THE SECOND MEETING OF THE 2023 ST. THOMAS AREA SECONDARY WATER SUPPLY SYSTEM BOARD OF MANAGEMENT

COMMITTEE ROOM #304 **JUNE 22, 2023**

5:03 p.m. The meeting convened with Councillor Norm Watson, Vice Chair presiding.

ATTENDANCE

Members
Councillor Norm Watson, Municipality of Central Elgin
Deputy Mayor Justin Pennings, Southwold Township
Councillor Jeff Kohler, City of St. Thomas
Councillor Rose Gibson, City of St. Thomas (Alternate)

Absent
Councillor Steve Peters, City of St. Thomas

Officials
J. Lawrence, Director of Environmental Services, City of St. Thomas
C. Andrew, Manager Water & Sewer, City of St. Thomas
G. Brooks, Director of Infrastructure and Community Services, Municipality of Central Elgin
K. Kamerman, Compliance Coordinator, City of St. Thomas
S. Reitsma, Manager of Development and Compliance
A. Piggot, Water/Waste Water Superintendent, Municipality of Central Elgin
A. VanOorspronk, Director of Infrastructure & Development Services, Township of Southwold
M. Smale, Legislative Services Coordinator, City of St. Thomas

DISCLOSURES OF INTEREST

Nil.

MINUTES

Motion by Councillor Kohler - Watson:

THAT: The minutes of the meeting held on March 23, 2023, be confirmed.

Carried.

NEW BUSINESS

REPORTS OF COMMITTEE

Options for Ford Water Tower Renewal - *Appendix "A"*

The members discussed potential impacts of removing the Ford Water Tower without replacement.

The Director of Environmental Services and City Engineer advised that the pumps at the Elgin Middlesex Pumping Station regulate pressure in the system and that a power interruption could result in a vacuum effect resulting in undesirable inflow into the system.

The members inquired about the remaining lifespan of the water tower.

The Director of Environmental Services and City Engineer advised that the tower was at the end of its lifespan.

The members discussed cost implications of the options outlined in the report and the impact each option could have on water rates.

The members discussed the size of the towers proposed in options 1 and 2.

The members inquired whether Dutton Dunwich's position regarding back feeding had changed and whether user rates could be varied by municipality.

The Director of Infrastructure & Development Services advised that Dutton Dunwich's position had not changed.

The Director of Environmental Services and City Engineer advised that charging varying rates among the municipalities serviced by the secondary system could be investigated.

The members discussed the potential for sourcing an uninterruptable power supply to reduce the risk of pressure waves in the system and to back feed unneeded electrical supply to the grid.

The Director of Environmental Services and City Engineer advised that modeling done to date had not shown a scenario where the vacuum effect could be eliminated without replacing the tower.

Motion by Councillor Watson - Kohler:

THAT: Report SWB-04-23 relating to Options for the Renewal of the Ford Water Tower be received for information; and further,

THAT: An RFP be issued to provide modeling of creative solutions to power supply issues within the Secondary Water Supply System; and further,

THAT: A report be made to the Board following the evaluation of the RFP results.

Carried.

The members directed that staff have further back feed discussions with Dutton Dunwich and investigate rate and legal implications to the Board following the results of those talks.

UNFINISHED BUSINESS

NEXT MEETING

The next meeting is scheduled for October 12, 2023.

ADJOURNMENT

The meeting adjourned at 6:22 p.m.

Appendix "A"

ST. THOMAS THE RAILWAY CITY		**Report No.** SWB 04-23 **File No.**
Directed to:	Chairman and Members of the Board of Management of the St. Thomas Area Secondary Water Supply System	**Date Authored:** May 31, 2023 **Meeting Date:** June 22, 2023
Department:	Environmental Services	**Attachment**
Prepared By:	Karel Kamerman Compliance Coordinator	**#1** –Normal Operations with Tower **#2** -EMPS Out of Service with Tower **#3** –EMPS and ARBS Out of Service with Tower **#4** -EMPS Out of Service (No Tower) **#5** -EMPS and ARBS Out of Service (No Tower)
Subject:	**Options for Ford Tower Renewal**	

Recommendations:

THAT: Report No. SWB 04-23, Options for Ford Tower Renewal, be received for information.

Background:

The Ford Elevated Tower serves as a water storage vessel and provides the St. Thomas Area Secondary Water Supply System (STASWSS) with protection from hydraulic transient pressures following pump shutdowns, valve closures, etc..

The Ford Elevated Tower is nearing the end of its useful life (estimated 0-10 years of life remaining). Failure of the Ford Elevated Tower would have minimal effect under day-to-day circumstances, however, operation of the system without the Tower or other mitigating measures would leave the Southwold and STASWSS systems at risk of significant impact from vacuum, in the event of a pump failure, power failure, or other transient pressure wave initiating event. This type of event could result in Boil Water Advisories on the system(s), affecting system users and disrupting school and restaurant operations, with an estimated recovery time of up to one week.

Three options are provided for the Board's consideration for removal or replacement of the tower:

1. Replace the Tower with a tower of the same size.
2. Replace the Tower with a tower to hold a 1–2-day supply.
3. Remove the Tower

Analysis:

An elevated water tower provides instantaneous water supply and pressure regulation of the transmission main. Figure 1, attached, demonstrates how water is distributed by the existing water system under normal circumstances. The remainder of the figures (2-5) demonstrate the impact of various scenarios on the systems fed by the STASWSS for the 5-minute interval between pump failure and generator start-up, as this is the most difficult scenario for the system to manage. Figures 2 & 3 depict the effect on the system(s) of the EMPS and EMPS and ARBS respectively, not being able to operate given current system set up (i.e. with an elevated tower).

Removal of the Ford Elevated Tower would result in a wholesale change to the transient response of the STASWSS, relying on interconnections with other systems (Dutton-Dunwich and St. Thomas) to effectively mitigate the transient pressures. Figures 4 & 5 depict the effect on the system(s) during the 5-minute interval between pump failure and generator start-up in the event the EMPS and EMPS & ARBS, respectively, are not able to operate, following removal of the Ford Elevated Tower.

In order to mitigate the negative effects of transient pressure waves, it would be necessary to modify the existing interconnects between STASWSS and St. Thomas Drinking Water System at Wellington and Southwold Drinking Water System at Iona, construct new interconnects at Fingal Line and NW Area 1 connection point with STASWSS, obtain permission from the Municipality of Dutton-Dunwich to allow for back-feeding from their system to

Southwold under certain emergency response scenarios. Initial discussions with Dutton-Dunwich staff have not been favourable. Further feasibility modelling would also be required in order to demonstrate that the Dutton-Dunwich system and the St. Thomas system can provide adequate volume in the necessary time frame to mitigate the transient pressures and avoid a vacuum scenario.

Staff are seeking direction on which option below is preferred for renewal of the Ford Elevated Tower, given the initial response from Dutton Dunwich Staff.

The three options proposed are summarized below, along with the Pro's and Con's of each option.

Option	Pro's	Con's
1. Like for Like Tower Replacement (~800 m3)	- System remains self-sufficient in transient pressure mitigation. - Storage for short-term interruptions (~1hour?)	- Cost Estimate: $5-10 million
2. Upsized Tower Replacement (7600 m3)	- System remains self-sufficient in transient pressure mitigation. - Storage for medium-term water supply interruptions (~1 -2 days)	- Cost Estimate: $8 -12 million
3. Remove Tower by: a. Obtain cooperation of Dutton Dunwich; Complete feasibility studies on Dutton Dunwich system and ARBS; Construct Fingal Line interconnect; Alter Wellington and Iona interconnects. b. Obtain cooperation of Dutton Dunwich; Complete feasibility studies on Dutton Dunwich system and ARBS; Construct Fingal Line and NW1 interconnect; Modify Wellington and Iona interconnects c. Seek out other Options.	- Cost Estimate: $1-2 million	- Reliance on Dutton-Dunwich back feed necessary, staff have said no. - More modelling work required to ensure this solution is feasible. - Reliance on St. Thomas DWS. - No Storage for supply W/M break or system isolation resilience.

Respectfully,

Karel Kamerman, B.Sc, C.Tech.
Compliance Coordinator

Reviewed By: – JUSTIN LAWRENCE –
Env. Services

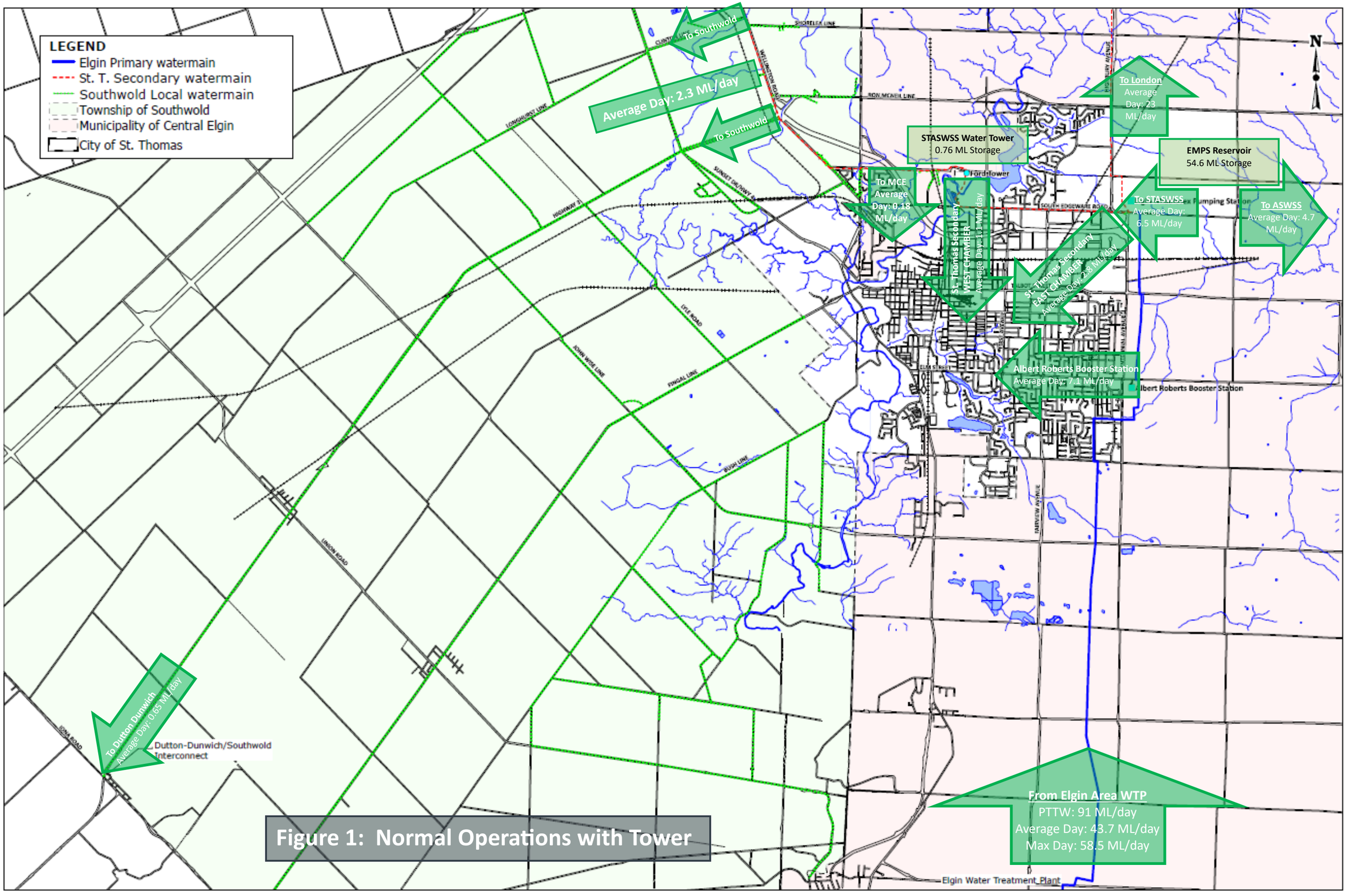

Figure 1: Normal Operations with Tower

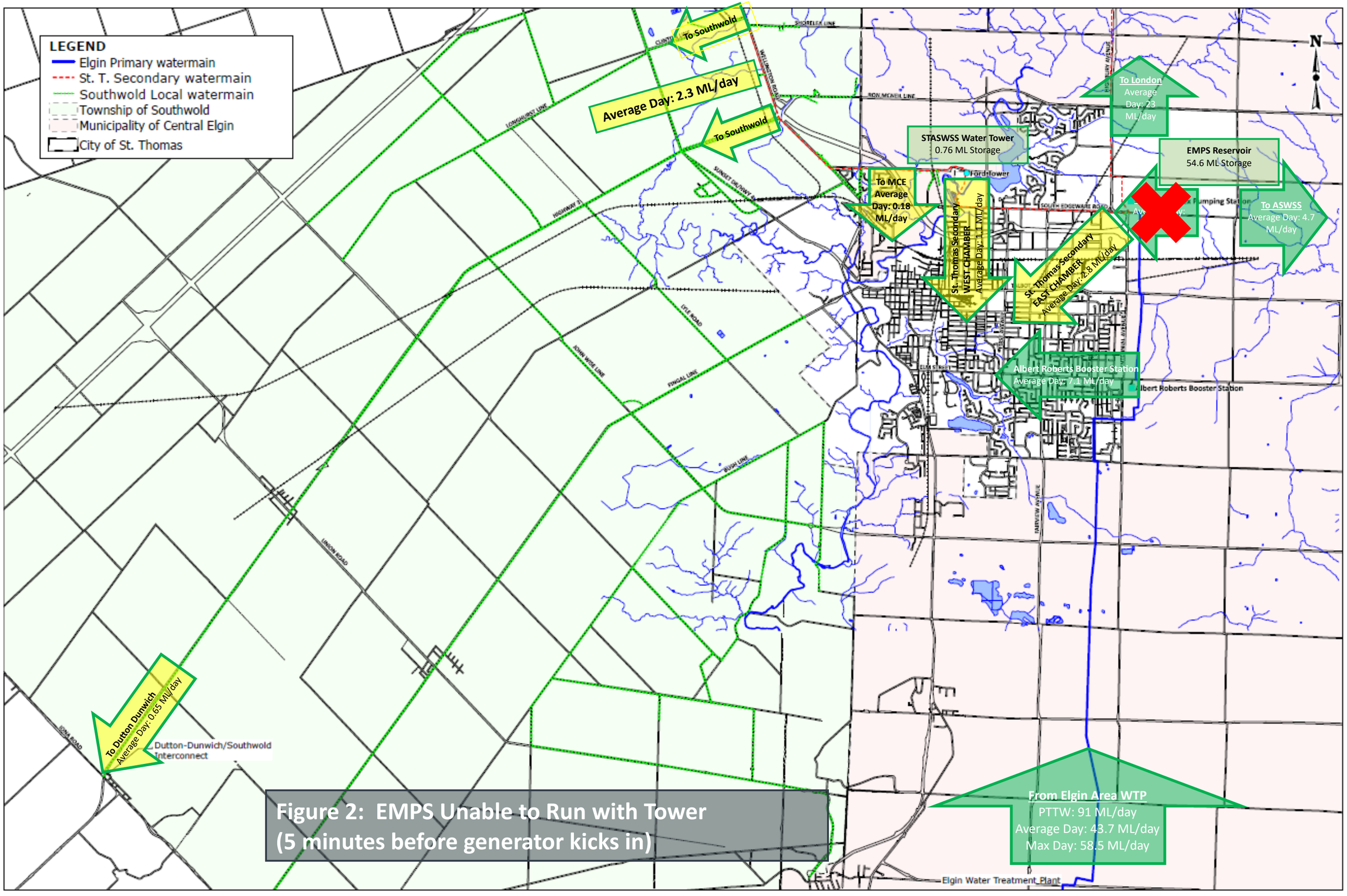

Figure 2: EMPS Unable to Run with Tower (5 minutes before generator kicks in)

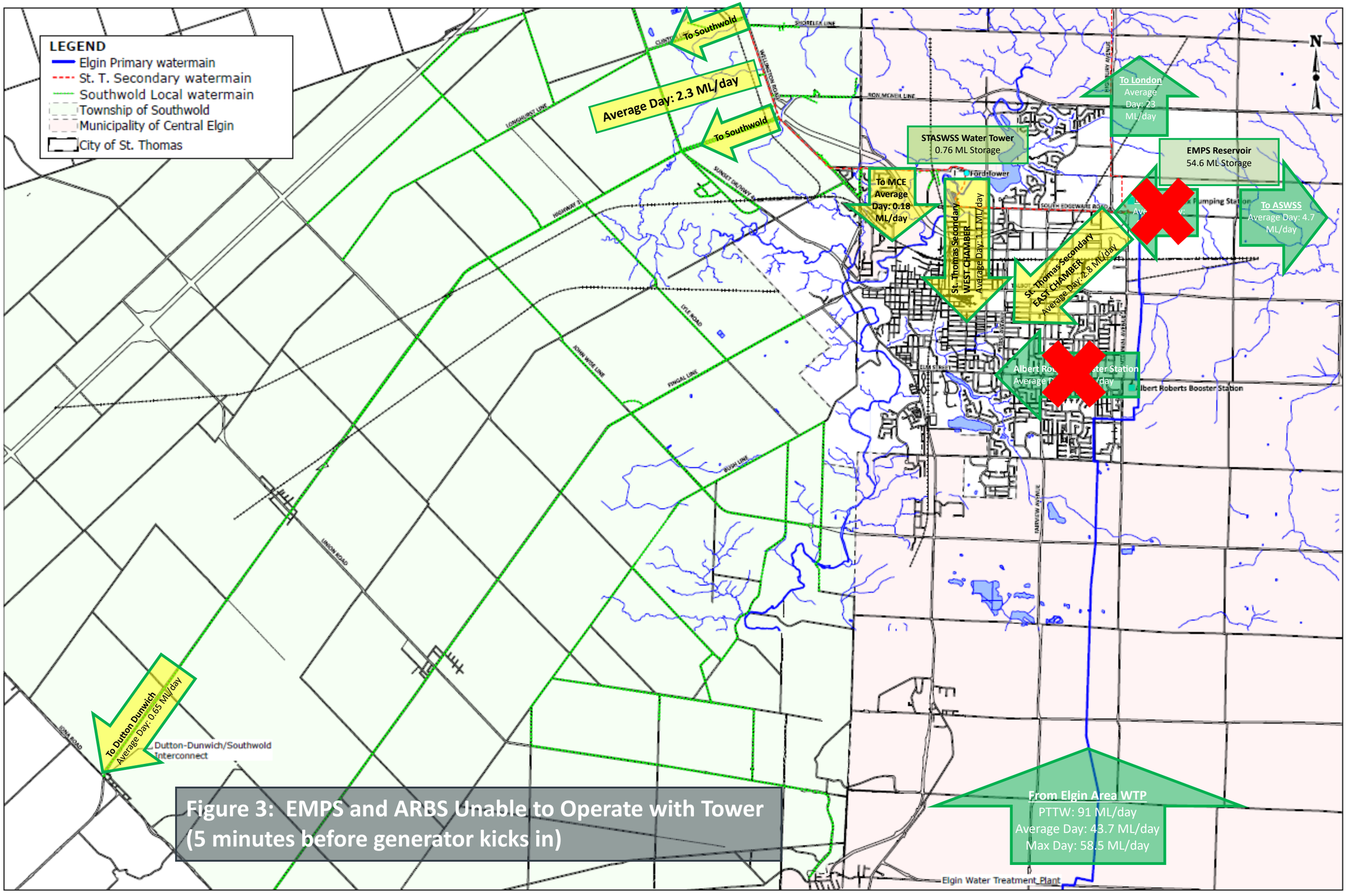

Figure 3: EMPS and ARBS Unable to Operate with Tower (5 minutes before generator kicks in)

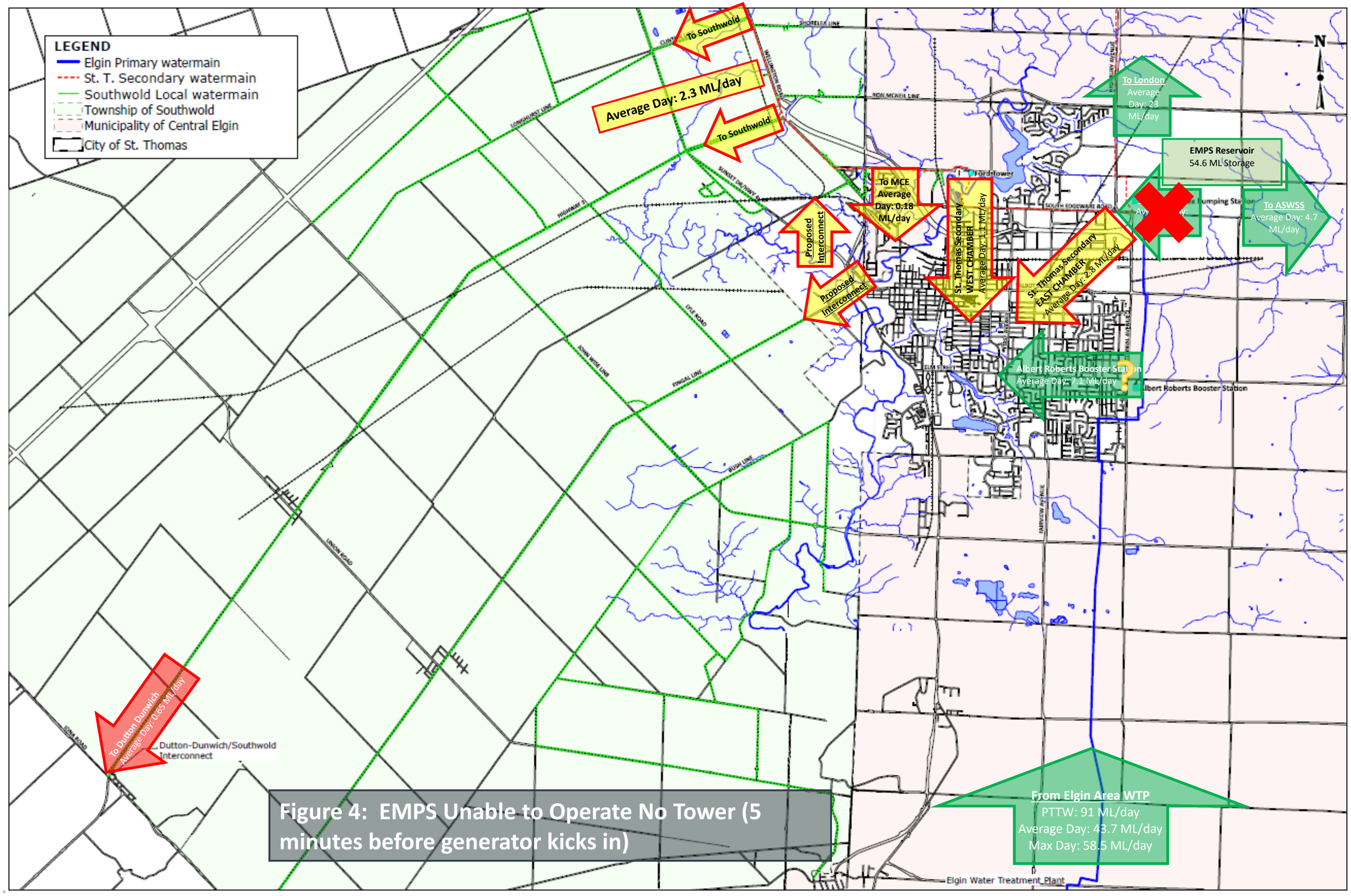

Figure 4: EMPS Unable to Operate No Tower (5 minutes before generator kicks in)

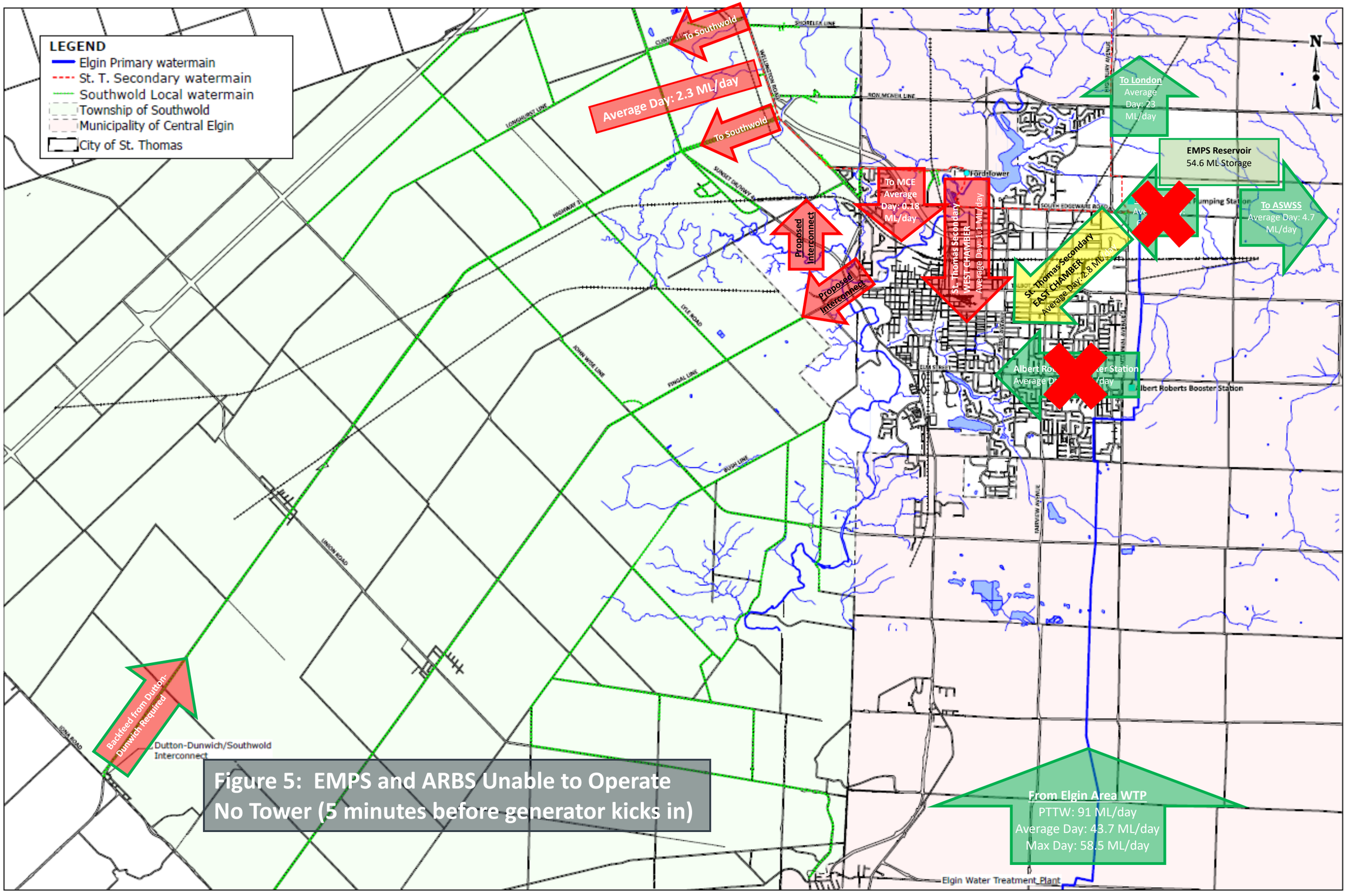

Figure 5: EMPS and ARBS Unable to Operate No Tower (5 minutes before generator kicks in)