THE CORPORATION OF THE
TOWN OF TECUMSEH

Public Works & Environmental Services
Report No. 23/17

TO:	Mayor and Members of Council
FROM:	Dan Piescic, P.Eng., Director Public Works & Environmental Services
DATE OF REPORT:	April 11, 2017
DATE TO COUNCIL:	May 23, 2017
SUBJECT:	Upper Little River Master Plan Environmental Assessment Filing the Notice of Study Completion

RECOMMENDATIONS

It is recommended:

1. That Administration finalize the Upper Little River Master Plan Environmental Assessment, with recommendations supporting the preferred solution (Alternative 6) identified by Stantec Consulting Ltd.; and

2. That Administration issue the Notice of Study Completion for the Upper Little River Master Plan Environmental Assessment as per the Municipal Class Environmental Assessment Planning Process to commence the 30-day review period immediately following finalizing the Environmental Assessment.

BACKGROUND

The City of Windsor, the Town of Tecumseh, and the Essex Region Conservation Authority (ERCA) commenced a stormwater study in the Upper Little River Watershed in 2004 to document existing conditions and to recommend stormwater management measures to protect existing resources as development continues in the upper reaches of Little River. The study area consists of the drainage area of the Upper Little River, upstream of E.C. Row Expressway. The drainage area is approximately 45 square kilometers (sq. km) including lands in both Windsor and Tecumseh.

The portion of the Town of Tecumseh that forms part of the Upper Little River Watershed includes the following areas:

- Approximately 900 Ha (2,200 Acres) generally located south of Highway 401 in the northerly part of the Oldcastle Hamlet industrial park area, as well as agricultural lands to the east, and
- Approximately 265 Ha (650 Acres) generally located south of County Road 22 in the existing residential and future Tecumseh Hamlet development lands west of St. Anne Street and generally along the Banwell Road corridor.

The stormwater management requirements identified in this Master Plan document will influence development planning and servicing requirements in these areas of the Town. In particular, the Town has been undertaking a Secondary Plan and a Municipal Servicing Class Environmental Assessment process for the Tecumseh Hamlet area (principally along the Banwell Road corridor), which could now resume by integrating these stormwater management requirements, as generally described below:

- Linear stormwater management facilities that would control runoff quality and quantity to the three (3) existing municipal drain outlets serving this area, namely Gouin Drain, the LaChance Drain and the Desjardins Drain.
- 200 m (650 feet) wide stormwater management corridors, each generally located as follows:
    - Gouin Drain, located at the north limit of the Tecumseh Hamlet lands, along the south side of County Road 22;
    - LaChance Drain, located along the north side of the CP Railway corridor; and
    - Desjardins Drain, located along the existing alignment of this municipal drain, north of County Road 42.
- Pump station outlets from each of these linear stormwater management facilities.

The Upper Little River Master Plan will satisfy the Schedule B Class Environmental Assessment requirements for the implementation of these facilities.

Original Study Commencement in 2004

In late 2004, Council approved the Town's participation in the Upper Little River Watershed Master Drainage and Stormwater Management Plan study ("the Upper Little River Study"). The Upper Little River Study is being undertaken by Stantec Consulting Ltd on behalf of the City of Windsor, the Town of Tecumseh and the ERCA. In 2004, Council approved funding of $20,000 for the Town's share of Stantec Consulting Ltd fees and $10,000 for the participation of the Town's designated engineer, J. Breschuk of Dillon Consulting, as deemed necessary.

Portions of the watershed extend into the Town; both to the south and east of the annexed lands, including future development lands along the Banwell Road corridor in Tecumseh Hamlet as well as portions of Oldcastle Hamlet.

The goal of the Upper Little River Study is to develop a plan for the protection, enhancement and restoration of the Upper Little River storm drainage system in the City's annexed area and the adjacent areas in the Town of Tecumseh along with its associated environmental features under existing conditions and as land use changes occur. An outcome will be a recommended drainage and stormwater management plan for regional facilities that includes preliminary sizing of drains and facilities along with cost estimates. The Upper Little River Study will consider the issue of stormwater management from the perspective of providing broad, regional solutions across the watershed. It will consider not only flood control and stormwater management, but also potential opportunities for associated recreational uses and linkages along various corridors and between facilities and natural features.

Proposed Study Recommencement in 2007

The Upper Little River Study had been underway for a short period of time however it was subsequently put on hold by the City of Windsor. In anticipation of it recommencing in 2007, a revised work plan and budget was developed at the request of the Town and City that ensured the Municipal Class EA requirements would be satisfied. This Environmental Assessment study component was not originally contemplated in the 2004 assignment.

In 2007, the scope of work was revised to the Class Environmental Assessment, which required a much more detailed review of all of the various alternatives being considered, mitigating measures required with each, and separate public meetings. Changes have occurred in government legislation and standard practice since the project initiation in 2004 and project scope revision in 2007, including archeological site work, First Nations engagement *Species at Risk Act*, and continuous hydrologic modeling.

The Town's share of the Upper Little River Study cost is 13.7% in accordance with the relative Town and City portions of the total study area. Accordingly, in 2007, Council approved an increase in the Town's share of the Stantec Consulting Ltd budget of $10,825, over and above the previously approved amount of $20,000 in 2004. However, the study did not recommence at that time.

Study Recommencement in 2011

In 2012, it became timely that the Upper Little River Study recommence given the following factors:

i) The Lauzon Parkway Project, as managed by the Ministry of Transportation, the City of Windsor and the County of Essex, with Steering Committee involvement by the Towns of Tecumseh and Lakeshore, had begun and was following an aggressive timeline. This project includes consideration of the extension of Lauzon Parkway south to Highway No. 3, a Municipal Class EA for a portion of County Road 42 including where it traverses the Town, and completion of a Secondary Plan in the City of Windsor for the 6,000 acres that were transferred from the Town to the City;

ii) The Town's desire to complete the Tecumseh Hamlet Secondary Plan.

Both of the foregoing projects required considerable stormwater drainage and management analysis that can best be achieved vis-à-vis the Upper Little River Study. Reciprocally, the Upper Little River Study will be greatly influenced by each of these two studies. For purposes of efficiencies and coordination, it was recommended by the Town that the Upper Little River Study recommence at that time.

A revised budget was prepared by Stantec Consulting Ltd for review and approval by the City of Windsor and the Town of Tecumseh. Due to the elapsed time from earlier project delays, inflation costs and increased requirements of the EA process today, the Town's portion of the total cost of the project has increased to $51,375. To date, the Town has been invoiced $21,301, leaving a remaining cost to the Town of $30,074 to complete the work.

COMMENTS

Council, at the Planning & Building Services Committee meeting held May 24, 2011, approved the following under Motion PC-16/11:

> *THAT the Planning and Building Services Committee, in accordance with the B. Hillman, May 16, 2011, Report No. 15/11, recommend Council approve the Tecumseh share on the increased project cost of $51,375 not including HST, of the Upper Little River Watershed Master Drainage and Stormwater Management Plan, being conducted by Stantec Consulting Ltd. in accordance with the terms noted in the May 9, 2011 letter from Jayson Innes, Water Resources Engineer of Stantec Consulting Ltd.;*
>
> *AND THAT Council approve funding for the outstanding $30,600, including non-rebateable HST of 1.76%, required to complete the study from the Infrastructure Reserve.*

Subsequent to Council's approval to increase the financial contribution to the project, work on the Upper Little River Watershed Master Drainage and Stormwater Management Plan proceeded (and is currently in its final stages).

Public consultation is an important part of the EA process. Two Public Information Centres (PICs) were held.

Public Information Centre (PIC) #1

PIC #1 was held on May 29, 2012 at the Forest Glade Community Centre from 3:00pm to 5:00 pm and from 6:00pm to 8:00pm to provide information regarding the project and outline the alternatives and evaluation criteria. A series of displays were prepared for PIC #1 depicting existing natural and social environmental conditions , background information, alternative stormwater management control options, an air photo of the study area, and preliminary evaluation criteria for the evaluation of various alternative concepts. The purpose of this Public Open House Meeting was to introduce the public to the various alternative stormwater management options and background information, and to seek input on the presented options. No decisions on a preferred scenario were presented at this meeting.

The six alternatives, illustrated in Appendix 1, were presented:

1. The "Do Nothing" approach
2. Water Quality and Erosion Control Only, no Flood Control
3. Communal On-Line SWM Facilities
4. Communal Flood Control and Distributed Water Quality and Erosion Control
5. Distributed Stormwater Management Controls
6. Grouped Stormwater Management Controls

Evaluation criteria included natural, economic, technical, and social/cultural environment criteria.

Public Information Centre (PIC) #2

PIC #2 was held on October 22, 2012 from 3:00 pm to 5:00 pm and from 6:00 pm to 8:00 pm at the Windsor Christian Fellowship. In addition, Public Information Centre 2 for the Lauzon Parkway Environmental Assessment and the third workshop for the Sandwich South Secondary Plan were held concurrently at the same location.

A series of displays were prepared for PIC #2 depicting existing natural and social environmental conditions, background information, alternative stormwater management control concepts, an air photo of the study area, criteria for the evaluation of various alternative concepts, and the evaluation scores. The purpose of PIC #2 was to introduce the public to the preferred alternative. PIC #2 was attended by approximately 25 people and all attendees were invited to provide written comments to the Project Team on any issues of interest on the study. Comments received at the time focussed primarily on the designation wood lots and wetlands as well as the widening of Baseline Road.

Six alternatives were evaluated based on criteria presented at PIC #1. Alternative 6, with grouped stormwater management controls located along major transportation and environmental corridors, was the preferred solution. This alternative has the highest combined score. It ranked highest by providing all of the technical requirements for stormwater management and by providing a central core for amenities and trails.

Recommended Alternative

The recommended alternative (Alternative 6) provides all stormwater management (SWM) controls before outletting to the downstream watercourses. Each facility would provide water quality, water quantity, and erosion controls on a standalone basis. In this alternative the SWM facilities are

grouped into stormwater management corridors. These would also promote natural linkages, recreational trails, and greenways. The SWM facilities can provide controls for more than one property and will be located adjacent to a watercourse. It is anticipated that facilities would be designed and constructed as development proceeds. The preferred alternative supports the ability of landowners within a drainage sub catchment area to proceed independently while minimizing the total number of SWM facilities.

Heavy vegetation adjacent to all water bodies and minimal open water will be implemented in order to make water features less attractive to bird species, a specific request from the Windsor Airport. As part of this work, several of the existing municipal drains are proposed to be abandoned and several new channels will be created that align with the proposed development plan for the area.

Advantages of the preferred alternative include the following:

- Staging Flexibility - This alternative minimizes the number of facilities, while providing flexibility with respect to their staging and construction
- Stormwater Pumping - Fewer facilities and grouped locations, with one pump for multiple properties should minimize the number of pumping stations
- Recreational Opportunities - The potential exists to create new trail networks through the corridors

A Draft version of the "Upper Little River Master Plan Environmental Assessment Environmental Study Report", dated January 2017, was prepared by Stantec Consulting Ltd. for review by the Project Team. Comments from the Project Team have been provided to Stantec Consulting Ltd. and the report is currently being finalized. It is anticipated that the final report will be available within the next three to four weeks.

Next Steps

Project related information is posted on the Town's website www.tecumseh.ca.

The Notice of Study Completion will be published in the Shoreline and on the Town's website immediately following finalizing the Environmental Study Report (ESR) and provided by direct mail-out to the directly affected property owners, stakeholders and those whom have requested to be included on the project contact list for the EA. A copy of the Notice of Study Completion will be provided to the Mayor and Members of Council and included as a Communication Item at the next regularly scheduled meeting of Council following publication. The ESR will be made available at Town Hall in the Clerk's office during the 30-calendar day review period.

The finalization of the ESR will require, pursuant to the Environmental Assessment Act, a mandatory 30-day review period. This provides an opportunity for the public to request a Part II Order regarding the proposed undertaken in the EA. Upon filing such an objection, the Minister of the Environment and Climate Change undertakes a review and renders a decision, which may approve, deny, or approve with conditions.

CONSULTATIONS

Essex Region Conservation Authority
Director Planning & Building Services
Director Financial Services & Treasurer

FINANCIAL IMPLICATIONS

The project has remained within the allocated funding provided.

LINK TO STRATEGIC PRIORITIES

No.	2017-18 Strategic Priorities	Applicable
1.	Make the Town of Tecumseh an even better place to live, work and invest through a shared vision for our residents and newcomers.	
2.	Ensure that the Town of Tecumseh's current and future growth is built upon the principles of sustainability and strategic decision-making.	✓
3.	Integrate the principles of health and wellness into all of the Town of Tecumseh's plans and priorities.	
4.	Steward the Town's "continuous improvement" approach to municipal service delivery to residents and businesses.	✓
5.	Demonstrate the Town's leadership role in the community by promoting good governance and community engagement, by bringing together organizations serving the Town and the region to pursue common goals.	

COMMUNICATIONS

Not applicable ☒

Website ☐ Social Media ☐ News Release ☐ Local Newspaper ☐

This report has been reviewed by senior Administration as indicated below and recommended for submission by the CAO.

Prepared by:

For Dan Piescic, P.Eng.
Director Public Works & Environmental Services

Reviewed by:

Brian Hillman, MA, MCIP, RPP
Director Planning & Building Services

Reviewed by:

Luc Gagnon, CPA, CA, BMath
Director Financial Services & Clerk

Recommended by:

Tony Haddad, MSA, CMO, CPFA
Chief Administrative Officer

Attachments:

1. Appendix 1 – ULR Alternative
2. Appendix 2 – Draft Report 2017-01-27 Executive Summary

DP

Upper Little River
Stormwater Master Plan Class Environmental Assessment

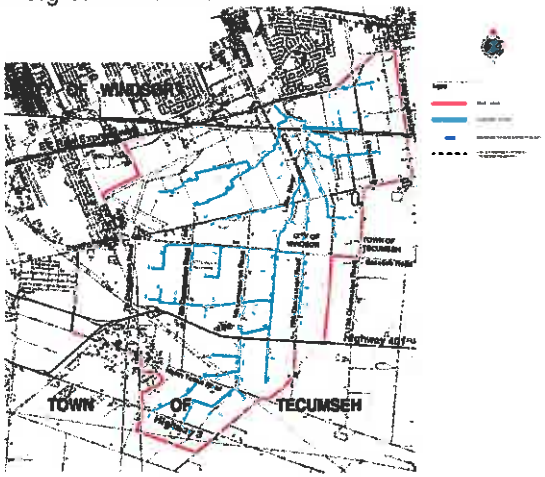
Description of Alternatives

Alternative #1
The "Do-Nothing" Approach

The "Do-Nothing" alternative includes no stormwater management controls for the developing areas in the Upper Little River.

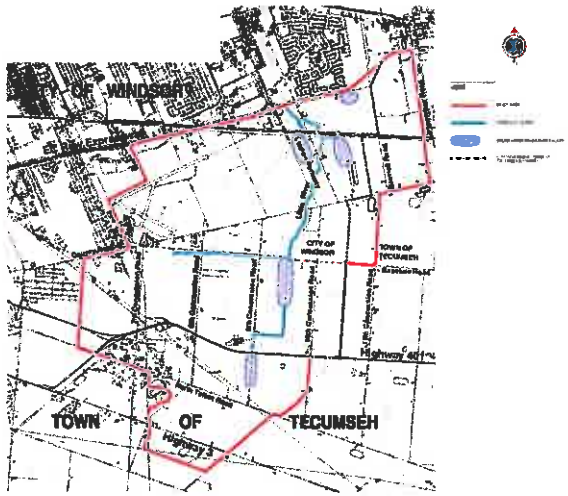
Alternative #2
Water Quality and Erosion Control Only, no Flood Control

For this alternative, the proposed development will have only water quality treatment and erosion control, with no flood control. Many small water quality facilities would be scattered throughout the watershed.



Alternative #3
Communal On-line SWM Facilities

This alternative analyzes the potential to minimize the number of stormwater management facilities required to serve the study area by consolidating all water quality, erosion and flood controls at a few locations throughout the watershed.



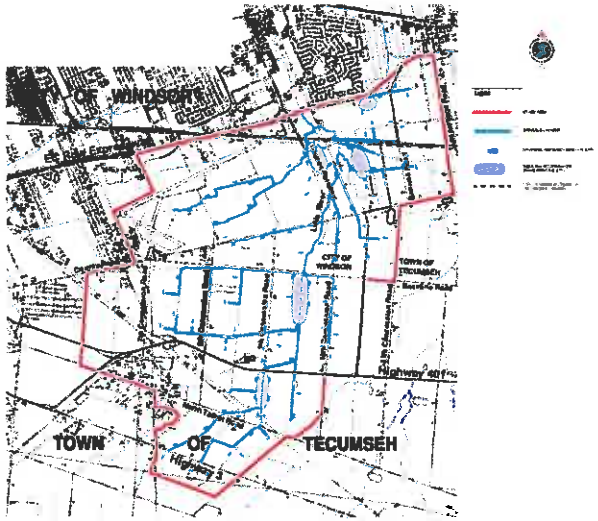
Essex Region Conservation Authority
Stantec
Windsor

Upper Little River
Stormwater Master Plan Class Environmental Assessment

Description of Alternatives

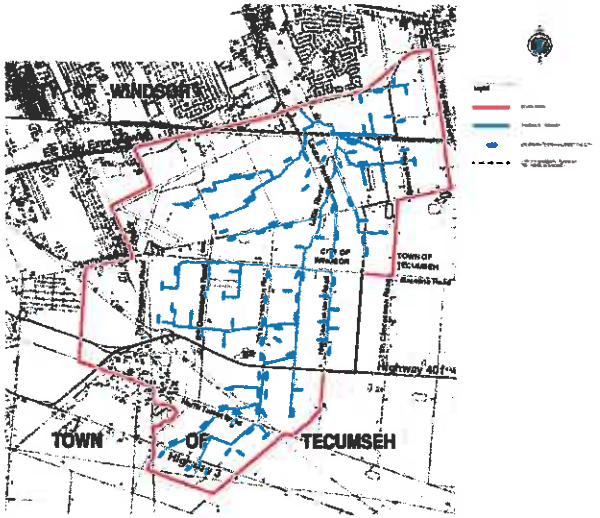
Alternative #4
Communal Flood Control and Distributed Water Quality and Erosion Control

This alternative analyzes the scenario where a few large flood control facilities are located within the study area (similar locations to Alternative #3), but many small water quality and erosion controls are distributed throughout the area (similar locations to Alternative #2).



Alternative #5
Distributed Stormwater Management Controls

This alternative considers the potential for stormwater management controls to be distributed throughout the study area, and each facility would be required to provide water quality, erosion and flood controls.



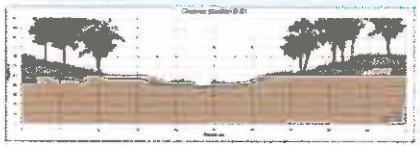
Essex Region Conservation Authority
Stantec
WINDSOR

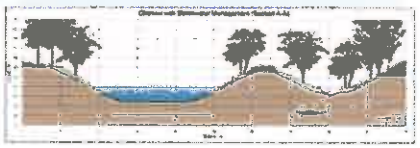
Upper Little River
Stormwater Master Plan Class Environmental Assessment

Description of Alternatives

Alternative #6
Grouped Stormwater Management Controls

This alternative considers the potential for stormwater management controls to be grouped into stormwater management corridors. Each facility would be required to provide water quality, erosion and flood controls. The facilities are aligned to promote natural corridors and recreational linkages.





Essex Region Conservation Authority

Stantec

City of Windsor

APPENDIX 2
UPPER LITTLE RIVER STORMWATER MANAGEMENT EXECUTIVE SUMMARY (2017-01-27 DRAFT)

DRAFT UPPER LITTLE RIVER MASTER PLAN ENVIRONMENTAL ASSESSMENT
ENVIRONMENTAL STUDY REPORT
WINDSOR AND TECUMSEH, ONTARIO

Executive Summary

The Upper Little River watershed is located in the southeast part of the City of Windsor and the west part of the Town of Tecumseh, as shown on the Site Location Plan (Figure E1). The Main branch of Little River originates south of Highway 401 and generally flows north through a well-defined system of municipal drains and channels towards the Detroit River and Lake St. Clair. The drainage area contributing to Upper Little River upstream of the E.C. Row Expressway is approximately 45 km².

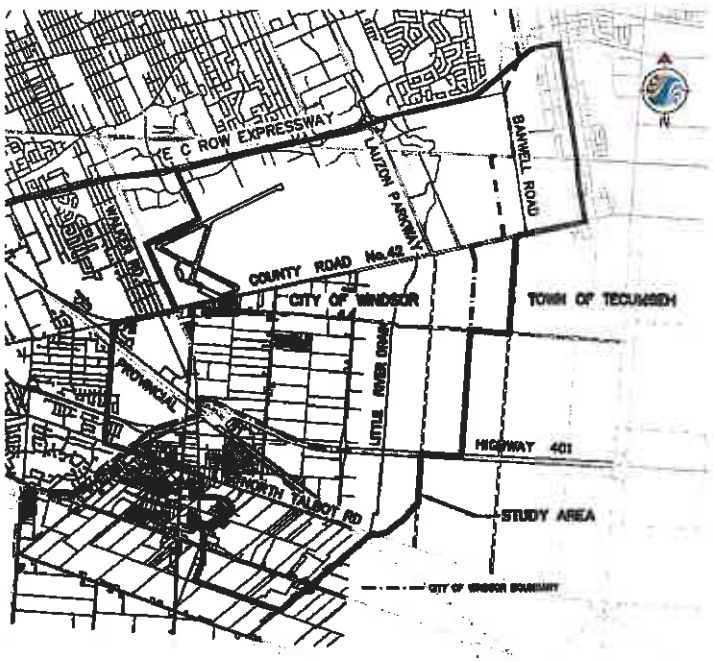


Figure E1: Site Location Plan

The City of Windsor (City), the Town of Tecumseh (Town), and the Essex Region Conservation Authority (ERCA) commenced a study in 2004 to document existing conditions and to recommend stormwater management measures to protect existing resources as development continues in the upper reaches of Little River. In 2005, the City was in the process of completing a Land Use Plan for the Sandwich South Employment Lands, and the Study was put on hold until that process could be completed. The City of Windsor Council adopted a Preferred Concept

Land Use Plan on October 23, 2006. The project was put on hold again in 2007 after the Ministry of Transportation (MTO) announced that it had plans for a new highway through the study area.

The project was reinitiated in 2010 at the same time as several adjacent projects. Land use planning, future arterial roadway locations (Lauzon Parkway, County Road 42, and a new East-West Arterial), and the proximity of the Windsor International Airport have all been taken into account in the development of the proposed stormwater management approach.

Stantec Consulting Ltd. is the lead consultant, in cooperation with Parrish Geomorphic Ltd., to complete a Class Environmental Assessment Study to determine a preferred approach to providing stormwater management control measures for the developing lands upstream of the E.C. Row Expressway and contributing to Upper Little River.

The Project Team, consisting of representatives from the City of Windsor, The Town of Tecumseh, the Essex Region Conservation Authority, and the Consultant Team, has examined a number of alternatives for stormwater management based on a combination of previous documentation and current information. In addition, two Public Open House Meetings (May 29, 2012 and October 22, 2012) have been held to receive input on the alternative options investigated.

A preferred option was developed as a result of an evaluation of alternatives and public/agency input, and is considered representative of the most financially and physically appropriate option to achieve the required controls, while maximizing opportunities to conserve existing natural conditions. Details of the study process, from conceptual development of alignment alternatives through to selection and preliminary design of the preferred alternative, are summarized in the following Environmental Study Report, which is to be considered for approval by the Councils of the City of Windsor and the Town of Tecumseh.

This project has been completed in accordance with a "Master Plan Environmental Assessment – Approach 2". In accordance with the Environmental Assessment Act, this Environmental Study Report was filed on the Public Record for a period of thirty (30) days after adoption of the recommendations by the City of Windsor and the Town of Tecumseh. Notification of the public review period was advertised in the local newspaper, and copies of pertinent advertisements are included in the Appendices.

The main objectives of this Class EA, and how they were generally approached, are summarized as follows:

> *To ensure that urbanization of the Upper Little River Watershed can occur in a fashion that will not lead to negative impacts on the receiving systems including increased flood risk, the impairment of natural watercourse features, and would allow for future enhancement of the watercourse, stream margins and wetlands.*

Alternatives and Evaluation

As part of the Class EA Process, it is important that all reasonable design alternatives be adequately considered. The following alternatives have been identified for further evaluation through this Class EA process:

Alternative 1 - The Do-Nothing Alternative

In this alternative, the Little River subwatershed area is developed but no stormwater management control measures are implemented for the watershed. The evaluation of this alternative is required by the EA process; however, ERCA has stated that lands downstream of the study area are currently impacted by flood waters and any increase in flows would require channel improvements with significant costs to ensure that flood levels/damages are not increased.

Alternative 2 - Water Quality and Erosion Control Only

In this alternative, the proposed development will have only water quality treatment and erosion control, no water quantity or flooding controls. ERCA has stated that lands downstream of the study area are currently impacted by flood waters and any increase in flows would require channel improvements with significant costs to ensure that flood levels/damages are not increased.

Alternative 3 - Communal Stormwater Facilities

This alternative analyses the potential to minimize the number of SWM facilities required to serve the study area by consolidating all water quality, erosion and water quantity controls at a few locations throughout the watershed.

On-line

These large centralized SWM facilities would provide control for anywhere from 150 to 800 ha of development area. The ponds could likely be incorporated with a greenway along one of the existing municipal drain alignments forming a linear pond and would use the existing municipal drain network to transport flows to the SWMFs. Another option would be to keep the existing municipal drains similar to existing with large ponds at key locations. Multiple forebays could be used to consolidate drainage from different directions.

Several of the Municipal Drains are considered to provide direct fish habitat. Since this alternative provides water quality control downstream of the fish habitat this option would likely require a permit from the DFO. This alternative would also be classified as an on-line water quality facility (since it would be located on a watercourse). Recent projects attempting to employ this method have had difficulty obtaining approvals from MOECC, MNRF, and DFO, primarily due to fisheries/natural heritage concerns. Due to the complications arising from the

proximity of the airport and the online water quality controls, it would be difficult to obtain approvals for this alternative.

Off-line

This alternative is similar to the on-line version where a few large centralized SWMFs would be used to provide controls. This alternative differs in that the storm flows would drain through large storm sewers to the SWMFs whereas the on-line version uses the existing municipal drain network to transport flows. Due to flat grades throughout the site and required minimum slopes on storm sewers, flows in the storm sewers would need to be pumped before outletting to the downstream water courses. This option requires significant upfront capital costs for the storm sewers and land acquisition and does not lend itself well to staged construction.

Alternative 4 – On-line Quantity Control with Local Quality and Erosion Controls

This alternative analyses the scenario where a few on-line water quantity or flood control facilities are centralized in key locations throughout the study area, but water quality and erosion controls are distributed across the watershed.

Large centralized SWMFs would be used to provide water quantity control for large rainfall events. These large facilities would be located generally in the same locations as for Alternative 3, except that they could be smaller and they would not require a permanent body of water (although there would be some form of low flow channel). Recent projects employing on-line water quantity controls have been approved by the MNRF and MOECC with some additional review time.

Smaller distributed SWMF's would be used to provide a Normal level of water quality control, which could take the form of a dry pond combined with a treatment train approach (i.e., pre-treatment), a wet pond, a wetland, or low impact development techniques. The minor system would drain to the small distributed SWMFs where water quality and erosion control would occur. Major flows would either bypass the small distributed SWMF or drain through them with minimal controls to the large downstream SWMFs.

Alternative 5 - Distributed Off-line SWM Controls

This alternative considers the potential for stormwater management controls to be distributed throughout the study area, and each facility would be required to provide water quality, erosion and water quantity controls separately. It is anticipated that facilities would be designed and constructed as development proceeds on a site by site basis.

This form of SWM is typical of most developments where each development block would provide their own SWM controls (water quality, water quantity, and erosion control) before outletting to the drains. It would be the easiest alterative to receive approvals for due to its standard approach.

Similar to Alternative 4, water quality would be provided on a site-by site basis throughout the development area in end-of pipe facilities (i.e., dry pond combined with a treatment train approach, wetland, or wet pond). Flood control would occur above the water quality control volume (so that the water depth would be larger) or in adjacent mixed use areas (e.g., sports field, woodlots, etc.). Under normal conditions they will operate similar to the Alternative 4 ponds and it is only under large rainfall events where there will be differences in operation.

Alternative 6 - Grouped Off-line SWM Controls

This alternative considers the potential for all stormwater management controls to be provided before outletting to a watercourse. Each facility would be required to provide water quality, erosion and water quantity controls similar to Alternative 5. In this alternative the SWM facilities are generally in the same area (co-located) and are congregated into SWM corridors.

This alternative is similar to Alternative 5, with the main differences being that the SWM facilities are intended to provide controls for more than one property and they are located adjacent to other facilities and a watercourse. Generally, there will be fewer and larger SWMFs compared to Alternative 5 and more and smaller SWMFs compared to Alternative 3.

Evaluation of Alternatives

Throughout the Study process, the various alternatives were reviewed and discussed by the Project Team, the public, and agency representatives. It is obvious that each alternative will result in varying impacts on environmental features, lands available for development by local property owners and the downstream system. As would be expected, the objectives and needs of various groups are not always consistent, and so an appropriate evaluation process was applied by the Project Team to arrive at a preferred concept or recommended concept.

A set of evaluation criteria/indicators was selected to reflect the issues, constraints and concerns considered most important when comparing the alternative alignments. The evaluation criteria used to assess the various alternatives were grouped into four major categories as outlined below:

- Natural Environment
  - Terrestrial Resources, Vegetation, and Wildlife Implications
  - Fisheries Resources and Aquatic Habitat Implications
  - Groundwater and Baseflow Implication
  - Surface Water Quality

- Economic Environment
  - Total Capital Cost
  - Total Maintenance Cost
- Technical Environment
  - Ability to Provide Required Flood Protection
  - Ease of Construction/ Implementation
  - Ability to Meet Agency Requirements
- Social/Cultural Environment
  - Aesthetics
  - Health and Safety
  - Recreational Opportunities
  - Cultural Heritage/Archaeology

For each evaluation criteria a relative preference rating was assigned to each alternative. That is, for each criterion a particular alternative was either highly preferred, moderately preferred, or was generally not preferred. This information was tabulated for all of the criteria. Based on the evaluation matrix Alternative 6 is the preferred option.

Description of Preferred Alternative

The preliminary preferred alternative (Alternative 6) provides all stormwater management controls before outletting to the downstream watercourses. Each facility would be required to provide water quality, water quantity, and erosion controls on a standalone basis. In this alternative the SWM facilities are grouped into stormwater management corridors to promote natural linkages, recreational trails, and greenways. The SWM facilities can provide controls for more than one property and will be located adjacent to other facilities and a watercourse. It is anticipated that facilities would be designed and constructed as development proceeds. The study area will be developed by multiple land owners and the preferred alternative supports the ability of individual land owners to proceed independently while minimizing the total number of SWM facilities.

The stormwater areas are proposed to be congregated into stormwater management corridors which can be combined with trail systems and amenity areas for the surrounding developments.

The stormwater management corridor will be located beside watercourses which will accept drainage from the end-of-pipe facilities. Heavy vegetation adjacent to all water bodies and minimal open water will also be implemented in order to make water features less attractive to bird species, a specific request from the Windsor Airport. As part of this work, several of the existing municipal drains are proposed to be abandoned and several new channels will be created that align with the proposed development plan for the area. In addition, the work will include re-grading the stream channel banks to create benches or terraces, which will help dissipate energy and re-connect the bankfull channel to a floodplain area.

Advantages of the preferred location include the following:

- Staging Flexibility – This alternative minimizes the number of facilities while providing flexibility with respect to their staging and construction
- Avian Habitat – The avian habitat area is relatively concentrated, which provides continuous linkages for predators, reduces the number of sites to be monitored, and provides more separation between nesting and foraging areas
- Ease of Permitting – SWM facilities are located offline of each watercourse easing approval issues. Individual SWM facilities generally follow typical designs leading to easier approval
- Stormwater Pumping – fewer facilities and grouped locations (with one pump for multiple properties) should lead to fewer pumping stations when compared to standard one facility per property strategies
- Recreational Opportunities – The potential exists to create new trail networks through the corridors due to the continuity of the grouped SWM system
- Fish Passage – The stormwater management areas are located offline of the existing watercourses and no additional barriers to fish movement are created. The conveyance system remains fish habitat similar to the existing municipal drain network
- Erosion - re-grading the banks to create benches or terraces will re-connect the bankfull channel to a floodplain area, thereby reducing erosion and improving fish habitat