



Working together with our community

## Council Meeting – November 17, 2020

Subject: Introduction to the Inter Urban Water Supply  
Report Number: PW 20-63  
Division: Public Works  
Department: Administration  
Purpose: For Decision

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### Executive Summary:

In 2016, the County finalized its Integrated Sustainable Master Plan (ISMP) study, which was initiated to address long-term planning for essential community services including potable water strategies to facilitate growth to 2041. The ISMP considered an inter-urban water supply (IUWS) system, wherein all communities would be interconnected. This option was not recommended at the time due to cost. However, given the projected growth and existing constraints in each community, the County has decided to re-evaluate the IUWS option. The purpose of the IUWS is to identify water quantity and quality issues, develop alternatives to mitigate these issues, and provide recommendations on next steps to provide the County with a secure, inter-urban water supply servicing strategy.

This report is intended to provide an brief introduction to the issues facing Norfolk County's water systems and highlight some of the options that will be presented in the completed IUWS report.

### Discussion:

#### Current State of Norfolk County's Municipal Drinking Water Systems:

Norfolk County's municipal drinking water systems are currently subject to a number of risks and system deficiencies. These are briefly summarized below:

#### Port Dover (High-High Risk):

- Port Dover Water Treatment Plant (WTP) does not have sufficient firm or installed capacity to meet the current maximum day demands of the community.
- Port Dover WTP clarifier was indentified as being in very poor condition and is at significant risk of failure. As a result, replacement of the clarifier is currently underway in order to ensure a secure supply of water at existing treatment capacity, but this work will not result in increased treatment capacity.

- As a result of the treatment capacity constraints at the WTP, a “development freeze” has been implemented in the community, whereby no new water customers are permitted to connect to the existing Port Dover Municipal Drinking Water System.

#### Simcoe (High Risk):

- The Simcoe Municipal Drinking Water System is supplied by 7 groundwater wells. These wells are all currently experiencing operational challenges, increasing water quality concerns, and are not considered to be viable long term water sources for the community of Simcoe. Since 2016, two groundwater wells have already been removed from service due to water quality/quantity issues. Some of the known water quality issues include sodium levels which are greater than 50% of the maximum allowable concentration, a trend of increasing nitrate levels in the source water due to the proximity to agricultural areas, threat of contamination of the Cedar Street wells from the known groundwater contamination in the area of the Norfolk County Garage, and high iron levels. While iron can be removed through our current water treatment processes, the iron is increasingly problematic due to the physical effects it has on the well pumps and screens. This results in decreased production capability of the wells, and requires annual/bi-annual well rehabilitations to be completed. The rehabilitation work is not successful in restoring the full production capability of the wells, so the production capability of each well is slowly declining.
- Explorations for additional groundwater supplies are ongoing, but have had limited success. Current efforts for the development of a new well source for Simcoe are underway, however even if successful, this supply will effectively only be capable of replacing the ‘lost’ capacity of the existing wells, and will not result in additional capacity in the Simcoe system.
- Review of actual flow and consumption data indicates that the ‘surplus’ water capacity in Simcoe is rapidly declining and without increased capacity within the system, Norfolk County will likely be in a position whereby a “development freeze” may be required in the Community of Simcoe until such time that additional water capacity is made available.

#### Waterford (Medium-High Risk):

- The Waterford Municipal Drinking Water System is supplied by 2 groundwater wells. There are minimal concerns relating to the water quantity with these wells, however the two wells are both located in the same aquifer, which is in close proximity to the Waterford Ponds and adjacent wetlands. The proximity to the ponds and wetlands leaves these wells vulnerable to contamination. Since these wells are in the same aquifer, should they become contaminated, both wells would need to be removed from service, leaving the community without a water supply. While contamination may be unlikely, the system requires additional redundancy to be constructed in order to maintain a secure, long-term supply.
- Exploration for a new groundwater well is currently anticipated to begin in 2023.
- Review of actual flow and consumption data indicates that the ‘surplus’ water capacity in Waterford is rapidly declining and without increased capacity within the

system, Norfolk County will likely be in a position whereby a “development freeze” may be required in the Community of Waterford until such time that additional water capacity is made available.

- In November 2019, Council heard a presentation relating to potential future expansion of the Community of Waterford. While there have been no formal submissions to the County relating to this, staff note that currently there is insufficient water capacity available to support growth of this magnitude.

#### Delhi and Courtland (Low Risk):

- The Delhi Municipal Drinking Water System (which includes Courtland) is supplied by 4 groundwater wells and a surface water treatment plant. The Delhi Surface WTP will be removed from service in 2021, and fully decommissioned in the years to follow due to source water quality concerns and the deteriorated state of the facility.
- The Delhi system will have a supply surplus in both 2020 (1,500 m<sup>3</sup>/d) and 2041 (1,400 m<sup>3</sup>/d) with all 4 groundwater wells operational.
- There is minimal concern relating to the water quantity with these wells, however they are located in close proximity to one another, in an agricultural area with nearby wetlands. This leaves these wells vulnerable to potential contamination. While contamination may be unlikely, the system requires additional redundancy to be constructed in order to maintain a secure, long-term supply.

#### Port Rowan and St Williams (Medium Risk):

- Due to geographic constraints, and the fact that this system is already a lake-based surface water system, both the ISMP and IUWS have recommended that local improvements and upgrades continue at this water treatment plant in order to meet the current and future needs of these communities.
- The Port Rowan WTP is limited by its shallow water intake and several treatment related factors. High turbidity levels resulting from changes in lake levels causes the filters to plug faster and the filters require multiple backwashes each day. Algae blooms have caused issues for the plant and limits its treatment capacity.
- A significant rehabilitation of the existing treatment process is currently underway. Investigations are currently underway relating to the establishment of a new or improved water source/intake. If the water intake concerns are resolved, the plant can operate at its DWWP rated capacity of 3,040 m<sup>3</sup>/d, the Port Rowan & St Williams system will not have any deficiencies in 2041.
- Review of actual flow and consumption data indicates that the ‘surplus’ water capacity in Port Rowan is rapidly declining and without increased capacity within the system, Norfolk County will likely be in a position whereby a “development freeze” may be required in the Community of Port Rowan and St Williams until such time that additional water capacity is made available.

### Additional Analysis to be Presented in the IUWS:

Review and commentary on the following studies:

- Integrated Sustainable Master Plan (ISMP)
- Nanticoke Grand Valley Area Water Supply (NGVAWS)
- Long Point Region Source Protection Area – Approved Source Protection Plan
- Haldimand/Norfolk Regional Water Supply Study Draft Report
- Impact of Blending and Changing Water Sources
- Analysis of Alternative Solutions, including analysis of current and future capital and operating expenditures required

### Additional Analysis provided by County staff:

Review of the following studies:

- Norfolk County Water and Wastewater Rates Review
- Haldimand County Water and Wastewater Rates Review
- Comparative analysis of theoretical water supply and existing 'ground-truthed' water supply trends and operational realities

### Alternative Solutions:

The IUWS began on the basis of examining 3 main alternatives:

1. Water from Norfolk County source(s)
2. Water from Haldimand County source(s)
3. Water from Elgin County source(s)

From these main alternatives, a high-level overview of 13 possible alternatives to provide a long term strategy for a safe and secure supply of water for Norfolk County's Municipal Drinking Water Systems were examined.

After preliminary evaluation, a total of 5 alternatives were short-listed for further detailed analysis on the basis of timelines for implementation, costs, the ability to address current issues and mitigate future risks, and source water blending.

The 5 short-listed alternatives are generally described as follows:

- 1.2 Centralized WTP in Port Dover to Service All County Communities and Completion of Community Water System Interconnections
- 1.3 Two Lake Based WTP's and Completion of Community Water System Interconnections (Port Dover to service the Communities of Port Dover, Simcoe, Waterford, Delhi and Courtland, and Port Rowan to service Port Rowan and St Williams)

2.2 Nanticoke WTP Upgrades to meet the Demands of Port Dover, Simcoe and Waterford with one transmission main connection

2.3 Nanticoke WTP Upgrades to meet the Demands of Port Dover, Simcoe and Waterford with two transmission main connections

2.4 Port Dover WTP upgrades to meet demands of Port Dover, and Nanticoke WTP upgrades to meet Simcoe and Waterford demands, as well as future needs of Port Dover

### Moving Forward:

Staff are currently in the final review stages of the IUWS prior to presentation to Norfolk County Council. The intention is to bring forward complete details of the report in December 2020 for Council's consideration and direction to staff.

Staff at Norfolk County and Haldimand County are actively working together on all the Nanticoke based water solutions, however staff in both Counties require direction and support for their respective Council's in order to further proceed with more through analysis, and to pursue potential funding from the Federal and/or Provincial governments. The preliminary analysis indicates a strong or preferred option for a connection to Nanticoke. Though final analysis needs to be undertaken and a final decision for both Councils would be required, staff will be proceeding with more indepth analysis and reviewing structuring options for these arrangements. Staff will also seek preliminary government advocacy advice to develop a strategy to seek senior government level support for this project.

The implementation of the IUWS will re-shape the County's drinking water systems and provide a long term financially viable solution relating to the provision of safe and secure drinking water for the County.

### **Financial Services Comments:**

Full Financial Services comments and analysis will be provided upon presentation of the Inter Urban Water Supply report. However it should be noted that conservative costing estimated for these options were considered in our water and wastewater rate forecast and budgets.

### **Interdepartmental Implications:**

None.

### **Consultation(s):**

Public Works Engineering Department, Public Works Environmental Services Department, Chief Administrative Officer, Haldimand County, WSP, WT Infrastructure

**Strategic Plan Linkage:**

This report aligns with the 2019-2022 Council Strategic Priorities "Build Solid Foundations", "Build and Maintain Reliable, Quality Infrastructure", "Create an Optimal Place for Business" and "Foster Vibrant, Creative Communities".

Explanation:

**Conclusion:**

The establishment of an affordable, safe and secure drinking water source for all of Norfolk County's municipal drinking water systems will form a solid base for Norfolk County's water customers, while providing ability to meet all current and future development needs.

**Recommendation(s):**

THAT Staff Report PW 20-63, Introduction to the Inter Urban Water Supply, be received as information;

AND THAT Council directs staff to further investigate potential options for the establishment of a long term agreement relating to the supply of drinking water from Haldimand County as well as potential funding strategies.

**Attachment(s):**

None.

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