



CITY OF HAMILTON

PUBLIC WORKS DEPARTMENT
Environment & Sustainable Infrastructure Division

TO: Mayor and Members General Issues Committee	WARD(S) AFFECTED: WARD 11
COMMITTEE DATE: June 20, 2012	
SUBJECT/REPORT NO: Stoney Creek Urban Boundary Expansion (SCUBE) Subwatershed Study (PW12049) - (Ward 11)	
SUBMITTED BY: Gerry Davis, CMA General Manager Public Works Department	PREPARED BY: Udo Ehrenberg (905) 546-2424, Extension 2499 Nahed Ghbn (905) 546-2424, Extension 6413
SIGNATURE:	

RECOMMENDATION

- (a) That the Stoney Creek Urban Boundary Expansion (SCUBE) Subwatershed Study be received;
- (b) That the General Manager of the Planning and Economic Development Department be authorized and directed to develop future planning policy for Fruitland Winona Secondary Plan consistent with the stormwater and subwatershed strategies of the SCUBE Subwatershed Study;
- (c) That the General Manager of the Public Works Department be authorized and directed to file the Subwatershed Study with the Municipal Clerk for a minimum thirty (30) day public review period in September 2012.

EXECUTIVE SUMMARY

The Public Works Department has prepared the Stoney Creek Urban Boundary Expansion (SCUBE) Subwatershed Study for the Lower Stoney Creek Area (see Appendix "A" - Study Area Map and the boundaries of the SCUBE East and West Subwatershed Study), in consultation with Planning and Economic Development staff.

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High level strategies for watershed management and stormwater management have been developed to reflect the contemplated land uses in the study area.

The SCUBE Subwatershed Study was initiated in late 2009, to provide supporting watershed/stormwater requirements necessary to shape the Fruitland-Winona Secondary Plan. The Subwatershed Study was completed in three (3) phases:

- Phase 1: Investigate and define existing environmental conditions, including environmental constraints and opportunities for development
- Phase 2: Evaluate future land use impacts and develop a Subwatershed Strategy, comprised of recommended works and measures to address stormwater management and the maintenance, protection and enhancement of the study area's significant natural heritage features and ecological functions
- Phase 3: Develop an implementation plan to guide future work by the City of Hamilton and development proponents

Separate Phase 1 and Phase 2 Subwatershed Study reports were completed for the lands on the east and west side of McNeilly Road. The SCUBE West Subwatershed Study addresses lands within the drainage boundaries of the watercourses, which drain the SCUBE West lands, namely Watercourses 5.0, 6.0 and 7.0. The SCUBE East Subwatershed Study addresses lands within the drainage boundaries of the watercourses that drain the SCUBE Central and SCUBE East, namely Watercourses 7.2, 9, 10, and Fifty Creek (see Appendix "A" - Study Area Map and the boundaries of the SCUBE East and West Subwatershed study).

The Phase 3 report combines the SCUBE East and SCUBE West Subwatershed study areas. Collectively, this report encompasses roughly all of the lands between Fruitland Road, in the west, to the City of Hamilton's boundary with Niagara Region in the east, from Lake Ontario in the north to just above the Niagara Escarpment in the south. The Phase 3 report was prepared to guide the future work required to successfully implement the components of the recommended Subwatershed Strategies which were developed during Phase 1 and Phase 2 of the SCUBE West and SCUBE East Subwatershed Studies.

The Subwatershed Study phases were conducted as a Master Plan and are intended to satisfy Phases 1 and 2 of the Municipal Engineers Association (MEA) Municipal Class Environment Assessment Act (Class EA) process (October 2000, as amended in 2007). This EA process includes problem/opportunity identification, evaluation of alternative solutions and selection of a preferred solution. Stakeholder consultation is an important part of the EA process, and a key component of the study.

The study recommendations will guide the development of the Fruitland - Winona Secondary Plan and Policies, delineation of the Natural Heritage System, and the development of related policies in the Secondary Plan for additional master servicing analyses and/or block servicing strategies.

The City will continue with a rainfall and flow monitoring program on Watercourse 5.0 and 6.0, as requested by Hamilton Conservation Authority, until the end of December 2012, to confirm calibration of the hydrology model (the science of determining the

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amount of water moving within a watershed area), and update the hydraulics (water levels and velocities on the creeks and watercourses). The City will also undertake additional Habitat Field Surveys to respond to HCA requests and new provincial regulations for Species at Risk issues. Separate supplemental reports to HCA will be provided after the additional monitoring program and the field surveys are completed. The supplementary works and related reports do not affect the filing of the Subwatershed Study.

The Subwatershed Study recommended strategies and measures, summarized as follows:

- Stormwater Management Controls [Stormwater management ponds, traditional source controls, low Impact Development (LID) controls]
- Drainage and Infrastructure Improvement Works
- Establishment of the recommended Natural Heritage System and Natural Heritage System Management Measures, including those associated with edge management, fencing and road crossings

The Subwatershed Study is a framework document that will be used to implement stormwater management infrastructure and strategies to modern service levels and guide the future Secondary Plan Policies for the Fruitland-Winona Secondary Plan Area.

Interested parties will have the opportunity to provide comments during the 30-day review period and if no criticisms are expressed, the study recommendations can be incorporated into the Fruitland-Winona Secondary plan policies and the Block servicing strategies.

Alternatives for Consideration - See Page 8

FINANCIAL / STAFFING / LEGAL IMPLICATIONS

Financial: There are no financial implications associated with the Subwatershed Study recommendations. However, further Master Servicing Analysis and/or Block Servicing Strategy will be initiated by Planning and Economic Development Department.

Staffing: Existing staff will implement the recommendations.

Legal: N/A

HISTORICAL BACKGROUND

The Fruitland - Winona Urban Boundary Expansion was approved by the Ontario Municipal Board on April 30, 2007. The approval of the Urban Boundary Expansion requires the City to prepare the lands for development through Secondary Planning and supporting servicing strategies.

This SCUBE Subwatershed Study was initiated in late 2009, in support of the Secondary Plan, and has been prepared in three (3) phases. Separate Phase 1 and Phase 2 Subwatershed Study draft reports were completed for the lands on the east and west sides of McNeilly Road. The Phase 1 and Phase 2 reports of the SCUBE East and

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SCUBE West Subwatershed Studies characterized existing environmental conditions and identified opportunities and constraints to development based on background review, field investigations, and modeling. 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 Phase 1 and Phase 2 reports 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 that consists of a series of stormwater management controls, stream works, and management measures 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).

The Phase 3 report addresses both the SCUBE East and SCUBE West study areas for the lands between Fruitland Road, in the west, to the City of Hamilton's boundary with Niagara Region in the east, from Lake Ontario in the north to just above the Niagara Escarpment in the south.

The purpose of this Phase 3 report was to guide the future work required to implement successfully the components of the recommended Subwatershed Strategies, which were developed during Phase 1 and Phase 2 of the SCUBE West and SCUBE East Subwatershed Studies.

Key objectives of this Phase 3 report include:

- Review of the key Subwatershed Strategy components
- Identify who is responsible for each of the Subwatershed Strategy components
- Provide direction as to the types of future studies required for the successful implementation of the Subwatershed Strategy
- Provide recommendations with respect to the phasing of proposed works
- Provide additional design guidance and policy considerations for key Subwatershed Strategy components
- Review of approvals considerations
- Natural Heritage System recommendations

Successful implementation of the Subwatershed Strategies on the Phase 3 report 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). As such, the Phase 3 Report outlines the following basic elements of a successful implementation plan:

- Responsibility for Implementation - identifies who is responsible for the implementation of the various Subwatershed Strategy components
- Targets/Objectives - identifies the target(s)/objective(s) associated with each component of the Subwatershed Strategy
- Requirements for Future Studies - outlines the requirements for future studies to be completed in support of the implementation of the various components of the recommended Subwatershed Strategy
- Phasing Considerations - identifies preliminary phasing considerations associated with the implementation of recommended works, particularly those that are inter-related
- Additional Design Guidance and Policy Considerations - provides additional design guidance for many key Subwatershed Strategy components, stormwater policy issues that may affect the implementation of the Subwatershed Strategy components
- Approvals - identifies the approvals and/or permits that may be required for each component of the recommended Subwatershed Strategy

POLICY IMPLICATIONS

Although the Subwatershed Study itself is a technical document, it will guide the future Secondary Plan Policies for the Fruitland-Winona Secondary Plan Area.

Public Works Business Plan- Innovate Now

The recommendations of this report will assist in meeting Public Works' "key goal" to be recognized as the centre of environmental and innovate excellence in Canada. The recommendations are an integral part of flood prevention and environmental enhancement to assist Public Works in building on our Strategic Vision Drivers as follows:

- **Communities (Services our Communities connect with and trust)**
Implementing the recommendations of the report will improve our local environmental living conditions. The transparent and consultative nature of the Class Environmental Assessment process builds trust within the community and Review Agencies, demonstrating Hamilton's and Public Works' Commitment to Service Excellence.
- **People (Skilled teams ready for any situation)**
The Subwatershed Study demonstrates the ability of our City staff to develop innovative and cost effective strategies for our stormwater system. Through a consultation process at Public Information Centres and meetings, stakeholders were invited to provide their input and contribute throughout the process of decision making.
- **Process (Smart processes to match our needs)**
Throughout the process, plans have been formulated to ensure that all aspects of the City's "Triple Bottom Line" approach to problem solving were considered. Social, environmental, and economic impacts were all assessed to provide a balanced approach to the recommended preferred strategies. A scoring and

evaluation as part of the environmental assessment process was employed in order to effectively arrive at the optimal solution that meets Hamilton specific goals and objectives. The result is a sustainable long-term approach that addresses all aspects of the "Triple Bottom Line".

▪ **Finances (Sound financial management for the long haul)**

The proposed strategies will be incorporated in the Fruitland-Winona Secondary Plan and reflected in its policies. Any growth related element will have a Development Charge component.

The Secondary Plan and associated policies will be presented to the Planning Committee at a future date in 2012.

RELEVANT CONSULTATION

This Subwatershed Study is a framework document that will be used to implement stormwater management infrastructure and strategies to modern service levels in the growth areas.

Staff met with the Ward Councillor and Hamilton Conservation Authority on April 2, April 19, 2012 respectively and May 25, 2012. The Councillor has identified historic flooding concerns. Staff are investigating these concerns in separate undertakings and will keep consulting with the councillor in this regard. The Councillor has requested that the 30 days review period occur in September 2012, followed by the secondary plan meeting by Planning and Economic Development.

Stakeholder consultation was completed in the form of a Public Information Centre held at the Stoney Creek Municipal Office - Council Chambers on June 24, 2010. There were no objections to the solutions presented.

Extensive consultation with the Hamilton Conservation Authority (HCA) was completed at various milestone points of the Subwatershed Study. The HCA identified concerns in the methodology used to determine flood plains, NHS field surveys/meander belt delineation. It was agreed that the Subwatershed Study would be followed by Master Servicing Analyses and/or Block Servicing Strategy with these complementary components coordinated with future development applications. Hamilton Conservation Authority was also concerned with the extent of environmental monitoring and model updates. These concerns will be addressed through follow up and stand alone assessments. Hamilton Conservation Authority has indicated their no objection to proceed with filing of the Subwatershed Study reports, with the understanding that additional complementary work will be undertaken in follow up assignments.

ANALYSIS / RATIONALE FOR RECOMMENDATION

SCOPE OF WORK - The Fruitland-Winona Subwatershed Study was undertaken to address flooding, erosion and environmental habitat/ecological concerns associated with the watershed.

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The goal of the SCUBE Subwatershed Study is to protect, maintain and enhance the ecological processes, functions and significant natural features of the subject area, by 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 SCUBE Subwatershed Study provides protection, maintenance and enhancement of surface water and groundwater quality and quantity by supporting the development of environmentally sound and responsive policies for the Fruitland-Winona Secondary Plan. Specifically, the study will provide a guide for future development activity that can safely occur in the Fruitland-Winona Secondary Plan area, so as to manage flood risks, stream erosion, degradation of water quality and negative impacts on natural systems. Recommendations identify opportunities for ecological enhancement where deemed integral to the function of the plan.

The SCUBE 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 also developed an appropriate stormwater management control and natural heritage strategy, drainage assessment and post development target flows. The study also 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 Study (East and West areas) 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, several alternative techniques have been identified to address the potential environmental impacts resulting from the proposed future development lands within the SCUBE study area:

- Do nothing
- Traditional Source Control Measures
- Low Impact Development (LID) Source Control Measures
- LID Conveyance Control Measures
- End-of-pipe controls including wet ponds, wetlands, and dry ponds
- Stream Restoration
- Natural Heritage System (NHS) Recommendations

The above alternative measures focus primarily on the development of a Stormwater Management Strategy, which is the key component of an overall Subwatershed Strategy.

The implementation of strategies and measures that are either directly related to future urban development, or are expected to provide a direct benefit to the developing lands, are the responsibility of the development proponents. These works are summarized below and include:

Stormwater Management Controls, including:

- Stormwater Management Ponds
- Traditional Source Controls
- Low Impact Development (LID) controls
- Drainage and Infrastructure Improvement Works, including:
 - Watercourse 5.0 relocation/reconstruction within the SCUBE West lands
 - Possible Watercourse 7.2 diversion to the Main Watercourse 7.0 channel
 - Watercourse 9.0 West Tributary channel capacity improvements
- Establishment of the recommended Natural Heritage System, including studies to:
 - Confirm the flooding hazard limit along watercourses impacted by proposed drainage and infrastructure improve works or environmental restoration and enhancement works
 - Identify the erosion hazard limit along confined portions of Fifty Creek
 - Identify the final boundaries of Core Areas and Linkages
 - Confirm the extent of Vegetation Protection Zones
- Natural Heritage System Management Measures, including those associated with edge management, fencing and road crossings

The study recommendations are integrated as part of the Fruitland - Winona Secondary Plan and policies that planned to move forward in 2012.

The Subwatershed Study would be followed by supplementary studies and reports for Master Servicing Analyses and/or Block Servicing Strategy coordinated with future development applications and the ongoing rainfall and flow monitoring program on Watercourse 5.0 and 6.0.

ALTERNATIVES FOR CONSIDERATION

Alternative 1: Reject the Subwatershed Study

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

This alternative is not recommended. *Orderly development in the Fruitland-Winona Secondary Plan area is dependant on the timely completion of the Secondary Plan,*

policies and the subsequent Servicing Strategies. Should individual development applications be submitted to the City in advance of the completion of the Secondary Plan, development may be adhoc and infrastructure delivery compromised and inefficient.

CORPORATE STRATEGIC PLAN

Focus Areas: 1. Skilled, Innovative and Respectful Organization, 2. Financial Sustainability, 3. Intergovernmental Relationships, 4. Growing Our Economy 5. Social Development, 6. Environmental Stewardship, 7. Healthy Community

Financial Sustainability

- ◆ Delivery of municipal services and management capital assets/liabilities in a sustainable, innovative and cost effective manner.
- ◆ Effective and sustainable Growth Management.

Growing Our Economy

- ◆ Completion of Servicing Strategies and Secondary Plans will facilitate efficient and timely development.
- ◆ Reducing flooding impacts to private properties, reduce costs to individual home/property owners in damages, timely risk management cost savings to the City.
- ◆ Reducing erosion results in reduction of land loss to private land owners abutting those sites, resulting in improvement of property value of the entire community.

Social Development

- ◆ Reduction of flooding and damage to private properties.

Environmental Stewardship

- ◆ Natural resources are protected and enhanced.
- ◆ Reduced impact of City activities on the environment.

Healthy Community

- ◆ Engaged stakeholders through consultation with the community on infrastructure decision making.

APPENDICES / SCHEDULES

Appendix "A" Study Area Map and the Boundaries of the Stoney Creek Urban Boundary Expansion (SCUBE) East and West Subwatershed Study

SCUBE Sub-watershed Study Area and the Boundaries of the
SCUBE East and West Subwatershed study

