plan.

The Subwatershed Study reviewed and evaluated the study area's existing hydrologic, hydrogeologic, geotechnical, environmental, land use and natural heritage conditions. Appropriate methods of accommodating the pre-development and post development stormwater discharge and stormwater quality control from the areas of future growth located within the study area were also determined. The study developed an appropriate stormwater management control and natural heritage strategy, drainage assessment and post development target flows. Furthermore it included identification of general locations for any required stormwater management facilities. The feasibility of several Best Management Practices, including Low Impact Development measures, was also defined.

The Mid-Spencer Creek/Greensville RSA Subwatershed Study was conducted as a Master Plan under the Municipal Class Environmental Assessment (Class EA) process. In order to meet the intent of the *Environmental Assessment Act*, the study will need to satisfy Phases 1 and 2 of the Class EA process:

- Phase 1 - identification of the problem (deficiency) or opportunity;
- Phase 2 - identification of alternative solutions to address the problem or opportunity by taking into consideration the existing environment, and establish the preferred solution, taking into account public and review agency input.

In keeping with the Environmental Assessment process, a number of alternatives were developed to address issues related to Stormwater and Servicing for lands to be developed within the RSA. Each of the alternatives that were brought forward were evaluated against a series of criteria that included:

- Physical and Natural Environment
- Social, Economic and Cultural Environment
- Technical Factors
- Financial Factors
- Legal and Jurisdictional Factors

The alternatives for Stormwater Management included:

- Do nothing;
- Traditional Measures;
- Low Impact Development (LID) Measures;
- Low Impact Development (LID) Measures and Traditional Measures.

The Preferred alternative for Stormwater Management within the RSA is Low Impact Development (LID) Measures and Traditional Measures. For sites larger than 5ha the preferred approach is implementation of LID source controls and end-of-pipe wet ponds; for sites with area less than 5ha the alternative approach is to use traditional source controls (surface storage and oil/grit separators) and LID source controls.

A number of alternatives to provide Domestic Water Supply to existing and future residents and businesses within the RSA were considered. The alternatives considered for Servicing/Domestic Water Supply include:

- Do Nothing - maintain status quo
- Control/Limit Community Growth
- Lake based Municipal water supply
- Provide more Communal wells
- Maintain Status Quo and add a Backup Municipal Well

The Preferred alternative for the RSA regarding Servicing/Domestic Water Supply is to continue to support development on private services (wells and septic systems) and add a backup well to the existing Greenville municipal system. This alternative was selected based on the impact to the environment, capacity of groundwater resources, consistency with existing policy and the objective to enhance reliability of water supply to the homes currently serviced by the municipal well.

Public and Stakeholder consultation is an integral part of the Class EA process. See the Relevant Consultation section of this Report and the Project File for more details.

The final step in the analysis rationale before proceeding to implementation of the preferred alternative is to undertake the mandatory 30-day review. A Notice of Completion of the Class EA as recommended herein will be issued in second quarter 2016. Notices will be issued via newspaper advertising and direct mail out to all members of the Stakeholder and Agency Contact lists. The Project File will be placed on public record along with contact information to receive concerns. All attempts will be made to mitigate all expressed concerns. Should resolution of a concern be unattainable the conflict may be escalated by the opponent to the Minister of the Environment for a decision.

The above analysis rationale is a prescribed process under that Municipal Class Environmental Assessment. The project was completed under full compliance.

Planning considerations

Planning staff note that implementation of the recommendations from the Subwatershed Study will result in required Amendments to the Rural Hamilton Official Plan (RHOP). Mapping amendments will be required to the Schedule “B” – Natural Heritage System Maps from Volume 1 of the RHOP and associated schedules. Further, amendments will be required to the Greensville Rural Settlement Area Plan Maps from Volume 2, including a requirement to remove the reference to phasing and the Major Development Areas. In addition, text amendments will be required, in particular to the Greensville Rural Settlement Area Plan, including updates to the policies regarding stormwater management, servicing, and development phasing, and to reference the recommended lot sizes as identified in the Study.

Further, amendments to the Zoning By-law will also be required to recognize the minimum lot area recommendations of the Subwatershed Study. Significant portions of Greensville were not included in the City’s new Rural Zoning By-law (15-173) in recognition of the lot size recommendations which would be brought forward through this Study. The City may now bring these lands into the new By-law with special requirements for minimum lot areas identified in this Study.

Proposed Official Plan and Zoning By-law Amendments will be brought forward to a future Planning Committee meeting to implement these recommendations, should the Subwatershed Study be approved.

ALTERNATIVES FOR CONSIDERATION

Alternative: Reject the Subwatershed Study

Under this alternative, the City of Hamilton would have to undertake additional analysis to resolve any outstanding concerns or individual studies would be required for all future development.

This alternative is not recommended. The Greensville Rural Settlement Area Plan (Vol. 2, section 3.5) requires the development of a Comprehensive Servicing Study in order to support further development, policies and the subsequent Servicing Strategies.

Should Council not wish to approve the filing of the Mid-Spencer Creek/Greensville Rural Settlement Area (RSA) Subwatershed Study Master Plan and Class Environmental Assessment study, the Municipal Class EA process would be considered incomplete by the provincial government. The City will not have approval under provincial environmental legislation to have the option to pursue the Greensville Backup Well System option as a Schedule “C” project.

ALIGNMENT TO THE 2012 – 2015 STRATEGIC PLAN

Strategic Priority #1

A Prosperous & Healthy Community

WE enhance our image, economy and well-being by demonstrating that Hamilton is a great place to live, work, play and learn.

Strategic Objective

- 1.2 Continue to prioritize capital infrastructure projects to support managed growth and optimize community benefit.

The Study identifies the required Schedule “B” and “C” projects under the Class Environmental Assessment Process to address stormwater and domestic water supply recommendations.

- 1.5 Support the development and implementation of neighbourhood and City wide strategies that will improve the health and well-being of residents.

The Study provides recommendations for the implementation and monitoring of stormwater, groundwater and natural heritage management strategies that account for the protection of water resources and biodiversity.

- 1.6 Enhance Overall Sustainability (financial, economic, social and environmental).

The Study provides recommendations as to where and how future development activity can safely occur in order to minimize flood risks, stream erosion, degradation of water quality and negative impacts on natural systems; the Study also identifies requirements for future studies, phasing considerations and design guidance; in addition, the Study’s recommendations enhance the overall sustainability on all aspects by providing coherent strategies that will guide local policy response through integration into the ROP.

Strategic Priority #2

Valued & Sustainable Services

WE deliver high quality services that meet citizen needs and expectations, in a cost effective and responsible manner.

Strategic Objective

- 2.2 Improve the City's approach to engaging and informing citizens and stakeholders.

The Study is a requirement under the Rural Official Plan and identifies the stormwater, groundwater and natural heritage strategies required to support future development; the Study also provides recommendations for maintenance and enhancement of environmental conditions through the implementation of stewardship measures. Public consultation/communication was a key element of the project.

Strategic Priority #3

Leadership & Governance

WE work together to ensure we are a government that is respectful towards each other and that the community has confidence and trust in.

APPENDICES AND SCHEDULES ATTACHED

Appendix A	Study Area Map
Appendix B	Mid-Spencer Creek/Greensville Rural Settlement Area (RSA) Subwatershed Study Executive Summary
Appendix C	Stormwater management facilities for water quality, erosion and flood control in the RSA
Appendix D	Minimum lot size for proposed development areas within the Greensville RSA
Appendix E	Revised Natural Heritage System within the Greensville RSA