



# WALDEMAR WATER STORAGE SCHEDULE B MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

## Public Information Centre

Monday, March 4<sup>th</sup>, 2019

7:00 PM- 9:00 PM

Township of Amaranth

374028 6th Line, Amaranth, ON



# WELCOME

## to the Public Information Centre for Waldemar Water Storage– Schedule B Municipal Class Environmental Assessment

Please:

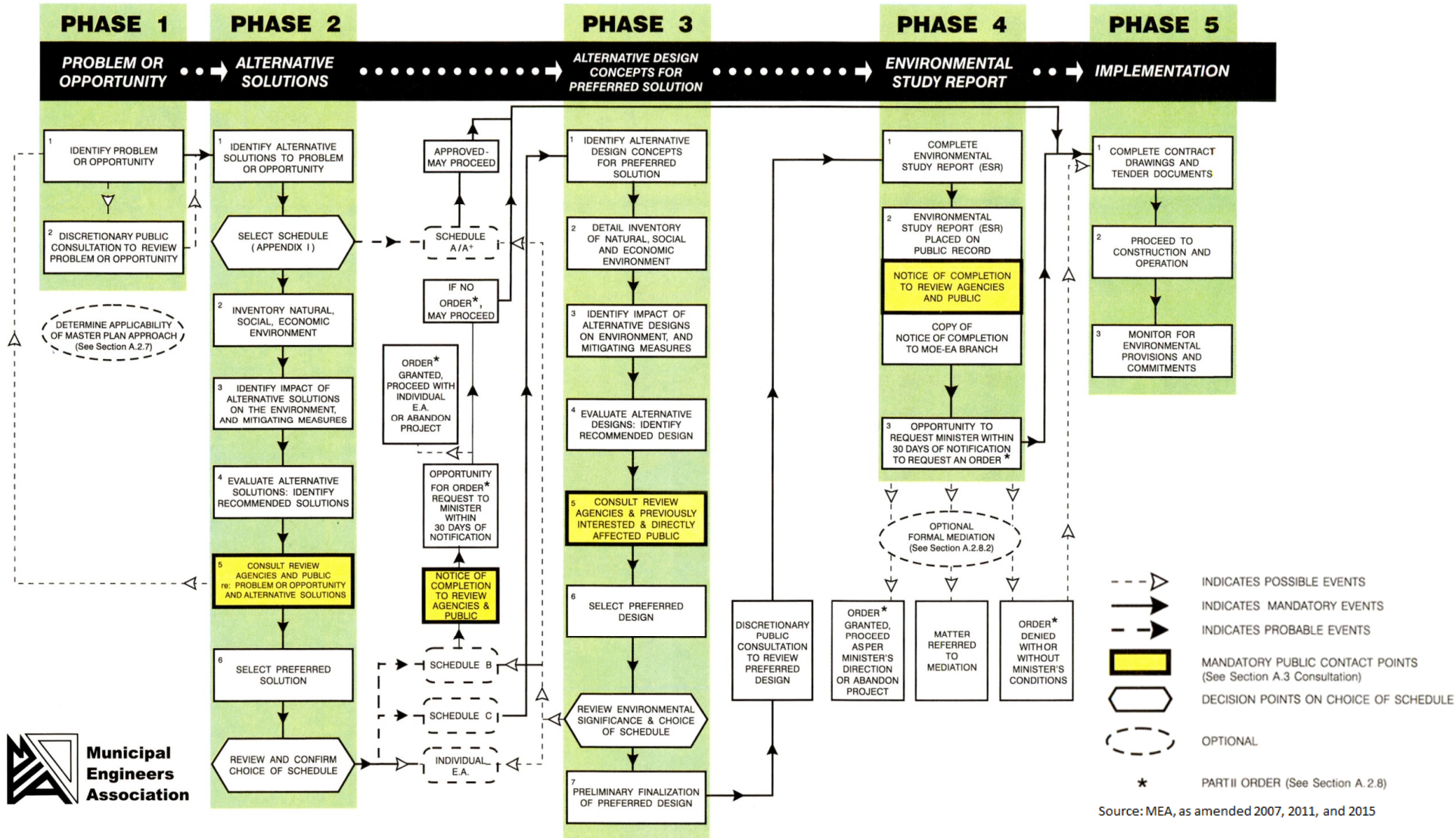
- Sign in
- Review the display materials and discuss your questions and ideas with our team members
- We will review and incorporate feedback from public, agencies, etc.
- We will respond to written questions and comments
- Fill in a comment sheet and place in “Comment Box” or send comments **before March 18<sup>th</sup>, 2019** to:

**Carley Dixon, P. Eng.**  
Project Manager  
R. J. Burnside & Associates Limited  
15 Townline  
Orangeville, ON L9W 3R4  
**T: 226-486-1542**  
**E: Carley.Dixon@rjburnside.com**

**Christine Gervais**  
Director of Planning  
Township of Amaranth  
374028 6<sup>th</sup> Line  
Amaranth, ON L9W 0M6  
**T: 519-941-1007**  
**E: cgervais@amaranth-eastgary.ca**



# MUNICIPAL CLASS EA FLOWCHART





# MUNICIPAL CLASS EA PROCESS - FOR SCHEDULE B PROJECT

## PHASE 1 PROBLEM OR OPPORTUNITY

- Identify problems or opportunities

## PHASE 2 ALTERNATIVE SOLUTIONS

- Identify alternative solutions to address the problems or opportunities
  - Consider environmental and technical impacts on each alternative solution
  - Identify preliminary preferred solutions
  - **Consult with agencies/stakeholders and the public**
- Select a preferred solution to address the problems or opportunities
  - Evaluate preliminary preferred solutions based on public input and feedback
  - Select a preferred solution to address the problems or opportunities
  - Re-confirm project as a Schedule B undertaking



## PHASE 3 ALTERNATIVE DESIGN CONCEPTS FOR PREFERRED SOLUTION

## PHASE 4 ENVIRONMENTAL STUDY REPORT

- Not required for Schedule B projects

## PROJECT FILE REPORT

- Prepare project file report that documents Phase 1 and Phase 2 of the process
  - Include copies of all notices and letters relating to public consultation
  - Include all comments received and feedback provided to/from agencies/stakeholders and the public

## NOTICE OF COMPLETION

- Issue Notice of Completion and Project File Report for a 30-day public review period
- Person or Party may request a Part II Order from the Minister of the Environment, Conservation and Parks if concerns regarding the project cannot be resolved with the Township

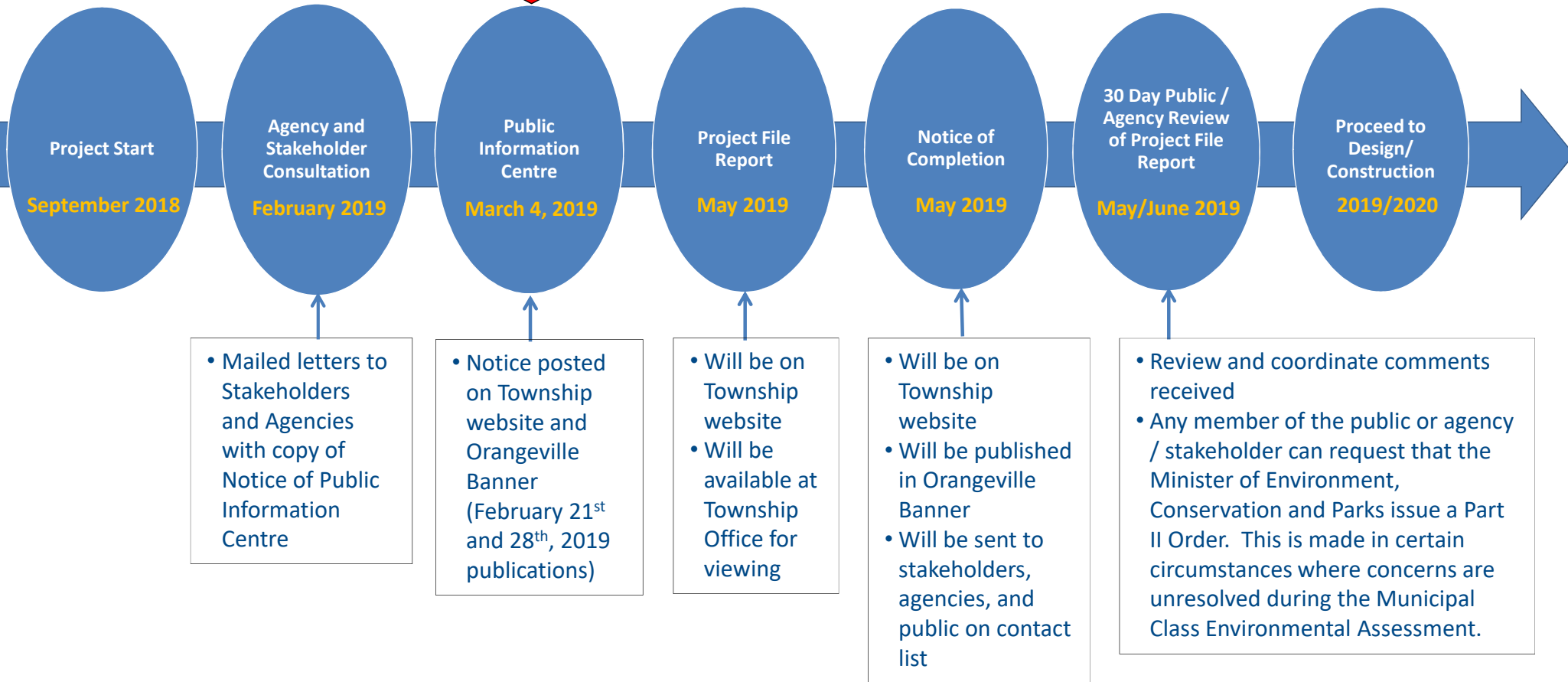
## PHASE 5 IMPLEMENTATION

- Proceed to detailed design and construction of the project
- Monitor for environmental provisions and commitments



# CONSULTATION TIMELINE

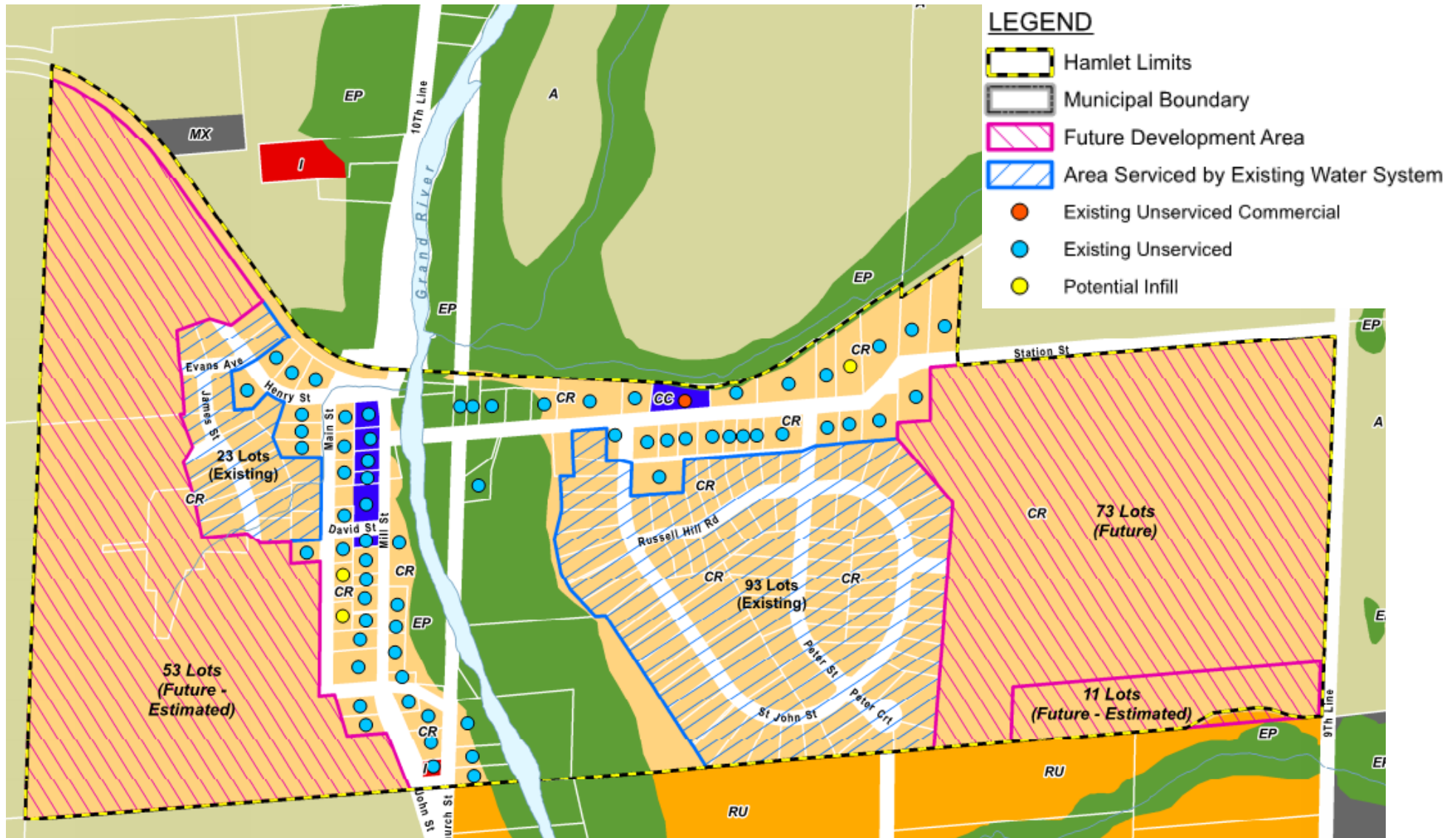
TIMELINE MAY VARY PENDING COMMENTS RECIEVED







# PROJECT AREA - WALDEMAR





## EXISTING DRINKING WATER SYSTEM

### Waldemar Pumpouse - 10 Station Street

- Three groundwater wells
  - PW1: 341 L/min (5.7 L/s)
  - PW2: 273 L/min (4.5 L/s)
  - PW3: 318 L/min (5.3 L/s)
- Sodium Hypochlorite System for disinfection
- Reservoir with storage volume of 272.5 m<sup>3</sup>
- Three high lift pumps each rated at 378 L/min (6.3 L/s)
- One emergency pump rated at 1930 L/min (32.2 L/s)

### Water Distribution System

- Watermain sizes range from 150 – 200 mm dia.
- One watermain crosses the Grand River on Station St. Bridge





## FUTURE ESTIMATED WATER DEMANDS

	SCENARIO UNDER CONSIDERATION IN THIS EA			EXISTING WATER SYSTEM CAPABILITIES
	Existing Water System	Existing Water System + New Development	Ultimate Population of Waldemar within Hamlet Boundaries	Provided
Estimated Population	371	810	1,034	N/A
Per capita flow	300 L/cap·d	300 L/cap·d	300 L/cap·d	N/A
Max Day Flow	5.2 L/s	9.3 L/s	10.8 L/s	9.85 L/s (firm capacity – largest well pump out of service)
Peak Hour Flow	7.7 L/s	14.1 L/s	16.2 L/s	12.6 L/s (firm capacity – one pump out of service)
Fire Flow	<ul style="list-style-type: none"> <li>Original system designed to pump 38 L/s out to system</li> <li>Original storage volume was designed for 16.6 L/s for 2 hrs</li> </ul>	<ul style="list-style-type: none"> <li>54 L/s for 2 hrs (MOECP)</li> <li>100 L/s for 2 hrs (Fire Chief request based on FUS)</li> <li>79 L/s for 2 hrs (Original expectation of future fire flow)</li> </ul>	<ul style="list-style-type: none"> <li>65 L/s for 2 hrs (MOECP)</li> <li>100 L/s for 2 hrs (Fire Chief request based on FUS)</li> <li>79 L/s for 2 hrs (Original expectation of future fire flow)</li> </ul>	Modelling results: 38-57 L/s
Storage Requirements	289 m <sup>3</sup>	<ul style="list-style-type: none"> <li>Due to the higher flow requested by the Fire Chief the 54 L/s is not being considered further.</li> <li>1,151 m<sup>3</sup> (100 L/s for 2 hrs)</li> <li>961 m<sup>3</sup> (79 L/s for 2 hrs)</li> </ul>	<ul style="list-style-type: none"> <li>Due to the higher flow requested by the Fire Chief the 65 L/s is not being considered further.</li> <li>1,191 m<sup>3</sup> (100 L/s for 2 hrs)</li> <li>1,002 m<sup>3</sup> (79 L/s for 2 hrs)</li> </ul>	272.5 m <sup>3</sup>

### PROBLEMS

- The existing system does not have sufficient high lift pumping capabilities for future flows (anticipated peak flows)
- The existing system does not have sufficient storage to meet Fire Chief requirements or original future design expectation
- The existing distribution system does not deliver minimum fire flows (either 79 L/s or 100 L/s) at adequate pressures

THE ULTIMATE POPULATION WAS INCLUDED FOR COMPARISON. AS COST IS ONLY TO BE ATTRIBUTED TO DEVELOPERS, THE COSTING INCLUDING IN THIS EA IS TO PROVIDE THE ADDITIONAL WATER INFRASTRUCTURE REQUIRED TO SERVICE NEW DEVELOPMENT AREAS ONLY.





## PROBLEM STATEMENT

- THE EXISTING WATER SYSTEM HAS 272.5 CUBIC METERS OF STORAGE. ADDITIONAL STORAGE VOLUME IS REQUIRED TO MEET FIRE CHIEF REQUIREMENTS AND THE ONTARIO MINISTRY OF ENVIRONMENT GUIDELINES FOR STORAGE VOLUME FOR A SYSTEM PROVIDING FIRE PROTECTION
- THE EXISTING HIGHLIFT PUMPING SYSTEM IS RATED FOR 12.6 L/S. THIS WILL NOT BE ADEQUATE FOR PROJECTED GROWTH TO MEET PEAK HOUR DEMANDS IN THE SYSTEM WHICH IS ANTICIPATED TO BE 14.1 L/S.
- UNDER CURRENT OPERATING CONDITIONS AT THE PUMPHOUSE, THE EXISTING SYSTEM CAN DELIVER FIRE FLOWS BETWEEN 38 L/S TO 57 L/S AT THE REQUIRED PRESSURES. THIS IS BELOW FIRE CHIEF REQUIREMENTS.

## ALTERNATIVE SOLUTIONS

**Alternative 1 – Do nothing**

**Alternative 2 – Construct Storage Facility**

- **Option A: In-Ground Reservoir at Existing Pumphouse**
- **Option B: Standpipe at Existing Pumphouse**
- **Option C: Water Tower at South West Limits of Waldemar**

**Alternative 3 – Connect to nearby Municipal System (Grand Valley or Orangeville)**



## FACTORS CONSIDERED

Natural Environment	Socio-economic/ Cultural Environment	Financial Factors	Technical Factors
<ul style="list-style-type: none"><li>• Terrestrial Habitat</li><li>• Designated Sites/Species</li><li>• Aquatic Habitat</li><li>• Hazard Lands (Floodplain lands)</li></ul>	<ul style="list-style-type: none"><li>• Conformity to Local Planning Provisions</li><li>• Heritage Resources (built heritage, landmarks, significant landscapes)</li><li>• Cultural Resources (archeological Features)</li><li>• Nuisance Impacts</li><li>• Land Requirements</li></ul>	<ul style="list-style-type: none"><li>• Land Costs</li><li>• Capital Costs</li><li>• Operation &amp; Maintenance Costs</li></ul>	<ul style="list-style-type: none"><li>• Suitability of connection to existing water system</li><li>• Topography (Elevation of Site)</li><li>• Road access</li><li>• System reliability</li><li>• Ease of operation and maintenance</li><li>• Ability for system expansion/phasing</li><li>• Ability to improve distribution system</li></ul>



## ALTERNATIVE 1 - DO NOTHING

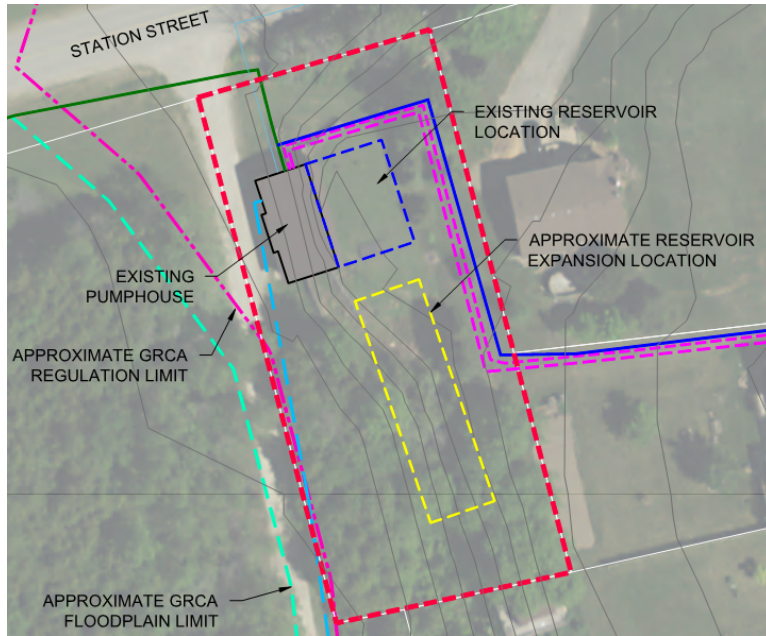
Advantages	Disadvantages
<ul style="list-style-type: none"><li>• No impact over existing conditions related to the natural environment.</li><li>• No additional nuisance since existing infrastructure would not change.</li><li>• No expense associated with new infrastructure.</li><li>• No new land is required.</li></ul>	<ul style="list-style-type: none"><li>• Little conformity to planning policies, given the Township's official plan designates growth for various areas of Waldemar.</li><li>• There is a draft plan of subdivision which requires municipal water.</li><li>• The existing storage is undersized compared to what would normally be constructed today. Not doing anything means that there will be less fire protection capabilities compared to an expanded system.</li></ul>

**NOT PREFERRED - Alternative 1 does not address the problem statement. Therefore this alternative was not selected as the preliminary preferred alternative.**



## ALTERNATIVE 2 – CONSTRUCT STORAGE FACILITY

### OPTION A: IN-GROUND RESERVOIR AT EXISTING PUMPHOUSE SITE



- EXISTING 150mm DIAMETER WATERMAIN
- EXISTING 200mm DIAMETER WATERMAIN
- EXISTING 75mm DIAMETER RAW WATER PIPE
- EXISTING 100mm DIAMETER RAW WATER PIPE

**CONCEPTUAL FIGURE. FINAL LOCATIONS DETERMINED AT DETAIL DESIGN.**



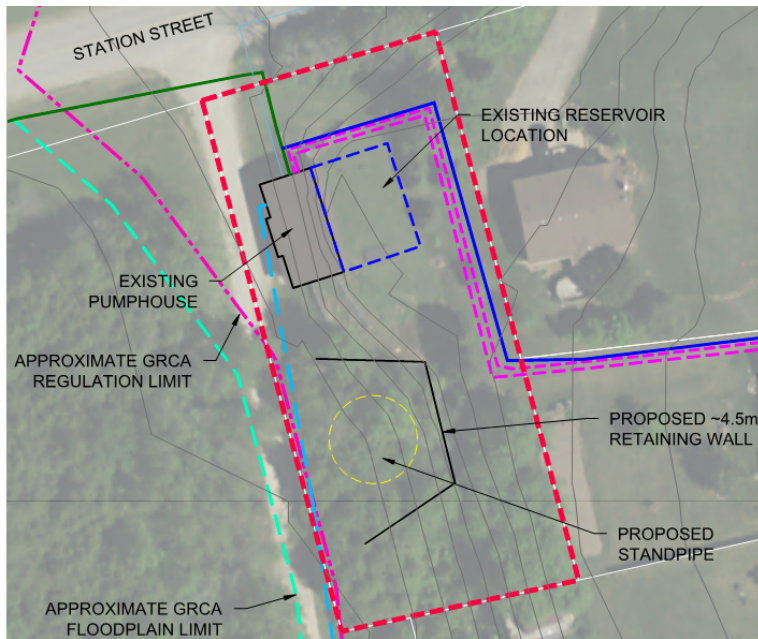
Natural Environment	Socio-economic / Cultural Environment	Technical Factors	Financial Factors
<ul style="list-style-type: none"> <li>- Tree removal is required to accommodate the expansion of the reservoir. No species at risk were identified in the field visit that took place on July 3<sup>rd</sup>, 2018.</li> <li>- The site has a very small section of land within the GRCA regulatory area, but it is outside the floodplain limits.</li> <li>- A back-up generator is required which have air &amp; noise impact.</li> </ul>	<ul style="list-style-type: none"> <li>- The additional storage would be designed to accommodate future growth areas designated in the Official Plan</li> <li>- No impact anticipated on cultural resources as an archeological assessment was completed on the site in 2018.</li> <li>- Aesthetically, an expanded underground reservoir would be integrated in the land.</li> <li>- There is a loss of trees that cannot be replaced on site which is a negative aesthetic impact associated with this alternative.</li> <li>- Potential impacts on air quality during construction (noise, dust, emissions).</li> <li>- No land acquisition is required as land is owned by the Township.</li> </ul>	<ul style="list-style-type: none"> <li>- Upgrades at the existing pumphouse would be required to accommodate the expanded storage. This would include upgrades to all of the highlift pumps including emergency pump. A larger back-up generator would be required and it would likely need to be relocated outside the building due to sizing constraints.</li> <li>- Underground storage can be expandable, but should be designed to do so which adds additional cost.</li> <li>- The storage does rely on pumping, so there is reliance on equipment to function. In a power outage, your back-up generator is required to supply power to the system.</li> <li>- Distribution system               <ul style="list-style-type: none"> <li>• 79 L/s: The water distribution system is able to meet this minimum requirement at almost all locations in the system. On the west side, there will be a requirement to replace a section of existing 150 mm dia. piping to provide a continuous 200 mm dia. watermain. Final details would be determined at detail design of the future subdivision.</li> <li>• 100 L/s: The water distribution system would require substantial upgrades to meet this minimum requirement. Almost all existing 150mm dia. pipes in the system would require replacement. A larger dia. watermain from the pumphouse, across the river to the west side would also be required.</li> </ul> </li> </ul>	<p>No Land Costs</p> <p>Capital:</p> <ul style="list-style-type: none"> <li>- 100 L/s storage               <ul style="list-style-type: none"> <li>• \$1,900,000</li> <li>• Does not include any existing watermain upsizing. It would not be financially finable to replace most of the existing watermains until they were at end of life which could still be 50+ years into the future</li> </ul> </li> <li>- 79 L/s storage               <ul style="list-style-type: none"> <li>• \$1,780,000</li> </ul> </li> </ul> <p>O&amp;M associated with storage reservoir only (50 year): \$80,000</p>

## PRELIMINARY PREFERRED ALTERNATIVE



## ALTERNATIVE 2 - CONSTRUCT STORAGE FACILITY

### OPTION B: CONSTRUCT STANDPIPE AT EXISTING PUMPHOUSE SITE



**CONCEPTUAL FIGURE.  
FINAL LOCATIONS  
DETERMINED AT  
DETAIL DESIGN.**

Natural Environment	Socio-economic / Cultural Environment	Technical Factors	Financial Factors
<ul style="list-style-type: none"> <li>- Similar impacts to Option A</li> <li>- Tree removal is required to accommodate the standpipe. There is potential for slightly less tree removal, however it is likely not a significant difference.</li> <li>- The site has a very small section of land within the GRCA regulatory area, but it is outside the floodplain limits.</li> <li>- A back-up generator is required which have air &amp; noise impact.</li> </ul>	<ul style="list-style-type: none"> <li>- The additional storage would be designed to accommodate future growth areas designated in the Official Plan.</li> <li>- No impact anticipated on cultural resources as an archeological assessment was completed on the site in 2018.</li> <li>- Aesthetically, standpipes can be considered unpleasing because they are above grade. To accommodate a standpipe on the existing terrain a large retaining wall would be required.</li> <li>- There is a loss of trees that cannot be replaced on site which is a negative aesthetic impact associated with this alternative.</li> <li>- Potential impacts on air quality during construction (noise, dust, emissions).</li> <li>- No land acquisition is required as land is owned by the Township.</li> </ul>	<ul style="list-style-type: none"> <li>- Upgrades at the existing pumphouse would be required to accommodate the expanded storage. This would include upgrades to all of the highlift pumps including emergency pump. A larger back-up generator would be required and it would likely need to be relocated outside the building due to sizing constraints.</li> <li>- The storage does rely on pumping, so there is reliance on equipment to function. In a power outage, your back-up generator is required to supply power to the system.</li> <li>- They can be expanded, but it is not typical.</li> <li>- There can be concerns associated with falling ice and a buffer is required.</li> <li>- Distribution system               <ul style="list-style-type: none"> <li>• 79 L/s: The water distribution system is able to meet this minimum requirement at almost all locations in the system. On the west side, there will be a requirement to replace a section of existing 150 mm dia. piping to provide a continuous 200 mm dia. watermain. Final details would be determined at detail design of the future subdivision.</li> <li>• 100 L/s: The water distribution system would require substantial upgrades to meet this minimum requirement. Almost all existing 150mm dia. pipes in the system would require replacement. A larger dia. watermain from the pumphouse, across the river to the west side would also be required.</li> </ul> </li> </ul>	<p>No Land Costs</p> <p>Capital:</p> <ul style="list-style-type: none"> <li>- 100 L/s storage               <ul style="list-style-type: none"> <li>• \$2,200,000</li> <li>• Does not include any existing watermain upsizing. It would not be financially finable to replace most existing watermains until they were at end of life which could still be 50+ years into the future</li> </ul> </li> <li>- 79 L/s storage               <ul style="list-style-type: none"> <li>• \$1,990,000</li> </ul> </li> </ul> <p>O&amp;M associated with standpipe only (50 year): \$100,000</p>

## ALTERNATIVE NOT PREFERRED





## ALTERNATIVE 2 - CONSTRUCT STORAGE FACILITY

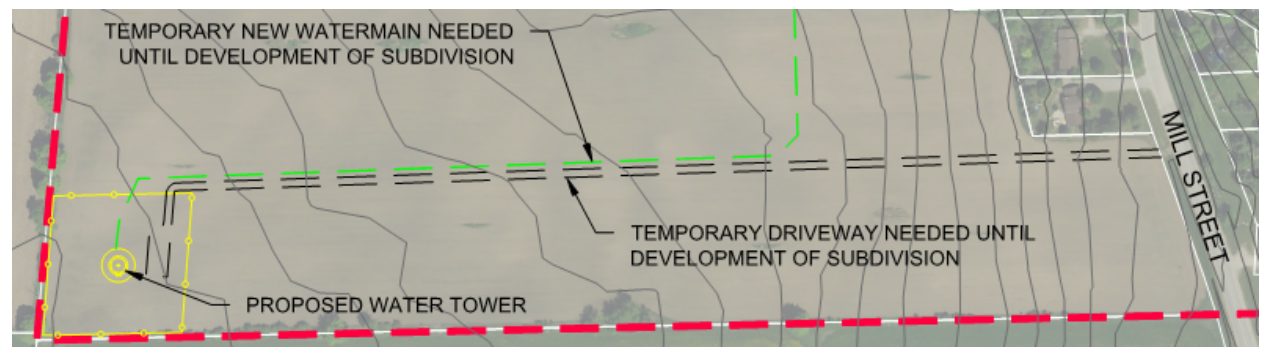
### OPTION C: WATER TOWER AT SOUTH WEST CORNER OF WALDEMAR

Natural Environment	Socio-economic / Cultural Environment	Technical Factors	Financial Factors
<ul style="list-style-type: none"> <li>- The existing generator would provide back-up which have air &amp; noise impact similar to existing.</li> <li>- Potential impact on terrestrial habitat however it's minimal as the land is currently farmed.</li> </ul>	<ul style="list-style-type: none"> <li>- The additional storage would be designed to accommodate future growth areas designated in the Official Plan.</li> <li>- No impact anticipated on cultural resources as an archeological assessment was completed on the site in relation to the proposed development by Sarah Properties.</li> <li>- Aesthetically, some people find water towers unpleasing and obtrusive, while others consider them to be a landmark in the community.</li> <li>- Potential impacts on air quality during construction (noise, dust, emissions).</li> <li>- Land is not owned by the Township. It would need to be purchased from Sarah Properties.</li> <li>- The elevated water tower would be located the farthest away from existing residents compared to Options A and B, but eventually would be in close proximity to residential lots when the surrounding lands are developed.</li> </ul>	<ul style="list-style-type: none"> <li>- Upgrades at the existing pumphouse would include upgrades to the highlift pumps however the emergency pump would be eliminated as a result of the elevated storage.</li> <li>- A larger standby generator is not required where by Options A and B do require a larger generator.</li> <li>- The existing pumping system does fill the water tower, however in emergency situations, you can draw from your elevated storage as it relies on gravity and not pumping.</li> <li>- There can be concerns associated with falling ice and a buffer is required.</li> <li>- Not expandable</li> <li>- Distribution system               <ul style="list-style-type: none"> <li>• 79 L/s: A larger dia. watermain across the river and down Station Street would be required and would need to go through the new subdivision and connect back into the existing system at Russell Hill Rd. though the new planned road connection. This upgrade would allow most of the distribution system to be able to provide the minimum 79 L/s.</li> <li>• 100 L/s: The system would require substantial upgrades to meet this minimum requirement. Almost all existing 150mm dia. pipes in the system would require replacement. A larger dia. watermain from the pumphouse, across the river to the east side of Waldemar would also be required.</li> </ul> </li> </ul>	<p>Capital:</p> <p>Extra cost associated with providing temporary access and potentially temporary watermain as Sarah Properties is not developed. There is also costs included for land.</p> <ul style="list-style-type: none"> <li>- 100 L/s storage               <ul style="list-style-type: none"> <li>• \$4,440,000</li> <li>• Does not include any existing watermain upsizing. It would not be financial finable to replace most existing watermains until they were at end of life which could still be 50+ years into the future</li> </ul> </li> <li>- 79 L/s storage               <ul style="list-style-type: none"> <li>• \$4,320,000</li> </ul> </li> </ul> <p>O&amp;M associated with storage only (50 year): \$940,000</p>

ALTERNATIVE  
NOT  
PREFERRED



CONCEPTUAL  
FIGURE. FINAL  
LOCATION  
DETERMINED AT  
DETAIL DESIGN.





## ALTERNATIVE 3 – CONNECT TO NEARBY MUNICIPAL SYSTEM

### OPTION A: WALDEMAR TO GRAND VALLEY

- Approx. 2.5 km along the trail

### OPTION B: WALDEMAR TO ORANGEVILLE

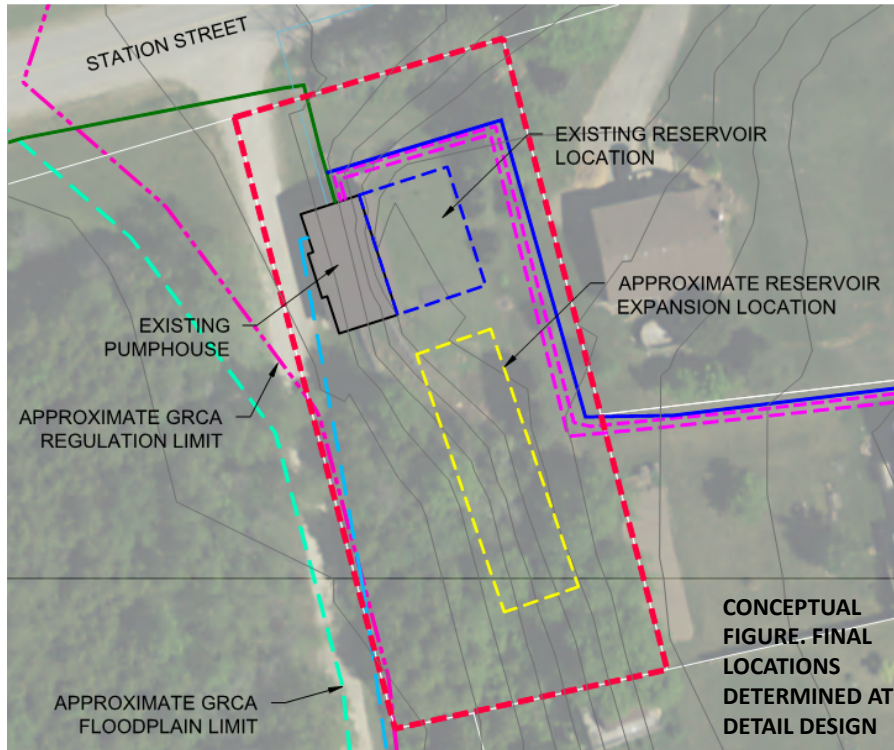
- Approx. 11.5 – 19 km (depending on route)

Natural Environment	Socio-economic / Cultural Environment	Technical Factors	Financial Factors
<p>Overall</p> <ul style="list-style-type: none"> <li>- More area is disturbed compared to other alternatives</li> </ul> <p>Option A</p> <ul style="list-style-type: none"> <li>- Creek crossing is required. Areas along the trail are regulated by GRCA.</li> <li>- Construction could be kept under the trail to reduce overall impact</li> </ul> <p>Option B</p> <ul style="list-style-type: none"> <li>- Route requires going through multiple GRCA regulated areas.</li> <li>- More detailed assessment would be needed to confirm preferred route as to reduce overall impact on the natural environment</li> </ul>	<p>Overall</p> <ul style="list-style-type: none"> <li>- Aesthetically the watermain is mostly buried except for flushing locations or air release valves so it has minimal impact.</li> <li>- Potential impacts on air quality during construction (noise, dust, emissions)</li> <li>- Both options require agreements and negotiating can be costly and time consuming. They are typically renewed or renegotiated depending on the terms of the agreement which re-commences negotiation requirements.</li> </ul> <p>Option A:</p> <ul style="list-style-type: none"> <li>- During the duration of the construction, the trail would likely be closed. This is a general nuisance to those who use the trail.</li> </ul> <p>Option B:</p> <ul style="list-style-type: none"> <li>- Construction duration would be longer compared to option A</li> <li>- Route would be within road right of way, and traffic could be impacted during construction</li> </ul>	<p>Option A:</p> <ul style="list-style-type: none"> <li>- Consultation with Town of Grand Valley required</li> <li>- Grand Valley does not have surplus capacity. They are in the process of a Master Servicing Plan to expand their storage.</li> </ul> <p>Option B:</p> <ul style="list-style-type: none"> <li>- Consultation with County of Dufferin and Town of Orangeville required</li> <li>- We did not approach Town of Orangeville to inquire on whether there is capacity for Waldemar. The overall cost expected is significantly higher than other options.</li> </ul>	<p>Capital for watermain connection only:</p> <ul style="list-style-type: none"> <li>• Option A: \$1,750,000***</li> <li>• Option B: \$13,300,000***</li> </ul> <p>***This is just a starting number. There would be an additive capital cost to cover any upgrades for the additional supply at the municipal system that Waldemar would be connected to. There is an unknown cost spent negotiating agreement details related to the capital contributions, operation and maintenance contributions, and also water rates for the system which would be imposed on Waldemar.</p>

## ALTERNATIVE LEAST PREFERRED



## PRELIMINARY PREFERRED ALTERNATIVE



### OPTION A: IN-GROUND RESERVOIR AT EXISTING PUMPHOUSE SITE STORAGE BASED ON FIRE FLOW OF 79 L/s

#### Why?

- Least capital cost
- No land acquisition required
- Reservoir would be integrated into the terrain and avoid the requirement for a large retaining wall
- Based on modelling, the 79 L/s is available at almost all locations in the water distribution system with minimal watermain upgrades required.



## NEXT STEPS

1. Provide comments by completing the comment sheet and placing into “Comment Box” or send to Carley Dixon or Christine Gervais before **March 18, 2019**
2. We will review comments received and conduct additional work if necessary
3. We will re-evaluate alternatives in light of comments received
4. We will select preferred alternative and finalize Project File Report
5. We will issue Notice of Completion
6. There will be a 30 Day Public / Agency Review of Project File Report once Notice of Completion is issued
7. If no Part II order is received, proceed to design and construction. Cost of storage expansion is to be paid for by developers and not the existing users.

These presentation materials will be available online at: [www.amaranth.ca](http://www.amaranth.ca)

**THANK YOU FOR ATTENDING**