



BURNSIDE

**Waldemar Water Storage
Municipal Class Environmental
Assessment (Schedule B)
Project File Report**

Township of Amaranth

**R.J. Burnside & Associates Limited
15 Townline
Orangeville ON L9W 3R4 CANADA**

**August 2019
300041042.0000**

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Record of Revisions

Revision	Date	Description
1	August 2019	Initial Submission to Township

R.J. Burnside & Associates Limited**Report Prepared By:**

pp



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CD/GF:sd

Report Reviewed By:


Gord Feniak, P.Eng.
Executive Vice President, Public Sector
CD/GF:sd



**NOTICE OF COMPLETION
Waldemar Water Storage
Municipal Class Environmental Assessment Study
Township of Amaranth**



The Study

The Township of Amaranth retained R.J. Burnside & Associates Limited to complete a Municipal Class Environmental Assessment to identify and evaluate alternatives to expand water storage to meet future water system requirements for land designated in the Official Plan for future development and those on the existing water system in Waldemar. The preferred alternative is to expand the in-ground storage at the existing pumphouse site located at 10 Station Street in Waldemar.

The Process

This study was carried out in accordance with the requirements of a Schedule "B" undertaking (Phase 1 and 2) as outlined in the Municipal Engineers Association Municipal Class Environmental Assessment document (2000, as amended in 2007, 2011 and 2015). The Class EA planning process includes public and regulatory agencies consultation, evaluation of alternatives, assessment of the effects of the proposed upgrades and identification of measures to mitigate adverse impacts.

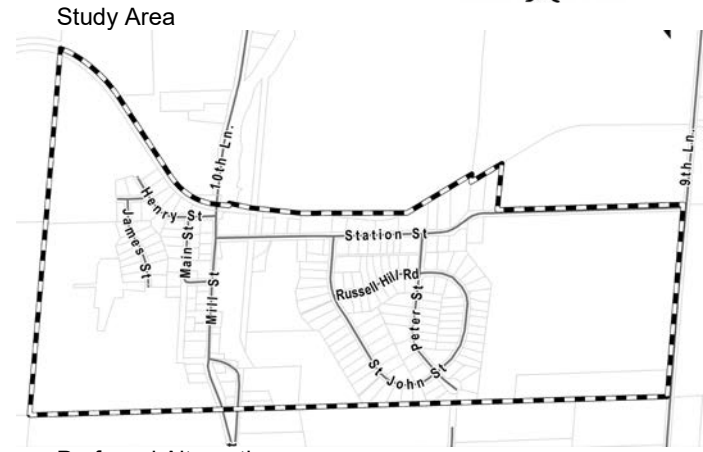
The Class EA process included consultation with the public, agencies, and stakeholders. A Notice of Study Commencement was placed on the Township's website on October 4, 2018 to inform residents that the study was being initiated and that the Township would be holding a future Public Information Centre (PIC). The PIC was held on March 4, 2019. Along with the notice for the PIC, letters were sent to agencies and stakeholders.

Project File Report

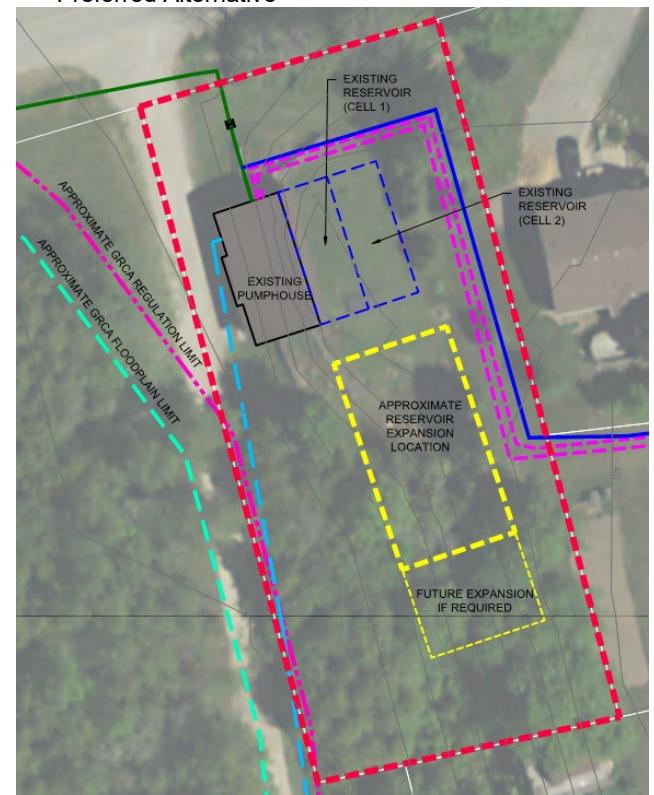
In accordance with the EA Act, the project file documenting Phase 1 and 2 of the project has been placed on the public record and is available for review for 30 days starting September 4, 2019 and ending October 3, 2019. An electronic copy is available on the Township's website (www.amaranth.ca) and a hard copy of the project file will be available at the Township office, located at 374028 6th Line, Amaranth, ON L9W 0M6.

Comments can be provided by contacting the following Project Team members (contact details below) by October 3, 2019.

Burnside	Township of Amaranth
Project Manager	Director of Planning
Gord Feniak, P.Eng.	Christine Gervais
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Orangeville ON L9W 3R4	Amaranth ON L9W 0M6
Phone: 519-938-3076	Phone: 519-941-1007
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Preferred Alternative



If concerns arise regarding this project which cannot be resolved through discussion with the Township, the person or party with the concern may submit a written request to the Minister of the Ministry of the Environment, Conservation and Parks to make an order for the project to comply with Part II of the Environmental Assessment Act (referred to as a Part II Order), which addresses Individual Environmental Assessments. Part II Order Requests must be submitted using a standard form available on the Provincial Forms Repository website (<http://www.forms.ssb.gov.on.ca/>). The form can be found by searching either "Part II Order" or "012-2206E" (the form ID number) on the Repository's main page. The completed form for Part II Order Request must be received by the Minister and the Director of the Environmental Assessment and Permissions Branch (addresses are provided on the bottom of the form) by October 3, 2019. A copy of the completed form for Part II Order Request should also be sent to the Christine Gervais at the Township and Gord Feniak at Burnside. If no request is received by October 3, 2019, the Township intends to proceed with detailed design and construction as outlined in the project file report subject to approvals needed for detail design, municipal priorities and budgets.

Project and notice information will be made accessible upon request in accordance with the Accessibility Standard for Information and Communication under the *Accessibility for Ontarians with Disabilities Act, 2005*.

Information will be collected in accordance with the Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.

This Notice first issued on September 4, 2019.

Executive Summary

Additional storage is required to meet Ministry of Environment, Conservation and Parks (MECP) guidelines as well as the Fire Chief's requirements for fire protection in development lands in Waldemar.

R.J. Burnside & Associates Limited was retained by the Township of Amaranth (Township) to undertake a Schedule B Municipal Class Environmental Assessment (MCEA) to identify and evaluate alternative solutions to expand the water storage in the Waldemar drinking water system.

Alternative solutions considered included:

- Do nothing.
- Construct in-ground storage facility at the existing Waldemar Pumphouse.
- Construct standpipe at the existing Waldemar Pumphouse.
- Construct water tower.
- Connect to nearby municipal system.

Public Consultation

A Schedule B, MCEA requires completion of Phases 1 and 2 of the MCEA process. Three points of contact are being made (two are mandatory). The first was a non-mandatory notice posted on the Township's website on October 4, 2018 primarily to let residents know that the Township was initiating the study. The second point of contact was the Public Information Centre (PIC) held at the Township office on March 4, 2019. At this time a letter was sent to agencies/stakeholders that may have had an interest in the project. The third point of contact with the public for this project which is mandatory is the Notice of Completion.

Preferred Alternative Solution

Each alternative solution was evaluated using the following criteria: natural environment, social/cultural environment, technical factors and financial factors. The preferred alternative and the estimated time line is summarized below. We have also included additional recommendations for the Township to consider resulting from our review.

Estimated Timeline	Preferred Alternative
Commence design in 2019 with construction in 2020	Construct in-ground reservoir at existing pumphouse site. The storage will be based on providing a fire flow of 79 L/s for 2 hours.
Other Recommendations	
Timetable unknown but will be coordinated when development on the west side of Waldemar is in its planning stages and detail design stage. This property is referred to as Sarah Properties.	<ul style="list-style-type: none"> • Review sizing of watermains to confirm what external watermain upgrades are required to service the development. This may include providing a 200 mm dia. continual loop from where the existing 200 mm watermain terminates at Henry St/Main St. • Review actual water demands to confirm they reflect projected demands as the 73-lot subdivision on the east side is developed. Additional well supply is not anticipated but is very close to the limits. If additional supply is required, this will necessitate a need for a Municipal Class Environmental Assessment.
When existing watermains are at the end of their life	Review sizing of existing watermains at the time they would undergo replacement to determine whether they should be increased in size.

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- Appendix D Correspondence with Agencies, Stakeholders, Public
- Appendix E Hydraulic Model Analysis
- Appendix F Natural Heritage Review Results (OBBA and NHIC)
- Appendix G Official Plan Land Use
- Appendix H Archeological Study

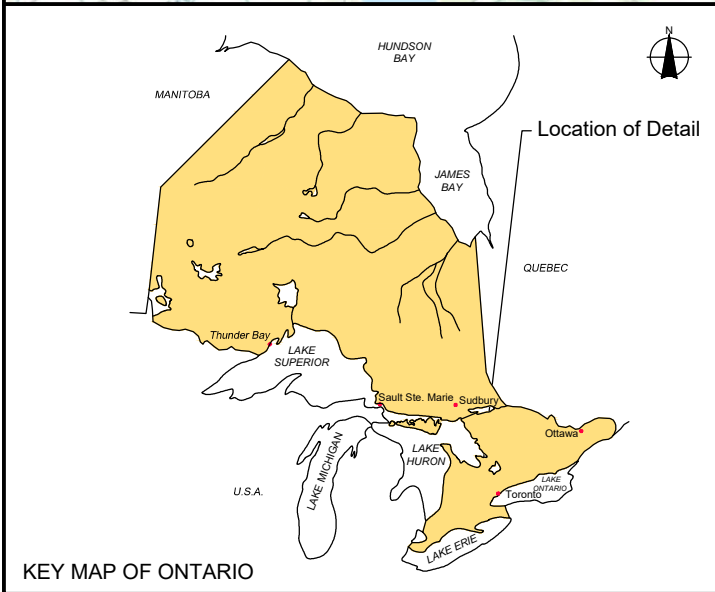
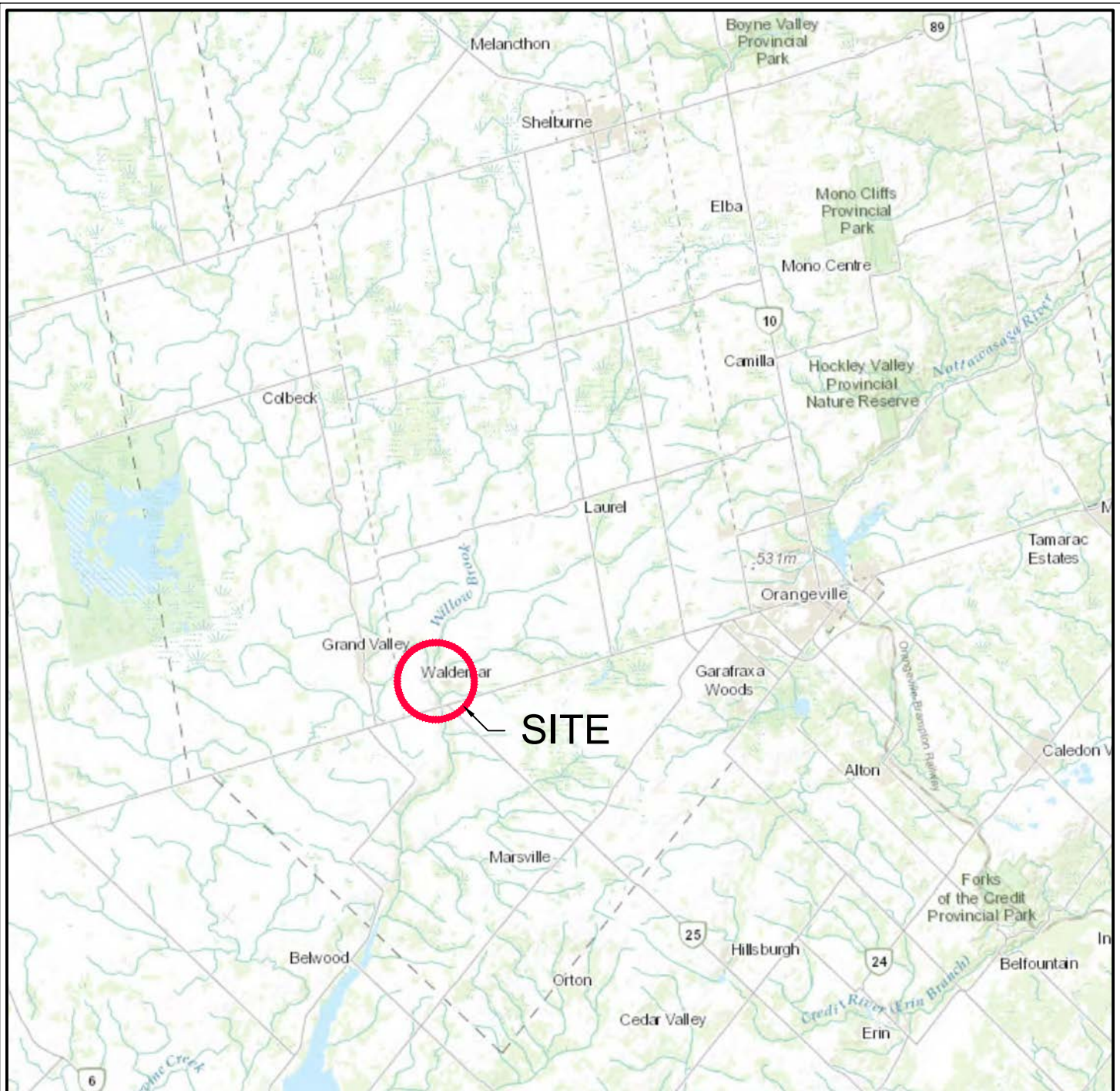
1.0 Introduction

The Township has authorized Burnside to complete a Municipal Class Environmental Assessment (MEA, 2000, as amended 2007, 2011 and 2015) to identify and evaluate alternative solutions to expand storage in the Waldemar Water System for lands designated for development in the official plan.

Waldemar is located south east of Grand Valley in the County of Dufferin. Refer to Figure 1 for a site location map. This Municipal Class Environmental Assessment (MCEA) report will review and evaluate various storage options for Waldemar with respect to existing and future population projections and potential impacts on the natural, social, technical and economical environments.

2.0 Problem/Opportunity Statement

The Township has identified that additional storage volume is required to meet fire protection requirements of the Fire Chief and to meet minimum Ministry of Environment Guidelines. The existing pumping system is also inadequate for projected growth or to achieve the flows in the distribution system that the Fire Chief has requested. The Township is undertaking the MCEA to identify the preferred method of addressing this problem. The MCEA will identify and evaluate as necessary the related system components, including well supply, water pumping systems, storage and the distribution system.




Client
**TOWNSHIP OF AMARANTH
 WALDEMAR**

Figure Title
**WALDEMAR WATER STORAGE
 MUNICIPAL CLASS EA
 SITE LOCATION PLAN**

Drawn CD	Checked CED	Date January 2019	Figure No. 1
Scale N.T.S.	Project No. 300041042		

3.0 Existing Waldemar Drinking Water System

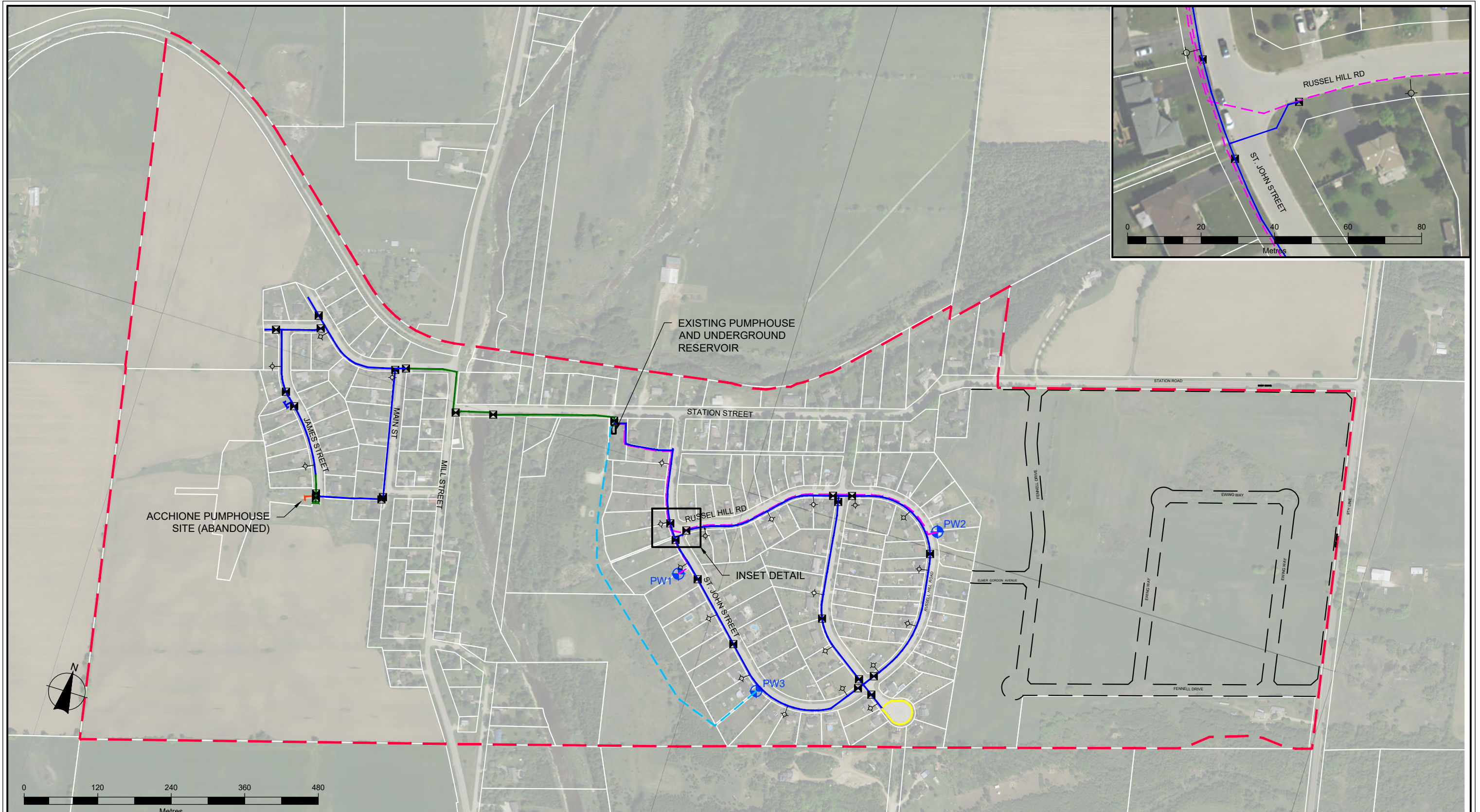
The Waldemar Drinking Water System (DWS) is owned by the Township and operated by Dufferin Water Company Ltd. The system consists of three groundwater wells, a pumphouse, and an in-ground reservoir (2 cells) located at 10 Station Street in Waldemar. The distribution system (network of pipes and hydrants) provides water to 116 houses (approximately 371 people). Table 1 summarizes components of the Waldemar drinking water system.

Table 1: Summary of Waldemar Water Supply System

Item	Description
Groundwater Wells	Rated Pump Capacity
Well PW1 (1975)	341 L/min at 40 m TDH (Standby/Duty)
Well PW2 (1989)	273 L/min at 71.6 m TDH (Standby/Duty)
Well PW3 (2002)	318 L/min at 45 TDH (Standby/Duty)
Sodium Hypochlorite System	1 100 L storage tank 4 chemical dosing pumps. Capacity 0.59 L/h. Three duty and one shelf standby
Reservoir	Storage volume – 272.5 m ³ 2 reservoir cells located directly adjacent to pumphouse building
High Lift Pumps HL1, HL2, HL3	378 L/min (6.3 L/s) at 60 m TDH variable speed drives
Fire Pump	1930 L/min (32.2 L/s) at 66 m TDH (powered by the generator)
Pressure regulation	Three hydropneumatics tanks each 1,226 L
Emergency Power	80 kW stand-by diesel generator (full stand-by)
Distribution System	One river crossing Watermains and hydrants for fire protection Piping system designed to support a fire flow of 500 lpm (38 L/s)

A photo of the pumphouse and reservoir at 10 Station Street is shown below. Figure 2 illustrates the distribution system and location of the pumphouse and Figure 3 illustrates the sequences of components from the groundwater wells to the distribution system.





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











- - - HAMLET LIMITS
- 25mm DIAMETER WATERMAIN
- 50mm DIAMETER WATERMAIN
- 150mm DIAMETER WATERMAIN
- 200mm DIAMETER WATERMAIN
- 300mm DIAMETER WATERMAIN
- 75mm DIAMETER RAW WATER PIPE
- 100mm DIAMETER RAW WATER PIPE
- HYDRANT SET
- VALVE & BOX
- WELL LOCATION

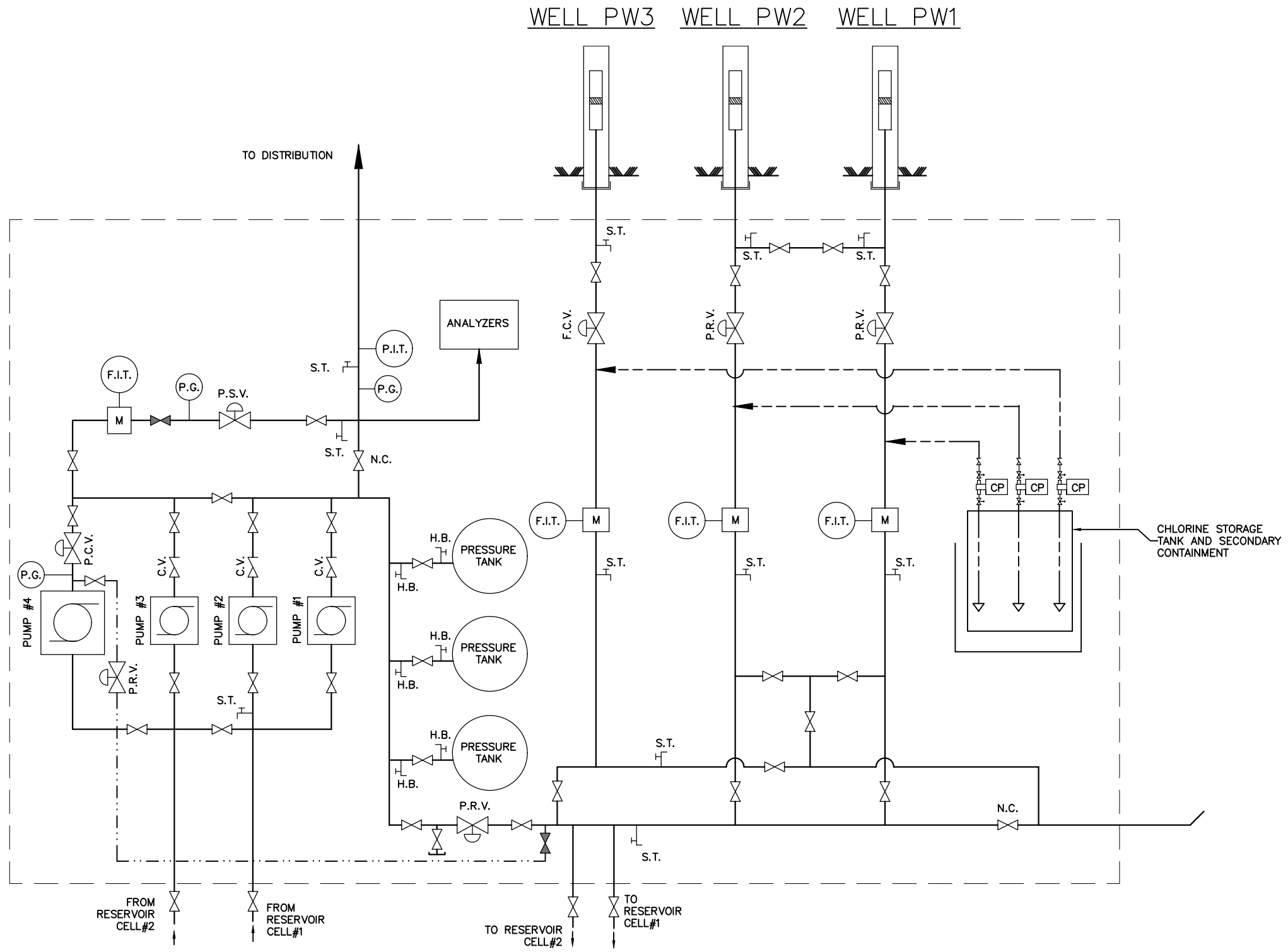



Client
**TOWNSHIP OF AMARANTH
 WALDEMAR**

Figure Title
**WALDEMAR WATER STORAGE
 MUNICIPAL CLASS EA
 EXISTING WALDEMAR WATER SUPPLY SYSTEM**

Drawn CD	Checked CED	Date January 2019	Figure No. 2
Scale #####	Project No. 300041042		

-  PRESSURE GAUGE
-  GATE VALVE
-  BALL VALVE
-  FLOW METER
-  SAMPLE TAP
-  HOSE BIB
-  PRESSURE RELIEF/CHECK VALVE
-  NORMALLY CLOSED
-  CHEMICAL FEED PUMP
-  FLOW TRANSMITTER
-  PRESSURE TRANSMITTER
-  PUMP CONTROL VALVE
-  CHECK VALVE
-  PRESSURE SUSTAINING VALVE
-  FLOW CONTROL VALVE
-  PRESSURE RELIEF DRAIN LINE



 BURNSIDE		Figure Title WALDEMAR WATER STORAGE MUNICIPAL CLASS EA WALDEMAR PUMPHOUSE PROCESS AND INSTRUMENTATION DESIGN	
Client	TOWNSHIP OF AMARANTH	Drawn CD Checked SG Date January 2019 Project No. 300041042	Figure No. 3

There is an abandoned pumphouse referred to as the Acchione pumphouse that was part of the water system at one time. Changes in drinking water regulations resulted in a number of changes to the Waldemar drinking water system in 2004, one being the abandonment of the pumphouse and associated well. The pumphouse still stands but it is only used as a sampling point to test the drinking water. A picture of the pumphouse is shown below and is located at the end of James Street.



3.1 Water Supply (Groundwater Wells)

The water supply for Waldemar is obtained from three groundwater wells (PW1, PW2 and PW3) all located off of St. John Street at different locations. The wells pump raw water to the pumphouse where it is treated with sodium hypochlorite before being distributed to customers. All wells run independently of each other providing 100% equipment standby in case of pump failure. While the Permit to Take Water allows for the combined pumping of Wells PW1, PW2, and PW3 the firm capacity of the system is deemed to be 591 L/min (9.85 L/s) which is the permitted taking with the largest well out of service.

Table 2: Existing Supply Well Capacities

Groundwater Supply	Capacity (L/min)
Well PW1	341
Well PW2	273
Well PW3	318
Total	932
Firm Capacity (PW2 + (PW3))	591 (9.85 L/s)

3.2 Water Storage (Reservoir)

The reservoir is a two-celled in-ground reservoir located adjacent to and below the pumphouse. Maximum usable storage capacity is approximately 272.5 m³ at high water level. This storage facility is equipped with watertight access manholes and associated appurtenances, site storm drain, overflow line and air vents. The reservoir also provides

the contact time required for primary disinfection. Three pumps (referred to as highlift pumps) and the fire pump are all vertical in-line centrifugal pumps located in the pumphouse. These are non-submersible pumps that draw water from the storage reservoir to deliver the treated water to the distribution system. A process schematic of the main components in the pumphouse was shown previously on Figure 3.

System pressure is maintained at approximately 620 kPa (90 psi) +/- 5 kPa via the variable frequency drive on the high lift pumps. The pumphouse is equipped with an emergency pressure relief valve set for 700 kPa (102 psi).

3.3 Water Distribution System

The existing distribution system provides water to some residents in Waldemar. The system is comprised of approximately 3.2 km of watermain, ranging in diameter from 50 mm to 200 mm and is shown in Figure 2 presented earlier in the report. The existing network serves customers between approximate elevations of 450 m and 474 m. As a result the difference between the high and low pressures in the system is typically 234 kPa (34 psi).

3.4 Site Assessment

The existing pumphouse was visited on September 17, 2018 which included meeting with the Township's Water Operator. It was a visual assessment only, no entry to the in-ground reservoir was included. The following information was relayed to us:

- Only two wells are online a year (meaning one is totally disconnected).
- The fire pump operates solely off the emergency generator.
- The piping network makes it difficult to isolate the system and make repairs.
- The pumphouse is showing aging typical of other pumphouses of similar age (20 to 30 years old).

4.0 Water Supply Capacity Requirements

To determine the future water needs for Waldemar, the current and projected future population must be analysed and projected. All of the water demand within the community is currently from residential use. Development of the future population and demand scenarios has been estimated based the lands to be developed within the limits of Waldemar as defined in the Official Plan, which are shown in Figure 4.

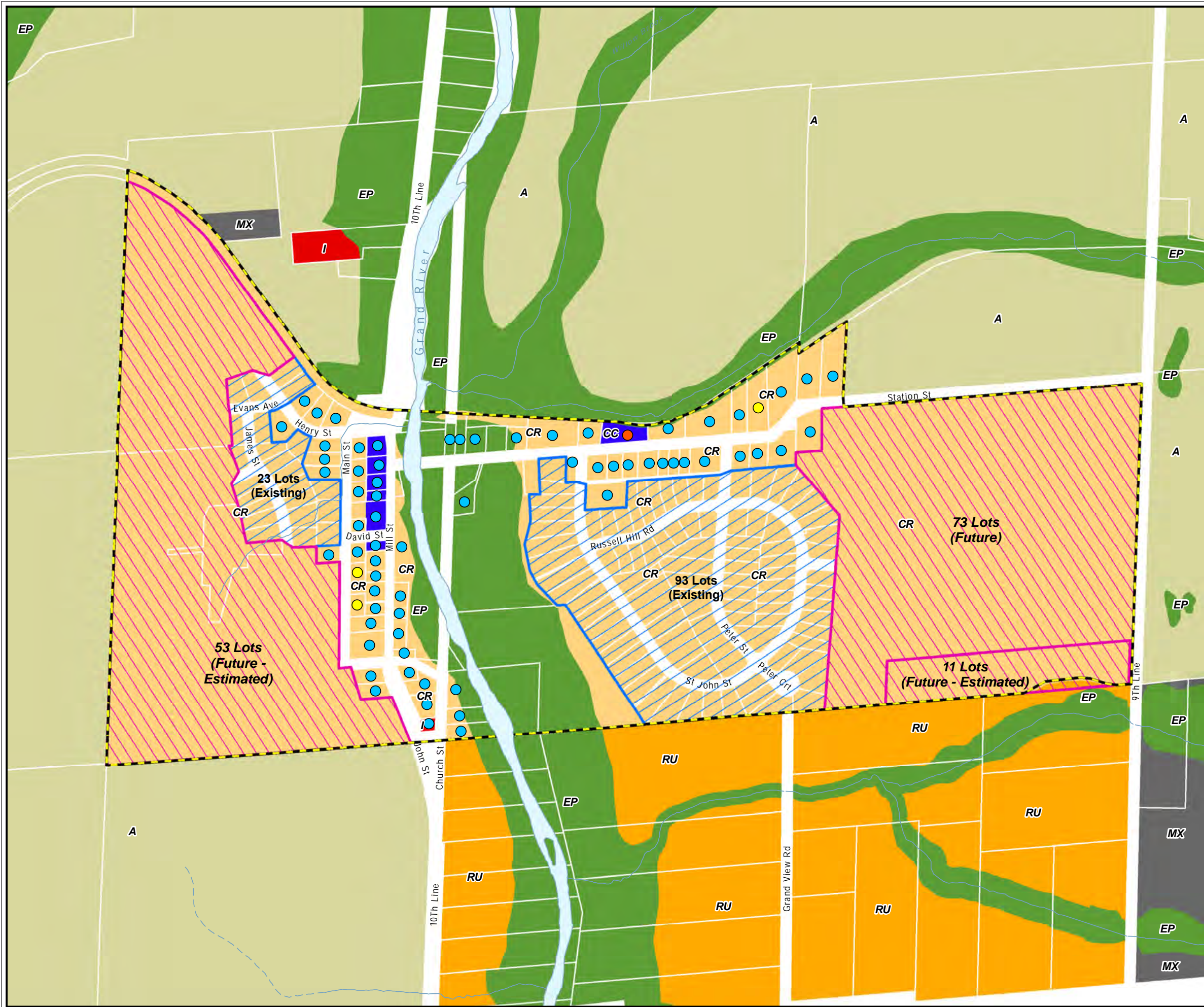
4.1 Population Projections

Population projections are outlined in Table 3 below for the scenarios reviewed in this study. Areas to be developed or are existing but not connected to the existing water system are shown on Figure 4. A density of 3.2 people per unit which was the density used in the 2014 Development Charge Background Study.

Waldemar does have community commercial lands designated in the Official Plan (7 lots in total). These existing lots are serviced by on-site sewage systems that will limit their water usage. We have treated them as one residential unit each within the table below as we do not expect these sites to be high water users necessitating a need to apply additional water demands.

Table 3: Population Projections

	Units	Population
Existing Water System	116	371
Scenario 1: Existing Water System + New Development		
Existing	116	371
Centurian	73	234
Sarah Properties	53	170
South of Centurian	11	35
Scenario 1 Total	253	810
Scenario 2: Ultimate Population of Waldemar within Hamlet Boundaries		
Scenario 1 Total	253	810
Existing unserviced	67	214
Potential Infill	3	10
Scenario 2 Total	323	1034



LEGEND

- Hamlet Limits
- Municipal Boundary
- Future Development Area
- Area Served by Existing Water System
- Existing Unserved Commercial
- Existing Unserved
- Potential Infill
- Stream: Permanent
- Stream: Intermittent
- Waterbody: Permanent

Official Plan Zoning

- A - Agricultural
- EP - Environmental Protection
- RU - Rural
- MX - Extractive Industrial
- CR - Community Residential
- I - Community Institutional
- CC - Community Commercial

Sources:

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. Township of Amaranth - Official Plan Consolidation September 2010 Note: Schedule "A-1" is revised with respect to the approved Official Plan Amendments (OPA 1 - 3).
4. This Map is Not A Legal Survey. The Township Cannot Be Responsible for Errors, Omissions or Other Inaccuracies.

Datum: North American 1983 CSRS
 Coord. System: NAD 1983 CSRS UTM Zone 17N

0 100 200 300 400 500 600
 Metres

BURNSIDE

Client

**TOWNSHIP OF AMARANTH
 WALDEMAR**

Figure Title

**WALDEMAR WATER STORAGE
 MUNICIPAL CLASS EA
 DEVELOPABLE LANDS**

Drawn	Checked	Date	Figure No.
CD	CED	January 2019	4
Scale	Project No.		
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4.2 Historical Water Demands

The historical water usage records from 2011 to 2017 were reviewed to determine the existing historical water use. The existing use is summarized in the following table and based on 116 units (371 people).

Table 4: Historical Water Use

Year	Average Pumped (m ³ /d)	Maximum Day Pumped (m ³ /d)	Maximum Day Demand Factor	Per Capita Average Day Demand (L/cap/day)
2011	100	430	4.3	287
2012	105	510	4.8	303
2013	87	266	3.1	250
2014	88	377	4.3	254
2015	84	268	3.2	241
2016	104	386	3.7	299
2017	75	172	2.3	214

When comparing the historical data of water usage in Waldemar to Ministry of Environment, Conservation and Parks (MECP) design guidelines:

- The per capita demand estimates are at the lower end of the design range (270 to 450 L/cap/day).
- The maximum day demand factor (ratio of the maximum day demand within the year vs. the average daily demand) averaged 3.7. This factor is higher than the recommended design guideline of 3.3 for similar populations. Only 3 of the 7 years reviewed had factors less than the guideline.

4.3 Projected Water Demands

Based on the review of the historical data, the following was used for water demand design purposes:

- Average daily water demand of 300 L/cap/day for all scenarios.
- For existing, a max day factor of 4 was used based on the historical data. The peak hour demands for the existing population are unknown and therefore was determined by using the MECP guidelines and adjusting the factor to account for the higher max day factor observed in the historical data.
- For the future scenarios, the max day and peak hour demands were based on the MECP Guidelines and adjusted proportionally higher considering the historical data.

Table 5 summarizes future water demand projected for Waldemar.

Municipal Class Environmental Assessment (Schedule B)
August 2019

Table 5: Water Demand Projections

	Population	Average Day Demand (L/s)	Max Day Factor	Max Day Demand (L/s)	Peak Hour Factor	Peak Hour Demand (L/s)
Existing Water System	371	1.3	4	5.2	6	7.7
Existing Water System + New Development	810	2.8	3.3	9.3	5	14.1
Ultimate Population of Waldemar within Hamlet Boundaries	1,034	3.6	3	10.8	4.5	16.2

5.0 Current and Future Water Supply and Storage Requirements

5.1 Supply Requirements

For water systems which include water storage, such as the one in Waldemar, the wells should have a capacity that is equivalent to at least the projected maximum day demand. In addition, the MECP Guidelines recommend that the water system be designed such that it can meet the maximum day demand with the largest well out of service, which is referred to as the firm capacity of the system. The firm capacity of the well supply is 9.85 L/s when considering all three wells being online. However, as outlined previously, only two wells are kept online at a time, while a third is kept offline, rotating on a yearly basis. Though the third does provide a backup supply, it cannot be brought online immediately requiring proper startup/disinfection prior to being placed back online. As the demands on the system increases, the third becomes more essential.

As identified below in Table 6, the existing system is able to provide firm capacity for the population currently being serviced. Projected demands show that for Scenario 1, firm capacity is still achieved, however not for Scenario 2.

Table 6: Projected Max Day Demand Compared to Rated Well Supply

	Population	Max Day Demand (L/s)	Is the supply adequate adequate? ⁽¹⁾
Existing Water System	371	5.2	Yes
Scenario 1: Existing Water System+ New Development	810	9.3	Yes
Scenario 2: Ultimate Population of Waldemar within Hamlet Boundaries	1,034	10.8	No

Notes:

(1) Adequate refers to the projected max day demand being less than 9.85 L/s, the firm capacity of the well supply.

Recommendations: As Scenario 1 is close to the firm capacity, on-going review of actual water demands as the next subdivision comes on-line is needed to verify that another well is not required. The electrical system requires upgrading to accommodate all three wells being online at once, to have that backup supply available on demand.

5.2 Highlift Pumping Requirements

The existing drinking water system services the distribution system network demands through the use of the highlift pumps located at the pumphouse. The provision of fire flows is discussed separately in Section 5.3. The highlift pumping system is intended to satisfy the peak hour demand or the maximum day demand in combination with the fire

demand. Demands in excess of the maximum day demand up to and including the peak hour demand are supplied from the water storage at the pumphouse.

The drinking water system has 3 highlift pumps. All are rated for 6.3 L/s at 66 m total dynamic head. The firm pumping capacity of the domestic highlift system is therefore 12.6 L/s. The existing and anticipated water demands are illustrated in Table 7. The Waldemar highlift pumping system has firm pumping capacity to meet the peak hour demand for the population currently serviced but does not for Scenarios 1 or 2.

Table 7: Projected Peak Demand Compared to Highlift Pumping Capacity

	Population	Peak Hour Demand (L/s)	Is the pumping system adequate ⁽¹⁾ for normal water demands?
Existing Water System	371	7.7	Yes
Scenario 1: Existing Water System + New Development	810	14.1	No
Scenario 2: Ultimate Population of Waldemar within Hamlet Boundaries	1,034	16.2	No

Notes:

(1) Adequate refers to the projected peak hour demand being less than 12.6 L/s, the firm capacity of the highlift pumps. This is for water usage but does not include emergency use (firefighting for example).

Though not the case with the existing water system, in a scenario where elevated storage (water tower) is located in the distribution system, the highlift pumping system needs only to provide firm capacity to meet the Maximum Day Demand instead of the Peak Hour Demand. As shown in Table 8, the existing high lift pumping system would be adequate to meet the existing maximum day demand if a water tower was erected.

Table 8: Projected Max Day Demand Compared to Highlift Pumping Capacity

	Elevated Water Storage Scenario Only		
	Population	Max Day Demand (L/s)	Are Demands below 12.6 L/s? ⁽¹⁾
Existing Water System	371	5.2	Yes
Scenario 1: Existing Water System + New Development	810	9.3	Yes
Scenario 2: Ultimate Population of Waldemar within Hamlet Boundaries	1,034	10.8	Yes

5.3 Fire Protection (Pumping and Water Storage)

Where a municipality elects to provide fire protection, designers will typically refer to the local Fire Department, Fire Under Writers Survey (FUS), and the Ministry of Environment, Conservation and Parks Guideline to determine the storage and fire flow.

Table 9: Summary of Fire Flow Guidelines

	Existing Water System	Existing Water System + New Development	Ultimate Population of Waldemar within Hamlet Boundaries
Population	371	810	1,034
Fire Department	Requested Fire Flow per the FUS		
Fire Under Writers Survey ⁽¹⁾	100 L/s for 2 hrs	100 L/s for 2 hrs	100 L/s for 2 hrs
Ministry of Environment, Conservation and Parks Guidelines (MECP)(2)	38 L/s for 2 hrs ⁽³⁾	54 L/s for 2 hrs	65 L/s for 2 hrs
Original Expectation of Future Fire Flow ⁽⁴⁾	Less than 38 L/s for 2 hours	79 L/s	

Notes:

- (1) The FUS requirements are developed based on individual building characteristics. For this study, a random sample of the existing houses in Waldemar were used (average size was 2044 sq.ft.). Typical setbacks including zoning requirements were also used to determine the fire flow.
- (2) Historical fire flow requirements small municipalities in Ontario have used.
- (3) The existing storage would not be able to sustain the 38 L/s for 2 hrs. The original storage volume was designed for 16.6 L/s for 2 hours.
- (4) This was based on MECP guideline, with a population of 1,500.

As the MECP guidelines are well below what the Fire Department has requested to be provided, this EA will consider the scenario of providing 100 L/s for 2 hours and 79 L/s for 2 hours.

5.3.1 Pumping

At the existing pumphouse there is one 32.2 L/s pump which can be used for fire service as well as domestic pumps that can be utilized in combination. The existing system was designed to provide 38 L/s pumping capacity during emergency conditions, with all pumps operating except for one of the domestic pumps (6.3 L/s). The water for firefighting is drawn from the reservoir at the existing pumphouse. The pumping system would need to be upgraded to accommodate new development to achieve the desired fire flows.

5.3.2 Storage

Storage reservoirs provide operating, emergency and fire storage for water systems, so that the well supply does not have to directly provide these flows to the distribution system. The MECP Guidelines require the provision of storage sufficient to supply the required fire flow volume and meet the peak demands on the system. The calculation

Municipal Class Environmental Assessment (Schedule B)
August 2019

for required storage is based on the ABC formula noted below and is summarized in Table 10 below.

$$\text{Storage} = A + B + C \quad \text{where:} \quad \begin{aligned} A &= \text{Required fire flow volume (L)} \\ B &= 25 \% \text{ of maximum day volume (L)} \\ C &= 25 \% \text{ of sum of A and B} \end{aligned}$$

Table 10: Future Storage Requirements

	Scenario 1 Existing + New Development		Scenario 2: Ultimate Population of Waldemar within Hamlet Boundaries	
	79 L/s	FUS 100 L/s	79 L/s	FUS 100 L/s
A. Fire Storage (L)	568,800	720,000	568,800	720,000
B. Equalization Storage (L)	200,376	200,376	232,560	232,560
C. Emergency Storage (L)	192,294	230,094	200,340	238,140
Minimum Required Storage (L)	961,470	1,150,470	1,001,700	1,190,700
Existing Storage (L)	272,500	272,500	272,500	272,500
Required Additional Storage (L)	688,970	877,970	729,200	918,200

The existing storage for fire protection was designed based on Ministry of Environment guidelines in place at the time of design of the water system. This included accommodating the minimum storage of 16.6 L/s for 2 hours, with the pumps designed to accommodate 38 L/s of flow out to the system. In comparison with current MECP Guidelines as well as the FUS, the existing system would be undersized. Under both future scenarios, the water system requires additional water storage to meet desired fire flows.

6.0 Municipal Class EA Planning Process

The planning of major municipal infrastructure projects or activities is subject to the *Environmental Assessment Act*, R.S.O. 1990, and requires the proponent to complete an Environmental Assessment. The MCEA process was developed by the Municipal Engineers Association (MEA), in consultation with the MECP, as an alternative method to Individual Environmental Assessments for recurring municipal projects that are similar in nature, usually limited in scale and with a predictable range of environmental impacts and are responsive to mitigating measures. The MCEA solicits input and approval from regulatory agencies, the municipality and the public at the local level. This process leads to an evaluation of the alternatives in view of the significance of environmental impacts and the choice of effective mitigation measures.

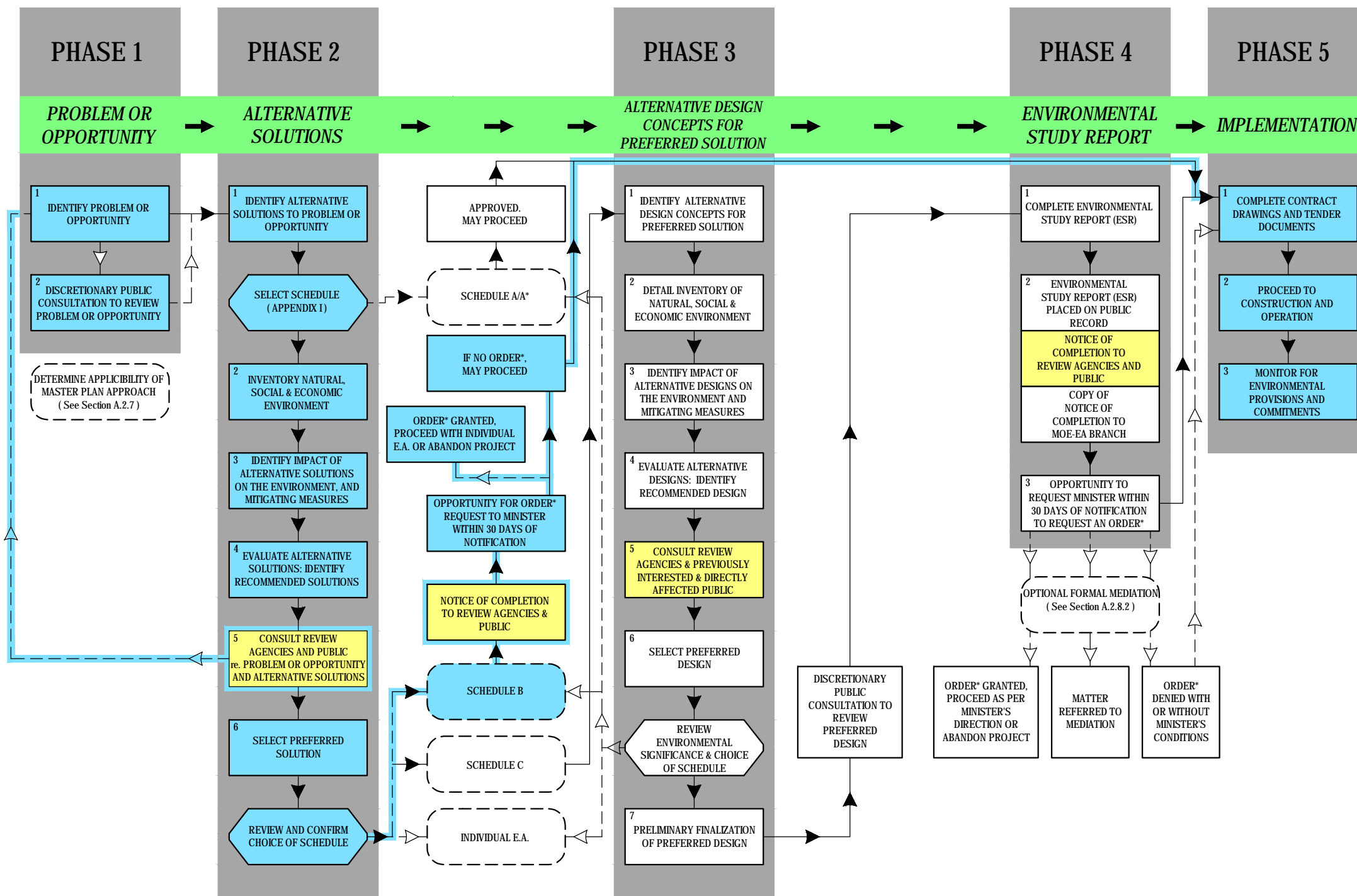
A flow chart, as seen in Figure 5, prepared by the MEA, shows the MCEA procedure. There are three categories of assessment within the MCEA procedure dependent on the complexity and potential for environmental impact (Schedule A and A+ – negligible impacts, Schedule B – modest impacts, Schedule C – significant impacts).

The MCEA also provides an opportunity for any member of the public or agency to request the Minister of the Environment, Conservation and Parks to order a MCEA project to become subject to an Individual Environmental Assessment. This is known as a Part II Order (or “bump-up”) request and is made in certain circumstances where concerns are unresolved during the MCEA planning process.

Schedule B projects generally include improvements and minor extensions to existing facilities. These projects have the potential for some adverse, yet mitigable, environmental impacts and requires the completion of only Phases 1 and 2 of the MCEA procedure (Figure 5). Public consultation is required at two stages under a Schedule B project. At the completion of Phase 2, if there are no outstanding concerns, then the Township may proceed to implementation. Alternatives considered in this project file report are Schedule B projects and therefore this study was carried out as a Schedule B activity in accordance with the MEA MCEA document (October 2000, as amended in 2007, 2011 and 2015).

MUNICIPAL CLASS EA PLANNING AND DESIGN PROCESS

NOTE: This flow chart is to be read in conjunction with Part A of the Municipal Class EA



LEGEND

- > INDICATES POSSIBLE EVENTS
- INDICATES MANDATORY EVENTS
- > INDICATES PROBABLE EVENTS
- Yellow box: MANDATORY PUBLIC CONTACT POINTS (See Section A.3 Consultation)
- Blue box: REQUIREMENTS RELATED TO SCHEDULE B PROJECTS
- Hexagon: DECISION POINTS ON CHOICE OF SCHEDULE
- Dashed box: OPTIONAL
- * PART II ORDER (See Section A.2.8)

Source: MEA, 2000, as amended 2007, 2011 and 2015



Client			
TOWNSHIP OF AMARANTH			
Figure Title			
WALDEMAR WATER STORAGE MUNICIPAL CLASS EA CLASS ENVIRONMENTAL ASSESSMENT PROCESS			
Drawn	Checked	Date	Figure No.
CD	CEd	January 2019	5
Scale	Project No.		
N.T.S.	300041042		

6.1 Public Consultation

Public consultation is a key component of the MCEA process. Agencies, indigenous communities and utility companies which may have interest in the proposed project, received a letter and a copy of the notice for the Public Information Centre. These agencies were asked to comment on the study. A complete list of contacts for this MCEA is provided in Appendix A.

6.1.1 Notice of Study Commencement

A Notice of Study Commencement (Appendix B) was placed on the Township's website on October 4, 2018. This notice was intended to inform residents that the study was being initiated and that Township would be holding a Public Information Centre to present the alternatives for public input and comment. The notice for the PIC was published in the Orangeville Banner, the Township website, and to individuals who requested to be placed on the contact list for the project. Burnside also attended Council on October 3, 2018 to discuss the commencement of the MCEA.

6.1.2 Public Information Centre

The notice for the Public Information Centre (PIC) was placed in the Orangeville Banner on February 21, 2019 and February 28, 2019. A copy of the newspaper advertisement is provided in Appendix B. This notice provided a brief introduction to the study and encouraged interested individuals to attend the PIC or contact the Project Team directly for more information. The notice was also on the Township's website and was mailed or emailed to all agencies and interested stakeholders. The PIC was held in the Township of Amaranth Office, at 374028 6th Line, Amaranth, from 7 p.m. to 9 p.m. on March 4, 2019. A copy of the PIC presentation materials was posted on the Township's website on March 5, 2019 including a copy of the comment sheet that could be filled out.

Materials presented at the PIC are provided in Appendix C including the sign-in sheets. A total of 22 people signed-in, but we believe approximately 40 people attended the PIC. A total of 11 comment sheets were submitted with an additional three emails received from the public with comments. All comments received are included in Appendix D and are summarized in Table 11 below.

Table 11: Public Comments from PIC

Public Comment	Response to Comment
General Water Supply Concerns	
Concerns regarding the addition of more homes to the water system as they experience low water pressure.	There should be no noticeable changes in pressure as a result of additional homes. The pumps that send water to the distribution system will be replaced to meet the higher demands.

Public Comment	Response to Comment
<p>There is not enough water in Waldemar to service two huge subdivisions currently planned for Waldemar. Watering is already restricted to odd and even numbers.</p>	<p>Based on existing water usage data (reviewed from 2011-2017) and the projected future demands, the supply is adequate and below pumping rates permitted by the Permit to Take Water. The wells pump max day demands, while the water storage is there to supplement the instantaneous higher demands placed on the system by users. The Township will also continue to review the water demands on the system as a result of the new connections from the first expected subdivision (73 lots) to develop to confirm demands are consistent with projected demands. Though not expected, should demands be higher, additional supply will be needed, necessitating a Municipal Class Environmental Assessment. This could be a condition of approval for the next development. We note that the west subdivision (Sarah Properties) has not been approved. Most municipalities (including nearby Town of Orangeville, Town of Shelburne, Township of Centre Wellington, Township of Wellington North) have a by-law with respect to lawn watering on odd and even numbers. The intent is to prevent residents from watering their lawn every single day to promote conservation.</p>
<p>Need to be assured that there will be water for everyone including those who are on private wells</p>	<p>As noted above, we have reviewed historical water data and we do not have concerns related to supply as pumping rates will be below current permitted rates. Each subdivision developer will be required to monitor private wells for those who agree to participate.</p>
<p>Comments pertaining to previous upgrades completed as a result of new regulations that came into place after the Walkerton Tragedy</p>	
<p>Council indicated at the time of the payment that no one else would be able to connect to the water system</p>	<p>The Township's Water By-Law Number 52-2006 notes in Section 4.4 "Council may at a future date establish policies requiring all persons within reasonable servicing proximity of the water main to connect to the system and be liable for fees as set out" We are not aware of other policies or by-law that prohibit the connection of others to the water system.</p>
<p>Indicated that they were advised that they would be reimbursed should a Developer hook up to the system for the upgrade they paid for.</p>	<p>Through a settlement with the Grand River Estates Development, the Township received money to finish off the subdivision. When that was completed there was a surplus that the Township applied to the water works that it had already upgraded (which included upgrades required post Walkerton). In 2008, Council passed a resolution to use the remaining surplus to provide a</p>

Public Comment	Response to Comment
	<p>rebate to each water system account located in Grand River Estates Subdivision. A rebate of \$325 was given in December 2008. Users were either given a credit on their water account if they had not paid their capital costs up front, or they were sent a cheque if they had paid capital costs. The Township is entitled to charge through the subdivision process any upgrades or expansions that the water system requires to service new development. The expansion of storage requires several existing components to be replaced which is to be paid for by the Developers. This includes new pumps, fire pump, new generator/fuel source, electrical/programming work in addition to the actual concrete storage reservoir and piping modifications).</p>
Comments related to alternatives	
<p>Would prefer option A, inground reservoir and do not appreciate the water tower.</p>	<p>Option A, the inground reservoir at the existing pumphouse is the selected preferred alternative.</p>
<p>Expansion of the current site has a number of advantages (esthetically more pleasing, least expensive with equal capacity, least intrusive construction noise, dust etc. for current residents). Above ground structure will require regular on-going maintenance.</p>	<p>Expansion at the current site is the preferred alternative.</p>
<p>The Fire water supply of 100 L/s is a preference of the Fire Chief. This should be investigated to coincide with Code. There is a 20% increase over RJB figures (based on MECP Guidelines) which reflects on reservoir size and therefore cost.</p>	<p>The 100 L/s is from the Fire Underwriters Survey. It is not a code/regulation, rather it is a document used by insurance companies to determine insurance rates. The Design Guideline for Drinking Water Systems (2008) issued by the Ministry of Environment does provide storage sizing guidelines based on population. The preferred alternative to provide 79 L/s for fire storage will meet and exceed the guideline. This is a guidance document and not code.</p>
<p>If developers want to build more subdivision in Waldemar, they should</p>	<p>This is not a good option for the reasons indicated below:</p> <ul style="list-style-type: none"> • The maintenance/replacement costs are higher. The Township would be responsible to maintain additional

Public Comment	Response to Comment
<p>build and service their own pumphouse and leave the pumphouse as is.</p>	<p>wells, at least one extra building, double the equipment, more sampling/labour costs, double the back up power, etc. When multiple users are connected to the same system, costs can be shared among all users.</p> <ul style="list-style-type: none"> • In the case of Waldemar and explained at the Public Information Centre, before the MCEA process was in place, it was always intended that the next developer would expand the water storage, it was just never expected that so much time would past since the original design (almost 30 years). If each developer built its own system, the existing system storage size would remain well below current guidelines. • There is less reliability in the distribution system. Connecting (looping) the water distribution system allows for easier replacement and maintenance of flows during emergency repairs. The looping also increases the available water in the distribution system for fire demands, particularly on the east side where the Developer is installing a new watermain down Station Street and re-connecting into the existing east subdivision. • The 73 lot subdivision has been draft plan approved with a condition to expand the storage reservoir and build a new watermain down Station Street. This condition could not be satisfied if a separate system was constructed. • Larger systems are designed with consideration that greater numbers of users will buffer peak usage. This allows one larger system to have lower total well capacity compared with two smaller systems.
<p>They do not want their water/taxes to increase due to future subdivision hooking up to the system.</p>	<p>The 2015 water rate study (Table 2-1) that assists the Township in determining rates includes growth (at least 75 new connections) starting in the year 2017 to 2025. If these were taken out of consideration, the existing rates would be expected to be increased if the future subdivisions do not connect. The Township waived the capital charge that would be used for replacement identified/recommended in the rate study. It should be noted that another council may not choose to waive this charge resulting in an increase in the rates that would not have anything to do with future subdivisions connecting into the system.</p>

Public Comment	Response to Comment
All costs should be covered by Developer and Township as a whole, not Waldemar residents only.	For the storage expansion and related upgrades, costs are being paid for by the Developers.
Comments related to private wells	
Private wells should be tested for water flow and capacity since double amount of water will be used by the public. If private wells are affected by loss of water, the cost of new wells or deeper wells should be covered by the Developer.	Each developer will be required to monitor the private wells (of those who agree/request to participate) to collect data throughout the development of the subdivision. Should a water shortage/issue be reported, an investigation will be required by the Developer's hydrogeologist (all submitted to the Township for review). Any costs to investigate and rectify the problem will be covered by the Developer. This may include deepening the well, replace the pump or a potential connection to the municipal system.
Concerned about how private well will be impacted and noted that they were not available at the time Terraprobe came to visit to study wells in the Fall of 2018.	Contacted resident via email to confirm that it is still possible to participate in the monitoring study being completed as part of the Centurian development. Provided owners contact information to Developer's Engineer who confirmed that Terraprobe will reach out to the resident.
Do not have any interest in a future connection to the municipal drinking water system. New dug well installed 5 years and very satisfied with the quantity of water.	No one who responded to the survey indicated interest in a future connection.
Other	
There have only been two fires in Waldemar in almost 30 years. One was garage and one was a grass fire.	Acknowledged.
Does Burnside remember that there was a pond in the vicinity where they plan a reservoir which was filled in. It was the runoff from Grand River Estate Subdivision.	Burnside is aware of the pond. It was not located in the exact location of the proposed reservoir. The pond was built and used as a sediment pond during construction and located near the end of the walkway behind 14/16 St. John Street. After the subdivision land was stabilized, the sediment was no longer needed and filled in. Notwithstanding, a geotechnical investigation will be completed at the detail design stage to obtain

Public Comment	Response to Comment
	recommendations related to construction of the new storage.
I have read through previous reports with respect to the Waldemar water system and there have been no reported problems.	Acknowledged.
This EA is "ONLY" coordinated to suit the Township plan as stated at this meeting. 73 lots for Centurian and 53 lots for Sarah Properties.	Centurian subdivision (73 lots) has been draft plan approved with the subdivision layout known. The 53 lot subdivision is an estimate based on the official plan where the lots are serviced by individual on-site sewage systems.
Several indicated they would like to be notified of any comments and decisions made by Amaranth Township Council or Dufferin County in respect to the EA	The Notice of Completion will be mailed to all those that requested it. The report will be available to the public on the Township's website and the Township will have a hardcopy available at their administrative office.

6.1.3 Summary of Public Stakeholder/Agency Correspondence

Table 12 summarizes the comments that have been received from agencies/stakeholders. Copy of correspondence is included in Appendix D.

Table 12: Summary of Comments from Agencies/Stakeholders/Public

Summary of Comments	Response Provided
County of Dufferin Building and By-Law Department	
Mar. 7/19: Based on preliminary review, the building department has no comments	No response required.
County of Dufferin Planning Department	
Mar. 8/19: No comments on this application provided that the water storage solution chosen through the EA process meets the Town's Source Protection Plan and GRCA guidelines and does not negatively impact nearby environmental features including the Natural Heritage System, woodlands and the unevaluated wetlands. Recommended to consult with the Ministry of Energy of Energy,	Burnside followed up with the Township's Risk Management Official regarding Source Water Protection, provided further information to GRCA, and contacted the Ministry of Energy of Energy, Northern Development and Mines. Comments are included later in this table.

Summary of Comments	Response Provided
Northern Development and Mines to confirm the significance of the mineral resources on the site	
County of Dufferin Public Works Department	
Mar. 11/19: No comments based on the preliminary preferred alternative (in-ground reservoir at the existing pumphouse). They would like to be provided updates as the project progresses.	No response required.
Grand River Conservation Authority	
<ul style="list-style-type: none"> Feb. 25/19: Would like to remain notified of any information pertaining to the EA as it becomes available. Noted that the study area (Waldemar) contains natural hazard and heritage features including the Grand River and its tributaries, floodplain, and areas with slope hazards as well as the regulated allowances to these features. The study area is also adjacent to several wetland features which are regulated under O.Reg. 150/06. Any future development within the regulated areas may require the issuance of permit from the GRCA. May 27/19: For the preliminary preferred alternative, there is a small area that is regulated on site and a permit would only be needed if development were to occur in that area. Would like to be informed if the preliminary preferred alternative changes. 	<ul style="list-style-type: none"> May 24/19: Sent a link to PIC materials noting the preferred site is the existing pumphouse (10 Station Street) to confirm if GRCA had any specific requirements May 27/19: Acknowledged response.
Grand Valley and District Fire Department	
<ul style="list-style-type: none"> Sept. 17/18 – Meeting with Fire Chief to discuss project Mar. 20/19 – Meeting with Fire Chief and CAO to discuss project Mar. 20/19 – Emailed copy of NFPA 1142 	Mar. 21/19: Sent copy of PIC Presentation Materials Aug. 2/19: Phone discussion. Fire Chief prefers 100 L/s, but understands economic considerations.
Township of Amaranth's Risk Management Official for Source Water Protection	
March 21/19 – The site is outside of the wellhead protection area and there are no source protection policies that apply to the site. The fuel tank (which has the potential to be placed outside) is not considered a threat as its outside the WHPA, but best practice is to include spill management as part of the operational procedures for fuel handling.	No response required. Alternatives (such as natural gas) may be an option for the backup generator, however spill management is a typical operational requirement and the Township will modify their standard operating procedures as required related to the upgrades.

Summary of Comments	Response Provided
Chippewas of Rama First Nation	
Apr. 1/19: No comments at this time but would like to be updated as the project continues and requested a digital copy of the Project File Report.	Apr. 1/19: Responded to confirm that they will remain on the contact list for further circulations and we would send a digital copy of the project file report.
Ministry of Energy, Northern Development and Mines	
Apr. 11/19: Has no comments or concerns with the proposal currently. Indicated that the study area lies within an area of significant aggregate resources and within an area of known and potential karst development in bedrock.	No response required. As part of the detail design, a geotechnical investigation will be completed which will require recommendations related to construction requirements.
Developer/Developer Representatives	
Sarah Properties Owner	
<p>Feb. 19/19 phone call summarized below:</p> <ul style="list-style-type: none"> • Concerned with the lot yield that was predicted for Sarah Properties. • Interpreted the current Official Plan to suggest a lot yield of 334 lots based on a statement contained within the Official Plan indicating that communal servicing is preferred over private individual septic systems. The estimate of 53 lots is based on a perceived outcome of the Local Planning Appeal Tribunal (LPAT) process which is underway. • Would appeal (request a Part 2 Order) on this EA unless it allowed for multiple possible outcomes, including 334 lots for the property. • Burnside indicated that they would provide a formal written response to the phone call. 	<p>April 26/19: Letter was sent to respond to Feb 19/19 phone call. Responses related to the phone call are summarized below (refer to Appendix D for entire letter).</p> <ul style="list-style-type: none"> • The EA process starts with a defined Problem Statement. Considering multiple possible input parameters (Burnside provided examples detailed in the letter), such as potential amendments to the Official Plan would not lead to any resultant conclusion, even after the results of the LPAT process are known. • While an application has been made by Sarah Properties to amend the Official Plan, it would be premature to assume communal servicing in advance of a decision on the proposed Official Plan Amendment. • There are timing consequences if we await the LPAT decision in which we do not have an expected timeframe for its conclusion. The existing fire reservoir is too small to meet

Summary of Comments	Response Provided
	<p>current guidelines and its expansion cannot be put off indefinitely. The reservoir expansion is on the critical path for Centurian Homes who are now clearing their conditions of draft plan approval and who should not be unduly delayed owing to the desires of Sarah Properties.</p> <ul style="list-style-type: none"> • There are financial consequences of basing the EA on multiple potential outcomes on lot yield. The completed EA will be used to assess financial costs to the development community, and it is unlikely that other developers will be willing to finance oversizing costs that are reliant on an LPAT decision that may or may not justify the costs. We awaited the decision (rejection of the OP Amendment) of Township Council before embarking on the EA as their rejection can be taken as confirmation that the Township will not be willing to finance the oversizing on a speculative basis. • There are significant impacts to the water system depending on whether the Sarah Properties application is approved. Density of houses drives the required fire flows much higher and require significant replacement and upsizing of existing watermains. Higher fire flows will result in an entirely different pump selection and potentially different emergency standby generator. The number of houses in the

Summary of Comments	Response Provided
	<p>Sarah Properties proposal could increase the volume of water to be stored in the reservoir as much as 33%.</p> <ul style="list-style-type: none"> • We are continuing the study based on addressing the Problem Statement and using 53 lots for Sarah Properties. This estimate is substantially higher than Sarah Properties' Engineer's estimate for the site for individual wastewater servicing. • We will view your application as an Opportunity to be considered along with the Problem through the evaluation of alternatives.
Sarah Properties Planner (Zelinka Priamo Ltd.)	
<ul style="list-style-type: none"> • Nov. 13/18: Requested to be on contact list • Nov. 29/18: Wanted confirmation on what density (number of lots) is being used for Sarah Properties land • Dec. 10/18: Wanted confirmation on what density (number of lots) is being used for Sarah Properties land • Feb. 19/19: Requested a copy of Notice of Public Centre ASAP • Mar. 12/19: Letter received. Comments summarized below. For entire letter refer to Appendix D. • Noted the Official Plan Policy 4.2.4.b states that communal services are the preferred means of servicing multiple lots/units where full municipal sewage and water services are not or cannot be provided. • The study did not disclose how the 53 lots was calculated or justify such a limitation for the Sarah lands. It is a significant under estimation. • There is an active Draft Plan of Subdivision and Amendment application for 334 lots for Sarah properties serviced by a communal wastewater and an expansion to the 	<ul style="list-style-type: none"> • Nov. 13/18: Added to contact list • Dec. 11/18: We considered the number of residential properties that C.C. Tatham provided during their Wastewater Treatment and Effluent Disposal Class EA for Sarah Properties which was 26 lots and we set that as the low end of the range. We considered the upper end of the range (without obtaining an OPA) to be 53 lots. For the purposes of the Water Storage EA, we have carried 53 lots for Sarah Properties • Feb. 19/19: Emailed a copy of the Notice, but also confirmed he would receive it by mail as he's on the contact list. • April 26/19: Provided response to Mar. 12/19 letter (addressed to Walter Broos copied to Developer's Engineer, Planner, and Lawyer). For entire letter refer to Appendix D.

Summary of Comments	Response Provided
<p>municipal water system. The Township's decision to refuse the concurrent Official Plan Amendment has been appealed.</p> <ul style="list-style-type: none"> • Given the unresolved nature of the proposed development, the EA should be conducted with due consideration for a maximum possible number of lots contemplated for the Sarah Site, as well as for the potential connecting of existing homes to the water distribution system, at the very least a provision for a potential further expansion at the water storage facility. • In agreement with preliminary preferred solution of an inground water storage facility however it should be design with due consideration for a more conservative service population or at least a future expansion. It was acknowledged at the PIC by Burnside that the cost of expanding the reservoir later will be significantly higher than building a larger reservoir at this time. • Indicated that only a 15% increase of size is required. • The Class EA should not be limited to considering storage expansion only, but also consider an increase in the groundwater supply. The decision not to consider the ultimate servicing scenario is short-sighted from a municipal infrastructure planning point of view. • Jul. 9/19: Letter received. Similar to comments provided in Mar. 12/19 letter. For entire letter refer to Appendix D. 	<ul style="list-style-type: none"> • 53 lots was based on an optimistic calculation (see letter for details). As this yield is more than double what your engineering consultant estimated, it is our opinion that 53 lots is a reasonable projection of growth on the lands. • Through the PIC Comment sheet, we did reach out to existing residents to confirm if there would be interest in future connections. In all responses, no existing resident indicated any desire for future connection. Council indicated that any cost for upgrades to the water system is to be fully paid for by developers which precludes expansion for existing homes at the expense of the Township. • Groundwater supply is not part of this EA. The scenario considered in this EA does not currently predict that the water system will need additional supply. • An increase of 15% is underestimated. Without considering existing residents not currently serviced, the Sarah Properties proposal could increase the volume of water to be stored in the reservoir as much as 33%. • Jul. 26/19: Acknowledged letter and referred to responses provided in Apr. 26/19 letter.
Sarah Properties Engineer (C.C. Tatham & Associates Ltd.)	
<ul style="list-style-type: none"> • Nov. 14/18: Requested to be on contact list 	<ul style="list-style-type: none"> • Nov. 14/18: Added to contact list • Nov. 28/18: Confirmation that Sarah Properties is included

Summary of Comments	Response Provided
<ul style="list-style-type: none"> • Nov. 16/18: Requesting confirmation that 334 units are being accounted for as part of Sarah Properties • Nov. 29/18: How many lots are included for the Sarah Properties lands to estimate the projected water demands 	<p>based on the Official Plan that is currently in place and does not rely on communal sanitary servicing. If an Official Plan Amendment is put in place to allow the 334 lots that Tatham's client has proposed, a future Class EA will be needed.</p> <ul style="list-style-type: none"> • Dec. 11/18: We considered the number of residential properties that C.C. Tatham provided during their Wastewater Treatment and Effluent Disposal Class EA for Sarah Properties which was 26 lots and we set that as the low end of the range. We considered the upper end of the range (without obtaining an OPA) to be 53 lots. For the purposes of the Water Storage EA, we have carried 53 lots for Sarah Properties

6.2 The Project File Report

In accordance with the MCEA process for a Schedule B project, this Project File Report identifies the following:

- The existing technical, natural, social and economic environment.
- Alternative solutions to the proposed project.
- Potential impacts of the alternative solutions on the existing environment;
- The consultation process undertaken throughout the project.
- Selection of the preferred alternative.
- Mitigation measures of the preferred alternative

6.2.1 Notice of Completion

At the completion of the EA study, the report is filed and placed on public record for 30 days following a Notice of Study Completion. Concerns regarding a project should be brought to the attention of the Township within the 30 day review period after the Notice of Completion has been issued. If the concern is not resolved through discussion with the Township, a person/party may submit a written request to the Minister of Environment, Conservation and Parks to make an order for the project to comply with Part II of the Environmental Assessment (referred to as a "Part II Order"), which

Municipal Class Environmental Assessment (Schedule B)
August 2019

addresses individual environmental assessments. Submissions must be received within the 30 day review period with a copy forwarded to the proponent.

Requests for Part II Orders should address the following issues:

- Environmental impacts of the project and their significance.
- The adequacy of the planning process.
- The availability of other alternatives to the project.
- The adequacy of the public consultation program and the opportunities for public participation.
- The involvement of the person/party in the planning of the project.
- The nature of the specific concerns which remain unresolved.
- Details of any discussions held between the person/party and the proponent.
- The benefits of requiring the proponent to undertake an individual environmental assessment.
- Any other important matters considered relevant.

In considering a request for Part II Orders, the Minister shall give consideration to the following issues:

- Extent and nature of public concern.
- Potential for significant adverse environmental effects.
- Need for broader consideration of alternatives by the proponent.
- Considerations of urgency.
- Participation of the requester in the planning process.
- Nature of the request.
- Degree to which public consultation and dispute resolution have taken place.

7.0 Water Storage and Distribution Alternatives

Water storage alternatives are discussed in Section 7.1. These alternative solutions have been proposed in order to address the problem/opportunity statement identified in Section 1.1.

7.1 Water Storage Alternatives

As identified in Section 5.3, the available municipal water storage is not adequate. Two scenarios will be considered which include:

- New/Expanded storage to meet Scenario 1 demands (Existing + New Development) and to provide fire protection at 79 L/s for 2 hours
- New/Expanded storage to meet Scenario 1 demands (Existing + New Development) and to provide fire protection 100 L/s for 2 hours

Scenario 2 demands were not considered due to the complete lack of interest from the existing residents that are serviced with private wells.

7.1.1 Alternative 1 – Do Nothing

This is a mandatory alternative for consideration under the MCEA and serves as a reference point for comparing other alternative solutions. The “Do Nothing” alternative means no action is taken in addressing the problem statement and this would result in not providing any additional water storage in Waldemar. Therefore, this alternative does not address the problem/opportunity statement as it also does not accommodate planned growth. It would not conform to local planning provisions and there would be a need to modify and revise existing planning policies within the County and Township.

7.1.2 Alternative 2 – Construct Storage Facility

This alternative considers addressing the storage needs by constructing additional storage in the study area. There are multiple water storage options which are selected based on the site. In the case of Waldemar, three options were considered.

7.1.2.1 Option A – In-Ground Reservoir at Existing Pumphouse (10 Station Street)

This is the existing pumphouse site that treats all of the water supplied to it by the three wells in Waldemar. As described previously in the report, this site has an in-ground reservoir that holds water that is pumped by pumps in the pumphouse out to the distribution system that provides water to all the houses connected to the system. The site is at a lower elevation which is not preferred for water towers and the site is not very big. Therefore, elevated storage (that relies on gravity only) was not considered at this location.

The in-ground reservoir would be similar to the existing infrastructure except larger. When the original design was completed back in 1990, it was intended that the reservoir

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be expanded to accommodate future development. The new storage will require upgrades to several components of the pumphouse. The specific upgrades would be determined at the detail design stage, but would include:

- New reservoir interconnected with the existing.
- New pumping system to meet the higher peak demands of future development including fire pump.
- Generator replacement including fuel tank/source. It is anticipated that the new generator would be located outside the pumphouse.
- Electrical upgrades to operate all three wells and pumps.
- Piping modifications to accommodate the new storage.
- Disinfection system upgrades to ensure primary disinfection.

A schematic of a potential expansion to existing reservoir is included in Figure 6 and photos of the existing in-ground reservoir is shown below. An expanded reservoir would look similar and would extend into an existing treed area on the site.



7.1.2.2 Option B: Standpipe at Existing Pumphouse (10 Station Street)

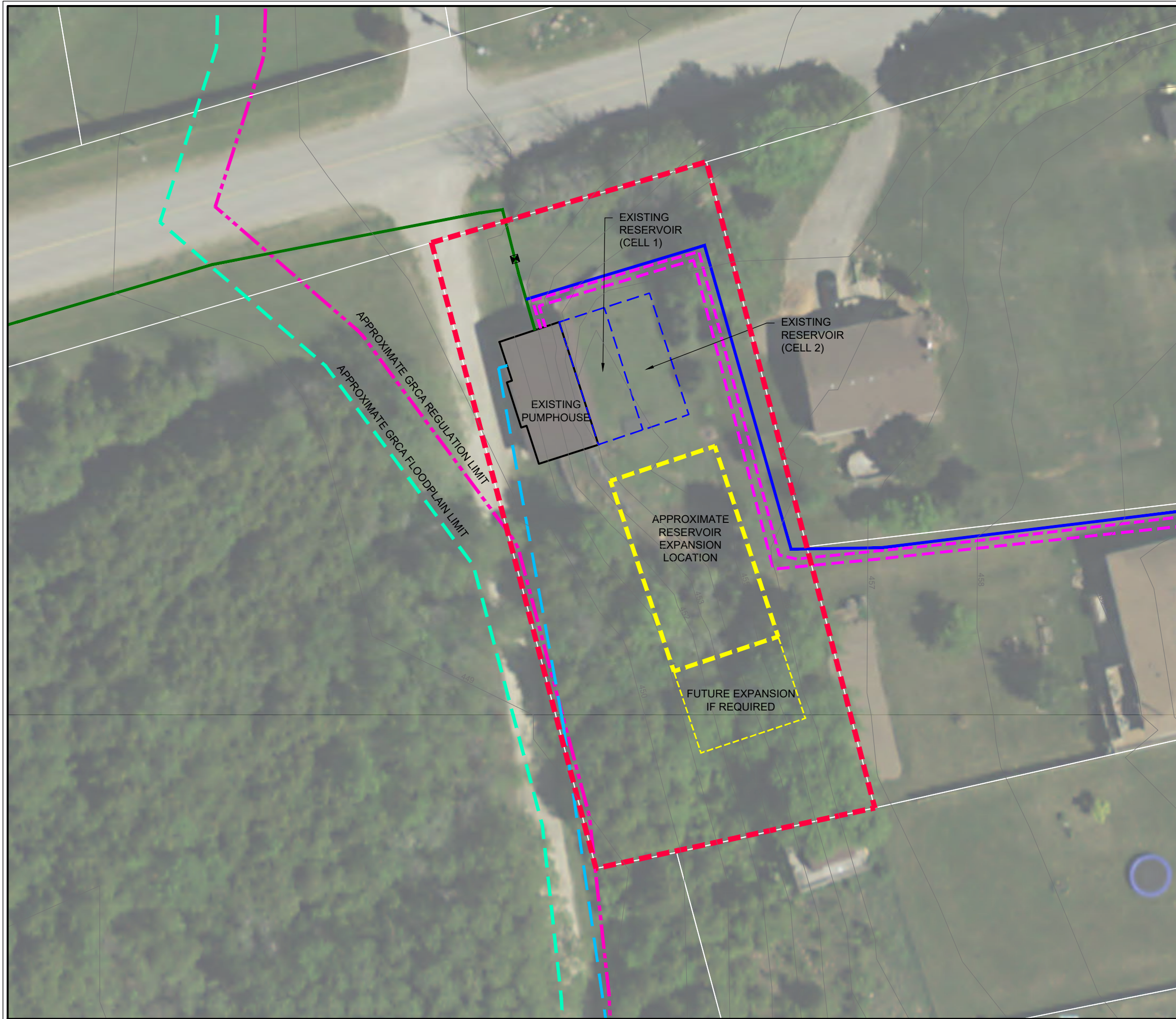
A grade level reservoir requires a highlift pumping station similar to Option A. Typically, a standpipe is used which we are considering as an option for additional storage.

Upgrades needed would include:

- Standpipe.
- Well pump replacement to address additional head requirements to fill the standpipe.
- New pumping system to meet the higher peak demands of future development including new fire pump.
- Generator replacement including fuel tank/source. It is anticipated that the new generator would be located outside the pumphouse.
- Electrical upgrades to operate all three wells and pumps.
- Piping modifications to accommodate the new storage.
- Disinfection system upgrades to ensure primary disinfection.



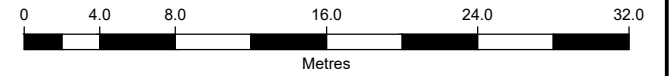
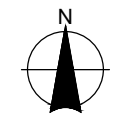
A schematic of a potential expansion to this system incorporating a standpipe on the site is included in Figure 7 with an example of a standpipe shown above.



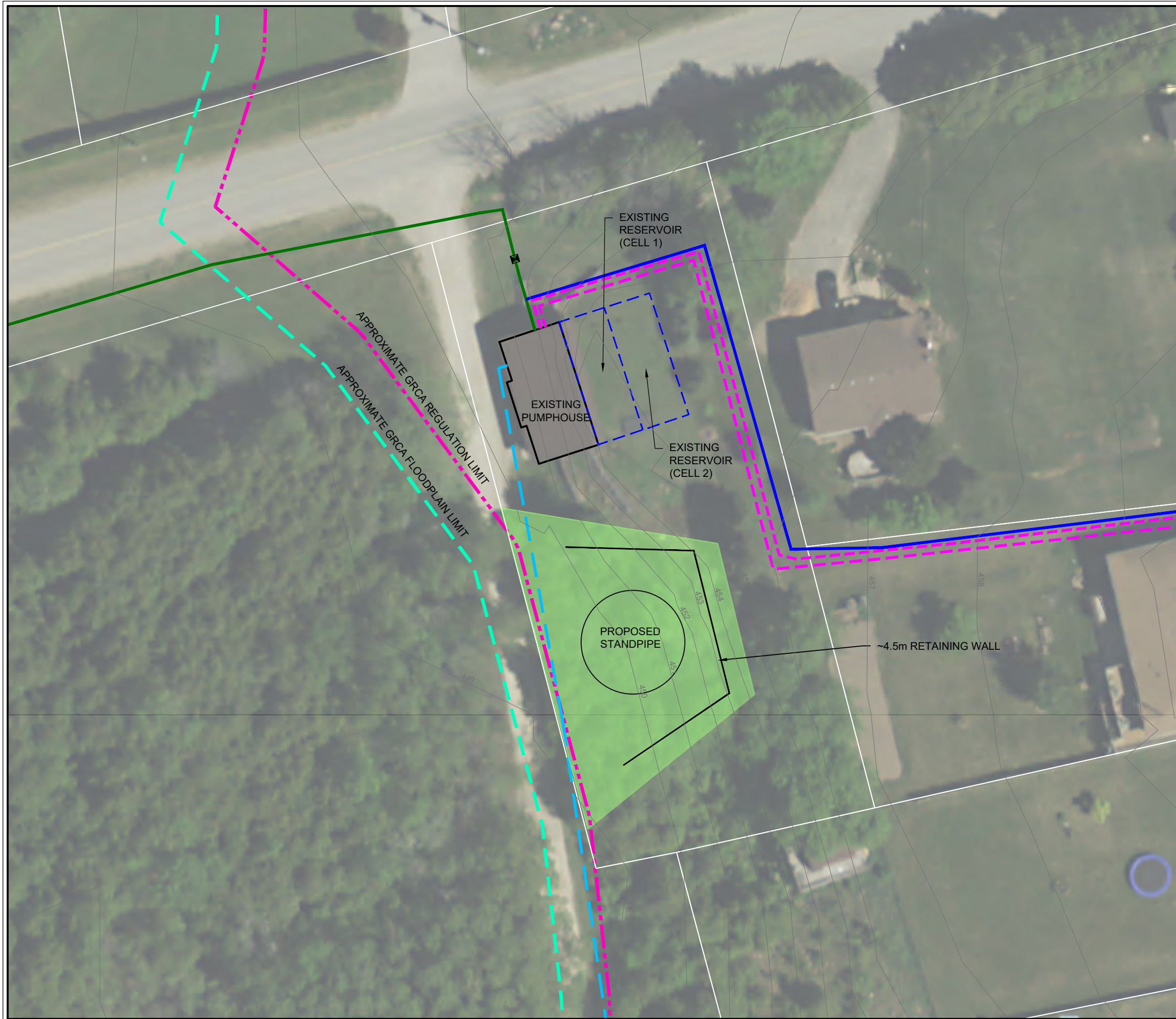
LEGEND

- EXISTING PUMPHOUSE
- EXISTING RESERVOIR
- EXISTING PARCEL
- EXISTING 150mm DIAMETER WATERMAIN
- EXISTING 200mm DIAMETER WATERMAIN
- EXISTING 75mm DIAMETER RAW WATER PIPE
- EXISTING 100mm DIAMETER RAW WATER PIPE
- HYDRANT SET
- VALVE & BOX

Air Photo Source:
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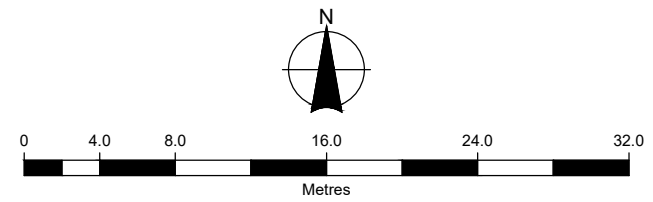


Client			
TOWNSHIP OF AMARANTH WALDEMAR			
Figure Title			
WALDEMAR WATER STORAGE MUNICIPAL CLASS EA OPTION A - PROPOSED IN-GROUND STORAGE AT EXISTING PUMPHOUSE			
Drawn	Checked	Date	Figure No.
CD	CED	January 2019	6
Scale	Project No.		
1:400	300041042		



- LEGEND**
- EXISTING PUMPHOUSE
 - EXISTING RESERVOIR
 - EXISTING PARCEL
 - EXISTING 150mm DIAMETER WATERMAIN
 - EXISTING 200mm DIAMETER WATERMAIN
 - EXISTING 75mm DIAMETER RAW WATER PIPE
 - EXISTING 100mm DIAMETER RAW WATER PIPE
 - HYDRANT SET
 - VALVE & BOX
 - APPROXIMATE EXTENT OF TREE LOSS

Air Photo Source:
 Background 2015 Air Photo obtained from Google Earth Professional / DigitalGlobe ©
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Client
**TOWNSHIP OF AMARANTH
 WALDEMAR**

Figure Title
**WALDEMAR WATER STORAGE
 MUNICIPAL CLASS EA
 OPTION B - PROPOSED STANDPIPE AT EXISTING
 PUMPHOUSE**

Drawn CD	Checked CED	Date January 2019	Figure No. 7
Scale 1:400	Project No. 300041042		

7.1.2.3 Option C: Water Tower at South West Limits of Waldemar (Sarah Properties)

This site is not owned by the Township but is designated for residential growth. The subdivision does not have draft plan approval so there is a potential that new infrastructure like a water tower could be accommodated for in the layout of the subdivision. The location at the south-west corner was chosen due to its higher elevation of approximately 475 m, which is among the highest land within Waldemar boundaries.

Due to the elevation of the land, an alternative for elevated storage (water tower) was included at an alternative. Water towers store water at a sufficient elevation to create the necessary pressure and flow by gravity to meet peak hour and fire flow demands. The shaft of the tower provides the height to maintain the appropriate pressures. Water is not stored in the shaft of the tower. A water tower at this site would need to be approximately 37 m high.

The addition of a water tower in the distribution system would require the highlift pumping system at the pumphouse to pump maximum day demand rather than the peak hour and fire flows required for the options at the existing Waldemar Pumphouse site. The fire pump at the existing pumphouse would no longer be required.

Upgrades needed would include:

- Water tower.
- Temporary driveway and watermain including easements.
- Electrical upgrades to operate all three wells.
- Significant watermain upgrades (refer to Section 8.0).

A schematic of potential site layout is shown in Figure 8 with an example of a water tower shown below.





LEGEND

 HAMLET LIMITS

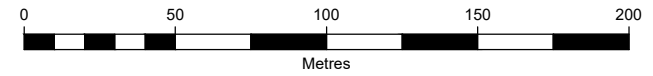
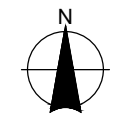
NOTE:
CONCEPTUAL PLAN -
MODIFICATIONS COULD BE REQUIRED
BASED ON DETAIL DESIGN

TEMPORARY WATERMAIN NEEDED
UNTIL DEVELOPMENT OF SUBDIVISION

TEMPORARY DRIVEWAY NEEDED
UNTIL DEVELOPMENT OF SUBDIVISION

PROPOSED
WATER
TOWER

Air Photo Source:
Background 2015 Air Photo obtained from Google Earth Professional / DigitalGlobe ©
Google Earth, use of products are subject to the Terms and Conditions of Licensed
Google Earth Software.



Client
**TOWNSHIP OF AMARANTH
WALDEMAR**

Figure Title
**WALDEMAR WATER STORAGE
MUNICIPAL CLASS EA
OPTION C - PROPOSED WATER TOWER**

Drawn CD	Checked CED	Date January 2019	Figure No. 8
Scale 1:2,500	Project No. 300041042		

7.1.3 Alternative 3 – Connect to Nearby Municipal System

Connecting to a nearby municipal system is another potential alternative. Consultation with the municipality would be required to confirm whether they have any surplus capacity and would require an agreement to obtain the additional water required. The nearby municipality may require upgrades to accommodate Waldemar, and that would need to be accounted for in the water rates.

7.1.3.1 Option A: Connect to Grand Valley

Grand Valley is the closest municipal water system to Waldemar. A potential route would be down the trail which is approximately 2.5 km. A creek crossing would be required and there are areas along the trail that are regulated by the Grand River Conservation Authority (GRCA). The Town of Grand Valley does not have surplus capacity to accommodate Waldemar. They recently underwent a water and wastewater master plan (notice of completion issued late March 2019) and they need more capacity to service their Town including additional well supply and have also selected a new water tower as the preferred alternative.

7.1.3.2 Option B: Connect to Orangeville

Connecting to the Town of Orangeville's water system is another possible option. The Route could range from 11.5 to 19 km. Multiple creek crossings would be required and there are several areas regulated by the GRCA. It would be expected the watermain would be installed in existing road right of ways under the jurisdiction of the Township, County, and Orangeville.

8.0 Distribution System Analysis

An analysis of the existing Waldemar water distribution system (shown on Figure 2) was completed to evaluate the performance of the distribution network under existing conditions and under the condition where new development is added. The water distribution system reviewed for the future is shown on Figure 9. The model results are included in Appendix E. The following sections outline the modelling parameters and modelling results.

8.1 Analysis Criteria and Assumptions

The distribution system analysis completed for both the existing and future conditions were modelled based on the below outlined criteria and conditions.

Pressure Zones

The Waldemar distribution system functions under a single pressure zone.

Roughness Coefficient (“C” Value)

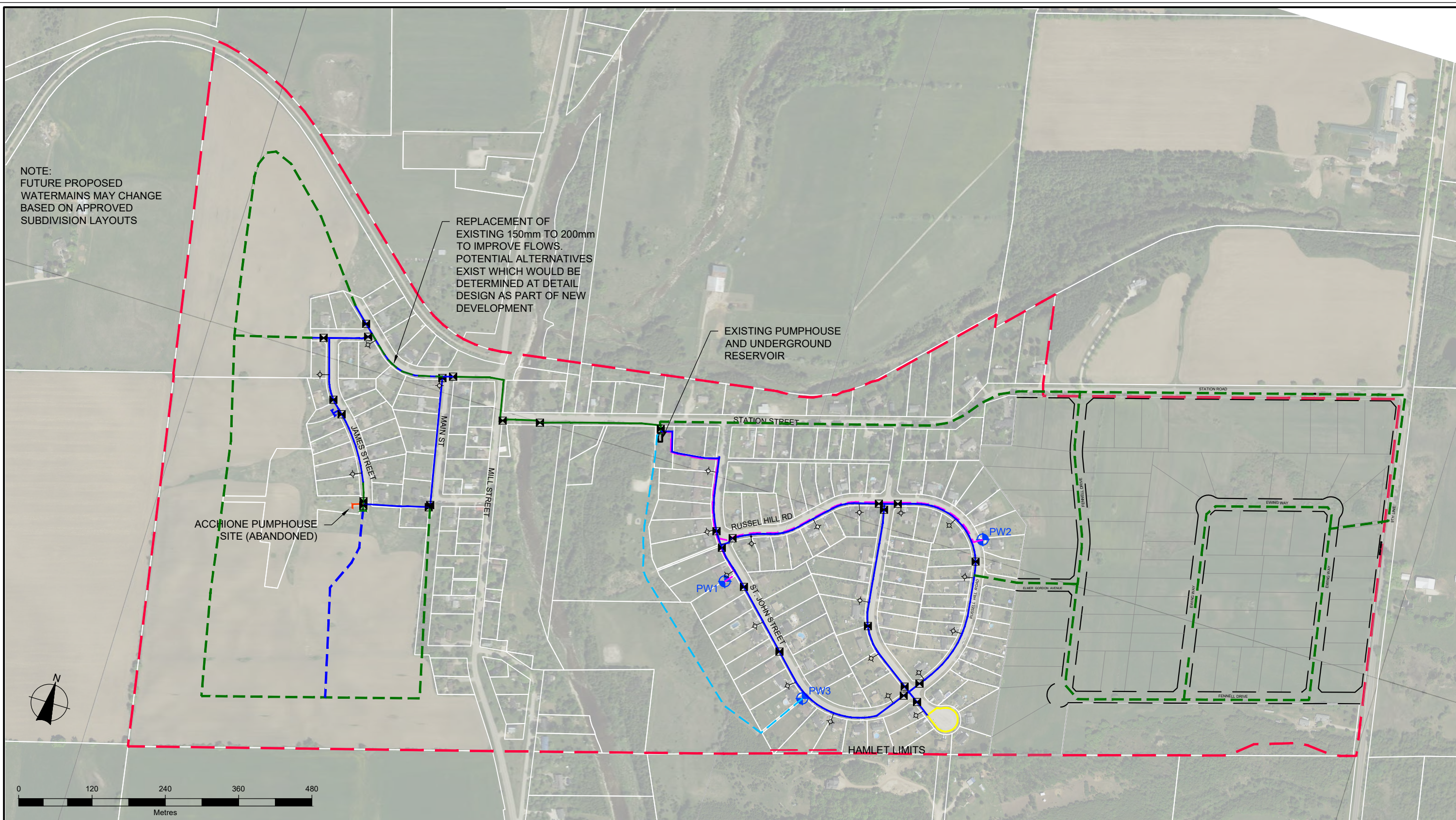
The friction factor “C” value for the piping network has been determined using MECP Guidelines and is summarized below.

Pipe Diameter (mm)	C Factor
150	100
200-250	110
300-600	120

System Pressures

Guidelines for system pressures have been based on MECP Guidelines, as summarized below.


Scenario	Optimum System Pressure	Max. System Pressure
Average Day Demand (ADD)	350 – 480 kPa (50 – 70 psi)	700 kPa (100 psi)
Maximum Day Demand (MDD)	350 – 480 kPa (50 – 70 psi)	700 kPa (100 psi)
Peak Hour Demand (PHD)	275 – 480 kPa (40 – 70 psi)	700 kPa (100 psi)
Maximum Day plus Fire Flow Demand	140 kPa minimum (20 psi)	700 kPa (100 psi)



LEGEND

	HAMLET LIMITS
	25mm DIAMETER WATERMAIN
	50mm DIAMETER WATERMAIN
	150mm DIAMETER WATERMAIN
	200mm DIAMETER WATERMAIN
	300mm DIAMETER WATERMAIN

	75mm DIAMETER RAW WATER PIPE
	100mm DIAMETER RAW WATER PIPE
	HYDRANT SET
	VALVE & BOX
	PROPOSED FUTURE 150mm DIA WATERMAIN
	PROPOSED FUTURE 200mm DIA WATERMAIN

 **BURNSIDE**

Client
**TOWNSHIP OF AMARANTH
WALDEMAR**

Figure Title WALDEMAR WATER STORAGE MUNICIPAL CLASS EA FUTURE WATER DISTRIBUTION SYSTEM			
Drawn CD	Checked CED	Date January 2019	Figure No. 9
Scale 1:6,000		Project No. 300041042	

Demands

The demands under each scenario are as outlined in Table 5.0. The target fire flow is being reviewed for two scenarios, 79 L/s and 100 L/s. The upper limit for available fire flows was determined using WaterCad. The upper limit in the analysis was set not to calculate beyond 120 L/s as this represents the physical limitation of the existing pumping system.

8.2 Existing Water Distribution System Analysis

The analysis of the existing system was completed for average day, maximum day, peak hour and maximum day + fire demand scenarios. Appendix E includes Figure A1 which identifies the location of each node and a table includes the modelling results. The system currently serves customers at elevations between approximately 450 m and 474 m.

Table 13: Summary of Modelling Results – Existing Water Distribution System

	Pumps modelled in Scenario	Optimum System Pressure (MECP Guideline)	Waldemar's Pressure Range	Comments
Average Day Demand	6.3 L/s pump in operation	350 – 480 kPa (50 – 70 psi)	352 – 586 kPa (51 – 85 psi)	<ul style="list-style-type: none"> All meet minimum optimum pressures Areas do exceed the maximum optimum range closest to the pumphouse and at the corner of Henry St. and Mill St. Though pressures are above 70 psi, they are below the MECP max 100 psi threshold.
Maximum Day Demand	Two 6.3 L/s pump in operation	350 – 480 kPa (50 – 70 psi)	379 – 621 kPa (55 – 90 psi)	
Peak Hour Demand	Two 6.3 L/s pumps in operation	275 – 480 kPa (40 – 70 psi)	345 – 586 kPa (50 – 85 psi)	
Maximum Day Demand + Fire Flow Conditions (38 L/s)	32.2 L/s fire pump + Two 6.3 L/pumps in operation (only one 6.3 L/s is spare)	140 kPa (20 psi) minimum	Greater than 140 kPa (20 psi)	Original designed based on 38 L/s in distribution system. Modelling estimates 38-58 L/s of available fire flow in the distribution system. Without upgrades to the pumping system and distribution system, 79 L/s or 100 L/s is not achievable.

As summarized in the table above, during average day, maximum day, and peak hour demand, and during emergency conditions, the system is operating per the recommended guidelines and intent of original design. With the higher fire flows now requested by the fire department (compared to the 38 L/s in the original design), the existing system would not be able to support it without changes at the pumphouse including pumping and storage. New linkages provided by the new development also help improve the fire flows available in some areas as noted in the subsequent sections.

8.3 Option A&B: New Grade Level Storage at Existing Pumphouse site

The analysis for the future scenario was completed for average day, maximum day, peak hour and maximum day + fire demand scenarios. Modelling was based on pump replacements for the upgraded system, and for the purposes of modelling, to achieve the 100 L/s of available fire flow in the system. If 79 L/s is selected as the fire flow, similar results could be designed for through pump selection at the detail design stage. In addition, Option A and B would produce similar results, so just one option was analyzed for modelling purposes. Appendix E includes Figure A2 which identifies the location of each node and a table includes the modelling results at each node. The standpipe was modelled using a high water level of 469.6 m. Booster pumps were modelled following the standpipe. One pump was set to meet the Average Day Demands, at a flow 3.6 L/s and a TDH of 42.4 m. A second pump was modelled to turn on to meet the Maximum Day and Peak Hour Demands at a flow of 10 L/s at a TDH of 42.4 m. A third fire pump was modelled for the fire flow scenario at a flow of 100 L/s and a TDH of 58 m.

The system would serve customers at elevations between approximately 450 m and 476 m. The proposed watermain are shown on Figure A2 but are subject to modification through the detail design of each development.

Table 14: Summary of Modelling Results – In-Ground Reservoir or Standpipe

	Pumps modelled in Scenario	Optimum System Pressure (MECP Guideline)	Waldemar's Pressure Range	Comments
Average Day Demand	3.6 L/s pump in operation	350 – 480 kPa (50 – 70 psi)	352 – 621 kPa (51 – 90 psi)	<ul style="list-style-type: none"> All meet minimum optimum pressures. Areas do exceed the maximum optimum range closest to the pumphouse and at the corner of Henry St. and Mill St. Though
Maximum Day Demand	3.6 L/s and 10 L/s pump in operation	350 – 480 kPa (50 – 70 psi)	400 – 669 kPa (58 – 97 psi)	
Peak Hour Demand	Single 3.6 L/s and Single 10 L/s pump in operation	275 – 480 kPa (40 – 70 psi)	283 – 558 kPa (41 – 81 psi)	

				pressures are above 70 psi, they are below the MECP max 100 psi threshold.
Maximum Day Demand + Fire Flow Conditions (100 L/s)	New fire pump required (old one would not meet the new demands)	140 kPa minimum (20 psi)	Greater than 140 kPa (20 psi)	Pressures are above 20 psi, but the minimum fire flow of 100 L/s is not achieved everywhere. Modelling estimates 72 L/s is the minimum. The average was 86 L/s.

As summarized in the table above, during average day demand, maximum day demand, and peak hour demand the system is operating per the recommended guidelines.

The desired fire flow is somewhere between 79 – 100 L/s as noted earlier in the report. The system cannot achieve 100 L/s in every area due to high headlosses caused by small of pipe diameters. Here are some general comments:

- The addition of the 73-lot subdivision in the east will involve construction of a new watermain down Station Street. This provides a new connection to the existing east subdivision (Waldemar Heights) which will improve fire flows. The east fire flows for the subdivisions ranged from 72 L/s to 98 L/s with 72 L/s at the Peter Court hydrant. All of the new watermains will be constructed as 200 mm dia. watermains. We reviewed an option of increasing some of the new watermains to 250 mm dia., but found a greater benefit if down the road, the future replacement of some of the existing watermains were increased from 150 mm dia to 200 mm dia. It would not be financially viable to replace all of the existing watermains until they have reached end of life. We note there can be multiple arrangements to increase watermains to improve flows and we have included a few scenarios that we reviewed in Appendix E (all labelled as Figure A3).
- The fire flows on the west side range from 78 L/s to 88 L/s which are slightly lower compared to the east side. Fire flows are slightly lower on the east side. This is because there is just one pipe across the river that brings the drinking water to the west side. As part of any future development on the west side, the developer would be required to replace at least one segment of existing 150 mm dia. watermain to provide a 200 mm loop (for example on Henry Street, starting at Main Street to the existing dead end). All of the new watermains would be installed as 200 mm in size. Available fire flows in the existing subdivision can be improved by increasing the watermain size, but similar to above we would recommend that be completed when the watermain has reached its end of life.

8.4 Option C: Water Tower at South West Limits of Waldemar (Sarah Properties)

The analysis for the future scenario was completed for average day, maximum day, peak hour and maximum day + fire demand scenarios. Since there is minimal difference between a fire flow of 100 L/s and 79 L/s, modelling was based on 100 L/s fire flow. This is a conservative approach should the system only be required to provide 79 L/s. Appendix E includes Figure A4 which identifies the location of each node and a table includes the modelling results at each node. The system would serve customers at elevations between approximately 450 m and 476 m. The proposed watermains are shown on Figure A4 but are subject to modification through the detail design of each development.

The water tower was modelled as a reservoir with a high water level of 511 m. The pumps were left as the existing pumps, with a flow of 6.31 L/s and a TDH of 60 m. One pump was turned on for the average day demand and two pumps were turned on for M day and peak hour demand. With the water tower, the existing pumps were sufficient to meet the demands for each scenario while staying within the recommended pressures ranges.

Table 15: Summary of Modelling Results – Water Tower

	Pumps modelled in Scenario	Optimum System Pressure (MECP Guideline)	Waldemar's pressure range?	Comments
Average Day Demand	6.3 L/s pump in operation	350 – 480 kPa (50 – 70 psi)	345 – 614 kPa (50 – 89 psi)	<ul style="list-style-type: none"> All meet minimum optimum pressures Areas do exceed the maximum optimum range closest to the pumphouse and at the corner of Henry St. and Mill St. Though pressures are above 70 psi, they are below the MECP max 100 psi threshold.
Maximum Day Demand	6.3 L/s pump in operation	350 – 480 kPa (50 – 70 psi)	345-614 kPa (50-89 psi)	
Peak Hour Demand	Two 6.3 L/s pumps in operation	275 – 480 kPa (40 – 70 psi)	338-614 kPa (49 – 89 psi)	
Maximum Day Demand + Fire Flow Conditions	Two 6.3 L/pumps in operation	140 kPa minimum (20 psi)	Greater than 140 kPa (20 psi)	Pressures are above 20 psi, but the minimum fire flow of 100 L/s is not achieved everywhere. Modelling estimates 50 L/s is the minimum. The average was 81 L/s.

The desired fire flow is somewhere between 79 – 100 L/s as noted earlier in the report. The water tower at the proposed location improves fire flow in the subdivision west of the Grand River. All are above the 100 L/s desired fire flow while the east side ranges from 52 L/s to 69 L/s.

There can be multiple arrangements to increase watermains to improve flows and we have included a few scenarios in the Appendix E for consideration (all labelled as Figure A5). However, at minimum the existing watermain on Station Street would need to be increased in size to be able to accommodate higher flows in the west end (or providing another watermain feed across the river). It is possible to achieve the desired 79 L/s to 100 L/s range with watermain upgrades, which from a financial perspective would be reviewed in greater detail as existing watermains reach their end of life.

8.5 Summary of Modelling Results

The following summarizes the results of the modelling:

- All meet minimum optimum pressures for average day, max day, and peak hour demand as recommended in the MECP guideline.
- There are areas that exceed the maximum optimum range as recommended in the MECP guideline. These areas are located closest to the pumphouse and at the corner of Henry St. and Mill St.) but are below the maximum threshold of 100 psi.
- The water tower provides better fire flow in the west side of Waldemar, with the distribution system being able to provide the 100 L/s of fire flow in the west subdivision. The east side however ranges from 52 L/s to 69 L/s.
- The expansion at the existing site (in-ground or grade level) is expected to produce fire flows in the range of 78 L/s to 88 L/s and on the east side, 72 L/s to 98 L/s.

9.0 Description of the Existing Natural Environment

The following sections discuss the natural environment within the study area. The natural environmental features are shown on Figure 10.

9.1 Terrestrial Environment

A desktop review of the terrestrial environment for the possible sites was completed prior to Burnside staff conducting a field reconnaissance on July 3rd, 2018. Previous reporting was also reviewed during the background information review including a Tree Inventory and Preservation Plan completed by Beacon Environmental (February 2015). During the field investigation, a detailed Ecological Land Classification (ELC), as per the methodology described in the Ecological Land Classification for Southern Ontario (Lee et al 1998), was completed to characterize the subject areas.

Option A and B – Waldemar Pumphouse (10 Station Street)

The site was reviewed as a potential alternative for the reservoir expansion. The existing pumphouse and reservoir are surrounded primarily by regularly maintained turf grass (MEM). A small forb dominated meadow (MEFM1) exists directly south east of the pumphouse. Asters, Goldenrods, and Burdock dominate this ecosite. Coniferous hedgerows (FOCM5) dominated by Eastern White Cedar and Colorado Blue Spruce are present north of the pumphouse, along Station Street as well as east of the pumphouse, parallel to the property boundary.

South of the pumphouse, the topography slopes west with the top of slope on the eastern adjacent property. This slope is heavily dominated by densely populated Eastern White Cedar (FOCM2-2). Little ground vegetation is present in this forest with the exception of young European Buckthorn. The young cedar stand is part of a larger tract of forest that continues west and south beyond the property limits.

West of the gravel driveway, a thin row of Balsam Poplar and Green Ash dominate the canopy while young Trembling Aspen dominate the subcanopy (FODM8-1). Ferns, Dogwoods, and young Eastern White Cedar dominate the ground cover. The GRCA's floodplain extends to the eastern limit of this ecosite.

Option C – South-West Corner of Waldemar (Sarah Properties)

Sarah Properties is actively farmed with several scattered open grown trees along the fencerows. Treed fencerows are identified along the western and southern property boundary while a residential subdivision provides an eastern property boundary. Reed Canary grass dominates a meadow (MEGM3-8) at the southern limit of James St.

Beacon Environmental's 2015 arborist investigation was reviewed to provide species composition information in the southwest corner of the property, specifically the treed fencerow. Mature Sugar Maples and White Elm dominate the fencerows.

9.1.1 Wildlife and Wildlife Habitat

The Ontario Breeding Bird Atlas (OBBA) was reviewed for records of birds breeding in the vicinity of the study area. The results of this review are provided in Appendix F. 98 species were identified (OBBA square 17NJ56) of which 5 are considered Threatened and 1 is considered Special Concern within the province. Threatened species will receive species protection, as well as habitat protection, under Ontario's *Endangered Species Act*.

Common species such as White Tailed Deer, Grey Squirrel, Coyote, and Raccoon are expected to utilize these properties. Both sites offer different values in terms of habitat suitability. However, habitat in these areas is considered marginal and will not provide significant habitat to local wildlife or any SAR.

Species at risk and their associated habitat requirements are discussed further in Section 9.2.

9.2 Species at Risk, Designated Species and Designated Areas

A review of the NHIC database did not identify any recent records within query square 17NJ5760 of rare fauna within or in the vicinity of the study area. There was a single Natural Area record identified as the Grand River in the NHIC query (Appendix F).

There were no records for provincially rare vegetation communities.

The Waldemar Area Earth Science Area of Natural and Scientific Interest (ANSI) is identified within and adjacent to the subject lands for this proposal. No additional information was available for this feature during the NHIC database inquiry.

The Ontario Breeding Bird Atlas (OBBA) data identified 6 species that are probable to be utilizing their respective habitats within the query area. The 6 protected species identified through the OBBA query are provided below. The natural environment within the Study Area provides suitable habitat for 3 of the Threatened species including Bobolink, Eastern Meadowlark, and Barn Swallow. The remaining 2 Threatened and 1 Special Concern species are unlikely to be found within the subject properties as the habitats on-site are not suitable and do not meet typical habitat requirements for these at-risk species. Species that are considered to be Threatened within the province will receive species protection, as well as habitat protection, under Ontario's *Endangered Species Act*.

The following species have been identified during the OBBA Query to have been historically located within the vicinity of the study area:

Threatened

- Bobolink (*Dolichonyx oryzivorus*)
- Eastern Meadowlark (*Sturnella magna*)

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- Wood Thrush (*Hylocichla mustelina*)
- Barn Swallow (*Hirundo rustica*)
- Bank Swallow (*Riparia riparia*)

Special Concern

- Eastern Wood Pewee (*Contopus virens*)

Bobolink and Eastern Meadowlark are most often found in grasslands and hayfields. These songbirds are not likely found throughout the Sites due to the ongoing farming activities and lack of suitable cover but may be located within the unmaintained Reed Canary grass areas or on adjacent properties in natural meadows and active hay fields.

The pumphouse may provide suitable habitat on-site for Barn Swallow nesting. The structure was inspected for active and in-active Barn Swallow nests, however, at the time of the field inspection, no nests were observed. It is unlikely that these species are utilizing the subject property. The pumphouse is not being demolished.

9.3 Aquatic Environment

The Grand River bisects Waldemar. The sites considered for new storage facilities are not located near aquatic features however the existing pumphouse site is just outside the floodplain limits.

9.4 Natural Hazards

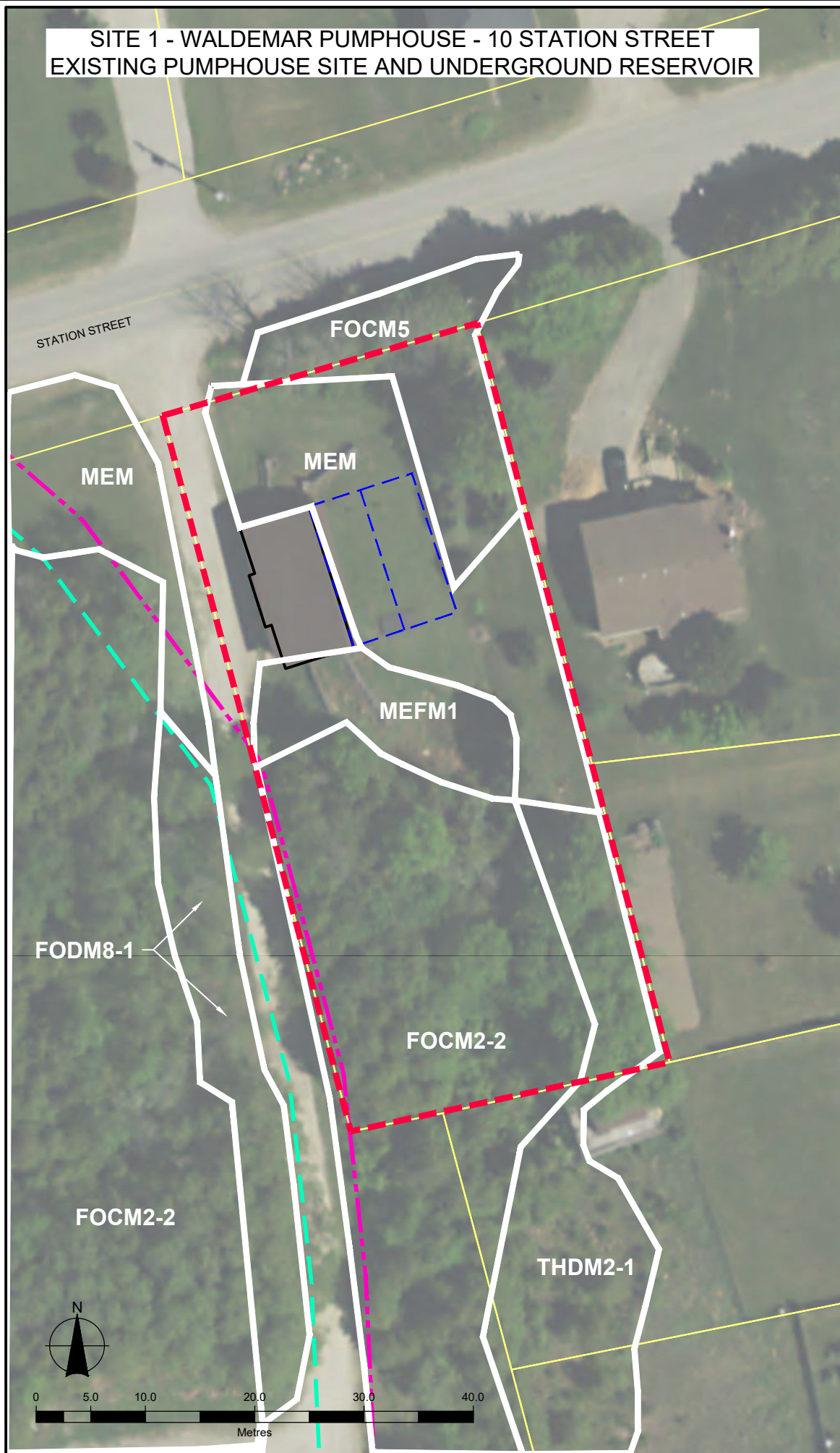
The GRCA regulates development on hazard lands through the Grand River Conservation Authority: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses (O.Reg.150/06) which is in conformance with O.Reg.97/04, also known as the “Generic Regulation”. The regulation includes watercourses, floodplains, erosion-prone slopes, wetlands and the areas directly adjacent to these hazardous features.

It must be recognized that the Generic Regulation limit does not constitute a “no development” zone. It simply identifies a “screening area” where study of the identified feature is required, and a permit must be obtained.

Work at the existing pumphouse (Option A and B) would likely require approval from the GRCA as their regulated area extends slightly into the site however through consultation if we remain outside the regulatory limit for the works a permit will not be required. Option C, the south west corner of the Sarah Properties site is outside the GRCA regulated area and no permits would be required.

**SITE 1 - WALDEMAR PUMPHOUSE - 10 STATION STREET
EXISTING PUMPHOUSE SITE AND UNDERGROUND RESERVOIR**

**SITE 2 - ACCHIONIE PUMPHOUSE SITE
(ABANDONED)**



LEGEND

- STUDY SITE BOUNDARY
- EXISTING PUMPHOUSE
- EXISTING RESERVOIR
- GRCA FLOODPLAIN
- GRCA REGULATION LIMIT

ECOLOGICAL LAND CLASSIFICATIONS (ELC)

- AG AGRICULTURE
- FOCM2-2 DRY-FRESH WHITE CEDAR CONIFEROUS FOREST
- FOCM5 CONIFEROUS HEDGE-ROW
- FODM1-1 NATURALIZED DECIDUOUS HEDGE-ROW
- FODM8-1 FRESH-MOIST POPLAR DECIDUOUS FOREST
- MEFM1 DRY-FRESH FORD MEADOW
- MEGM3-8 REED CANARY GRASS GRAMINOID MEADOW
- MEM MIXED MEADOW (MANICURED)

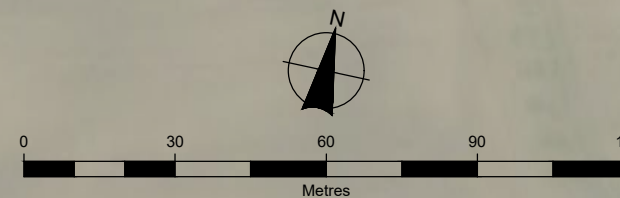
Air Photo Source:
Background 2015 Air Photo obtained from Google Earth Professional / DigitalGlobe © Google Earth, use of products are subject to the Terms and Conditions of Licensed Google Earth Software.



Client
**TOWNSHIP OF AMARANTH
WALDEMAR**

Figure Title
**WALDEMAR WATER STORAGE
MUNICIPAL CLASS EA
EXISTING ENVIRONMENTAL CONDITIONS**

Drawn CD	Checked CED	Date January 2019	Figure No. 10
Scale As Noted	Project No. 300041042		



10.0 Social and Cultural Environment

The social and cultural environment is considered as part of the EA to avoid significant negative impacts in the community. Impacts of a project on historical buildings, archaeological sites, or scenic landscapes that shape the community should be avoided. The social and cultural environment also considers impacts of how a project may impact people in the community with respect to adjacent land uses, any nuisances related to the project such as noise, overall aesthetics, traffic, air quality, and any temporary impacts associated with construction.

10.1 Local Planning Provisions

10.1.1 Provincial Policy Statement

The 2014 Provincial Policy Statement (PPS) states that municipal projects should be directed to existing settlement areas, create stronger and improved communities, and have little to no impact on the natural features of the area. In general, projects should have consideration for future needs to ensure the benefits of the project are far-reaching. Section 1.6 of the PPS contains specific guidance on Infrastructure and Public Service Facilities:

“1.6.1 Infrastructure, electricity generation facilities and transmission and distribution systems, and public service facilities shall be provided in a coordinated, efficient and cost-effective manner that considers impacts from climate change while accommodating projected needs.

Planning for infrastructure, electricity generation facilities and transmission and distribution systems, and public service facilities shall be coordinated and integrated with land use planning so that they are:

- a) financially viable over their life cycle, which may be demonstrated through asset management planning; and*
- b) available to meet current and projected needs.*

1.6.2 Planning authorities should promote green infrastructure to complement infrastructure.

1.6.3 Before consideration is given to developing new infrastructure and public service facilities:

- a) the use of existing infrastructure and public service facilities should be optimized; and*
- b) opportunities for adaptive re-use should be considered, wherever feasible.*

1.6.4 Infrastructure and public service facilities should be strategically located to support the effective and efficient delivery of emergency management services.

1.6.5 Public service facilities should be co-located in community hubs, where appropriate, to promote cost-effectiveness and facilitate service integration,

access to transit and active transportation. As such, improvements made to public infrastructure should be consistent with permitted uses of the adjacent land use designations.”

10.1.2 Official Plan

Land Use for all potential water storage sites was determined according to Schedule A-1 of the Township of Amaranth Official Plan (OP) (2004). A copy of Schedule A-1 is included in Appendix G. Both sites are designated as Community Residential. Public facilities are not specifically mentioned as a permitted use, however in section 3.9.6 b) of the OP, *New transportation and utility facilities should avoid Environmental Protection Areas and Agricultural designated areas wherever possible. However, these uses shall be permitted in all designations.*

10.1.3 Zoning By-Law

The existing pumphouse site is zoned as Hamlet Residential, and water tower site is zoned as Rural. Neither specifically identifies municipal water infrastructure as a permitted use, however as per 3.18.1 of the Zoning By-Law:

“the provision of this By-Law shall not apply to prohibit the use of any lot or the erection or use of any building or structure for the purposes of a Public User by any Public Authority.

Where such building, structure or lot is located in any zone for the purpose of a Public Use, the following shall apply:

- a) No goods, materials or equipment shall be stored in the open, except as permitted in such zone;*
- b) Any zone provision of the zone within which the building, structure or use is located shall be complied with except as otherwise provided in subsection 3.18.2*
- c) Any buildings in any Residential Zone shall be designed, located and maintained in general harmony with residential buildings of the type permitted in such zone.*

This provision shall not affect any requirements for completion with the Building Code, Municipal Act, S.O. 2001, c.25, as amended from time to time, or any other applicable legislation or regulation associated therewith.

Nothing in this By-law shall prevent the use of any land as public park, stormwater management facility, community park, playground, public walkway, road allowance or as a site of a statue, monument, cenotaph, fountain or other memorial or ornamental structure.”

10.2 Heritage Resources

Neither of the sites include any buildings, structures or monuments that would be considered heritage resources.

10.3 Cultural Resources

Option A and B – Waldemar Pumphouse (10 Station Street)

A Stage 1-2 Archeological assessment was completed for the site which has been included in Appendix H. The physical assessment was completed in October 2018. No archaeological material or sites were located during the assessment of the property.

Option C – South West Corner of Waldemar (Sarah Properties)

The south west corner of Sarah Properties is more than 300 m from the Grand River therefore having low archaeological potential. Burnside is aware of a Stage 1 Archeological assessment (completed in 2011) and a Stage 2-3 Archeological assessment (completed in 2014). Within the area of the water tower, there were no archaeological materials or sites that were located during the assessment of the property. There was a site that required further assessment (up to Stage 3) but was not considered to have cultural value and did not require further assessment.

10.4 Nuisance Impacts

All alternatives include temporary impacts associated with construction. This includes increased traffic to accommodate construction, noise impacts from construction and the use of heavy equipment and air quality issues such as dust. There could also be water shut down periods associated with construction in order to perform construction.

No significant traffic impacts are anticipated related to any of the alternatives. Daily visits by the Township's water operator and other routine deliveries of supplies are required, but they are considered very minimal.

Aesthetics of a project also need to be considered with respect to the compatibility of the project and the surrounding land uses. Some consider water towers and standpipes to be aesthetically unpleasing and obtrusive, while others sometimes consider it to be unobtrusive. They can be an identifiable landmark, depending on their location and height.

There has been an historical expectation that the storage would be expanded at the existing pumphouse site as the original design was completed before the Municipal Class EA process existed. The area where additional storage would be placed is in a treed area on site. Though it is always preferred to avoid tree removal, it cannot be avoided with Option A or B. For a new water storage site, sites that are the furthest away from residential uses are preferred. While the water tower site is currently the

furthest away from existing residential areas, it will eventually be situated among/near residential properties when the Sarah Properties lands are development.

Option A – In-Ground Reservoir at the Existing Waldemar Pumphouse

Expansion of the existing in-ground reservoir was part of the original design intention before the Environmental Assessment Act was in place. The pumphouse shares its entrance with Waldemar Park and is adjacent to residential properties. The gradient of the site is steep (30% range). The area remaining on the site that could be devoted to the expanded reservoir is treed and removal would be required to accommodate the work. An in-ground reservoir blends in with the existing land area and would be below the surface of the ground. It would look very similar to the existing reservoir which is depicted earlier in the report.

Option B – Standpipe at the Existing Waldemar Pumphouse

A standpipe has the potential to take up less overall area, reducing tree loss as the height can be increased however it is an above ground structure. Given the grade differential across the site, a significant size retaining wall would also be required to provide a flatter area to place the tank. An example of a standpipe was provided earlier in the report.

Option C – Water Tower at South West Limits of Waldemar (Sarah Properties)

A water tower is an above ground structure. Some people find them obtrusive, while others find them to be a landmark. The pedestal increases the height of the storage in order to provide the pressure needed for the water to meet demands in the system by gravity rather than a pumping system.

10.5 Land Acquisition

The existing pumphouse site (for Option A and B) is owned by the Township, however for the water tower site (Option C), land acquisition would be required.

10.6 Social Impacts

Historically, Waldemar had two water systems. One water system, constructed in 1987 serviced what is often referred to as the Acchione subdivision, consisting of 23 lots off James Street, Evans Avenue, and Main Street. Its water system consistent of one well (not in use anymore) and pumphouse (now only used as a sampling location). The other water system, constructed in the early 1990's serviced what is often referred to the Waldemar Heights Subdivision, consisting of 93 lots off of Peter Street, Peter Court, Russel Hill Road, and St. John Street. Its water system consisted of two wells (PW1 and PW2), pumphouse and underground storage reservoir still in use today. The systems were not connected to one another.

The Walkerton tragedy in 2000 invoked many changes to regulations surrounding drinking water that impacted the Waldemar's two water systems. As a result of additional studies required, the Acchione Well was suspected to be under the influence of surface water and was not adequately filtered, which meant additional treatment was required at a great expense as the water needed to be treated as if it was a surface water source. The Township abandoned the Acchione well and connected the two distribution systems together, drilled a new well (referred to as PW3), and implemented upgrades at the Waldemar Pumphouse to meet the regulations. Though provincial and federal governments provided some financial assistance, there was still a cost to users of the water system for the upgrades. Residents who still live in Waldemar have not forgotten about the financial burden that was placed on them at that time for the drinking water system that was not that old. We received many comments from the public that want to ensure that no additional costs are allocated towards them as a result of new development.

In light of the historical costs related to the water system, Council has clearly indicated, that any upgrades to the water system should be solely developer funded with no cost to existing water users.

11.0 Evaluation of Alternatives

This section identifies the alternatives that were considered as a part of this Schedule B MCEA. The above noted alternatives were evaluated using natural environment, social/cultural environment, financial factors and technical factors. An evaluation of each of the alternatives, using the identified criteria, is presented in Table 16.

Table 16: Evaluation of Alternatives

Criteria for Evaluating Alternative Sites	Alterative 1 Do Nothing	Alternative 2 – Construct Storage Facility			Alternative 3 Connect to Nearby Municipal System
		Existing Waldemar Pumphouse (10 Station Street)		South West Limits of Waldemar	
		Option A: In-Ground Reservoir	Option B: Standpipe	Option C: Water Tower	
A Natural Environment	Most Preferred	Partially Preferred	Partially Preferred	Partially Preferred	Least Preferred
1 Terrestrial Habitat	No impact over existing	Tree removal is required to accommodate the storage expansion.	Tree removal is required to accommodate the storage expansion. Though not expected to make a significant impact, the standpipe could be extended up, rather than out to minimize tree loss to the extent possible.	Most of the site is already farmed and therefore expect there to be minimal impact.	Both options would require further environmental study. Creek/tributary crossings would be required and new watermain would need to go through environmental areas regulated by the GRCA. Due to the significant cost anticipated with the projects, these environmental studies were not completed as part of this study.
2 Designated Sites/Species		No designated sites or species in the area.			
3 Aquatic Habitat		The site does not have a water course and therefore no impact over existing conditions.			
4 Hazard Lands		The site has a very small sliver of land within the GRCA's regulatory area and is just outside the Grand River's floodplain. We did not consider land within the Waldemar park as an option because the majority is floodplain land.	Not located within the GRCA's regulatory area.		
5 Construction Impacts		Potential temporary impacts on soils and surface water quality because of construction activities.			

Criteria for Evaluating Alternative Sites	Alterative 1 Do Nothing	Alternative 2 – Construct Storage Facility			Alternative 3 Connect to Nearby Municipal System Option A: Grand Valley Option B: Orangeville
		Existing Waldemar Pumphouse (10 Station Street)		South West Limits of Waldemar	
		Option A: In-Ground Reservoir	Option B: Standpipe	Option C: Water Tower	
B Social and Cultural Environment	Least Preferred	Most Preferred	Partially Preferred	Partially Preferred	Least Preferred
1 Conformity to Local Planning Provisions	Little conformity, given that the Township’s Official Plan designates residential growth for various area in Waldemar. Upgrades to the water system are required to accommodate growth and an already draft plan approved subdivision.	The additional storage would be designed to accommodate future growth.			Grand Valley doesn’t have enough capacity for their expected growth and have just completed a Master Servicing Plan. We did not contact the Town of Orangeville due to the expected cost of the project.
2 Heritage Resources (built heritage, landmarks, significant landscapes)	No impact over existing conditions.	No impact over existing conditions.			We do not anticipate impacts as majority of work will be within existing road right of ways.
3 Cultural Resources (archaeological features)	No impact over existing conditions.	A Stage 1 and 2 Archeological Assessment was completed in 2018 and no additional assessment is required. No impact anticipated since no archaeological material or sites were located during the assessment of the property.	Burnside is aware of completed assessments including a Stage 1 in 2011 and a Stage 2-3 in 2014. There is no impact anticipated in the area of the water tower site.	Archeological Assessments may need to be completed should this alternative be selected.	

Criteria for Evaluating Alternative Sites	Alternative 1 Do Nothing	Alternative 2 – Construct Storage Facility			Alternative 3 Connect to Nearby Municipal System
		Existing Waldemar Pumphouse (10 Station Street)		South West Limits of Waldemar	
		Option A: In-Ground Reservoir	Option B: Standpipe	Option C: Water Tower	
4 Nuisance Impacts	No impact over existing conditions.	<ul style="list-style-type: none"> - Potential impacts on air quality (noise, dust, emissions) during construction. - Potential impacts on air quality because of the standby emergency generator required to supply back up power including routine monthly testing. - An expanded underground reservoir would be integrated to the surroundings like the existing reservoir. - Loss of the existing trees to accommodate the expansion. As part of the design the trees closest to the property line would try to be preserved in order to provide some visual screening for the adjacent residential properties. - Expect some water disruptions to accommodate construction. 	<ul style="list-style-type: none"> - Potential impacts on air quality (noise, dust, emissions) during construction. - Potential impacts on air quality because of the standby emergency generator required to supply back up power including routine monthly testing. - Some consider standpipes to be obtrusive as they are above-grade. Large retaining wall also needed for this option due to steep gradients on site. - Loss of existing trees required to accommodate expansion. To reduce tree loss, the standpipe could be built up higher, to reduce the diameter of the tank to the extent possible. - Expect some water disruptions to accommodate construction. 	<ul style="list-style-type: none"> - Disruptions during construction would include noise, dust and emissions. These would be minimized as best as possible. May be disruptions in water supply to accommodate the connection of the new storage. - Some consider elevated storage to be aesthetically unpleasing and obstructive, while others sometimes consider it to be either unobtrusive or positive in the sense that it provides an identifiable landmark. 	<ul style="list-style-type: none"> - Potential impacts on air quality (noise, dust, emissions) during construction. - Aesthetically the watermain is mostly buried except for flushing locations or air release valves so it has minimal impact. <p>Option A:</p> <ul style="list-style-type: none"> - During the duration of the construction, the trail would likely be closed. This is a general nuisance to those who use the trail. <p>Option B:</p> <ul style="list-style-type: none"> - Construction duration would be longer compared to option A - Route would be within road right of way, and traffic would likely be impacted during construction
5 Land Acquisition	Not required.	Not required. The land owned by the Township.		Land is not owned by the Township. Land acquisition would be required.	Not required as watermain would be kept within existing municipal road right of ways.

Criteria for Evaluating Alternative Sites	Alternative 1 Do Nothing	Alternative 2 – Construct Storage Facility		Alternative 3 Connect to Nearby Municipal System	
		Existing Waldemar Pumphouse (10 Station Street)			South West Limits of Waldemar
		Option A: In-Ground Reservoir	Option B: Standpipe		Option C: Water Tower
C Technical Factors	Least Preferred	Most Preferred	Partially Preferred	Least Preferred	Least Preferred
1 Capability to provide storage for existing and future development	Storage is undersized for current guidelines and would not be enough for future development	Yes, but cannot meet desired fire flows in the distribution system without watermain upgrades.		Yes, but cannot meet desired fire flows in the distribution system without watermain upgrades.	Option A – No, as Grand Valley does not have enough capacity currently Option B –Due to cost we did not contact the Town of Orangeville.
2 Site Considerations	No change	<ul style="list-style-type: none"> - Existing driveway would be utilized for access - The terrain is steep making construction more difficult - The site uses the same driveway as the Waldemar Park. Additional construction considerations will be needed. - Site is owned by the Township - Site is not suitable for water tower due to the elevation of the land and therefore only considered for Option C. - The site would also not be large enough for an elevated tower. 		<ul style="list-style-type: none"> - Temporary driveway needed until the area is developed. - The water tower would have a single feed into the system until the area is developed. - Site is not owned by the Township - Site is at one of the higher elevations in Waldemar reducing the overall height of the pedestal to the extent possible. - Site size should consider impacts of shadows caused by the above grade structures, safety buffers for the provision of falling ice, structural failure and/or tank collapse and aesthetic buffer if applicable. 	<ul style="list-style-type: none"> - Not all the right of ways will be under the jurisdiction of the Township (also County of Dufferin and Town of Orangeville) - Overall larger area of construction.

Criteria for Evaluating Alternative Sites	Alternative 1 Do Nothing	Alternative 2 – Construct Storage Facility		Alternative 3 Connect to Nearby Municipal System	
		Existing Waldemar Pumphouse (10 Station Street)			South West Limits of Waldemar
		Option A: In-Ground Reservoir	Option B: Standpipe		Option C: Water Tower
3 Reliability	<ul style="list-style-type: none"> - No change over existing conditions. - The highlift pumping capacity is not adequate for future demand. - The storage is not sufficient for fire protection to meet current MECP guidelines or Fire Department requirements. - System relies on pumping (although typically is reliable) does have dependencies on the mechanical and electrical equipment which introduce potential points of failure. Backup power equipment is required and is present at the pumphouse. 	<p>Since both options relies on pumping (although is typical reliable) does have dependencies on the mechanical and electrical equipment which introduce potential points of failure. Backup power equipment is required. In the case of both options, the existing generator would need to be replaced to accommodate the upgrades required.</p>		<p>Though the water system will still relay on pumping (as the raw water is treated at the existing pumphouse), there is an added advantage of an elevated tower. In the event there is failure at the pumphouse, the water tower can provide water to the system by gravity providing the temporary supply. A fire pump is also no longer needed with this option.</p>	<p>Assuming that both Grand Valley and Orangeville have fully reliable systems, each option is likely to be serviced with a singular trunk watermain. Breakage in the trunk line introduces a concern for reliability.</p>
4 System Expansion and Phasing	No expansion would occur under this alternative.	In-ground reservoirs can be interconnected. The design should consider potential expansions to the extent possible.	Standpipes are typically not expanded and new facilities are provided for any additional storage needed.	Water towers are not typically expanded, and additional storage is achieved by constructing new facilities.	You would need to re-negotiate for more storage and pay for associated upgrades.

Criteria for Evaluating Alternative Sites	Alterative 1 Do Nothing	Alternative 2 – Construct Storage Facility		Alternative 3 Connect to Nearby Municipal System Option A: Grand Valley Option B: Orangeville	
		Existing Waldemar Pumphouse (10 Station Street)			South West Limits of Waldemar
		Option A: In-Ground Reservoir	Option B: Standpipe		Option C: Water Tower
5 Water Model Results (Water Distribution System)	<ul style="list-style-type: none"> - All scenarios met minimum optimum pressures. - Areas did exceed the maximum optimum range closest to the pumphouse and at the corner of Henry St. and Mill St. Though pressures are above 70 psi, they are below the MECP max 100 psi threshold. - Original design based on 38 L/s in distribution system. Modelling estimates 38-58 L/s of available fire flow in the distribution system. - Without upgrades to the pumping system and likely the distribution system, 79 L/s or 100 L/s is not achievable. 	<ul style="list-style-type: none"> - All scenarios met minimum optimum pressures. - Areas do exceed the maximum optimum range closest to the pumphouse and at the corner of Henry St. and Mill St. however below the MECP max 100 psi threshold. <p>Fire flow:</p> <ul style="list-style-type: none"> - Not able to provide the desired 79 L/s or 100 L/s fire flow in all locations. Fire flow ranges are as follows: - West side: 78 – 88 L/s - East side: 72 – 98 L/s <p>Modelling assumes a small section of an existing 150 mm dia. piping on the west side is replaced to provide a continuous 200 mm dia. watermain loop. Final details would be determined at the detail design stage of the future west subdivision.</p> <p>You can achieve higher fire flows with larger diameter watermains. Replacement size to improve flows can be reviewed at the time a specific watermain undergoes replacement at end of life. It would not be considered financially viable to replace watermains before end of life.</p>	<ul style="list-style-type: none"> - All scenarios met minimum optimum pressures. - Areas do exceed the maximum optimum range closest to the pumphouse and at the corner of Henry St. and Mill St. however below the MECP max 100 psi threshold. - Modelling assumes a small section of an existing 150 mm dia. piping on the west side is replaced to provide a continuous 200 mm dia. watermain. Final details would be determined at detail design of the future west subdivision. <p>Fire flow:</p> <ul style="list-style-type: none"> - Not able to provide the desired 79 L/s or 100 L/s fire flow in all locations. Fire flow range are as follows: - West side: All above 100 L/s - East side: 52 – 69 L/s <p>Significant watermain upgrades are required to achieve the desired fire flows.</p>	Not analyzed.	

Criteria for Evaluating Alternative Sites	Alterative 1 Do Nothing	Alternative 2 – Construct Storage Facility		Alternative 3 Connect to Nearby Municipal System	
		Existing Waldemar Pumphouse (10 Station Street)			South West Limits of Waldemar
		Option A: In-Ground Reservoir	Option B: Standpipe		Option C: Water Tower
6 Contamination Potential	<p>Low</p> <ul style="list-style-type: none"> - Though there is no fencing, the building and hatches are locked. - The storage is outside the floodplain limits identified on GRCA mapping. 	<p>Low</p> <ul style="list-style-type: none"> - Like existing conditions, any new hatches will be locked. - The new storage will be outside the floodplain limits identified on GRCA mapping. 	<p>Low</p> <ul style="list-style-type: none"> - The new site would be fenced with a gate that locks. - Valves and sampling taps would be in an area that can be accessed by a lockable hatch. 	<p>Low</p> <ul style="list-style-type: none"> - Watermains are pressurized preventing contamination - The nearby municipal system would have measures in place to secure their storage sites 	
7 Suitability of Connection to Existing Water System	<p>The existing system is connected. No changes would occur.</p>	<p>With the pumphouse site servicing all existing users, construction must ensure that impacts/disruptions to the existing system are limited during connections/modifications to the existing system. Temporary supply is expected to be required during some portions of construction and potentially some water shut downs.</p>	<p>Limited disruptions expected as work in the existing pumphouse would likely be related to programing. The watermain connection is typical and would impact a limited amount of users should a shut down be required.</p>	<ul style="list-style-type: none"> - Option A: Connection would be expected off the existing watermain at Henry St. and Mill St. - Option B: Connection would be expected off one of the new watermains being constructed to service the new east subdivision (Centurian) 	
8 System Efficiency	<p>Low given much greater need for additional storage.</p>	<p>Water delivered to consumers is "double-pumped", once at the point of supply (at the wells) and once at the point of storage. Highlift pumping equipment is required to meet peak hour demand and fire flows. Highlift pumping system requires back-up power to maintain service during power failures.</p>	<p>Water remains "double pumped" similar to Options A and B however there would be no fire pump needed and the pumps that supply water to the system would only be required to pump max day rather than peak day as required in Options A and B.</p>	<p>The existing system would remain "double pumped". The Township would also be relying on the municipal system that they are connecting to which will also rely on pumping and additional equipment.</p>	

Criteria for Evaluating Alternative Sites	Alterative 1 Do Nothing	Alternative 2 – Construct Storage Facility			Alternative 3 Connect to Nearby Municipal System Option A: Grand Valley Option B: Orangeville
		Existing Waldemar Pumphouse (10 Station Street)		South West Limits of Waldemar	
		Option A: In-Ground Reservoir	Option B: Standpipe	Option C: Water Tower	
9 Water Quality	The water quality is dependent upon the existing water treatment system.	The water quality is dependent upon the existing water treatment system, but with additional storage that provides more fire protection, there needs to be proper measures in place to avoid the deterioration of water quality due to stagnation. This can be achieved by designing the facility such that all water in the reservoir is kept moving during periods of use (baffle walls encouraging plug flow). Disinfection methods such as chlorination are also required to prevent bacterial growth in the reservoir facility. Water quality monitoring is required prior to distribution to ensure disinfection requirements are met.		The water quality is dependent upon the existing water supply system. Similar to other storage options, there needs to be a provision to avoid stagnation. Operational set-points in the tower would need to be evaluated regularly and adjusted based on actual water demands to minimize potential issues as the tower is designed for ultimate conditions which may not be reached for a significant period of time. In some instances, re-chlorination is required.	We expect with Option B a sampling/re-chlorination station may be required due to the distance but would be determined at detail design. Option A is closer so it may not be required.
10 Ease of Operation and Maintenance (O&M)	O&M procedures would exist and be more critical to ensure existing facilities maintain reliable.	O&M procedures would be the same as the existing system. Due to the upgrades expected, more of the system would be new/replaced which could mean less issues when it comes to repairs due to aging equipment. Cleaning of the in-ground reservoir will depend but typically every 5 to 10 years, cleaning of the tank and a video inspection would be completed.	O&M procedures would be similar to Option A, except the standpipe also requires cathodic protection anodes about every 10 years.	O&M procedures would include the same O&M as the existing system as it would remain in place. Depending on the type, water towers require painting approximately every 20 years or routine maintenance including cathodic protection anodes about every 10 years. Regular cleaning and video inspections are also required.	O&M procedures would include the same O&M as the existing system as it would remain in place. The watermain would require regular flushing.

Criteria for Evaluating Alternative Sites	Alternative 1 Do Nothing	Alternative 2 – Construct Storage Facility		Alternative 3 Connect to Nearby Municipal System	
		Existing Waldemar Pumphouse (10 Station Street)			South West Limits of Waldemar
		Option A: In-Ground Reservoir	Option B: Standpipe		Option C: Water Tower
11 Regulatory Requirements	<ul style="list-style-type: none"> - Township may be issued an order from the MECP if Township cannot meet water demands - Township may need to impose a by-law restricting water usage which could include banning all outside water usage, or during a fire or high use periods, impose very restrictive water usage 	<ul style="list-style-type: none"> - Would require a drinking water works permit amendment from the MECP - Would require a building permit - The replacement generator would require assessment of emissions and completion of Form 3 – Record of Addition, Modification or Replacement of Equipment Discharging a Contaminant of Concern to the Atmosphere to append to the drinking water works permit amendment application - Would likely require approval from the Grand River Conservation Authority 	<ul style="list-style-type: none"> - Would require a drinking water works permit amendment from the MECP - Would require a building permit - The temporary watermain would require a Form 1 – Record of Watermains Authorized as Future Alteration completed 	<ul style="list-style-type: none"> - Would require a drinking water works permit amendment from the MECP - Likely would require a Form 1 – Record of Watermains Authorized as Future Alteration completed 	

Criteria for Evaluating Alternative Sites	Alternative 1 Do Nothing	Alternative 2 – Construct Storage Facility			Alternative 3 Connect to Nearby Municipal System
		Existing Waldemar Pumphouse (10 Station Street)		South West Limits of Waldemar	
		Option A: In-Ground Reservoir	Option B: Standpipe	Option C: Water Tower	
D Financial Factors	Most Preferred	Partially Preferred	Partially Preferred	Least Preferred	Least Preferred
1 Estimated Capital Costs	No expense.	100 L/s storage - \$1,900,000 - 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 79 L/s storage - \$1,780,000 - Watermain upgrades not included. Any expected upgrades would occur at the same time as construction of the new subdivisions	100 L/s storage - \$2,200,000 - Does not include any existing watermain upsizing. It would not be financially viable to replace most existing watermains until they were at end of life which could still be 50+ years into the future 79 L/s storage - \$1,990,000 - Watermain upgrades not included. Any expected upgrades would occur at the same time as construction of the new subdivisions	- Extra cost associated with acquiring the land, providing temporary access and temporary watermain as land is not yet developed. - The costs below do not include any existing watermain upsizing. 100 L/s storage - \$4,440,000 79 L/s storage - \$4,320,000	Option A: \$1,750,000* Option B: \$13,300,000* 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 water rates for the system which would be imposed on Waldemar.
2 O&M costs (related to storage only and not other operational costs such as operator, lab or chemical costs, pump replacement, etc.)	No impact over existing conditions.	O&M associated with storage only (50 year): \$80,000	O&M associated with standpipe only (50 year): \$100,000	O&M associated with storage only (50 year): \$940,000	O&M costs unknown and would be determined as part of negotiations
Addresses Problem	No	Partially*	Partially*	Partially*	Unknown
RECOMMENDED SOLUTION	LEAST PREFERRED	PREFERRED	NOT PREFERRED	NOT PREFERRED	LEAST PREFERRED

*Storage can be adequately sized, but desired fire flows in the distribution system won't be achieved until future watermain upgrades are completed

11.1 Water Storage and Distribution Alternatives

11.1.1 Alternative 1 - Do Nothing

This alternative serves as a reference point for comparing other alternative solutions. The “Do Nothing” alternative means no action is taken in addressing the problem statement and would result in not providing any additional water storage or capacity to the existing water supply system. It is not expected that any capital costs would be incurred for this option and it is expected that operating and maintenance costs for this option would be similar to those currently budgeted for by the Township though we expect increases in repair costs as the existing equipment ages. Doing nothing does not accommodate approved and expected growth within Waldemar and the remaining storage will remain undersized compared to current guidelines. It does not conform to local planning provisions and there would be the need to modify and revise existing planning policies within the Township.

This alternative would not address the problem statement and was therefore not considered a viable solution.

11.1.2 Alternative 2

Option A – In-Ground Reservoir at the Existing Waldemar Pumphouse

Expansion at the existing pumphouse site is the preferred alternative for the main reasons as outlined below:

- Feedback received from the public.
- Integrates into the surrounding area.
- Has been estimated to have the least capital cost.
- Has the potential to be further expanded.
- Overall improvements in flow. Close to meeting 79 L/s (72-98 L/s) in the system with minimal upgrades.

Option B – Standpipe at the Existing Waldemar Pumphouse

The standpipe was partially preferred, but not selected as the preferred alternatives for the main reasons outlined below.

- Requires a significant size retaining wall to provide a flat area on site
- Feedback received from the public did not identify this as a preferred option
- They are not typically expandable
- Capital cost is expected to be slightly higher than Option A.

Option C – Water Tower at South West Limits of Waldemar (Sarah Properties)

The water tower is not preferred for the following main reasons:

- The capital cost is significantly higher than other options. Operation and maintenance costs are also expected to be significantly higher.
- The overall benefits to the distribution system are one sided (there is major improvement on the west side of Waldemar, but not the east). This cannot be improved without the addition of an extra watermain crossing the river or upsizing the existing watermain crossing the river on Station Street. Here is brief comparison of ranges of flows with similar watermain improvements.

	Option A & B - Expansion at existing pumphouse site	Option C - Water Tower
West Subdivisions	78 L/s to 88 L/s	116 L/s to 120 L/s
East Subdivisions	72 L/s to 98 L/s	52 L/s to 69 L/s

- There are advantages to water towers as they can supply water to the system by gravity, however the Waldemar system will still need to rely on the existing infrastructure at the pumphouse as the raw water is pumped and treated at that location before being sent to the customers to drink.
- Water towers are typically not expanded.

11.1.3 Alternative 3 – Connect to Nearby Municipal System

The option to nearby municipal system is the least preferred for the following reasons:

- There is an unknown cost in terms of negotiating agreements
- In terms of connection to Town of Grand Valley
 - A creek crossing would be required and areas along the trail are regulated by GRCA.
 - Grand Valley does not have existing surplus capacity. Amaranth would be reliant upon when the Town expands their storage.
 - Though the cost would be substantially less than connection to Town of Orangeville, we would still anticipate that it would be higher than the other alternatives.
- In terms of connection to Town of Orangeville:
 - The cost to connect to the Town of Orangeville is substantial, more than all alternatives considered in this study.
 - More studies would be needed as the watermain would need to go through several existing environmental areas.
 - Would require approvals from multiple municipalities/agencies including County of Dufferin, Town of Orangeville and the GRCA
 - Orangeville’s water supply also comes from wells which will have limitations in capacity.

12.0 Preferred Alternative

By Council Resolution dated August 21, 2019 the Recommended Alternative was accepted by the Township and thereby became the Preferred Alternative. Specifically, the Preferred Alternative is to expand the in-ground storage at the existing pumphouse site. We have outlined other recommendations for the Township to consider as new subdivisions are developed and/or when existing watermains are eventually replaced.

Table 17: Summary of Preferred Alternative and Recommendations

Estimated Timeline	Preferred Alternative
Commence design in 2019 with construction in 2020	Construct in-ground reservoir at existing pumphouse site. The storage will be based on providing a fire flow of 79 L/s for 2 hours.
Other Recommendations	
Timetable unknown but will be coordinated when development on the west side of Waldemar is in its planning stages and detail design stage. This property is referred to as Sarah Properties.	<ul style="list-style-type: none"> Review sizing of watermains to confirm what external watermain upgrades are required to service the development. This may include providing a 200 mm dia. continual loop from where the existing 200 mm watermain terminates at Henry St/Main St. Review actual water demands to confirm they reflect projected demands as the 73-lot subdivision on the east side is developed. Additional well supply is not anticipated but is very close to the limits. If additional supply is required, this will necessitate a need for a Municipal Class Environmental Assessment.
When existing watermains are at the end of their life	Review sizing of existing watermains at the time they would undergo replacement to determine whether they should be increased in size.

12.1 Impacts and Mitigation

The following measures should be implemented in order to mitigate negative impacts from the proposed project on the environmental features of the study area. All design and construction reports and plans will be based on a best management approach that centre on the prevention of impacts, protection of the existing environment and opportunities for rehabilitation and enhancement of the impacted areas.

Table 18: Mitigation Measures

Soils, Surface Water, Groundwater	
Potential Impact	Mitigation Measure
<ul style="list-style-type: none"> Potential for sediments to 	<ul style="list-style-type: none"> The footprint of disturbed area will be minimized as much as possible.

<p>leave the site due to site clearing, stockpiling, excavation, and construction.</p> <ul style="list-style-type: none"> • Potential for localized water quality impacts as a result of spills. 	<ul style="list-style-type: none"> • Erosion and sediment control measures will be implemented on site such as silt fence to prevent sediments from leaving the site. These control measures will be inspected on a regular basis and repaired or modified as required and installed prior to the commencement of construction. • The Grand River is a significant distance from the site. Stockpiled materials will not be located near the Grand River and will be protected by Erosion and sediment control measures as required. • The contractor will be required to develop spill prevention and contingency plans for construction and operational phases of the project. Spills will be immediately contained and cleaned up in accordance with provincial regulatory requirements and the contingency plan. Spills will be reported to the Ontario Spills Action Center at 1-800-268-6060. • All waste generated during construction must be disposed of in accordance with MECP requirements.
<p>Vegetation, Wildlife/Habitat</p>	
<p>Potential Impact</p>	<p>Mitigation Measure</p>
<ul style="list-style-type: none"> • Loss of trees/habitat • 	<ul style="list-style-type: none"> • Disturbance will be limited to the extent possible, however the trees removed to accommodate the new storage cannot be replaced. There is no additional room on site for compensation. • Tree removal should be completed outside of the breeding bird window (April 1st to August 31st). Should tree removal take place during April 1st to August 31st, a nesting survey should be completed by a qualified person 3 days prior to removal to confirm there are no nests and/or abide by any recommendations by the qualified person
<p>Noise/Vibration/Air Quality</p>	
<p>Potential Impact</p>	<p>Mitigation Measure</p>
<ul style="list-style-type: none"> • Temporary nuisance noise during construction activities. • Increased dust in air from construction activities. 	<ul style="list-style-type: none"> • Noise control measures, such as restricted hours of operation, the use of appropriate machinery/mufflers, will be implemented where required. • Vehicles/machinery and equipment should be in good repair, equipped with emission controls, as applicable, and operated within regulatory requirements. • Dust is expected to be limited as construction site is small, however dust control measures may include wetting of surfaces using water for example.

Human Health and Safety	
Potential Impact	Mitigation Measure
<ul style="list-style-type: none">• Potential safety hazard from construction activities, heavy equipment and increased traffic.	<ul style="list-style-type: none">• The contractor will be required to implement a Health and Safety Plan (OHSA 1990).• Special mitigations measures will be required as the site shares the same access to the Waldemar Park. Sharing information with the public will be critical during construction. Signage and ensuring the site is secure especially when excavations are open will be required. There may be instances where access to the park will not be permitted for safety reasons.

13.0 Follow-up Commitments

If concerns arise regarding this project which cannot be resolved in discussion with the Township, a person or party may request that the Minister of Environment make an Order for the project to comply with Part II of the *Environmental Assessment Act* (referred to as a Part II Order), which addresses individual Environmental Assessments. Requests must be received by the Minister within 30 calendar days of the Notice of Completion.

If the Minister does not receive Part II Orders regarding this project, then the project will continue forward to detailed design, approvals processes, and implementation of the preferred design.

13.1 Permits and Approvals

The Township will be required to secure all necessary permits and/or authorizations required for the project. The following is a list of the permits that will be potentially required for this project:

- Amendment to the Drinking Water Works Permit from the MECP.
- Building Permit from the County of Dufferin Building Department.
- Potentially a permit from the Grand River Conservation Authority.



BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix A

Master Contact List

LEGEND

SEND BY EMAIL
DO NOT SEND FURTHER CORRESPONDENCE

Agency/ Organization	Title	First Name	Last Name	Position	Address 1	Address 2	City	Prov.	Postal Code	Email	Telephone	Fax	Contact Instructions	Notes	Comments Received	Response Given	Action Required
Hydro One Networks Inc.										SecondaryLandUse@HydroOne.com				Letter and copy of PIC emailed on Feb 23, 2019			
Ministry of Infrastructure - Ontario Growth Secretariat, Growth Policy, Planning and Analysis Branch	Ms.	Allyson	Switzman	Manager Growth Planning and Analysis						allyson.switzman@ontario.ca hayley.berlin@ontario.ca				Letter and copy of PIC emailed on Feb 20, 2019 - bounce back received. Contact changed from Andrea Roberts to Allyson Switzman and Hayley Berlin.			
Infrastructure Ontario	Mr.	Alex	Lye	Environmental Specialist	1 Dundas Street, West, Suite 2000		Toronto	ON	M5G 1Z3	alex.lye@cisl.ca alex.lye@infrastructure.ca	413-327-2755			Letter and copy of PIC emailed on Feb 20, 2019			
Ministry of Agriculture, Food and Rural Affairs	Mr.	Arthur	Churchyard	Policy Advisor	Provincial Government Bld., 3rd Floor 1 Stone Road West		Guelph	ON	N1G 4Y2	arthur.churchyard@ontario.ca	519-826-3380	613-475-3835		Letter and copy of PIC mailed on Feb 20, 2019			
Ministry of the Environment, Conservation and Parks - West Central Region Technical Support Section										eanotification.wregion@ontario.ca			ELECTRONIC EA preferred	Project Information Form, PIC, and copy of the NOC (non mandatory) was sent via email on Feb 20, 2019.			
Ministry of the Environment, Conservation and Parks Environmental Approvals Branch										MEA.NOTICES.EAAB@ontario.ca			EMAIL only the Notice of Completion				
Ministry of the Environment, Conservation and Parks West Central Region	Ms.	Barbara	Slattery	Environmental Resource Planner & EA Coordinator	Ellen Fairclough Bld. 119 King Street West	9th Floor	Hamilton	ON	L8P 4Y7	barbara.slattery@ontario.ca	Toll free: 1-800-668-4557; 905-521-7640	905-521-7820		Letter and copy of PIC mailed on Feb 20, 2019			
Ministry of Health and Long Term Care	Mr.	Tony	Amalfa	Manager, Environmental Health Policy and Programs	393 University Avenue	21st Floor	Toronto	ON	M7A 2S1	tony.amalfa@ontario.ca	416-327-7624	416-327-0984		Letter and copy of PIC mailed on Feb 20, 2019			
Ministry of Municipal Affairs Central Municipal Services Office	Mr.	Mark	Christie	Manager, Community Planning and Development	777 Bay Street	13th Floor	Toronto	ON	M5G 2E5	Mark.Christie@ontario.ca	416-585-6063	416-585-6882		Letter and copy of PIC emailed on Feb 20, 2019. Removed from contact list. Received bounce back. Added Erick Boyd.			
Ministry of Municipal Affairs Western Municipal Services Office	Mr.	Erick	Boyd	Manager, Community Planning and Development	659 Exeter Road	Exeter Road Complex 2nd Floor	London	ON	N6E 1L3	erick.boyd@ontario.ca				Letter and copy of PIC emailed on Feb 20, 2019			
Ministry of Municipal Affairs and Housing Ontario Growth Secretariat	Mr.	Charles	O'Hara	Director, Growth Policy	College Park 777 Bay Street	23rd Floor Suite 2304	Toronto	ON	M5G 2E5	charles.o'hara@ontario.ca	416-325-5794	416-325-7403		Letter and copy of PIC mailed on Feb 20, 2019			
Ministry of Natural Resources and Forestry Guelph- Southern Region	Mr.	David	Marriot	District Planner	Ontario Government Bld. 1 Stone Road West		Guelph	ON	N1G 4Y2	david.marriott@ontario.ca	519-826-4926	519-826-4929		Letter and copy of PIC mailed on Feb 20, 2019			

LEGEND

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Agency/ Organization	Title	First Name	Last Name	Position	Address 1	Address 2	City	Prov.	Postal Code	Email	Telephone	Fax	Contact Instructions	Notes	Comments Received	Response Given	Action Required
Ministry of Tourism, Culture and Sport Culture Division	Ms.	Laura	Hatcher	Team Lead, Heritage Land Use Planning (Acting), Culture Services Unit	401 Bay Street	Suite 1700	Toronto	ON	M7A 0A7	laura.e.hatcher@ontario.ca	416-314-3108	416-314-7175		Letter and copy of PIC mailed on Feb 20, 2019			
Dufferin County	Ms.	Sonya	Pritchard	Chief Administrative Officer	55 Zina Street		Orangeville	ON	L9W 1E5					Letter and copy of PIC mailed on Feb 20, 2019			
Dufferin County	Ms.	Jenny	Li	Planning Coordinator	55 Zina Street		Orangeville	ON	L9W 1E5		519-941-2816 ext. 2509	jli@dufferincounty.ca		Added to contact list on March 8, 2019	190307_Received via email on March 8th, a letter from Dufferin County Building and By-Law indicating they have done a preliminary review and no issues were revealed. 190308_Planning indicated no comments provided the water storage solution chosen meets the Town's Source Protection Plan and the GRCA guidelines. Does not negatively impact nearby environmental features including Natural Heritage System, woodlands, and the unevaluated wetlands. Recommended consultation with Ministry of Energy, Northern Development and Mines. 190311_Public Works department does not have any comments at this time based on the preliminary preferred option of construction an in-ground reservoir at the existing pumphouse.		
Town of Grand Valley	Ms.	Jane	Wilson	Chief Administrative Officer, Clerk-Treasurer	5 Main Street North		Grand Valley	ON	L9W 5S6					Letter and copy of PIC mailed on Feb 20, 2019			
Six Nations of the Grand River	Ms.	Dawn	LaForme	Consultation Admin Assistant	2498 Chiefwood Road	P.O. Box 5000	Ohswegan	ON	N0A 1M0	diaforme@sixnations.ca	519-445-2201			Letter and copy of PIC emailed on Feb 20, 2019			
Six Nations of the Grand River	Chief	Ava	Hill	Chief		P.O. Box 5000	Ohswegen	ON	NOA 1M0		(519) 445-2201			Letter and copy of PIC mailed on Feb 20, 2019			
Mississaugas of the New Credit First Nation		Fawn	Sault	Consultation Manager	2789 Mississauga Road	RR #6	Hagersville	ON	N0A 1H0	fawn.sault@mncfn.ca	905-768-4260			Letter and copy of PIC emailed on Feb 20, 2019			
Haudenosaunee Confederacy	Hohahe s	Leroy	Hill	Secretary to Haudensaunee Confederacy	2634 6th Line	RR#2	Ohswegen	ON	N0A 1H0	jocko@sixnationsns.com	Cell: 519-717-7326			Letter and copy of PIC mailed on Feb 20, 2019			
Métis Nation of Ontario				Métis Nation of Ontario - Lands, Resources and Consultations						consultations@metisnation.org			EMAIL only	Letter and copy of PIC emailed on Feb 20, 2019			
Saugeen First Nation	Chief	Lester	Anoquot		R.R #1	6493 Highway 21	Southampton	ON	N0H 2L0	contactadmin@saugeenfirstnation.ca	(519) 797-2781	(519) 797-2978		Letter including link to PIC materials and original notice sent on March 25, 2019.			
Chippewas of Nawash Unceded First Nation	Chief	Greg	Nadjwon		#135 Lakeshore Blvd.		Neyaashiinigmiing	ON	N0H 2T0	cnadministrator@nawash.ca	(519) 534-1689			Letter including link to PIC materials and original notice sent on March 25, 2019.			
Beausoleil First Nation	Chief	Guy	Monague		11 O'Gema Miikaan		Christian Island	ON	L9M 0A9	info@chimnissing.ca	(705) 247-2051	(705) 247-2239		Letter including link to PIC materials and original notice sent on March 25, 2019.			
Chippewas of Rama First Nation	Chief	Rodney	Noganosh		5884 Rama Road	Suite 200	Rama	ON	L3V 6H6		Toll-free: 1-866-854-2121 (705) 325-3611	(705) 325-0879		Letter including link to PIC materials and original notice sent on March 25, 2019.	190401_Update contact info from Chief Rodney Noganosh to Sharday James. No comments at this time but ask to be updated as the project continues and would like a digital copy of the Project File Report Upon Completion.		

LEGEND

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Agency/ Organization	Title	First Name	Last Name	Position	Address 1	Address 2	City	Prov.	Postal Code	Email	Telephone	Fax	Contact Instructions	Notes	Comments Received	Response Given	Action Required
Chippewas of Rama First Nation		Sharday	James	Community Consultation Worker, Communications	5884 Rama Road	Suite 200	Rama	ON	L3V 6H6	shardayi@ramafirstnation.ca	Toll-free: 1-866-854-2121; (705) 325-3611	(705) 325-0879		Added to contact list on April 1, 2019.	190401_Update contact info from Chief Rodney Noganosh to Sharday James. No comments at this time but ask to be updated as the project continues and would like a digital copy of the Project File Report Upon Completion.	190401_Indicated I will send a copy of the PFR digitally	SEND DIGITAL COPY OF THE PROJECT FILE REPORT UPON COMPLETION.
Georgina Island First Nation	Chief	Donna	Big Canoe		R.R.#2	Box N-13	Sutton West	ON	L0E 1R0		705-437-1337	705-437-4597		Letter including link to PIC materials and original notice sent on March 25, 2019.			
Bell Canada	Ms.	Wendy	Lefebvre	Design Manager, Access Network	6446 Creekbank Road West	3rd Floor	Mississauga	ON	L4W 5R4		906-219-4658	416-701-6489		Letter and copy of PIC mailed on Feb 20, 2019	Response back on March 18, 2019 indicating Frank Brown should be the contact and not Wendy Lefebvre.		
Bell Canada	Mr.	Frank	Brown		21 First Avenue	Floor 1	Orangeville	ON	L9W 1H7	franklin.brown@bell.ca				Letter and copy of PIC emailed on March 19, 2019	Response back on March 18, 2019 indicating Frank Brown should be the contact and not Wendy Lefebvre.		
Bell Canada	Mr.	Scott	Moon	Implementation Department	5115 Creekbank Road	3rd Floor, West Tower	Mississauga	ON	L4W 5R1	scott.moon@bell.ca	905-219-4558	416-701-6489		Letter and copy of PIC mailed on Feb 20, 2019			
Bell Canada, Municipal Operations Centre	Mr.	John	Lachapelle		100 Borough Drive	Floor 5 Blue	Scarborough	ON	M1P 4WZ					Letter and copy of PIC mailed on Feb 20, 2019			
Enbridge Gas Distribution Inc.	Mr.	Vince	Cina	Supervisor, Planning and Design	500 Consumers Road		North York	ON	M2J 1P8	vince.cina@enbridge.com				Letter and copy of PIC mailed on Feb 20, 2019			
Enbridge Pipelines Inc.	Ms.	Ann	Newman	Crossing Coordinator	1086 Modeland Road.	Building 1050, 1st Floor	Sarnia	ON	N7S 6L2	ann.newman@enbridge.com				Letter and copy of PIC mailed on Feb 20, 2019			
Rogers Communications		Marion	Wright	Planning Coordinator	3573 Wolfedale Road		Mississauga	ON	L5C 3T6		905-897-3914; 888-764-3771			Letter and copy of PIC mailed on Feb 20, 2019			
Trans Canada Corporation MHBC Planning, Urban Design & Landscape Architecture	Ms.	Darlene	Presley	Planning Coordinator, EA contact	442 Brant Street, Suite 204		Burlington	ON	L7R 2G4	dpresley@mhbcpplan.com	905-639-8686 ext. 229 Cell: 705-627-2302	905-761-5589	Contact MHBC Planning, Urban Design & Landscape Architecture for EA-related queries, head office for more information.	Letter and copy of PIC mailed on Feb 20, 2019			
Zayo										Utility.Circulations@zayo.com	416-649-7527			Letter and copy of PIC emailed on Feb 20, 2019.	Response back on Feb 20, 2019 indicating they would respond within 15 business days.		
Grand River Conservation Authority	Ms.	Laura	Warner	Planner	400 Clyde Road	Box 729	Cambridge	ON	N1R 5W6	lwarner@grandriver.ca	Toll Free: 866-900-4722 519-621-2761	519-621-4844	MAIL 1 hard copy EA	Letter and copy of PIC mailed on Feb 20, 2019. Emailed link to PIC materials and location of preliminary preferred site on May 24, 2019.	190225_Letter noting that the study area contains natural hazard and natural heritage features including Grand River and its tributaries, floodplain, and areas with slope hazards as well as the regulated allowances. May require a permit. 190527_Email indicating that the preliminary preferred site contains a very small portion of the regulated allowance and if development is outside that area a permit would not be required. Also requested to be notified if the preferred alternative changes.		
Wellington- Dufferin- Guelph Public Health Unit				EA contact						PHI.intake@wdgpublichealth.ca				Letter and copy of PIC emailed on Feb 20, 2019.			
Dufferin County Paramedic Service	Mr.	Tom	Reid	Chief Paramedic	325 Blind Line		Orangeville	ON	L9W 4W9					Letter and copy of PIC mailed on Feb 20, 2019			
OPP Dufferin County- Shelburne				Chief of Police	506312 Highway 89		Mono	ON	L9V 1H9					Letter and copy of PIC mailed on Feb 20, 2019			
Grand Valley and District Fire Department	Mr.	Kevin	McNeilly	Fire Chief	P.O.-Box 83	Station Main	Grand Valley	ON	L0W 7G1	kmcneilly@gvdfd.com				Letter and copy of PIC mailed on Feb 20, 2019. Emailed the same on March 29, 2019 after receiving a RETURN TO SENDER. Prefers email moving forward. Emailed link of PIC materials on March 21, 2019.	190320_Emailed a copy of NFPA 1142		

LEGEND

SEND BY EMAIL
DO NOT SEND FURTHER CORRESPONDENCE

Agency/ Organization	Title	First Name	Last Name	Position	Address 1	Address 2	City	Prov.	Postal Code	Email	Telephone	Fax	Contact Instructions	Notes	Comments Received	Response Given	Action Required
Upper Grand District School Board				Planner						municipal.circulations@ugdsb.on.ca				Letter and copy of PIC emailed on Feb 20, 2019.			
Dufferin- Peel Catholic School Board	Ms.	Stephanie	Cox	Planner	40 Matheson Boulevard West		Mississauga	ON	L5R 1C5					Letter and copy of PIC mailed on Feb 20, 2019			
Dufferin Water Co. Ltd.	Mr.	Joe	Miedema		13 Rose Ridge Lane		Mono	ON	L9W 5Y3	jo_miedema@bell.net				Letter and copy of PIC mailed on Feb 20, 2019			
Ministry of Energy, Northern Development and Mines	Ms.	Jennifer	Paetz	Senior Strategic Initiatives Lead (A) Strategic Support Unit	933 Ramsey Lake Road	B6	Sudbury	ON	P3E 6B5	Jennifer.Paetz@ontario.ca	705-670-3003	705-670-5803		Letter including link to PIC materials and original notice sent on March 25, 2019.	190411_Letter indicating no comments at this time however study lies within an area significant for aggregate resources and potential karst development in bedrock.		
Source Water Protection	Mr.	Dwight	Smikle	Township's Risk Management Official	292 Speedvale Avenue West	Unit 20	Guelph	ON	N1H 1C4	Dwight.Smikle@rjburnside.com				Emailed map of location of preferred site on March 21, 2019 to confirm if there were any concerns with respect to source water protection	190321_Email confirming the site is outside the WHPA and no source protection policies apply to the site. Consider a spill management as part of the operational procedures for fuel handling at the location.		
Zelinka Priamo Ltd.	Mr.	Dave	Hannam		318 Wellington Road		London	ON	N6C 4P4	dave.h@zplan.com	519-474-7137 Cell: 519-312-1412			Emailed PIC on Feb 19, 2019 and Mailed PIC on Feb 19, 2019	181113_Email from Dave requesting to be added to contact list. 190312_Letter with a number of comments. Refer to Appendix D for letter dated March 12, 2019 prepared by Zelinka Priamo Ltd. 190709_Letter dated July 9, 2019 prepared by Zelinka Priamo Ltd. Refer to Appendix D for letter.	181113_Email to Dave confirming that he will be added to the list. 190426_ Emailed letter dated April 26, 2019 in response to March 12, 2019 letter received. Refer to Appendix D. The letter is addressed to Walter Broos but copied to Zelinka Priamo Ltd., C.C. Tatham, and Walter Broos lawyer as well as Township representatives 190726_ Responded via email on July 26, 2019.	
C.C. Tatham & Associates Ltd	Ms.	Suzanne	Troxler	Director, Manager	115 Sandford Fleming Drive	Suite 200	Collingwood	ON	L9Y 5A6	stroxler@cctatham.com	705-444-2565 ext 2089 Cell: 705-888-0898			Mailed PIC on Feb 19, 2019	181114_Email from Suzanne requesting to be added to contact list. 181116_Email requesting confirmation that 334 units are being accounted for as part of Sarah Properties	181114_Email to Suzanne confirming that she will be added to the list.	
IBI GROUP	Mr.	Stephen	Albanese		55 St. Clair Avenue West	7th Floor	Toronto	ON	M4V 2Y7	stephen.albanese@IBIGroup.com	1-416-596-1930 ex	1-416-596-0644		Mailed PIC on Feb 19, 2019			



BURNSIDE

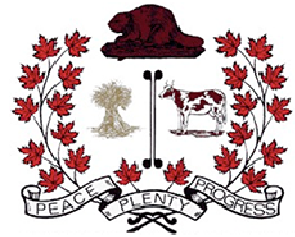
[THE DIFFERENCE IS OUR PEOPLE]

Appendix B

Notices and Newspaper Advertisements



**Township of Amaranth
Notice of Study Commencement
Waldemar Water Storage
Class Environmental Assessment Study**



The Study

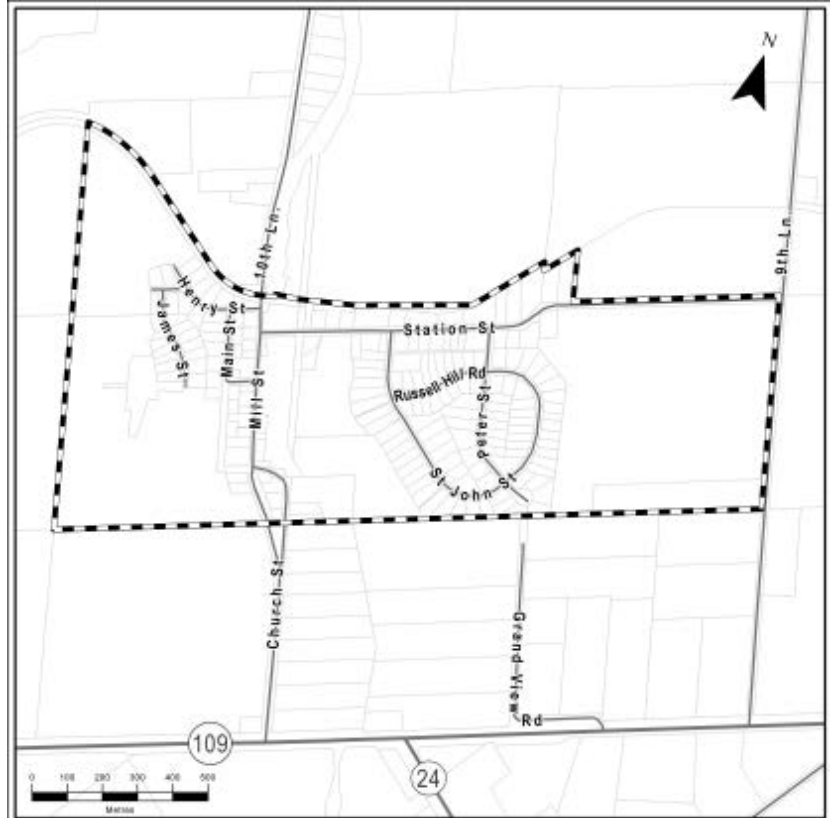
The Township of Amaranth has identified that the existing water storage in Waldemar does not have the volume required to support future water demands. The Township is initiating a Municipal Class Environmental Assessment (EA) to identify the preferred method of providing for these demands. The EA will review all lands designated within the Community Boundary of Waldemar in the Official Plan as part of this study.

Reasoning for Initiating the Study

The municipal drinking water system needs to be expanded to provide drinking water to a 73 lot subdivision near Station Street and 9th Line. The Developer is required to finance upgrades to the water system needed to service this development. The Township has identified that additional water storage is required and is initiating the EA to determine the preferred upgrades for the system.

Waldemar Drinking Water System

The existing drinking water system serves a portion of residents within Waldemar. The system has three wells to supply water, and a pumphouse and reservoir for treatment and storage of water. The water storage provides water to use when there are high demands on the system and for firefighting.



The Process

This study is being carried out in accordance with the requirements of a Schedule "B" undertaking as outlined in the Municipal Engineers Association *Municipal Class Environmental Assessment document* (2000, as amended in 2007, 2011, and 2015). A key component of the study will be consultation with interested stakeholders (public and agencies) as well as indigenous communities.

This notice is intended to inform residents of Waldemar that the Township is initiating the study. The Township will be holding a Public Information Centre expected to occur in the Fall, where further information related to the study including alternatives will be available for input and comment.

Notification for the date, location, and time of the upcoming Public Information Centre will be posted on the Township's website and will be published in the Orangeville Banner. If you wish to be placed on the contact list to receive future notices or have questions or comments related to this project, please contact Carley Dixon or Christine Gervais.

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

Township of Amaranth
Director of Planning
Christine Gervais
374028 6th Line
Amaranth ON L9W 0M6
Phone: 519-941-1007
cgervais@amaranth-eastgary.ca

Information will be collected in accordance with the Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.

This Notice first issued on October 4, 2018.



**Township of Amaranth
Notice of Public Information Centre for the
Waldemar Water Storage
Class Environmental Assessment Study**



The Study

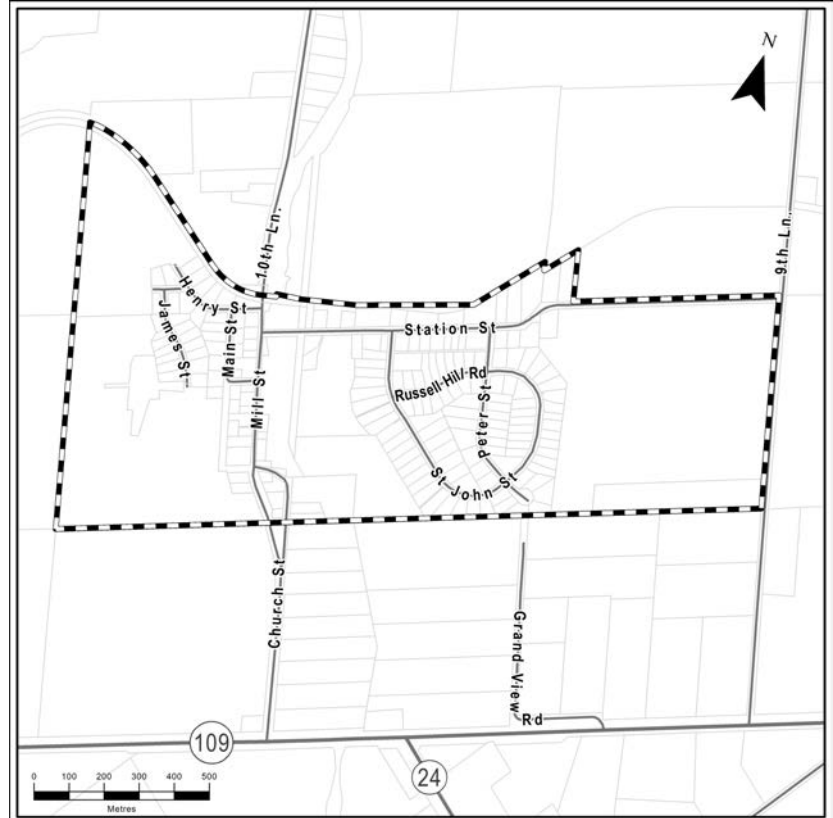
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Public Information Centre (PIC) – Comments Invited

Public consultation is vital to this study. The Township would like to ensure that anyone interested in this study has the opportunity to get involved and provide input on the project’s implementation. A PIC has been arranged to: describe the proposed project and the preliminary preferred solution; obtain feedback from the public; and, identify the next steps in the process. Presentation materials pertaining to the study will be made available on the Township’s website (www.amaranth.ca) following the PIC.

PIC Drop-in Centre Date: Monday, March 4, 2019
Time: 7:00 p.m. to 9:00 p.m.
Place: Township of Amaranth - 374028 6th Line, Amaranth, ON L9W 0M6

To provide comment or to request additional information concerning this project, or if you are unable to attend and would like to provide comments, please contact either of the following Project Team members by March 18th, 2019.

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

Township of Amaranth
 Director of Planning
 Christine Gervais
 374028 6th Line
 Amaranth ON L9W 0M6
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 cgervais@amaranth-eastgary.ca


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This Notice first issued on February 21, 2019.


GREEN, GOLD AND GOOD TIMES



LIST YOUR ST. PATRICK'S DAY EVENTS AT ORANGEVILLE.COM

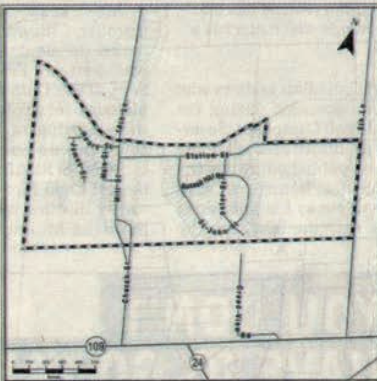


Township of Amaranth
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Waldemar Water Storage
Class Environmental Assessment Study



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Township of Amaranth
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 cgervais@amaranth-eastgry.ca

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NEWS



Alexandra Heck/Torstar

In a 29-2 recorded vote, county council approved a \$1.4 million tax levy increase for 2019, which equates to about a 3.8 per cent hike compared to last year.

DUFFERIN COUNTY COUNCIL APPROVES 3.8 PER CENT BUDGET INCREASE FOR 2019

ALEXANDRA HECK
 aheck@metroland.com

Dufferin County's politicians have approved a 3.8 per cent budget increase for 2019.

For the average Dufferin property assessed at \$400,000, that equates to \$1,584 on the county portion of the tax bill, an increase of about \$28 compared with 2018. That works out to about a \$7 increase for every \$100,000 worth of assessed property value.

County treasurer Alan Selby was able to find savings in the budgets allocated for employee benefits, which have cost the county well under what they budget for each year.

Selby reduced the employee benefits budget by \$200,000, alongside the budget for legal expenses within the county.

"The other item that is bothersome," Selby said, but unavoidable, is the \$800,000 chimney reconstruction project for the courthouse.

"It is a surprising number," he said, noting that \$300,000 from the rate-stabilization reserve will be

used to foot the bill.

Shelburne Mayor Wade Mills asked why the chimney project is so costly.

County staff explained the majority of the costs are associated with scaffolding as well as historical-building preservation measures.

The chimney will need to be dismantled brick by brick and then reassembled.

The treasurer brought forward 11 changes for council to adopt, which reduced the proposed tax levy for the budget from 6.9 per cent to 3.8 per cent.

"Basically, the numbers shake out almost exactly the same as they did a year ago," said Selby, noting the average county property paid an increase of \$29 last year. "The dollar increase is very, very close what it was for 2018."

In a 29-2 recorded vote, county council approved a \$1.4-million tax levy increase for 2019, which equates to about a 3.8 per cent hike from with last year.

Amaranth Deputy Mayor Chris Gerrits and Coun. Heather Foster - she attended on behalf of May-

or Bob Currie - were the lone council members to vote in opposition.

Factoring in a growth assessment rate of 1.9 per cent, the budget would subject taxpayers to a 1.9 per cent increase on the county portion of tax bills next year.

The \$38.5-million tax levy proposes an operating budget of about \$31 million and a capital budget of about \$8.4 million for 2019. That's a total increase of about \$1.4 million, or 3.8 per cent, from 2018.

"It works out just about even, actually," Selby said. "The total tax levy increase of \$1.4 million works out to about \$700,000 for capital and \$700,000 for operating."

From 2015 to 2019, county council has approved respective tax increases of 0.65 per cent, 3.14 per cent, 1.7 per cent, 1.9 per cent and 1.9 per cent.

"It's very close, actually," Selby said, referring to last year's increase compared with that of 2019. "The percentage increase was 1.90, and it was 1.95 per cent in 2018. It is all pretty much the same as before."

JUDICIAL PRE-TRIAL SCHEDULED FOR MOTHER OF KADEN YOUNG IN COURT

CHRIS HALLIDAY
challiday@orangevillebanner.com

Charged in the death of her three-year-old son Kaden Young, Michelle Hanson's case is moving onto the next stage.

With her case scheduled to be heard again in Orangeville court on Tuesday, Feb. 26, a paralegal representing Hanson's lawyer, Marco Forte, successfully requested a judicial pre-trial date

be scheduled for April 9.

A judicial pre-trial is a hearing where a judge helps to resolve a matter or reduce the number of issues to be discussed during any subsequent trial proceedings.

The aim of a pre-trial is to effectively address: Any resolution options, including the withdrawal of charges or guilty pleas; accurate trial estimates and procedural and evidentiary issues that promote the proper use of trial

time.

During a flood event in the early hours on Feb. 21, 2018, police report Kaden's mother, who was rescued by emergency responders near Dufferin County Road 109, drove past a road closure sign marked by orange pylons.

Her minivan was swept into the fast-moving river and deep water. Police say that she managed to free herself and Kaden from the vehicle, but the water

wrenched the boy from her arms.

Nearly 60 days after Kaden was lost to the Grand River, the body of the small boy was discovered by a fisherman beneath a bridge along County Road 26 near Belwood Lake on April 21.

About eight months after his disappearance, Dufferin OPP charged Hanson, 35, with impaired driving causing death, dangerous driving causing death and criminal negligence causing

death on Oct. 11.

Prior to that, she was charged by Dufferin OPP with assaulting Kaden's father, Cam Young, on April 24. According to court documents, the charge relates to an alleged incident on April 12.

The charges have not been proven in court. Hanson is scheduled to attend a judicial pre-trial regarding all her charges inside an Orangeville courtroom on April 9.



Township of Amaranth Notice of Public Information Centre for the Waldemar Water Storage Class Environmental Assessment Study



The Study

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Phone: 519-941-1007
cgervais@amaranth-eastgary.ca

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This Notice first issued on February 21, 2019.



Caledon \ Dufferin Victim Services

Support, Information, Referrals

BECOME A DIRECTOR

Caledon Dufferin Victim Services (CDVS) is currently seeking candidates to serve as Directors on the agency's volunteer Board of Directors. This opportunity is open to all residents of the Town of Caledon or County of Dufferin, who are interested in the stewardship of a caring and vibrant community focused non-profit, charitable organization that provides support to those affected by crime and life's tragic circumstances.


The Board of Directors is looking for enthusiastic people from the communities we serve, who want to contribute to CDVS through the provision of sound governance, based on the values and principals of a Policy Governance model. Previous experience serving on a Policy Governance Board while not required, would be a strong asset.

Successful candidates will be expected to offer 4 hours per month and attend monthly Board meetings. Additionally, candidates will need to submit to a Criminal Records Check, swear an Oath of Confidentiality and make decisions as part of a team of 8-10 Directors. Candidates are expected to support the Mission, Mandate and Values of the CDVS Corporation and meet the eligibility criteria of the agency bylaws.

Please submit your letter of intent and resume by one of the following methods:

Email:
info@cdvs.ca

Mail:
Chair, Board of Directors
15924 Innis Lake Road
Caledon East, ON L7C 2Z1



For more information, please visit:
www.cdvs.ca



BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix C

Public Information Centre Sign-In Sheet and Materials



**Waldemar Water Storage
Municipal Class Environmental Assessment**



Public Information Centre – Monday, March 4th, 2019 – 7:00 p.m. to 9:00 pm
Township of Amaranth – 374028 6th Line, Amaranth, Ontario

NAME (PLEASE PRINT)	ORGANIZATION (PLEASE PRINT)	MAILING ADDRESS (incl. Postal Code) (PLEASE PRINT)	E-MAIL (PLEASE PRINT)	DO YOU WISH TO BE ON THE MAILING LIST?	CONTACT BY EMAIL OR MAIL? (PLEASE PRINT)
				<input checked="" type="radio"/> Yes / <input type="radio"/> No	Email.
				<input checked="" type="radio"/> Yes / <input type="radio"/> No	EMAIL.
				<input checked="" type="radio"/> Yes / <input type="radio"/> No	Email
				<input checked="" type="radio"/> Yes / <input type="radio"/> No	EMAIL
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				<input checked="" type="radio"/> Yes / <input type="radio"/> No	email
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				<input checked="" type="radio"/> Yes / <input type="radio"/> No	email
				<input checked="" type="radio"/> Yes / <input type="radio"/> No	email

The Township of Amaranth and R.J. Burnside & Associates Limited thank you for your involvement in the Municipal Class Environmental Assessment. Information will be collected in accordance with the *Municipal Freedom of Information and Protection of Privacy Act*. With the exception of personal information, all comments will become part of the public record and published with the final Project File Report.



**Waldemar Water Storage
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[REDACTED]				[REDACTED] <input checked="" type="radio"/> Yes / <input type="radio"/> No	email
				CA <input checked="" type="radio"/> Yes / <input type="radio"/> No	EMAIL
				<input checked="" type="radio"/> Yes / <input type="radio"/> No	
				<input checked="" type="radio"/> Yes / <input type="radio"/> No	Email
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				<input checked="" type="radio"/> Yes / <input type="radio"/> No	EMAIL
				<input checked="" type="radio"/> Yes / <input type="radio"/> No	EMAIL
				<input checked="" type="radio"/> Yes / <input type="radio"/> No	
				Yes / No	

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WALDEMAR WATER STORAGE SCHEDULE B MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

Public Information Centre

Monday, March 4th, 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:

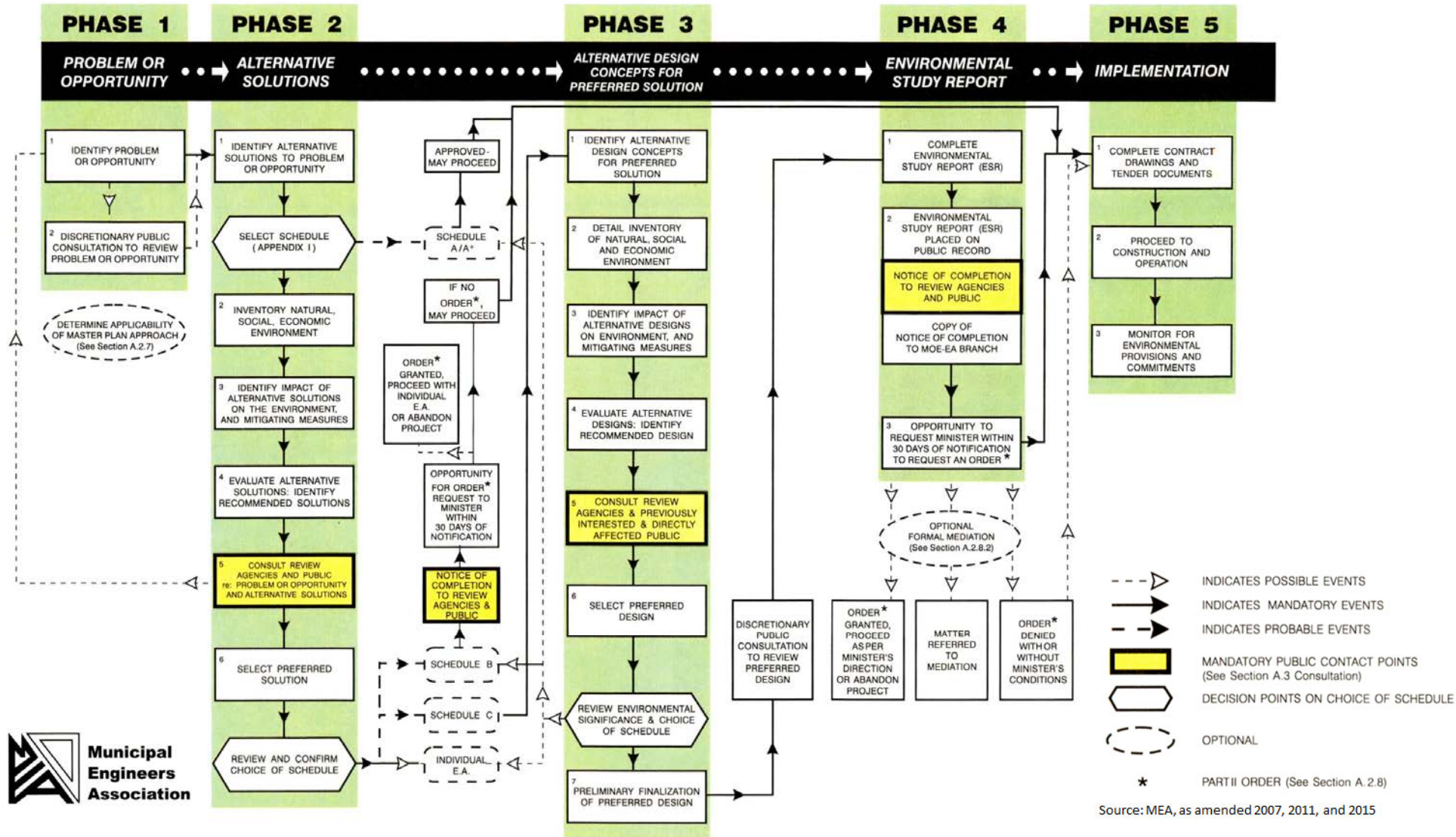
- Sign in
- Review the display materials and discuss your questions and ideas with our team members
- We will review and incorporate feedback from public, agencies, etc.
- We will respond to written questions and comments
- Fill in a comment sheet and place in “Comment Box” or send comments **before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

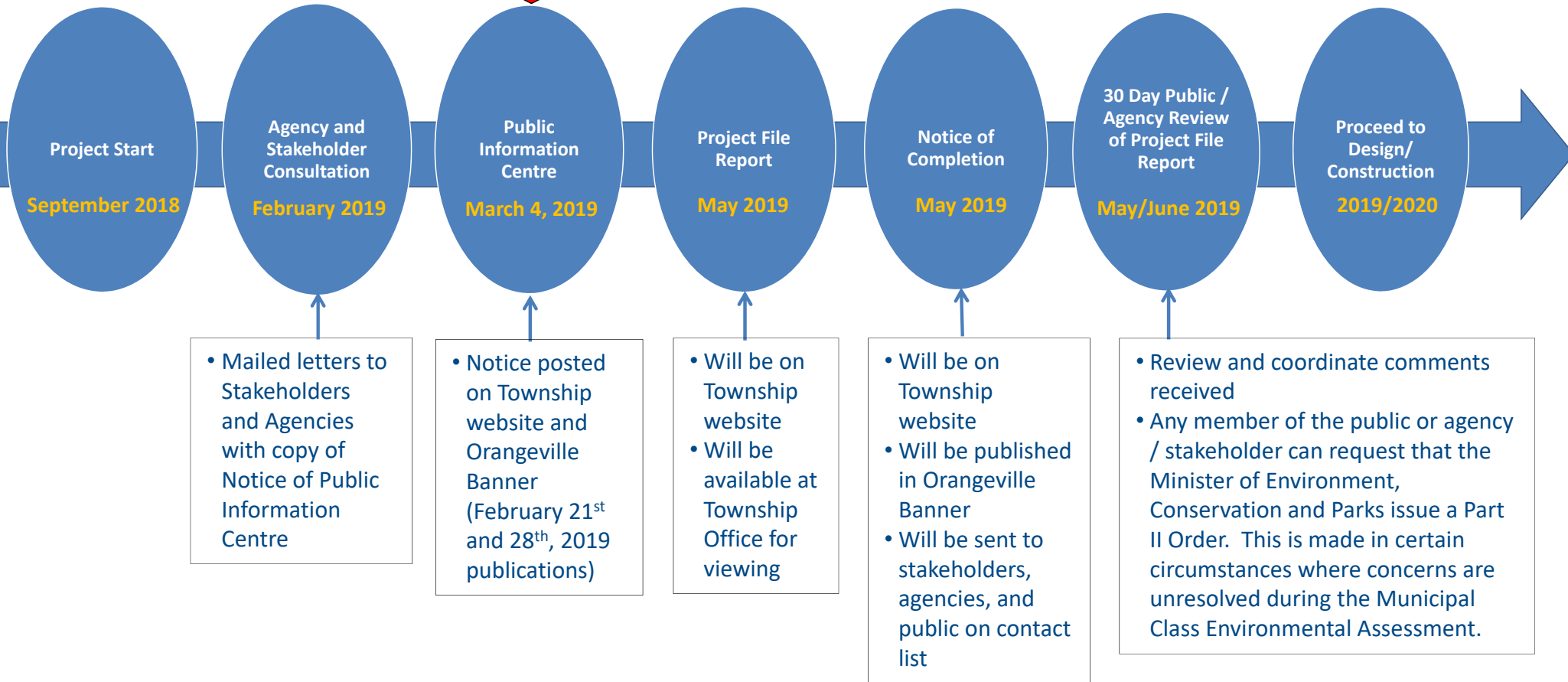
PHASE 5 IMPLEMENTATION

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



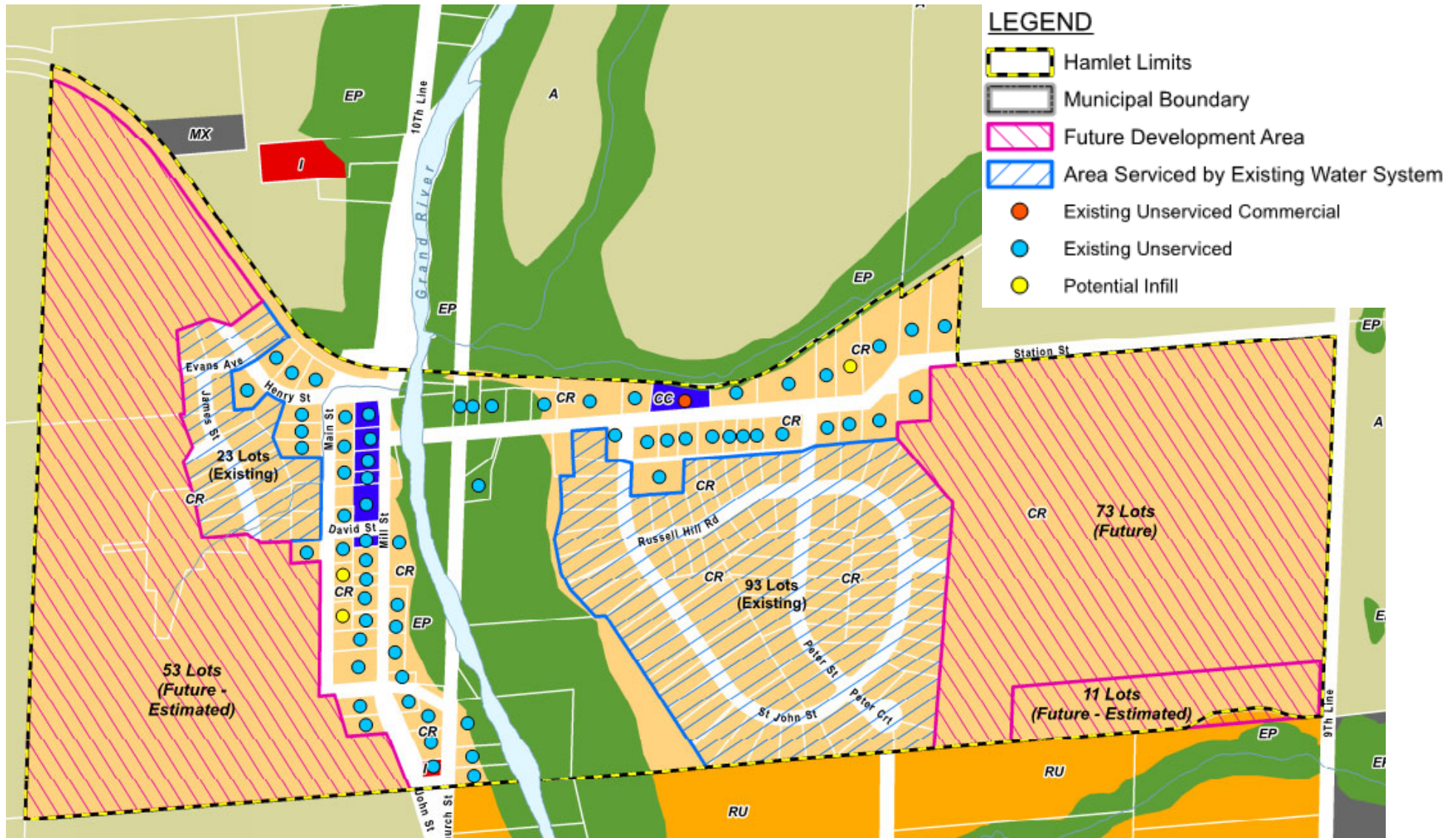
CONSULTATION TIMELINE

TIMELINE MAY VARY PENDING COMMENTS RECIEVED





PROJECT AREA - WALDEMAR





EXISTING DRINKING WATER SYSTEM

Waldemar Pumphouse - 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 m³
- 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"> • Original system designed to pump 38 L/s out to system • Original storage volume was designed for 16.6 L/s for 2 hrs 	<ul style="list-style-type: none"> • 54 L/s for 2 hrs (MOECP) • 100 L/s for 2 hrs (Fire Chief request based on FUS) • 79 L/s for 2 hrs (Original expectation of future fire flow) 	<ul style="list-style-type: none"> • 65 L/s for 2 hrs (MOECP) • 100 L/s for 2 hrs (Fire Chief request based on FUS) • 79 L/s for 2 hrs (Original expectation of future fire flow) 	Modelling results: 38-57 L/s
Storage Requirements	289 m ³	<ul style="list-style-type: none"> • Due to the higher flow requested by the Fire Chief the 54 L/s is not being considered further. • 1,151 m³ (100 L/s for 2 hrs) • 961 m³ (79 L/s for 2 hrs) 	<ul style="list-style-type: none"> • Due to the higher flow requested by the Fire Chief the 65 L/s is not being considered further. • 1,191 m³ (100 L/s for 2 hrs) • 1,002 m³ (79 L/s for 2 hrs) 	272.5 m ³

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



ALTERNATIVE 1 - DO NOTHING

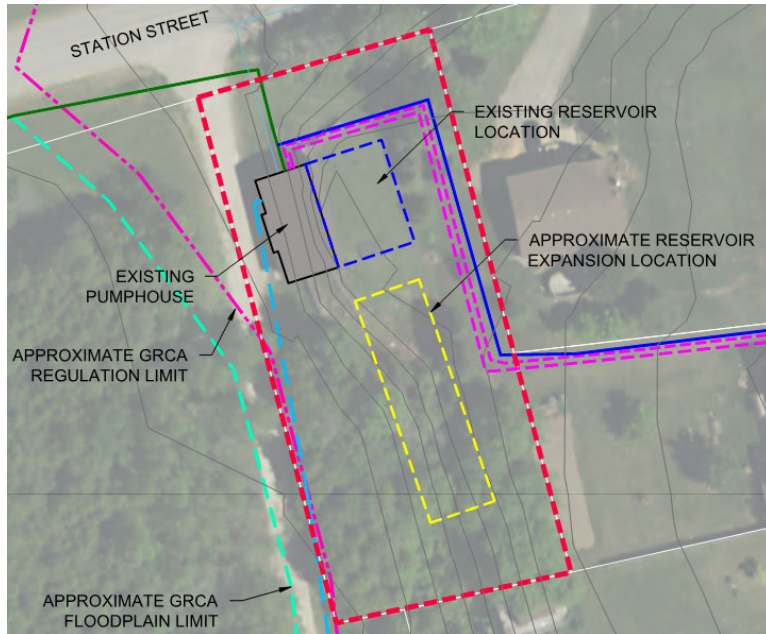
Advantages	Disadvantages
<ul style="list-style-type: none">• No impact over existing conditions related to the natural environment.• No additional nuisance since existing infrastructure would not change.• No expense associated with new infrastructure.• No new land is required.	<ul style="list-style-type: none">• Little conformity to planning policies, given the Township's official plan designates growth for various areas of Waldemar.• There is a draft plan of subdivision which requires municipal water.• 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.

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.



In-ground reservoir (at existing pumphouse site)



In-ground reservoir (at existing pumphouse site)

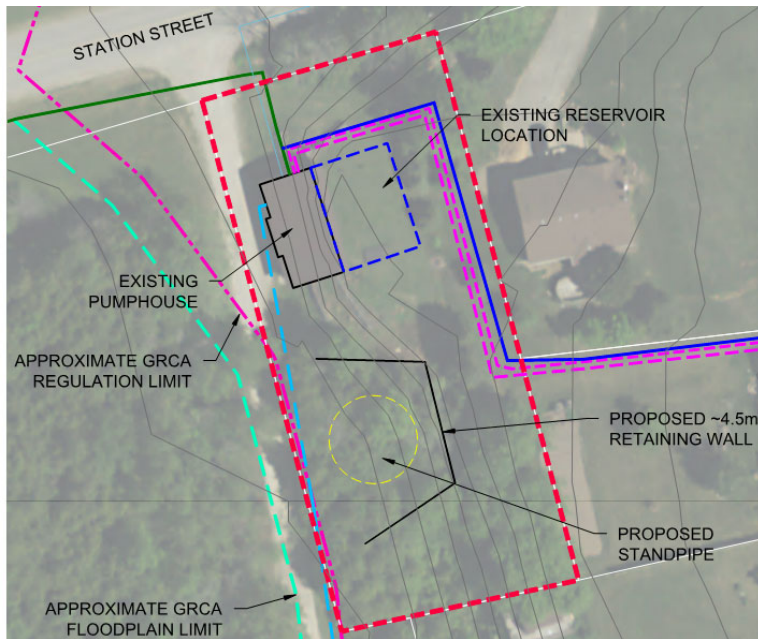
Natural Environment	Socio-economic / Cultural Environment	Technical Factors	Financial Factors
<ul style="list-style-type: none"> - Tree removal is required to accommodate the expansion of the reservoir. No species at risk were identified in the field visit that took place on July 3rd, 2018. - The site has a very small section of land within the GRCA regulatory area, but it is outside the floodplain limits. - A back-up generator is required which have air & noise impact. 	<ul style="list-style-type: none"> - The additional storage would be designed to accommodate future growth areas designated in the Official Plan - No impact anticipated on cultural resources as an archeological assessment was completed on the site in 2018. - Aesthetically, an expanded underground reservoir would be integrated in the land. - There is a loss of trees that cannot be replaced on site which is a negative aesthetic impact associated with this alternative. - Potential impacts on air quality during construction (noise, dust, emissions). - No land acquisition is required as land is owned by the Township. 	<ul style="list-style-type: none"> - 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. - Underground storage can be expandable, but should be designed to do so which adds additional cost. - 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. - Distribution system <ul style="list-style-type: none"> • 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. • 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. 	<p>No Land Costs</p> <p>Capital:</p> <ul style="list-style-type: none"> - 100 L/s storage <ul style="list-style-type: none"> • \$1,900,000 • 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 - 79 L/s storage <ul style="list-style-type: none"> • \$1,780,000 <p>O&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"> - Similar impacts to Option A - Tree removal is required to accommodate the standpipe. There is potential for slightly less tree removal, however it is likely not a significant difference. - The site has a very small section of land within the GRCA regulatory area, but it is outside the floodplain limits. - A back-up generator is required which have air & noise impact. 	<ul style="list-style-type: none"> - The additional storage would be designed to accommodate future growth areas designated in the Official Plan. - No impact anticipated on cultural resources as an archeological assessment was completed on the site in 2018. - 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. - There is a loss of trees that cannot be replaced on site which is a negative aesthetic impact associated with this alternative. - Potential impacts on air quality during construction (noise, dust, emissions). - No land acquisition is required as land is owned by the Township. 	<ul style="list-style-type: none"> - 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. - 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. - They can be expanded, but it is not typical. - There can be concerns associated with falling ice and a buffer is required. - Distribution system <ul style="list-style-type: none"> • 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. • 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. 	<p>No Land Costs</p> <p>Capital:</p> <ul style="list-style-type: none"> - 100 L/s storage <ul style="list-style-type: none"> • \$2,200,000 • 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 - 79 L/s storage <ul style="list-style-type: none"> • \$1,990,000 <p>O&M associated with standpipe only (50 year): \$100,000</p>

ALTERNATIVE NOT PREFERRED



ALTERNATIVE 2 - CONSTRUCT STORAGE FACILITY

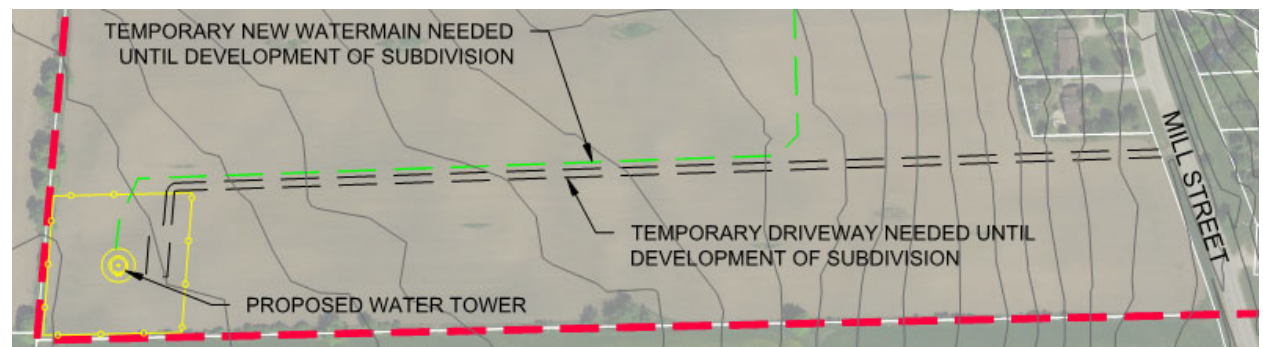
OPTION C: WATER TOWER AT SOUTH WEST CORNER OF WALDEMAR

Natural Environment	Socio-economic / Cultural Environment	Technical Factors	Financial Factors
<ul style="list-style-type: none"> - The existing generator would provide back-up which have air & noise impact similar to existing. - Potential impact on terrestrial habitat however it's minimal as the land is currently farmed. 	<ul style="list-style-type: none"> - The additional storage would be designed to accommodate future growth areas designated in the Official Plan. - No impact anticipated on cultural resources as an archeological assessment was completed on the site in relation to the proposed development by Sarah Properties. - Aesthetically, some people find water towers unpleasing and obtrusive, while others consider them to be a landmark in the community. - Potential impacts on air quality during construction (noise, dust, emissions). - Land is not owned by the Township. It would need to be purchased from Sarah Properties. - 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. 	<ul style="list-style-type: none"> - 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. - A larger standby generator is not required where by Options A and B do require a larger generator. - 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. - There can be concerns associated with falling ice and a buffer is required. - Not expandable - Distribution system <ul style="list-style-type: none"> • 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. • 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. 	<p>Capital: \$4,270,000</p> <ul style="list-style-type: none"> - Extra cost associated with providing temporary access and potentially temporary watermain as Sarah Properties is not developed. There is also costs included for land. - 100 L/s storage <ul style="list-style-type: none"> • \$4,440,000 • 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 - 79 L/s storage <ul style="list-style-type: none"> • \$4,320,000 <p>O&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

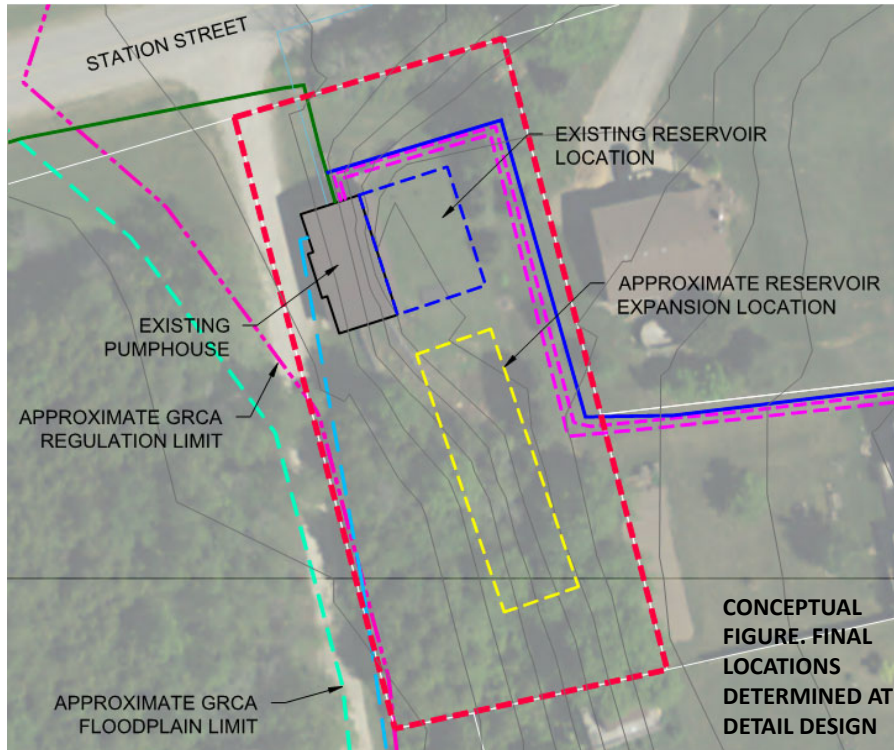
- Approx. 11.5 – 19 km (depending on route)

Natural Environment	Socio-economic / Cultural Environment	Technical Factors	Financial Factors
<p>Overall</p> <ul style="list-style-type: none"> - More area is disturbed compared to other alternatives <p>Option A</p> <ul style="list-style-type: none"> - Creek crossing is required. Areas along the trail are regulated by GRCA. - Construction could be kept under the trail to reduce overall impact <p>Option B</p> <ul style="list-style-type: none"> - Route requires going through multiple GRCA regulated areas. - More detailed assessment would be needed to confirm preferred route as to reduce overall impact on the natural environment 	<p>Overall</p> <ul style="list-style-type: none"> - Aesthetically the watermain is mostly buried except for flushing locations or air release valves so it has minimal impact. - Potential impacts on air quality during construction (noise, dust, emissions) - 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. <p>Option A:</p> <ul style="list-style-type: none"> - During the duration of the construction, the trail would likely be closed. This is a general nuisance to those who use the trail. <p>Option B:</p> <ul style="list-style-type: none"> - Construction duration would be longer compared to option A - Route would be within road right of way, and traffic could be impacted during construction 	<p>Option A:</p> <ul style="list-style-type: none"> - Consultation with Town of Grand Valley required - Grand Valley does not have surplus capacity. They are in the process of a Master Servicing Plan to expand their storage. <p>Option B:</p> <ul style="list-style-type: none"> - Consultation with County of Dufferin and Town of Orangeville required - 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. 	<p>Capital for watermain connection only:</p> <ul style="list-style-type: none"> • Option A: \$1,750,000*** • Option B: \$13,300,000*** <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

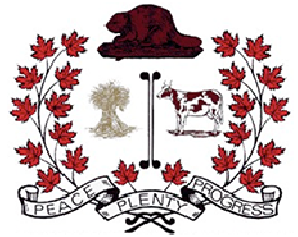
1. Provide comments by completing the comment sheet and placing into “Comment Box” or send to Carley Dixon or Christine Gervais before **March 18, 2019**
2. We will review comments received and conduct additional work if necessary
3. We will re-evaluate alternatives in light of comments received
4. We 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

THANK YOU FOR ATTENDING



MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT FOR WALDEMAR WATER STORAGE



PUBLIC COMMENT SHEET

Name: _____

Public Information Centre:

Address: _____

Monday, March 4th, 2019

7:00 p.m. – 9:00 p.m.

Postal Code: _____

Email: _____

The Township is undertaking a Municipal Class Environmental Assessment to identify the preferred method of providing additional water storage required to support future water demands for the remainder of the developable lands within the community boundary of Waldemar. R.J. Burnside & Associates Limited has been retained by the Township to review various alternatives. This questionnaire is your opportunity to comment on this study and indicate your concerns and preferences.

1. My interest is: (please check all that apply)

- resident
- general interest
- other: _____
- agency representative
- developer interest

2. If you live in Waldemar and you obtain your water from a private well, do you have any interest in connecting to the Municipal Drinking Water System at some point?

- Yes, I do have interest in a future connection to the municipal water system.
- No, I do not have any interest in a future connection.

NOTE: The purpose of this EA is to expand the water system to service new development only. However, this study allows us the opportunity to reach out to existing residents to confirm whether there is any interest in future connections, so we can properly consider the alternatives.

3. Comments/Questions/Suggestions (additional space on back of page):

The Township of Amaranth and R.J. Burnside & Associates Limited thank you for your involvement in the Municipal Class Environmental Assessment. Information will be collected in accordance with the *Municipal Freedom of Information and Protection of Privacy Act*. With the exception of personal information, all comments will become part of the public record and published with the final Project File Report.



BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix D

Correspondence with Agencies, Stakeholders, Public

Carley Dixon

From: Kevin McNeilly <kmcneilly@gvdfd.com>
Sent: Wednesday, September 12, 2018 3:43 PM
To: Carley Dixon
Subject: Re: Waldemar Water Storage EA - Fire Flows

Certainly

Sent from my BlackBerry 10 smartphone on the Bell network.

From: Carley Dixon
Sent: Wednesday, September 12, 2018 3:33 PM
To: Kevin McNeilly
Subject: RE: Waldemar Water Storage EA - Fire Flows

Great, how about Monday (Sept 17th) at 10:30am? I'll meet you at the Township of Amaranth office.

Carley Dixon, P.Eng.

R.J. Burnside & Associates Limited | www.rjburnside.com
Office: 800-265-9662 Direct: 226-486-1542

From: Kevin McNeilly <kmcneilly@gvdfd.com>
Sent: Tuesday, September 11, 2018 9:38 AM
To: Carley Dixon <Carley.Dixon@rjburnside.com>
Subject: RE: Waldemar Water Storage EA - Fire Flows

Any day next week at this point works for me.

Kevin McNeilly
Fire Chief
Grand Valley & District Fire Department

519-928-3460

From: Carley Dixon <Carley.Dixon@rjburnside.com>
Sent: September 4, 2018 10:48 AM
To: Kevin McNeilly <kmcneilly@gvdfd.com>
Subject: RE: Waldemar Water Storage EA - Fire Flows

Hi Kevin – Do you want to have a meeting to discuss this project below? I want to start doing the calcs and fire flows are an integral part of that. Let me know if there is a day or time that works best.

Thanks!
Carley

Carley Dixon, P.Eng.

R.J. Burnside & Associates Limited | www.rjburnside.com
Office: 800-265-9662 Direct: 226-486-1542

From: Carley Dixon
Sent: Friday, August 10, 2018 2:55 PM
To: 'kmcneilly@gvdfd.com' <kmcneilly@gvdfd.com>
Cc: Sue Stone (suestone@amaranth-eastgary.ca) <suestone@amaranth-eastgary.ca>; Christine Gervais (cgervais@amaranth-eastgary.ca) <cgervais@amaranth-eastgary.ca>; Gord Feniak <Gord.Feniak@rjburnside.com>
Subject: Waldemar Water Storage EA - Fire Flows

Hi Kevin,

The Township of Amaranth is initiating a Municipal Class EA to expand the water storage reservoir in Waldemar. As fire flow is an important aspect of determining storage requirements and reviewing any future designs related to the distribution system, I was wondering if you have any input related to fire flows you would like to see in Waldemar. Background information is below, and if needed I can set up a meeting to discuss further.

The existing water system was designed to support a fire flow of 500 igpm (38 L/s). There are notes in our files from the original design of the water system, that they expected the ultimate population to be 1500 people, and that the fire flow would ultimately be 79 L/s for 2 hours.

I've estimated that the water system will service somewhere between 800 – 1100 people at ultimate build-out determined by the information below.

	Units	Population
Existing Water System	116	371
Development Areas		
Centurian	73	234
Sarah Properties (Estimated)	53	170
South of Centurian (Estimated)	11	35
Existing Water System + Development Areas	253	810
Other Lots		
Existing unserviced	67	214
Potential Infill	3	10
Ultimate Population of Waldemar	323	1034

I know there are a number of considerations and guidelines related to fire flow that can be considered by the Township when selecting the fire flow that will be provided. I've outlined some below.

- Fire Department desired fire flows.
- The Fire Underwriters Survey – Using FUS short method, where separation is between 3 and 10 m the flow can be 67 L/s. For this fire flow, the duration is for 1.5 hours in the FUS. The zoning does require minimum 3 m setback to interior lot lines, so almost all dwellings should fall within this range.
- The MOECC Guidelines would be 38 L/s for 2 hrs (810 people) and 65 L/s for 2 hrs (1,034 people). Screen shot of MOECC guideline below. For the 67 L/s identified in the FUS short method, the MOECC guideline would equate to a population of 1,100 people.

Sizing Treated Water Storage for Systems Providing Fire Protection

The following method for sizing water storage needs may not fulfill the fire protection requirements of the municipality insurance company or the Fire Underwriters Survey. For fire flow requirements, refer to the latest edition of the Fire Underwriters Survey document *Water Supply for Public Fire Protection*¹². Historically, small municipalities in Ontario have used the following criteria.

Table 8-1: Fire Flow Requirements

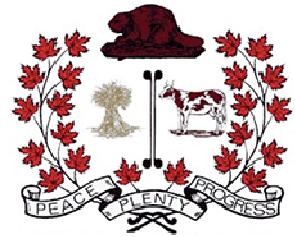
EQUIVALENT POPULATION¹	SUGGESTED FIRE FLOW (L/s)	DURATION (HOURS)
500 – 1 000	38 (10 ft/s)	2
1 000	64 (17 ft/s)	2
1 500	79 (21 ft/s)	2

Before confirming the fire flows to be provided, we would appreciate any input the Fire Department may have.

Thanks,
Carley



**Township of Amaranth
Notice of Study Commencement
Waldemar Water Storage
Class Environmental Assessment Study**



The Study

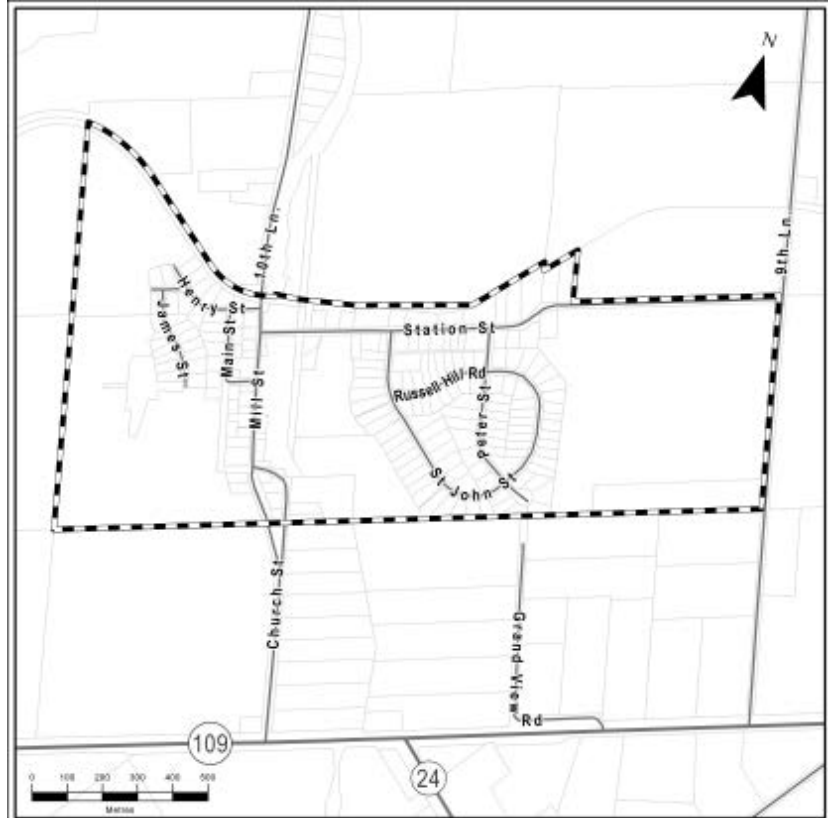
The Township of Amaranth has identified that the existing water storage in Waldemar does not have the volume required to support future water demands. The Township is initiating a Municipal Class Environmental Assessment (EA) to identify the preferred method of providing for these demands. The EA will review all lands designated within the Community Boundary of Waldemar in the Official Plan as part of this study.

Reasoning for Initiating the Study

The municipal drinking water system needs to be expanded to provide drinking water to a 73 lot subdivision near Station Street and 9th Line. The Developer is required to finance upgrades to the water system needed to service this development. The Township has identified that additional water storage is required and is initiating the EA to determine the preferred upgrades for the system.

Waldemar Drinking Water System

The existing drinking water system serves a portion of residents within Waldemar. The system has three wells to supply water, and a pumphouse and reservoir for treatment and storage of water. The water storage provides water to use when there are high demands on the system and for firefighting.



The Process

This study is being carried out in accordance with the requirements of a Schedule "B" undertaking as outlined in the Municipal Engineers Association *Municipal Class Environmental Assessment document* (2000, as amended in 2007, 2011, and 2015). A key component of the study will be consultation with interested stakeholders (public and agencies) as well as indigenous communities.

This notice is intended to inform residents of Waldemar that the Township is initiating the study. The Township will be holding a Public Information Centre expected to occur in the Fall, where further information related to the study including alternatives will be available for input and comment.

Notification for the date, location, and time of the upcoming Public Information Centre will be posted on the Township's website and will be published in the Orangeville Banner. If you wish to be placed on the contact list to receive future notices or have questions or comments related to this project, please contact Carley Dixon or Christine Gervais.

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

Township of Amaranth
Director of Planning
Christine Gervais
374028 6th Line
Amaranth ON L9W 0M6
Phone: 519-941-1007
cgervais@amaranth-eastgary.ca

Information will be collected in accordance with the Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.

This Notice first issued on October 4, 2018.



September 27, 2018

Via: Email

Mrs. Sue Stone
CAO/Clerk
Township of Amaranth
374028 6th Line
Amaranth, ON L9W 0M6

Dear Sue:

**Re: Waldemar Water Storage EA
Project No.: 300041042.0000**

Burnside is completing a Municipal Class Environmental Assessment (EA) for additional water storage in Waldemar. We met with the Fire Chief (Kevin McNeilly) on September 17 to obtain input on desired fire flows which is a critical component in determining water storage requirements. We understand this meeting has raised questions by members of Council who would like further information related to the Waldemar Water System.

Why is Burnside doing an EA for water storage?

There is a draft plan approved subdivision located at 9th Line and Station Street identified to the right with the blue outline. To facilitate this development additional water storage is required. The developer is required to do upgrades to the water system to accommodate their development and they are paying for the Municipal Class EA that the Township is undertaking. The EA will evaluate all lands designated for development in the Official Plan within Waldemar's boundary.



What input did the Fire Department provide?

The Fire Chief has requested that the water system provide 94 L/s (1240 igmp) for a duration of 2 hours. The existing system cannot provide this requested fire flow. We will be reviewing this request as part of the EA process, identifying what upgrades would be required to accommodate this flow.

What was the existing system designed for?

The existing storage for fire protection was designed based on Ministry of Environment guidelines in place at that time. Current guidelines would require substantially more. The

existing storage volume was based on 16.6 L/s for 2 hours, where current guidelines would require 38 L/s for 2 hours for a similar population. The existing pumps however were designed to accommodate a 38 L/s flow out to the system. In comparison to current Ministry of Environment guidelines, the existing system does have a shortfall of storage. The intent has always been that the next developer would add more storage to the water system, however it was not anticipated that development would not proceed again until over 20 years later.

Is there a minimum fire flow the Township must provide?

No, there is no regulation that dictates the minimum storage and fire flow that the Municipality must provide. There are however guidelines and documents in place that are used when designing municipal systems with fire protection. This includes input from the Fire Department, Ministry of Environment Guidelines, and Fire Underwriters Survey. This information will be considered as part of the EA process.

When is consultation being completed?

There are mandatory points of contact under the EA. A non-mandatory notice is being placed on the Township's Website (copy attached) as an initial point of contact to let the public know that an EA has commenced. Once Burnside has completed a detailed review of water demands and storage requirements, we will be in a better position to identify options for storage and answer questions from the public. Once this review is completed, a mandatory notice will be distributed to relevant approval agencies and stakeholders, indigenous communities, and the public. A date for a public open house will be included in this mandatory notice which is expected to occur in late fall. The notice would be posted on the Township's website and advertised in the paper. It is sent out to the agencies, stakeholders, indigenous communities, and anyone who has requested to be on the contact list.

We trust this provides clarification on why we met with the Fire Chief to discuss the Waldemar Water System. As we are in the EA process, comments provided will become part of the public record and included in our project file report for this EA.

Yours truly,

R.J. Burnside & Associates Limited

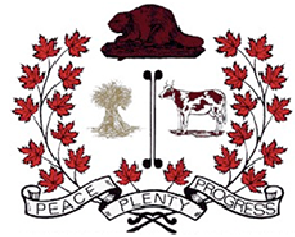


Carley Dixon
CD:sgd

Enclosure(s) Notice of Project Commencement



Township of Amaranth Notice of Study Commencement Waldemar Water Storage Class Environmental Assessment Study



The Study

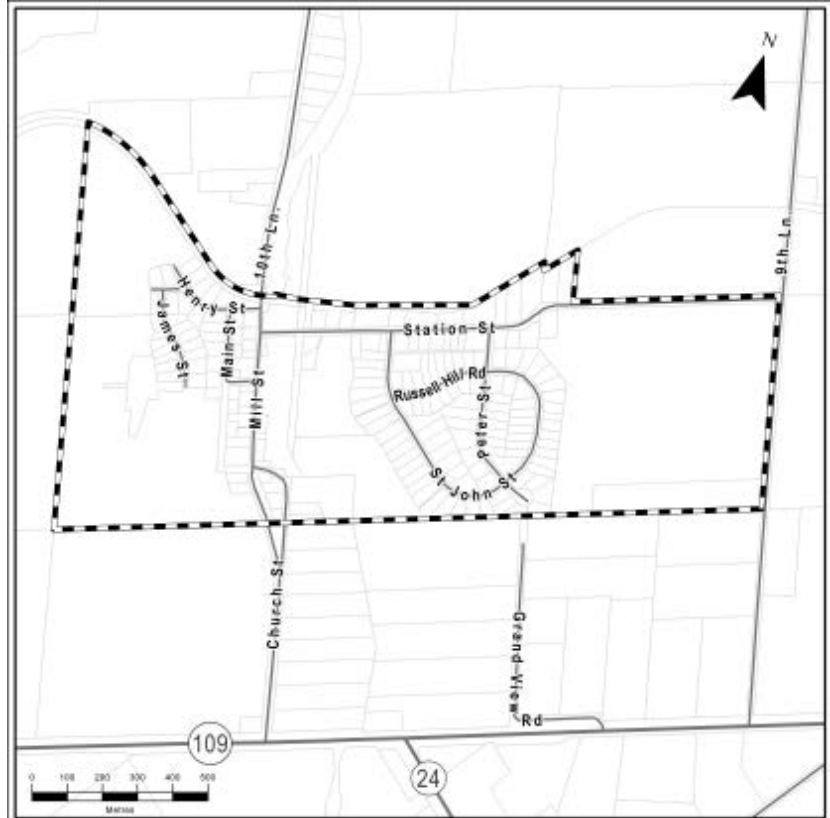
The Township of Amaranth has identified that the existing water storage in Waldemar does not have the volume required to support future water demands. The Township is initiating a Municipal Class Environmental Assessment (EA) to identify the preferred method of providing for these demands. The EA will review all lands designated within the Community Boundary of Waldemar in the Official Plan as part of this study.

Reasoning for Initiating the Study

The municipal drinking water system needs to be expanded to provide drinking water to a 73 lot subdivision near Station Street and 9th Line. The Developer is required to finance upgrades to the water system needed to service this development. The Township has identified that additional water storage is required and is initiating the EA to determine the preferred upgrades for the system.

Waldemar Drinking Water System

The existing drinking water system serves a portion of residents within Waldemar. The system has three wells to supply water, and a pump house and reservoir for treatment and storage of water. The water storage provides water to use when there are high demands on the system and for firefighting.



The Process

This study is being carried out in accordance with the requirements of a Schedule "B" undertaking as outlined in the Municipal Engineers Association *Municipal Class Environmental Assessment document* (2000, as amended in 2007, 2011, and 2015). A key component of the study will be consultation with interested stakeholders (public and agencies) as well as indigenous communities.

This notice is intended to inform residents of Waldemar that the Township is initiating the study. The Township will be holding a Public Information Centre expected to occur in the Fall, where further information related to the study including alternatives will be available for input and comment.

Notification for the date, location, and time of the upcoming Public Information Centre will be posted on the Township's website and will be published in the Orangeville Banner. If you wish to be placed on the contact list to receive future notices or have questions or comments related to this project, please contact Carley Dixon or Christine Gervais.

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

Township of Amaranth
Director of Planning
Christine Gervais
374028 6th Line
Amaranth ON L9W 0M6
Phone: 519-941-1007
cgervais@amaranth-eastgary.ca

Information will be collected in accordance with the Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.

This Notice first issued on October 4, 2018.



**Township of Amaranth
Council Minutes
Wednesday, October 3, 2018
10:00 a.m.**

The Township of Amaranth Council met in the Council Chambers of the municipal office, Laurel, Ontario on Wednesday, October 3, 2018, commencing at 10:00 a.m.

Present:	Mayor	D. MacIver
	Deputy Mayor	J. Aultman
	Councillor	G. Little
	Councillor	H. Foster (10:55 a.m. arrival)
	Councillor	C. Gerrits
	CAO/Clerk-Treasurer	S. Stone
	Deputy Clerk	C. Hickey
	Director of Public Works	B. Ryzebol
	Director of Planning	C. Gervais (Planning matters)
	Planner	S. Filson (Planning matters)

1. Opening of Meeting

Mayor MacIver called the Meeting to Order at 10:00 a.m. and invited Councillor Little to provide update of the recent Farm Tour. Councillor Little indicated that there was a great turn out for the tour, and resulted in a generous donation to the Local Food Bank.

2. Late Submissions - None

3. Approval of Agenda

Resolution #1

Moved by: J. Aultman – Seconded by: G. Little

BE IT RESOLVED THAT:

Council hereby approve the agenda as amended pursuant to Addendum 14.5 - Notice of Intention to pass the following By-law for Provision of Fire Protection Services between the Town of Orangeville and the Township of Amaranth.

CARRIED

4. Disclosure of Pecuniary Interest with Reasons

Deputy Mayor Aultman declared with respect to Item 11.8 – Other - Fibre Optic Status Update, as she is a subscriber to Internet Access Solutions.

5. Approval of Minutes

5.1. Regular Meeting Minutes held September 12, 2018

Resolution #2

Moved by: C. Gerrits – Seconded by: J. Aultman

BE IT RESOLVED THAT:

Council do hereby approve the minutes of the Regular Meeting held September 12, 2018 as circulated.

CARRIED

6. Public Question Period (10:00 a.m. to 10:15 a.m.)

Paul Thomson, resident was in attendance to question the burial of the power lines on the 10th Line, which he claims that Canadian Hydro Developers committed to do in 2018. Council was not aware of this commitment, but were not opposed to underground lines, which they have required for wind developments elsewhere in the Township, and instructed staff to send a letter to TransAlta, the new wind development owners, to question the status of this matter.

7. Delegations

- 7.1 Stephen Riley, R.J. Burnside and Associates Inc. (10:30 a.m.)
Bridge Deck Options

Stephen Riley, R.J. Burnside and Associates Inc., presented options that the Township has to utilize the Bridge Deck obtained from Guardian Bridge. They looked at two bridges being Bridge 11 on 15 Sideroad and Bridge 10 on 7th Line, and confirmed that the bridge deck could be used with either structure, though each bridge would require modifications to accommodate the deck and to ensure the bridge is structurally sound.

Councillor Foster joined the Council meeting (10:55 a.m.).

- 7.2 Gaetano Corbo & Percy Way, Alati Auto Truck Service Ltd. (10:45 a.m.)
Site Plan Application SPA2-15 – Development Status
Concession 6, West Part Lot 14

Domenic Alati, Gaetano Corbo and Percy Way were in attendance to address the development status of Site Plan Application SPA2-15. Carley Dixon, R.J. Burnside and Associates Inc. was also in attendance to provide an update from the site inspections that have been completed.

Ms. Dixon advised that Mr. Alati had been provided with time lines to complete the necessary work to bring his property into compliance, but that the timelines associated with the various stages, A, B and C, have passed, and they were not to move on to Stage C until Stages A and B completed. Ms. Dixon indicated she was on site September 20, 2018, at which time they were still on Stage A, which had a July 31st deadline, and there is still incomplete work in Stage A, though feels it is 95% complete.

Stage B work, that was to be completed by August 30, 2018, has not been completed, and noted that clean up of strapping still required. Mr. Corbo, Property Manager for Alati Auto Truck Services Limited advised that they are continuing to work on the items listed.

Council indicated that they would allow the work to continue, but that all requirements of Stage A and B to be complete by October 15, 2018, following which Ms. Dixon to re-inspect and if Stages A and B not successfully cleaned up, the Township will do the clean up utilizing the securities they have to ensure compliance of this matter. The November 30, 2018 deadline will apply to Stage C. The applicants wish to utilize grindings as part of their road construction, but this was not approved previously and grindings are not part of their Site Plan Amendment Application, which is still pending. Therefore, they are to provide plan to Ms. Dixon for use of the grindings, and same to be included in their Site Plan Amendment Application. The following resolution was passed.

Resolution #3

Moved by: C. Gerrits – Seconded by: H. Foster

BE IT RESOLVED THAT:

THAT pursuant to amended Schedule G timelines for the Alati Auto Truck Services Property, Stage A and B must be completed by October 15, 2018 to the satisfaction of the Township Engineer, failing which the Township will pursue completion and cost recovery in accordance with resolution passed August 29, 2018;

AND FURTHER THAT a plan utilizing Granular A, Granular B and Grindings on the roadways is to be provided to the Township Engineer for review and approval, and is to be included in the Site Plan Amendment Application by November 30, 2018 which is still pending.

CARRIED

8. **Public Meetings - None**

9. **Unfinished Business**

9.1. **Other**

10. **Public Works**

The following were received and/or dealt with:

10.1. **Director of Public Works
Update**

Director of Public Works, Ben Ryzebol provided an update on the following projects:

The roadside grass cutting is completed in the designated areas of the Township.
Ditch brushing is ongoing at this time
Working on grading of roads
Equipment is being prepared for the winter season
Public Works Department will require two seasonal staff for the winter season
Staff to discuss road flooding and damage on the Mono-Amaranth Townline with the Town of Mono.

10.2. **Bridge 15
10.2.1. Update**

A cost analysis was provided for 2017 and 2018 which included all costs related to Bridge 15.

10.3. **Bridge 17**

The Bridge Opening will take place on Friday October 12, 2018 at 10:00 a.m.

10.4. **Public Works Yard – Shop Addition
Tender Results**

No tenders were received at the Office for the Public Works Shop Addition. Discussion ensued on putting the tender out later this year or early next year.

10.5. **Other – nothing at this time.**

11. **Planning**

The following were received and/or dealt with:

11.1. **Development Updates**
Nothing at this time

11.2. **Class Environmental Assessment Study - Waldemar Water
Storage**

11.2.1. Notice of Study Commencement - Class Environmental Assessment Study

11.2.2. Letter from R.J. Burnside and Associates dated September 27, 2018 - Waldemar Water Storage Environmental Assessment

Carley Dixon, R.J. Burnside and Associates Inc., was in attendance, and advised that they are commencing a Class Environmental Assessment, this is part of the process for the proposed Centurian Subdivision and is completed at the developers cost as they are required to finance the upgrades to the water system that are needed. Burnside's will investigate all options to determine the preferred upgrades for the system. There will be a public information session where further information related to the study including alternatives will be available for input and comment.

Discussion ensued on how the fire hydrants are tested and if there would be any upgrades to the existing hydrants.

- 11.3. **County of Dufferin**
- 11.3.1. Notice of Decision – Township of Melancthon Official Plan Amendment – OPA 2, Part of the West Part of Lots 12 & 14, Concession 3 OS - Strada Aggregates

- 11.4. **Town of Grand Valley**
- 11.4.1. Notice of Decision – Consent Application B07-2018 Part of Lot 31, Concession 8

- 11.5. **Environment and Land Tribunals Ontario**
- 11.5.1. Sarah Properties Limited – Preliminary Screening of the Notice of Appeal – Appeal Deemed Valid

The Appeal Deemed Valid document to be provided to residents. Staff to obtain more information on the process in order to ensure the residents are provided with necessary information.

- 11.6. **Ontario Ministry of Natural Resources and Forestry**
- 11.6.1. Comment Period for Updated Procedures for Regional Review under the Great Lakes-St. Lawrence River Basin Sustainable Water Resources Agreement

- 11.7. **Local Planning Appeal Support Centre**
- 11.7.1. Letter dated August 22, 2018 - Local Planning Appeal Support Centre
- 11.7.2. [Interim Guide to Services and Eligibility](#)

- 11.8. **Other**

Director of Planning, Christine Gervais indicated that a meeting with Internet Access Solutions (Standard Broadband) and the County took place to bring additional high speed internet access to the area. The County of Dufferin has a budget to install a tower for high speed internet, fibre optic was discussed but it is not financially feasible in rural areas.

Internet Access Solutions has identified the Township office property as a good location due to the proximity to other areas, though other locations can also be investigated to determine the best possible location. Further discussions will take place on this matter.

Deputy Mayor Aultman declared with respect to Item 11.8 – Other - Fibre Optic Status Update, as she is a subscriber to Internet Access Solutions, and left the Council Chambers.

Ms. Gervais indicated that Internet Access Solutions held their Public Information night and provided an update to the residents on the process and costing for the project. Staff and consultants met with their installer on the status and process, at this time it appears unlikely that the installation will be completed this year. Staff are reviewing the matter and need for an agreement for the work that is being completed.

12. **Committee Report**

The following were received and/or dealt with:

- 12.1. **County of Dufferin**
- 12.1.1. [September 27, 2018 Community Services Dufferin Oaks Agenda](#)
- 12.1.2. [September 27, 2018 General Government Services Agenda](#)
- 12.1.3. [September 27, 2018 Infrastructure & Environmental Services Agenda](#)
- 12.1.4. Waste Services - Diversion Digest Newsletter

Councillor Foster provided an update from the POA meeting that was held on September 28, 2018. The POA agreement is still an outstanding issue, regular meetings have been scheduled with the next meeting being held on November 30, 2018. Councillor Foster has requested that elected officials need to be in attendance for all meetings along with the Police Chiefs.

- 12.2. **Shelburne District Fire Department**
- 12.2.1. Draft Board Agreement – Update
- 12.2.2. Resolution dated September 4, 2018 – Capital Implications
- 12.2.3. Resolution dated September 4, 2018 - Adoption of Capital Plan

Discussion ensued on the Capital plan that was presented, noting the value of the land and fire hall building need to be clarified in terms of what would happen to this asset.

- 12.3. **Orangeville District Fire Department**
- 12.3.1. 2018-2022 Fire Service Agreement – Amendment
- 12.3.2. Orangeville Fire Department Responses 2016-2018

See Item 14. By-laws for the resolution to accept the amended agreement.

- 12.4. **Shelburne Public Library Board**
- 12.4.1. Minutes – June 19, 2018

Councillor Little advised that Mulmur has re-joined the Shelburne Public Library Board.

- 12.5. **Grand Valley Public Library**
- 12.5.1. Annual Silent Auction Donation Request

Staff will put together a package of items for donations to the library.

- 12.6. **Ontario Provincial Police**
- 12.6.1. 2019 Annual Statement Package
- 12.6.2. Cyber Operations Section – Cybercrime Alert

Discussion ensued on traffic control, speed control, staff time, and parking issues within the Township.

- 12.7. **Grand Valley Medical Dental Centre Board**
- 12.7.1. Grand Valley Medical Dental Centre Board Agreement
- 12.7.2. Resolution dated September 14, 2018

Suggested that the agreement be reviewed each term of Council. There are no major changes or increases in the financial obligation for municipalities.

The by-law to authorize the execution of an agreement for Item 12.7.1 Grand Valley Medical Dental Board Agreement dealt with under Item 14.5.

- 12.8. **Waldemar Park Committee**
- 12.8.1. Update

Discussion ensued on possible changes that could be made to the park including the possibility of adding exercise equipment or include a dog park. Both of these options would have cost implications. The question of cleaning out the stormwater pond in the park was also raised. Director of Public Works, Ben Ryzebol advised that they can maintain it if required, but it was agreed that it is not necessary at this time.

- 12.9. **Ministry of Tourism, Culture and Sport**
- 12.10. Update

The handout has been submitted to Upper Grand District School Board for approval. Once we receive this we will provide to Laurelwoods, Centennial Highlands and Highland Heights for distribution.

- 12.11. **Grand River Conservation Authority**
- 12.11.1. GRCA Current – September 2018

Discussion ensued on the Emerald Ash Borer program and the success of the program. Mayor MacIver advised that they are offering workshops for land owners.

Councillor Foster requested that Grand River Conservation Authority attend a meeting to provide clarification on restoration of properties that have been subject of illegal peat extraction and fill operations.

- 12.12. **Nottawasaga Valley Conservation Authority**
- 12.12.1. Journey to 1812 at the Festival at Fort Willow on September 29, 2018
- 12.12.2. Circulations and Review Fees - Committee of Adjustment Applications
- 12.12.3. NVCA Integrated Watershed Management Planning Meeting #2

- 12.13. **Credit Valley Conservation**
- 12.13.1. Media Clips – September 21, 2018
- 12.13.2. Media Clips – September 10, 2018

Councillor Gerrits reported on the Joint Water Management Model requirement, which is to be implemented by December 31, 2018, and recent meeting between Councillor Gerrits, Mayor MacIver, Township staff and CVC staff. All four affected municipalities passed resolutions in support of the strategy that was developed, but Amaranth and East Garafraxa included some conditions, that CVC staff members wish to address and which were discussed further. Once they meet with Orangeville and Mono they will work at amending the report. Mayor MacIver mentioned that the model needs to be redone to include the areas affected by the Pullen Well.

- 12.14. **Other** – nothing at this time.

13. **General Business and Correspondence**

The following were received and/or dealt with:

- 13.1. **AMO**
- 13.1.1. [September 20, 2018 Watchfile](#)
- 13.1.2. Federal Gas Tax Allocations - 2019-2023
- 13.1.3. Policy Update - Ontario Introduces Legislation to Expand Natural Gas through Private Investment
- 13.1.4. Letter dated September 17, 2018 – AMO President Letter on Municipal Governance
- 13.1.5. Policy Update - Resource Productivity and Recovery Authority RPRA Sets 2019 Blue Box Steward Funding Obligation
- 13.1.6. Policy Update - Court Decision and Next Steps: Bill 5 - Reducing the Size of City of Toronto Council
- 13.1.7. Province to Introduce Private Cannabis Retail Legislation – With Municipal Opt Out

Staff to report back on new Cannabis legislation and impacts of municipalities. Discussion ensued on receiving comments from both the County of Dufferin and the Health Unit.

- 13.2. **AMCTO**
- 13.2.1. Response to Announcement of The Better Local Government Act
- 13.3. **North American Free Trade Agreement – Dairy Supply Management Program**
- 13.3.1. Township of Melancthon - Resolution dated September 21, 2018
- 13.3.2. Municipality of Huron East – Resolution dated September 19, 2018
- 13.3.3. Township of Macdonald, Meredith and Aberdeen
- 13.4. **Township of South Glengarry**
- 13.4.1. Resolution dated September 4, 2018 – Paramedic Services as an Essential Service

- 13.5. **Premier of Ontario**
- 13.5.1. Letter dated September 20, 2018 - Legislation to Repeal the Green Energy Act in the Province of Ontario.

Discussion ensued on the implications this will have on the existing wind turbine facilities.

- 13.6. **David Tilson M.P., Dufferin-Caledon**
- 13.6.1. Letter dated September 19, 2018 - Possible Canada Post Strike
- 13.7. **Wellington-Dufferin-Guelph Public Health**
- 13.7.1. Board of Health Highlights
- 13.8. **Headwaters Communities in Action**
- 13.8.1. Engaged Citizens for a Vibrant Community

14. **By-Laws**

The following were received and/or dealt with:

Notice of Intention to pass the following By-Laws:

- 14.1. **Appointing By-law**
Being a By-law to Amend By-Law 28-2018; to Appoint Officials for the Township of Amaranth for the year 2018.

Resolution #4

Moved by: G. Little – Seconded by: J. Aultman

BE IT RESOLVED THAT:

Leave be given to introduce a by-law to amend by-law 28-2018, being a by-law to appoint officials for the Township of Amaranth for the year 2018; and that it be given the necessary readings and be passed and numbered 51 - 2018.

CARRIED

- 14.2. **Tile Drainage Debenture By-law**
Being a by-law to impose special annual drainage rates upon land in respect of which money is borrowed under the Tile Drainage Act.

Resolution #5

Moved by: C. Gerrits – Seconded by: H. Foster

BE IT RESOLVED THAT:

Leave be given to introduce a by-law to impose special annual drainage rates upon land in respect of which money is borrowed under the drainage act; and that it be given the necessary readings and be passed and numbered 52 - 2018.

CARRIED

- 14.3. **Procedural By-law**
Being a by-law to Govern the Proceedings of Council, its Committees and Boards and to Repeal by-law 18-2007

Item 14.3 Procedural By-law was deferred till next Council meeting, to allow Council to complete a comparison with the previous procedural by-law.

- 14.4. **Prescribe Lower Rates of Speed By-law**
Being a by-law which Prescribes Lower Rates of Speed within the Township of Amaranth.

Resolution #6

Moved by: G. Little – Seconded by: J. Aultman

BE IT RESOLVED THAT:

Leave be given to introduce a by-law to prescribe lower rates of speed; and that it be given the necessary readings and be passed and numbered 53 - 2018.

CARRIED

14.5. **Other**

Addendum Item 14.5 - Notice of Intention to pass the following By-law for Provision of Fire Protection Services between the Town of Orangeville and the Township of Amaranth.

Resolution #7

Moved by: H. Foster – Seconded by: C. Gerrits

BE IT RESOLVED THAT:

THAT Council receive the Town of Orangeville Amendment to Agreement for Fire Protection Services;

THAT Council hereby approve the Amendment to the Fire Protection Services Agreement;

THAT All other clauses contained within the original agreement dated October 4, 2006 shall apply.

AND FURTHER THAT Leave be given to introduce a By-Law to authorize an amendment to an agreement between the Township of Amaranth and the Town of Orangeville for Provisions of Fire Protection Services and that it be given the necessary readings and passed and Numbered 54 - 2018.

CARRIED

Resolution #8

Moved by: J. Aultman – Seconded by: G. Little

BE IT RESOLVED THAT:

Leave be given to introduce a by-law to authorize the execution of an agreement between the Township of Amaranth, Township of East Garafraxa and Town of Grand Valley for the purpose of jointly managing and operating the Grand Valley Medical Dental Board, and to repeal By-law 13-2015; and that it be given the necessary readings and be passed and Numbered 55 - 2018.

CARRIED

15. **Late Submissions** – nothing at this time.

16. **Budget** – nothing at this time.

17. **Accounts**

17.1. General Accounts: September 8, 2018 – September 26, 2018

17.2. Road Accounts: September 8, 2018 – September 26, 2018

Resolution #9

Moved by: J. Aultman – Seconded by: G. Little

BE IT RESOLVED THAT:

The following Bills and Accounts be approved for payment for the period August 23, 2018 to September 7, 2018:

General 2018 \$184,825.27

Roads 2018 \$108,343.14

CARRIED

18. **New Business** – nothing at this time.

19. **Closed Meeting (3:40 p.m. – 4:45 p.m.)**

Resolution #10

Moved by: J. Aultman – Seconded by: G. Little

BE IT RESOLVED THAT:

Council move to a Closed Meeting pursuant to Section 239 of the Municipal Act, 2001, as amended for the following reason(s):

18.1 Litigation or potential litigation, including matters before administrative tribunals, affecting the municipality or local board

18.2 Advice that is subject to solicitor-client privilege, including communications necessary for that purpose

18.3 Personal matters about an identifiable individual, including municipal or local board employee

CARRIED

Resolution #11

Moved by: G. Little – Seconded by: J. Aultman

BE IT RESOLVED THAT:

Council do now rise and report from Closed Meeting, and resume regular business.

CARRIED

20. **Confirming By-Law**

Resolution #12

Moved by: G.Little – Seconded by: J. Aultman

BE IT RESOLVED THAT:

Leave be given to introduce a by-law to confirm the regular meeting of Council of the Township of Amaranth for September 12, 2018; and that it be given the necessary readings and be passed and numbered 56 - 2018.

CARRIED

21. **Adjournment**

There being no further business the meeting adjourned at approximately 5:00 p.m.

Resolution #13

Moved by: H. Foster – Seconded by: C. Gerrits

BE IT RESOLVED THAT:

Council do now adjourn to meet again on November 7, 2018 at 10:00 a.m. for the Regular Meeting of Council, or at the call of the Mayor.

CARRIED

Jane Aultman, Deputy Mayor

Susan M. Stone, CAO/Clerk

Carley Dixon

From: Carley Dixon
Sent: Tuesday, November 13, 2018 1:36 PM
To: 'dave.h@zpplan.com'; cgervais@amaranth-eastgary.ca
Subject: RE: REQUEST: Waldemar Water Storage Class EA Study

Hi Dave,

I will add you to the contact list for notifications.

Thanks,
Carley

From: Dave Hannam - Zelinka Priamo Ltd. <dave.h@zpplan.com>
Sent: Tuesday, November 13, 2018 1:33 PM
To: Carley Dixon <Carley.Dixon@rjburnside.com>; cgervais@amaranth-eastgary.ca
Subject: REQUEST: Waldemar Water Storage Class EA Study

Hi, please add my contact details to the notification list for all future correspondence pertaining to the Waldemar Water Storage Class EA Study.

An acknowledgement of my request by way of return email would be appreciated.

Thanks and regards

Dave Hannam, BRP, MCIP, RPP
Associate

Zelinka Priamo Ltd.

London Office
318 Wellington Road
London, ON N6C 4P4
(519) 474-7137 office
(416) 312-1412 cell
dave.h@zpplan.com
www.zpplan.com



February 20, 2019

Ms. Ann Newman
Crossing Coordinator
Enbridge Pipelines Inc.
1086 Modeland Road.
Building 1050, 1st Floor
Sarnia, ON N7S 6L2

Dear Ms. Newman:

**Re: Notice of Study Commencement & Notice of Public Information Centre
Waldemar Water Storage
Municipal Class Environmental Assessment Study
File No: 300041042.0000**

The existing drinking water storage in Waldemar does not have the volume required to support future water demands. The Township has initiated a Class Environmental Assessment (EA) to identify the preferred storage alternative. Please refer to the enclosed Notice of Public Information Centre. The Notice will be posted on the Township website and will be in two issues of the Orangeville Banner.

This study is being carried out in accordance with the planning and design process for Schedule 'B' projects as outlined in the Municipal Class Environmental Assessment (October 2000, as amended in 2007, 2011 and 2015). A key component of the study will be consultation with interested stakeholders (public and agency). Input and comments received from the public and from agencies will be incorporated into the planning and design of this project. Upon completion of the study, a Project File Report will be prepared for public review and comment. Subject to comments received and the receipt of necessary approvals, the Township of Amaranth intends to proceed with the planning, design and construction of this project.

The Township is holding a Public Information Centre (PIC) on Monday, March 4, 2019 to provide additional information on the project. The materials from the PIC will be posted on the Township's website (www.amaranth.ca) following the PIC.

The Township is requesting that your agency provide comments on the proposed project. The Township is seeking information on:

- Any preliminary comments or concerns that your agency has on the proposed project; and
- Other projects proposed within or near the general area of study.

It is essential to the success of this project that the concerns of your agency, and other stakeholders, are identified early in the planning process, such that the appropriate environmental protection measures are incorporated into the overall project design.

All interested stakeholders will be kept up-to-date on project status by means of future mailings, or inclusion in project meetings, as deemed appropriate.

Your participation in this EA study is much appreciated. To provide the study team with your comments or for further information, or you wish to be removed from our contact list, please contact Carley Dixon at 226-486-1592 or by email at Carley.Dixon@rjburnside.com.

Yours truly,

R.J. Burnside & Associates Limited

A handwritten signature in black ink that reads "Carley Dixon". The signature is written in a cursive, slightly slanted style.

Carley Dixon, P.Eng.
CD:sgd

Enclosure(s) Notice of Public Information Centre

cc Christine Gervais, Director of Planning, Township of Amaranth
 Sue Stone, CAO, Township of Amaranth



**Township of Amaranth
Notice of Public Information Centre for the
Waldemar Water Storage
Class Environmental Assessment Study**



The Study

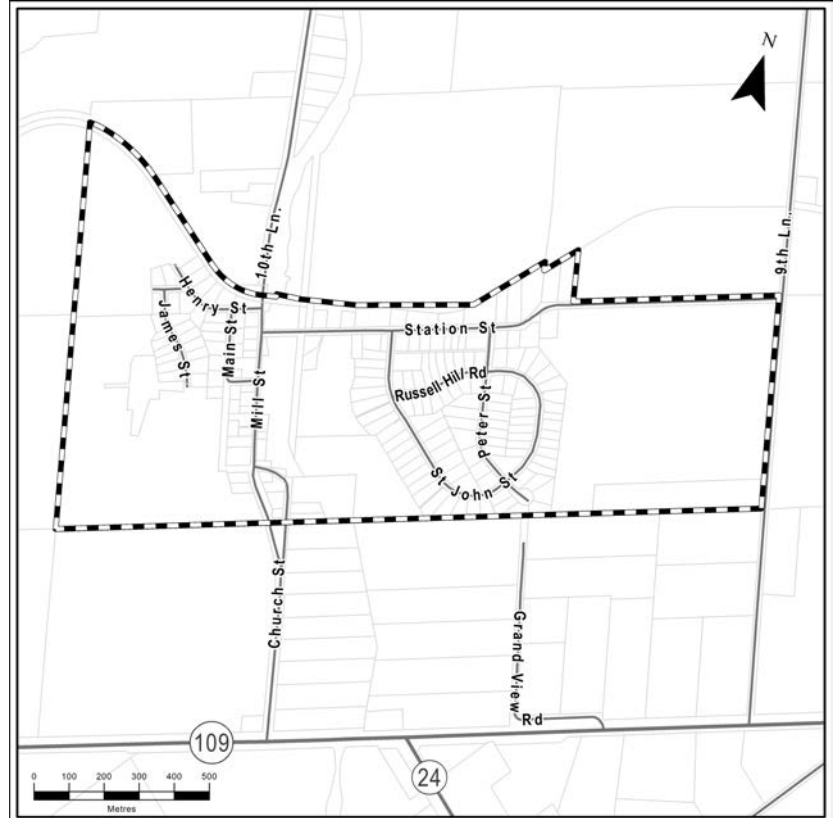
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PIC Drop-in Centre Date: Monday, March 4, 2019
Time: 7:00 p.m. to 9:00 p.m.
Place: Township of Amaranth - 374028 6th Line, Amaranth, ON L9W 0M6

To provide comment or to request additional information concerning this project, or if you are unable to attend and would like to provide comments, please contact either of the following Project Team members by March 18th, 2019.

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

Township of Amaranth
 Director of Planning
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This Notice first issued on February 21, 2019.



February 20, 2019

Mr. Arthur Churchyard
Policy Advisor
Ministry of Agriculture, Food and Rural Affairs
Provincial Government Bld.,
3rd Floor
1 Stone Road West
Guelph, ON N1G 4Y2

Dear Mr. Churchyard:

**Re: Notice of Study Commencement & Notice of Public Information Centre
Waldemar Water Storage
Municipal Class Environmental Assessment Study
File No: 300041042.0000**

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Yours truly,

R.J. Burnside & Associates Limited



Carley Dixon, P.Eng.
CD:sgd

Enclosure(s) Notice of Public Information Centre

cc Christine Gervais, Director of Planning, Township of Amaranth
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Township of Amaranth Notice of Public Information Centre for the Waldemar Water Storage Class Environmental Assessment Study



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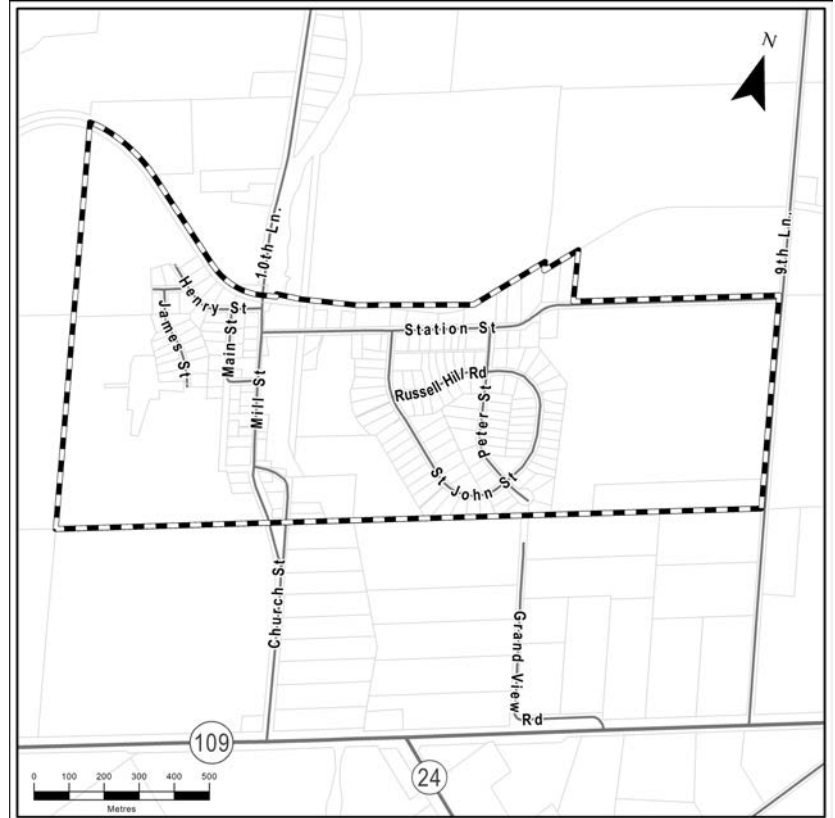
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February 20, 2019

Ms. Barbara Slattery
Environmental Resource Planner & EA Coordinator
Ministry of the Environment, Conservation and Parks
West Central Region
Ellen Fairclough Bld.
119 King Street West
9th Floor
Hamilton, ON L8P 4Y7

Dear Ms. Slattery:

**Re: Notice of Study Commencement & Notice of Public Information Centre
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File No: 300041042.0000**

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Carley Dixon, P.Eng.
CD:sgd

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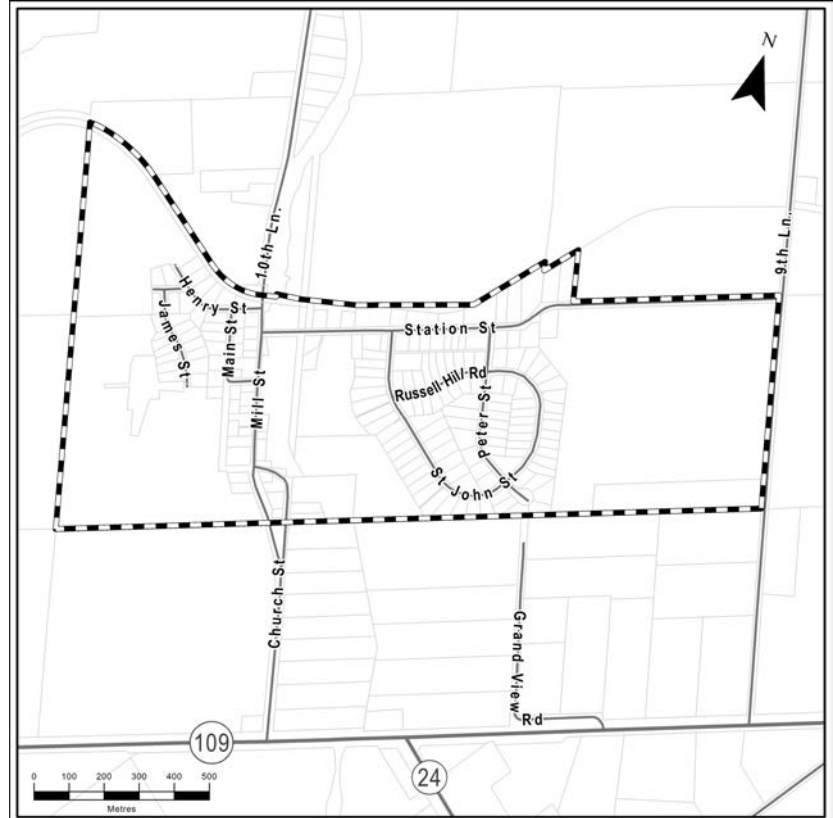
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February 20, 2019

Mr. Charles O'Hara
Director, Growth Policy
Ministry of Municipal Affairs and Housing
Ontario Growth Secretariat
College Park
777 Bay Street
23rd Floor, Suite 2304
Toronto, ON M5G 2E5

Dear Mr. O'Hara:

**Re: Notice of Study Commencement & Notice of Public Information Centre
Waldemar Water Storage
Municipal Class Environmental Assessment Study
File No: 300041042.0000**

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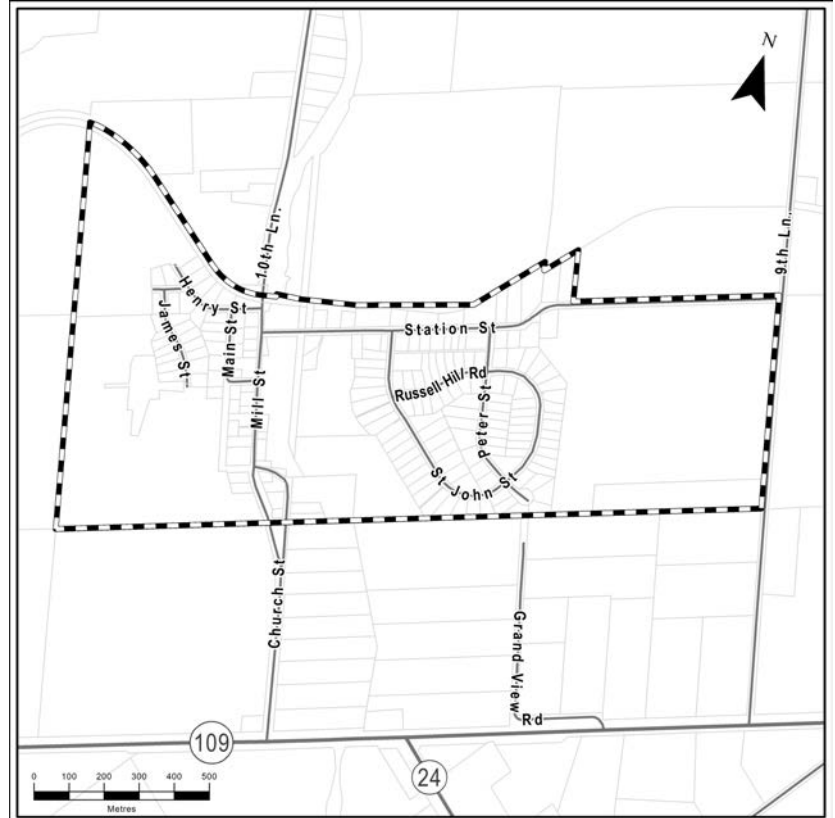
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February 20, 2019

Chief Ava Hill
Six Nations of the Grand River
P.O. Box 5000
Ohsweken, ON NOA 1M0

Dear Chief Hill:

**Re: Notice of Study Commencement & Notice of Public Information Centre
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File No: 300041042.0000**

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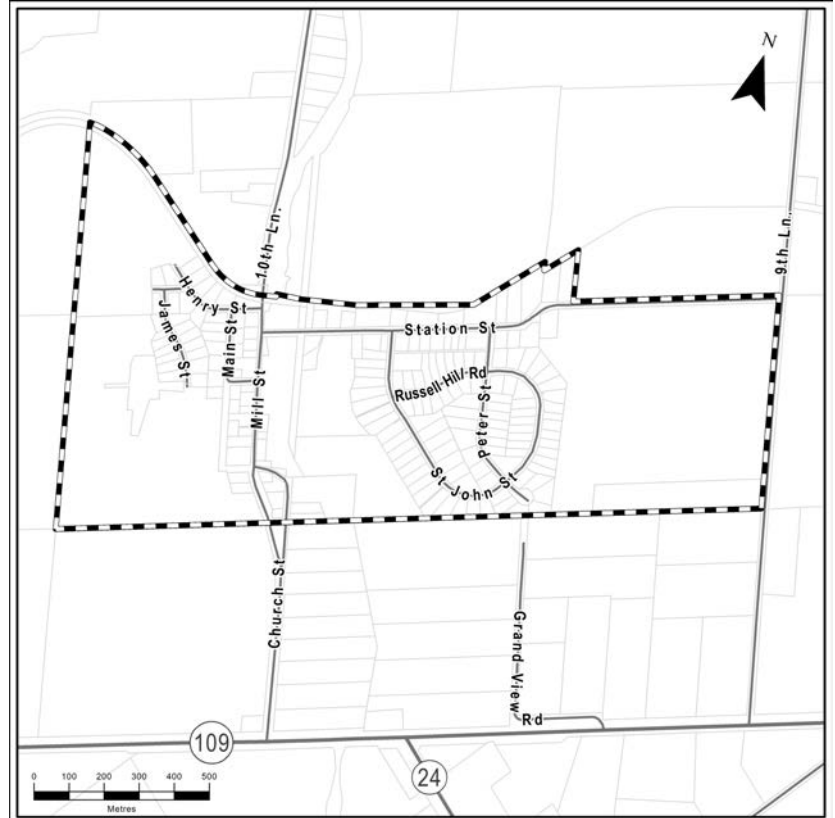
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February 20, 2019

Ms. Darlene Presley
Planning
Coordinator, EA contact
Trans Canada Corporation
MHBC Planning, Urban Design & Landscape Architecture
442 Brant Street, Suite 204
Burlington, ON L7R 2G4

Dear Ms. Presley:

**Re: Notice of Study Commencement & Notice of Public Information Centre
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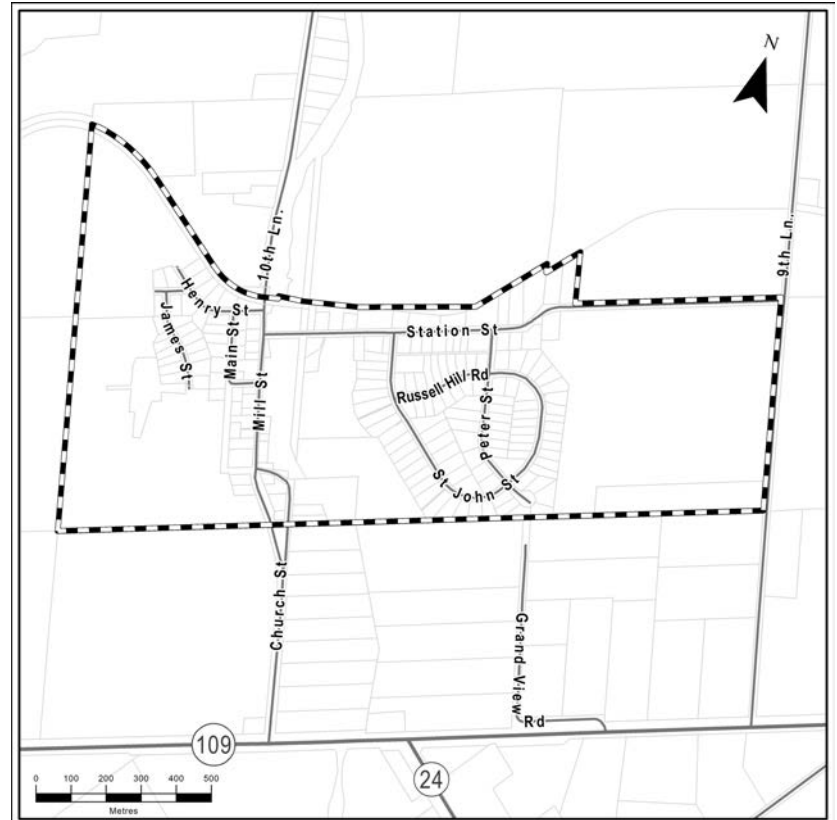
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Mr. David Marriot
District Planner
Ministry of Natural Resources and Forestry
Guelph- Southern Region
Ontario Government Bld.
1 Stone Road West
Guelph, ON N1G 4Y2

Dear Mr. Marriot:

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Yours truly,

R.J. Burnside & Associates Limited

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Carley Dixon, P.Eng.
CD:sgd

Enclosure(s) Notice of Public Information Centre

cc Christine Gervais, Director of Planning, Township of Amaranth
 Sue Stone, CAO, Township of Amaranth



Township of Amaranth Notice of Public Information Centre for the Waldemar Water Storage Class Environmental Assessment Study



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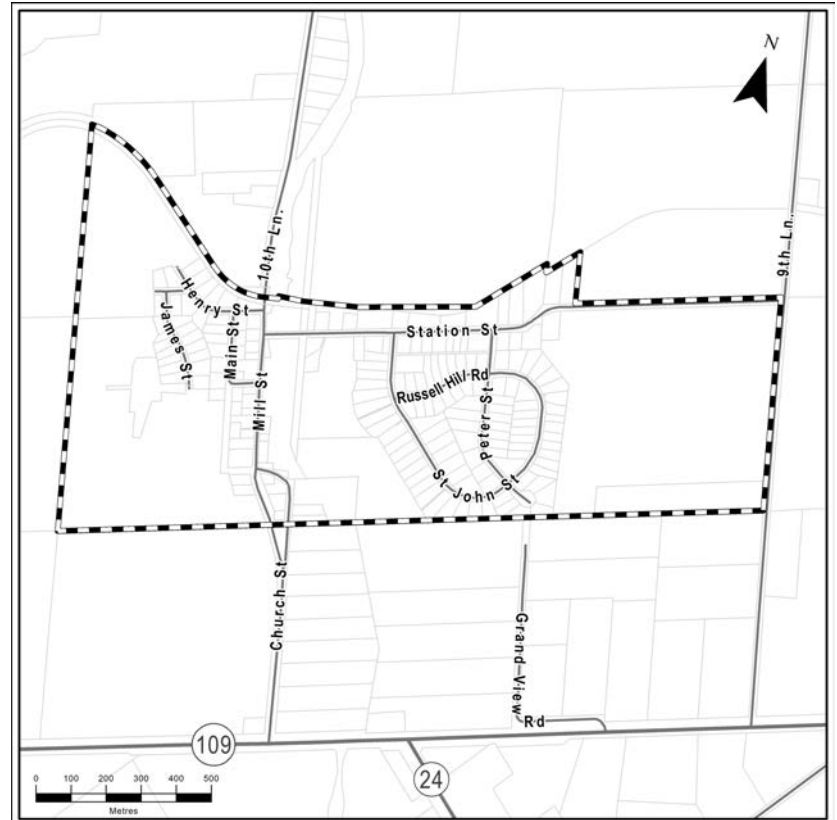
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Carley Dixon, P.Eng.
R.J. Burnside & Associates Ltd.
15 Townline
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February 20, 2019

Ms. Jane Wilson
Chief Administrative Officer, Clerk-Treasurer
Town of Grand Valley
5 Main Street North
Grand Valley, ON L9W 5S6

Dear Ms. Wilson:

**Re: Notice of Study Commencement & Notice of Public Information Centre
Waldemar Water Storage
Municipal Class Environmental Assessment Study
File No: 300041042.0000**

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**Township of Amaranth
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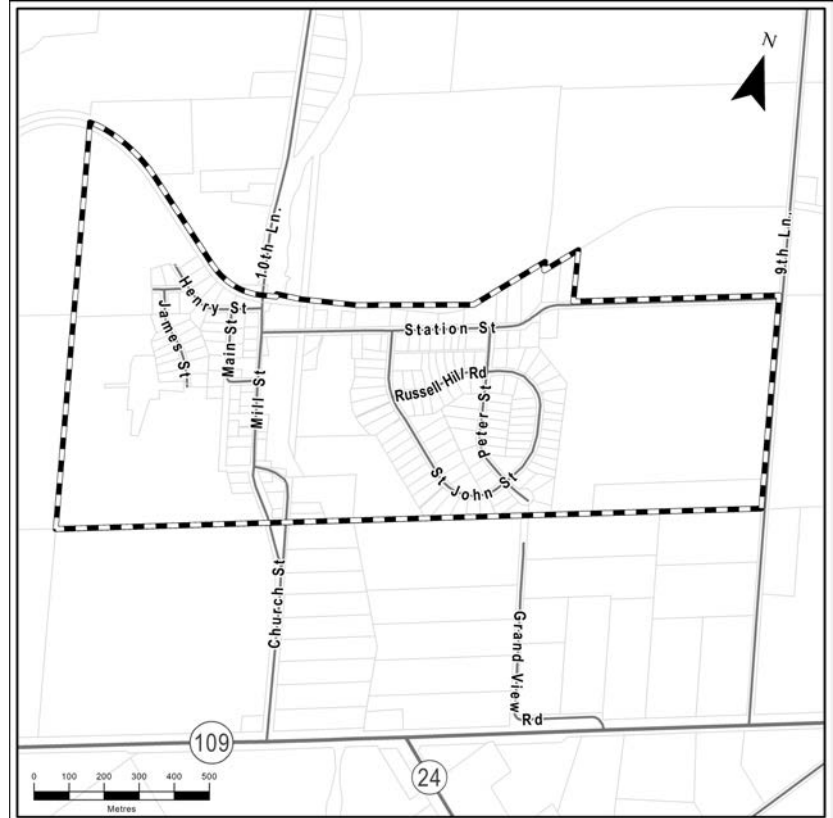
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February 20, 2019

Mr. Joe Miedema
Dufferin Water Co. Ltd.
13 Rose Ridge Lane
Mono, ON L9W 5Y3

Dear Mr. Miedema:

**Re: Notice of Study Commencement & Notice of Public Information Centre
Waldemar Water Storage
Municipal Class Environmental Assessment Study
File No: 300041042.0000**

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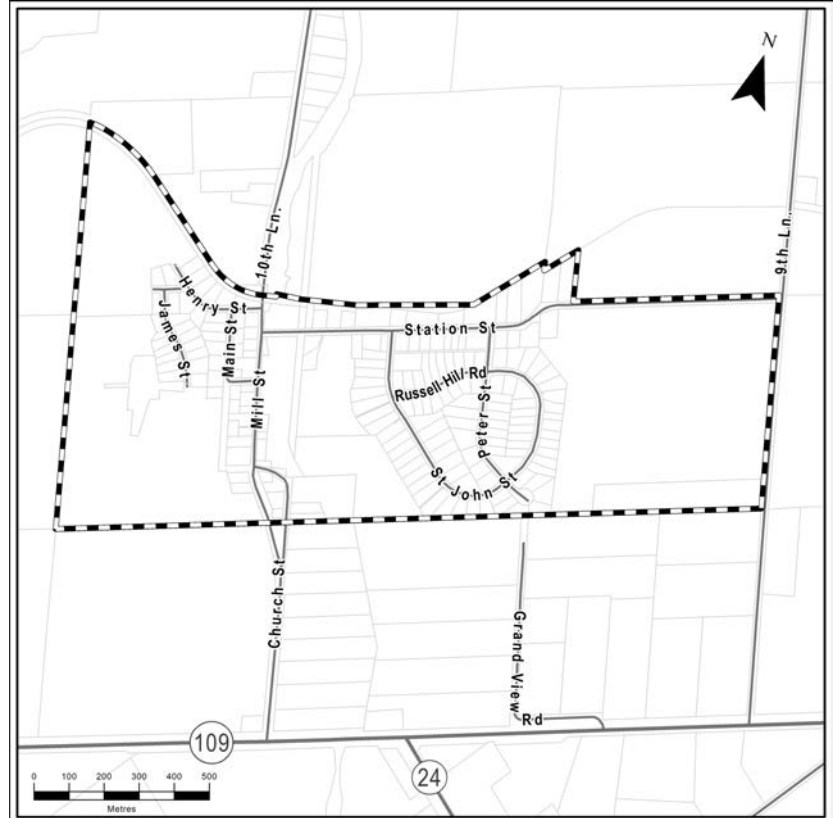
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February 20, 2019

Mr. John Lachapelle
Bell Canada, Municipal Operations Centre
100 Borough Drive
Floor 5 Blue
Scarborough, ON M1P 4WZ

Dear Mr. Lachapelle:

**Re: Notice of Study Commencement & Notice of Public Information Centre
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Municipal Class Environmental Assessment Study
File No: 300041042.0000**

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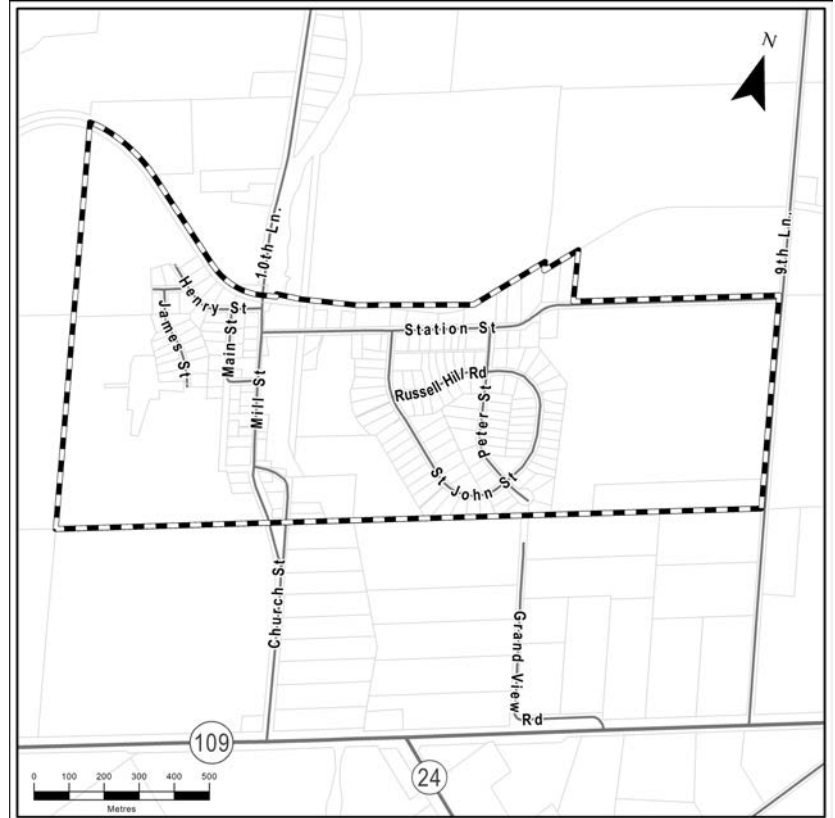
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February 20, 2019

Mr. Kevin McNeilly
Fire Chief
Grand Valley and District Fire Department
P.O. Box 83
Station Main
Grand Valley, ON L9W 7G1

Dear Mr. McNeilly:

**Re: Notice of Study Commencement & Notice of Public Information Centre
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File No: 300041042.0000**

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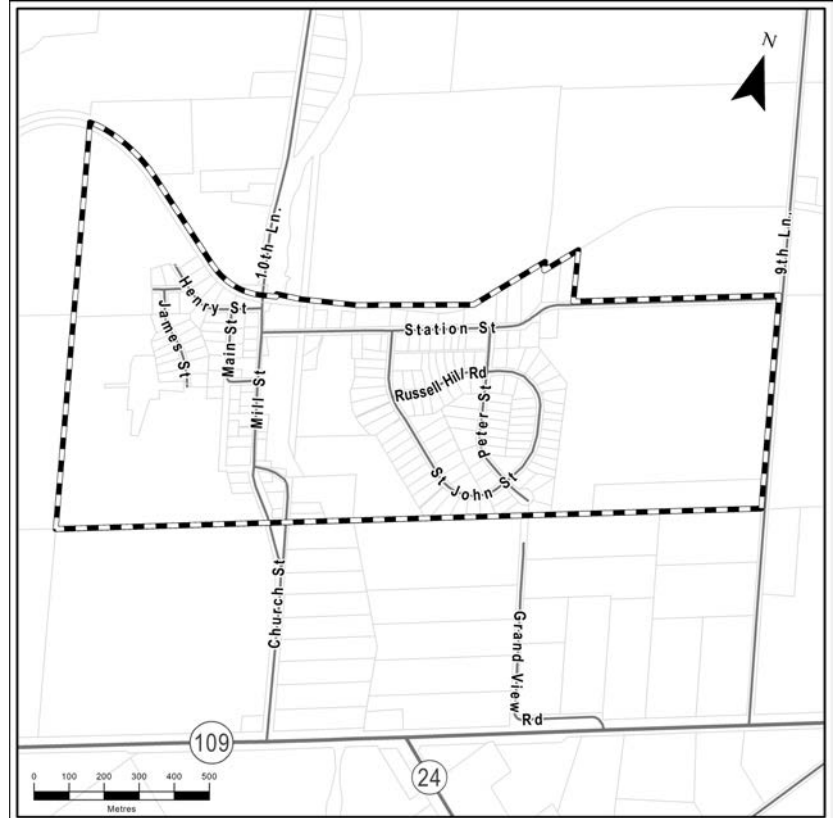
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February 20, 2019

Ms. Laura Hatcher
Team Lead, Heritage Land Use Planning (Acting), Culture Services Unit
Ministry of Tourism, Culture and Sport
Culture Division
401 Bay Street
Suite 1700
Toronto, ON M7A 0A7

Dear Ms. Hatcher:

**Re: Notice of Study Commencement & Notice of Public Information Centre
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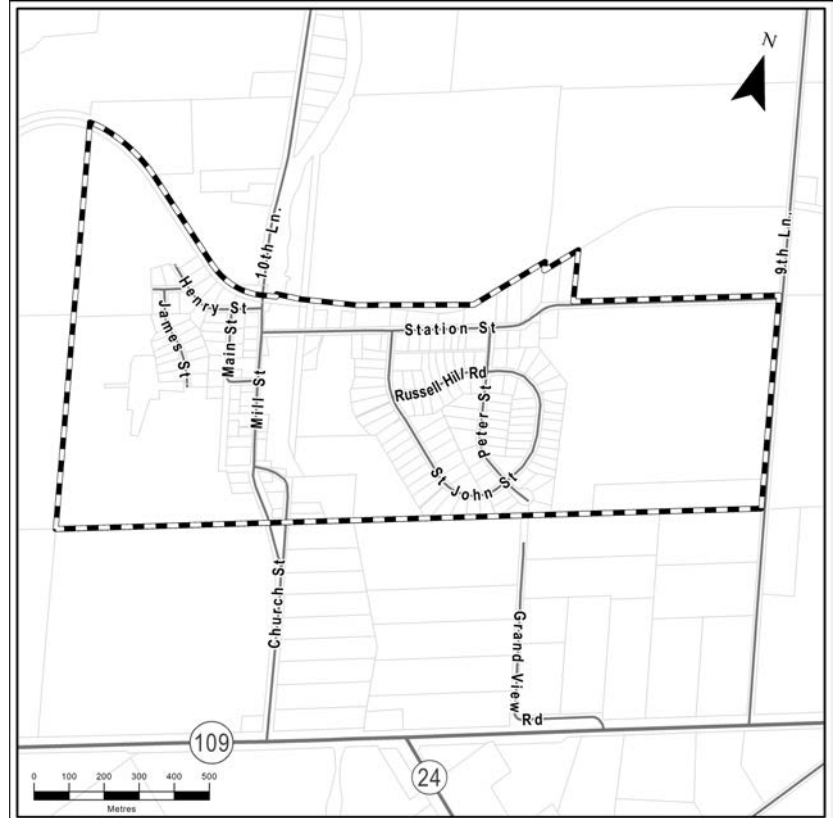
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Amaranth ON L9W 0M6
Phone: 519-941-1007
cgervais@amaranth-eastgary.ca

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This Notice first issued on February 21, 2019.



February 20, 2019

Ms. Laura Warner
Planner
Grand River Conservation Authority
400 Clyde Road
Box 729
Cambridge, ON N1R 5W6

Dear Ms. Warner:

**Re: Notice of Study Commencement & Notice of Public Information Centre
Waldemar Water Storage
Municipal Class Environmental Assessment Study
File No: 300041042.0000**

The existing drinking water storage in Waldemar does not have the volume required to support future water demands. The Township has initiated a Class Environmental Assessment (EA) to identify the preferred storage alternative. Please refer to the enclosed Notice of Public Information Centre. The Notice will be posted on the Township website and will be in two issues of the Orangeville Banner.

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Yours truly,

R.J. Burnside & Associates Limited



Carley Dixon, P.Eng.
CD:sgd

Enclosure(s) Notice of Public Information Centre

cc Christine Gervais, Director of Planning, Township of Amaranth
 Sue Stone, CAO, Township of Amaranth



Township of Amaranth Notice of Public Information Centre for the Waldemar Water Storage Class Environmental Assessment Study



The Study

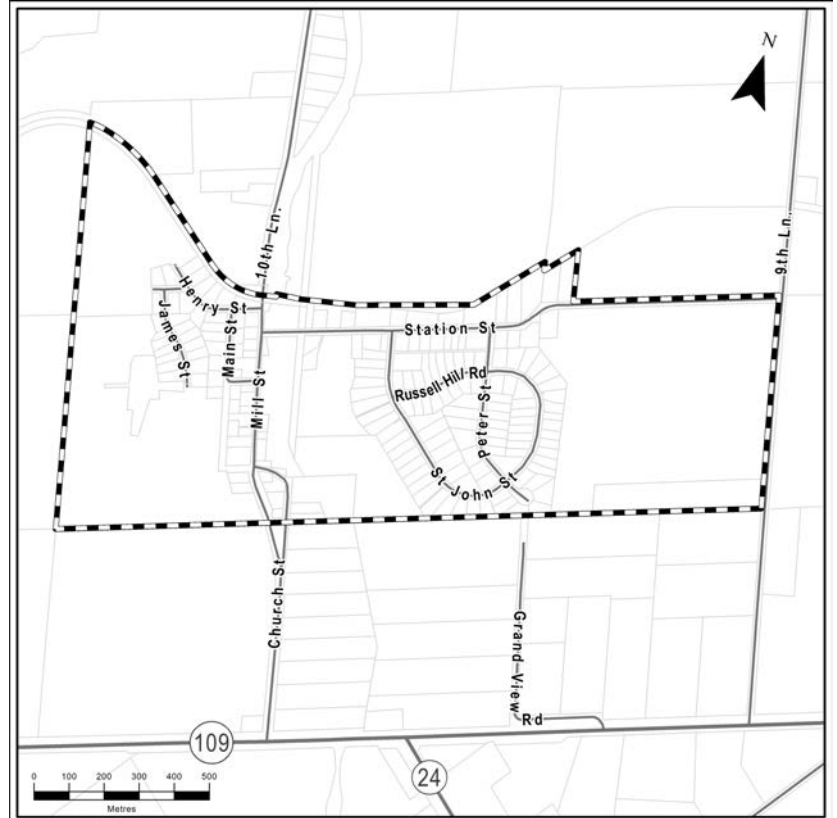
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Date: Monday, March 4, 2019

Time: 7:00 p.m. to 9:00 p.m.

Place: Township of Amaranth - 374028 6th Line, Amaranth, ON L9W 0M6

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15 Townline
Orangeville ON L9W 3R4
Phone: 226-486-1542
Carley.Dixon@rjburnside.com

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February 20, 2019

Hohahes Leroy Hill
Secretary to Haudensaunee Confederacy
Haudensaunee Confederacy
2634 6th Line
RR#2
Ohsweken, ON N0A 1H0

Dear Hohahes Hill:

**Re: Notice of Study Commencement & Notice of Public Information Centre
Waldemar Water Storage
Municipal Class Environmental Assessment Study
File No: 300041042.0000**

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Yours truly,

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Carley Dixon, P.Eng.
CD:sgd

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**Township of Amaranth
Notice of Public Information Centre for the
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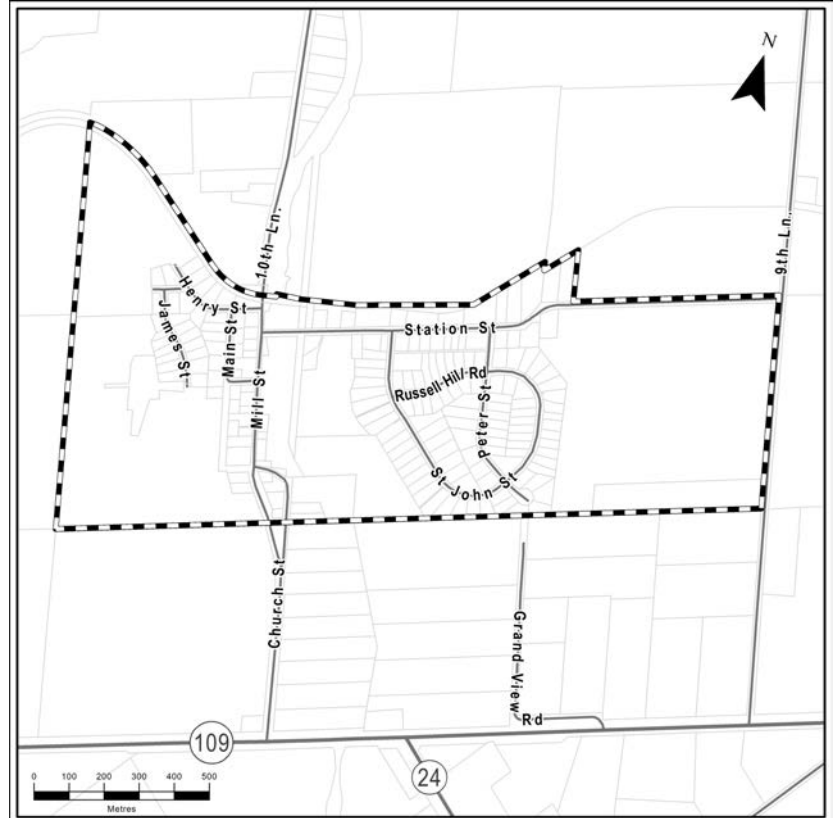
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February 20, 2019

Ms. Marion Wright
Planning Coordinator
Rogers Communications
3573 Wolfedale Road
Mississauga, ON L5C 3T6

Dear Ms. Wright:

**Re: Notice of Study Commencement & Notice of Public Information Centre
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Municipal Class Environmental Assessment Study
File No: 300041042.0000**

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Yours truly,

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Carley Dixon, P.Eng.
CD:sgd

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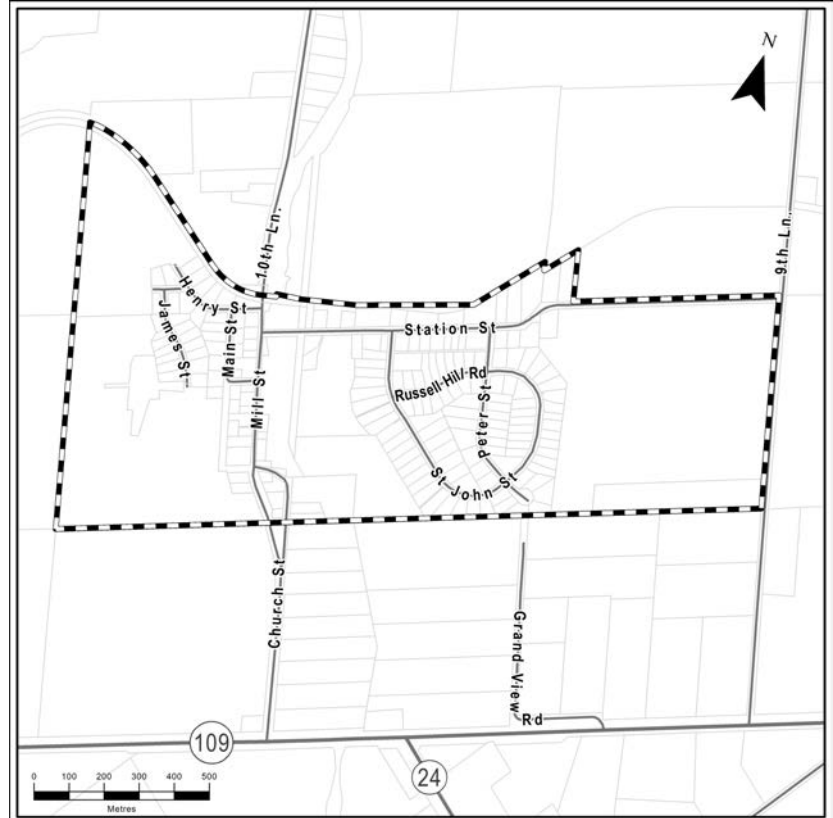
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February 20, 2019

Chief of Police
OPP Dufferin County- Shelburne
506312 Highway 89
Mono, ON L9V 1H9

To Whom It May Concern:

**Re: Notice of Study Commencement & Notice of Public Information Centre
Waldemar Water Storage
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File No: 300041042.0000**

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Carley Dixon, P.Eng.
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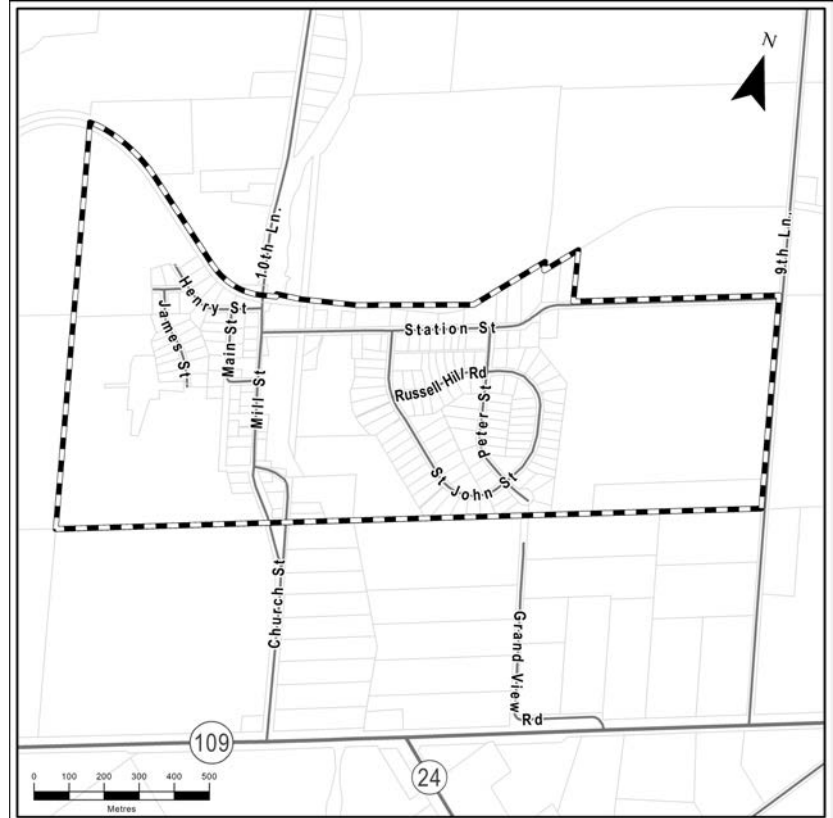
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February 20, 2019

Mr. Scott Moon
Implementation Department
Bell Canada
5115 Creekbank Road
3rd Floor, West Tower
Mississauga, ON L4W 5R1

Dear Mr. Moon:

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Municipal Class Environmental Assessment Study
File No: 300041042.0000**

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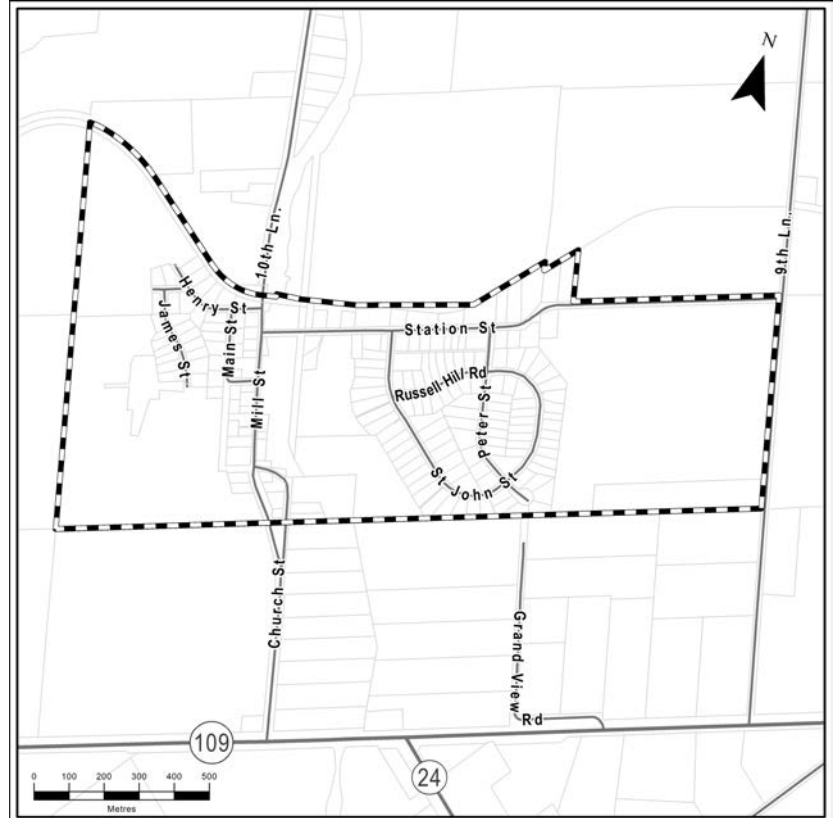
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Ms. Sonya Pritchard
Chief Administrative Officer
Dufferin County
55 Zina Street
Orangeville, ON L9W 1E5

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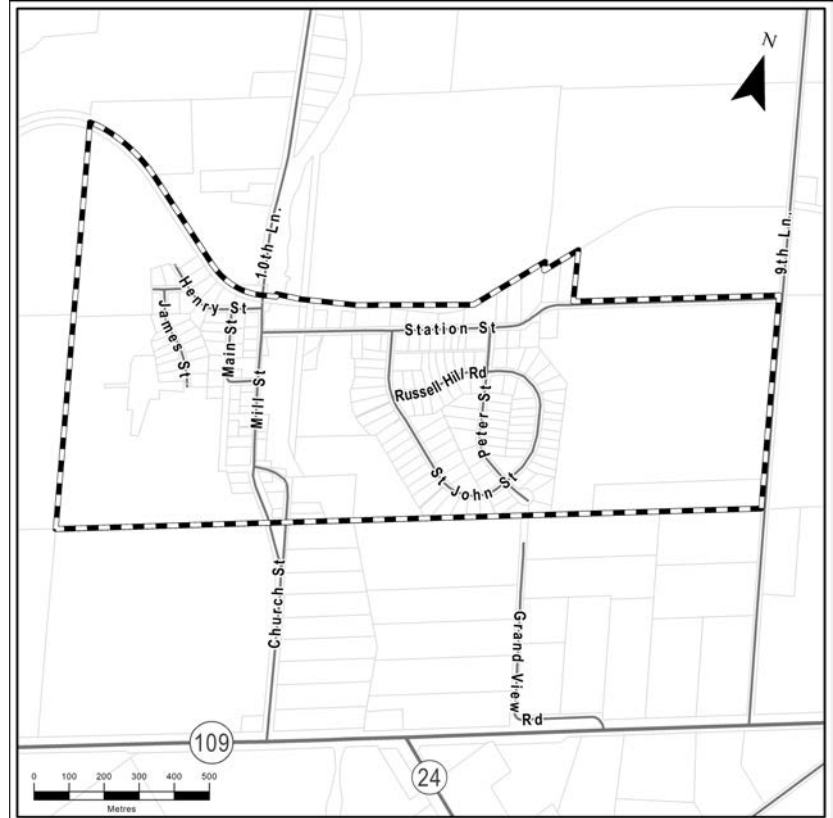
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PIC Drop-in Centre Date: Monday, March 4, 2019
Time: 7:00 p.m. to 9:00 p.m.
Place: Township of Amaranth - 374028 6th Line, Amaranth, ON L9W 0M6

To provide comment or to request additional information concerning this project, or if you are unable to attend and would like to provide comments, please contact either of the following Project Team members by March 18th, 2019.

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

Township of Amaranth
 Director of Planning
 Christine Gervais
 374028 6th Line
 Amaranth ON L9W 0M6
 Phone: 519-941-1007
 cgervais@amaranth-eastgary.ca

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This Notice first issued on February 21, 2019.



February 20, 2019

Ms. Stephanie Cox
Planner
Dufferin- Peel Catholic School Board
40 Matheson Boulevard West
Mississauga, ON L5R 1C5

Dear Ms. Cox:

**Re: Notice of Study Commencement & Notice of Public Information Centre
Waldemar Water Storage
Municipal Class Environmental Assessment Study
File No: 300041042.0000**

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Yours truly,

R.J. Burnside & Associates Limited



Carley Dixon, P.Eng.
CD:sgd

Enclosure(s) Notice of Public Information Centre

cc Christine Gervais, Director of Planning, Township of Amaranth
 Sue Stone, CAO, Township of Amaranth



**Township of Amaranth
Notice of Public Information Centre for the
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The Study

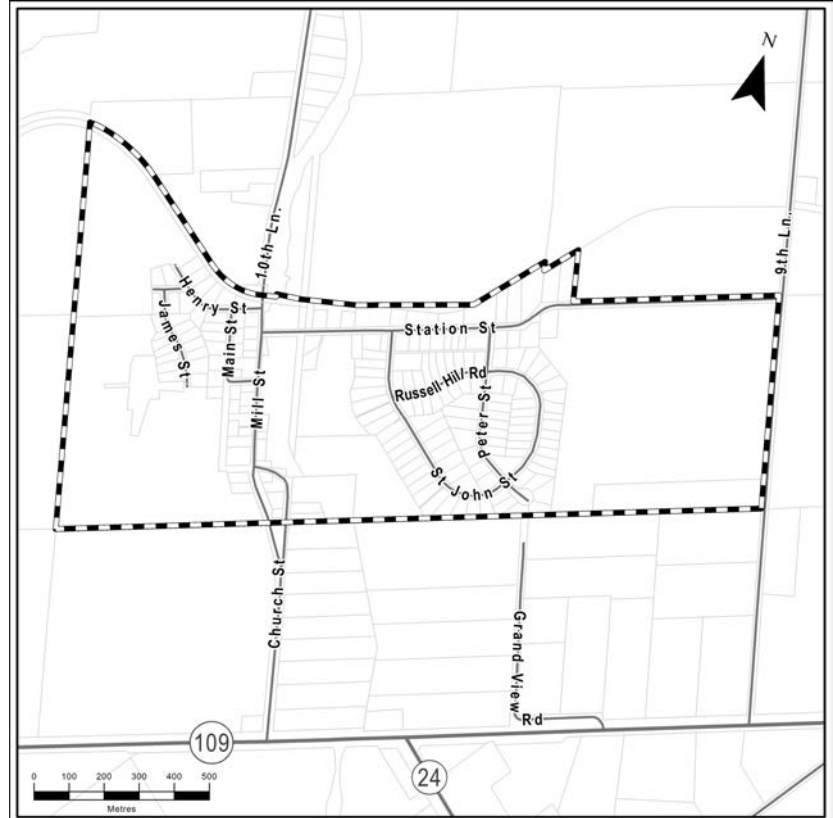
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February 20, 2019

Mr. Tom Reid
Chief Paramedic
Dufferin County Paramedic Service
325 Blind Line
Orangeville, ON L9W 4W9

Dear Mr. Reid:

**Re: Notice of Study Commencement & Notice of Public Information Centre
Waldemar Water Storage
Municipal Class Environmental Assessment Study
File No: 300041042.0000**

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Yours truly,

R.J. Burnside & Associates Limited

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Carley Dixon, P.Eng.
CD:sgd

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cc Christine Gervais, Director of Planning, Township of Amaranth
 Sue Stone, CAO, Township of Amaranth



**Township of Amaranth
Notice of Public Information Centre for the
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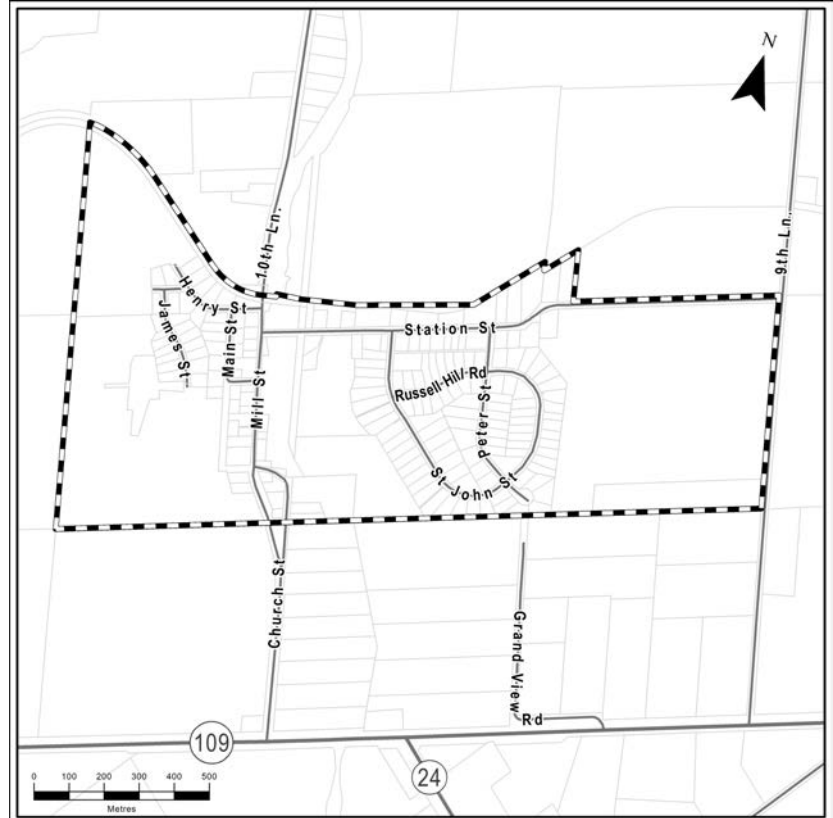
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February 20, 2019

Mr. Tony Amalfa
Manager, Environmental Health Policy and Programs
Ministry of Health and Long
Term Care
393 University Avenue
21st Floor
Toronto, ON M7A 2S1

Dear Mr. Amalfa:

**Re: Notice of Study Commencement & Notice of Public Information Centre
Waldemar Water Storage
Municipal Class Environmental Assessment Study
File No: 300041042.0000**

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Yours truly,

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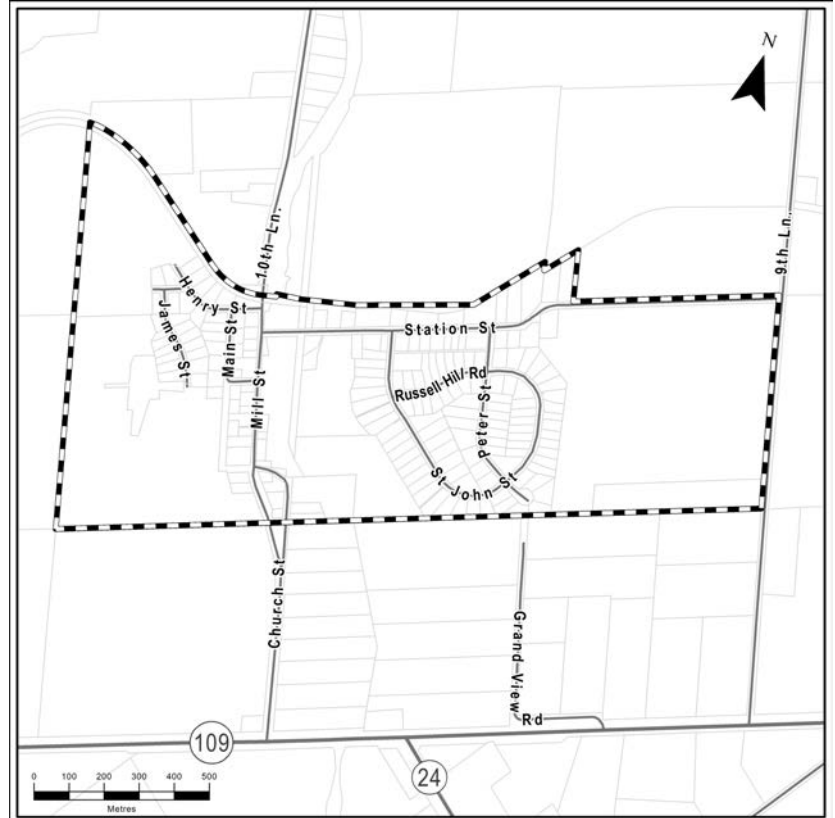
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February 20, 2019

Mr. Vince Cina
Supervisor, Planning and Design
Enbridge Gas Distribution Inc.
500 Consumers Road
North York, ON M2J 1P8

Dear Mr. Cina:

**Re: Notice of Study Commencement & Notice of Public Information Centre
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File No: 300041042.0000**

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Carley Dixon, P.Eng.
CD:sgd

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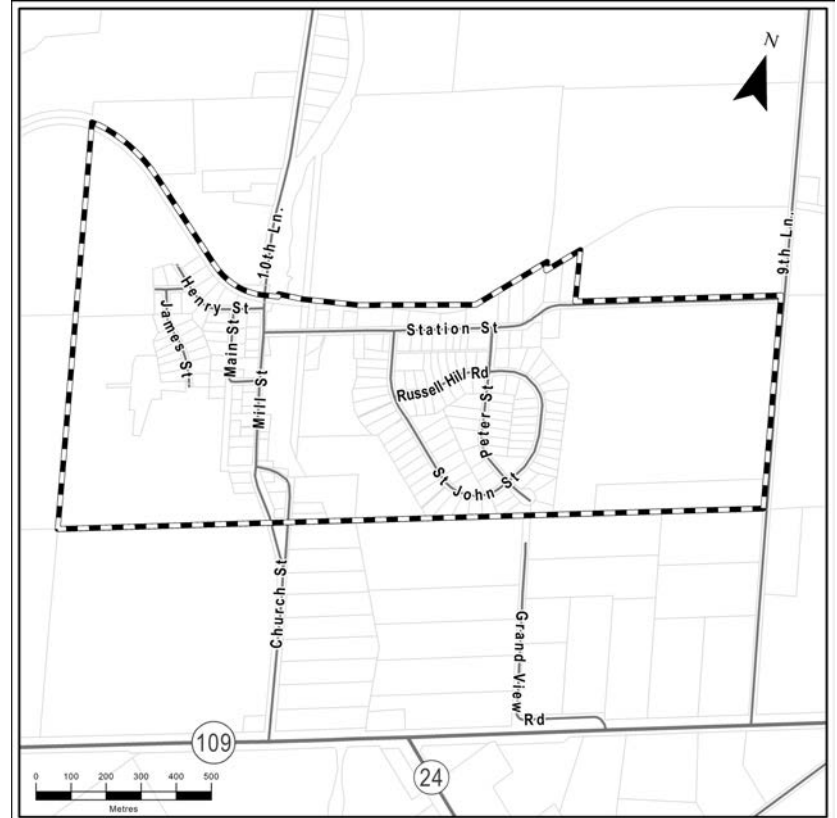
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February 20, 2019

Ms. Wendy Lefebvre
Design Manager, Access Network
Bell Canada
5115 Creekbank Road West
3rd Floor
Mississauga, ON L4W 5R1

Dear Ms. Lefebvre:

**Re: Notice of Study Commencement & Notice of Public Information Centre
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File No: 300041042.0000**

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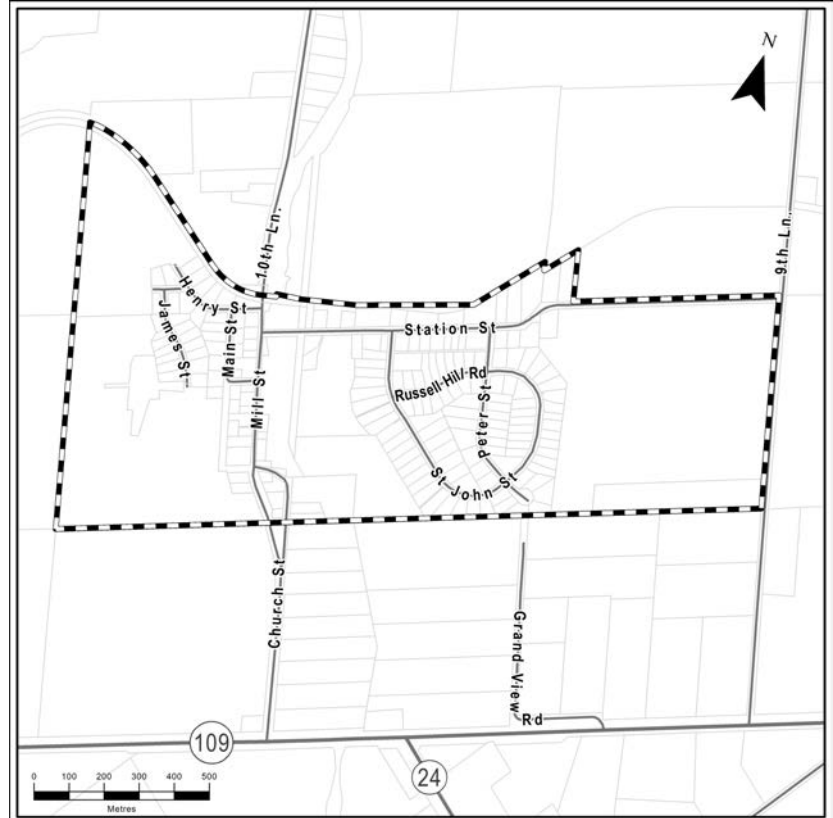
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Memorandum

Date: February 19, 2019 **Project No.:** 300041042.0000
Project Name: Waldemar Water Storage EA
Client Name: Township of Amaranth
Subject: Memo to File – Phone Conversation
From: Carley Dixon

On February 19, 2019, I received a voicemail from Walter Broos the owner of Sarah Properties wanting to comment on the Waldemar Water Storage EA.

I returned his voicemail the same day. A summary of our phone call is as follows:

- Walter asked how many lots are being included for the Sarah Properties Lands. I indicated 53 lots which I relayed to his planner Dave Hannam in an email. He said he recalled this email. (Note, after the phone call I went back and checked the email – Walter was copied on this email on December 11, 2018 which indicated: *“We considered the number of residential properties that C.C. Tatham provided during their Wastewater Treatment and Effluent Disposal Class EA for Sarah Properties which was 26 lots and we set that as the low end of the range. We considered the upper end of the range (without obtaining an OPA) to be 53 lots. For the purposes of the Water Storage EA, we have carried 53 lots for Sarah Properties.”*)
- Walter said he’s going to appeal any EA that is done on 53 lots for his land which will cause significant delay in the EA. The EA should be including how many lots he proposed in his draft plan, and that LPAT hasn’t made any final decision so it’s not up to us to only use 53 lots. He said we are assuming an outcome of LPAT which has not been made.
- Walter indicated that communal servicing is the preferred option in the OP, so we cannot say that we are following the Official Plan using 53 lots and that the EA should allow for multiple possible outcomes.
- I indicated that I would provide him with a formal response with respect to this phone call.

Carley Dixon

From: Carley Dixon
Sent: Wednesday, February 20, 2019 2:39 PM
To: 'alex.lye@cisl.ca'; 'alex.lye@infrastructure.ca'
Cc: Sue Stone (suestone@amaranth-eastgary.ca); Christine Gervais (cgervais@amaranth-eastgary.ca)
Subject: Waldemar Water Storage Municipal Class Environmental Assessment Study - Township of Amaranth
Attachments: 041042 Notice of Commencement-Notice of PIC Agency Letter_Alex Lye.pdf

Hi Alex,

Please see the attached letter with respect to the Municipal Class Environmental Assessment Study being undertaken for water storage in Waldemar. Please do not hesitate to contact me if you have any questions.

Regards,
Carley



February 20, 2019

Mr. Alex Lye
Environmental Specialist
Infrastructure Ontario
1 Dundas Street, West, Suite 2000
Toronto, ON M5G 1Z3

Dear Mr. Lye:

**Re: Notice of Study Commencement & Notice of Public Information Centre
Waldemar Water Storage
Municipal Class Environmental Assessment Study
File No: 300041042.0000**

The existing drinking water storage in Waldemar does not have the volume required to support future water demands. The Township has initiated a Class Environmental Assessment (EA) to identify the preferred storage alternative. Please refer to the enclosed Notice of Public Information Centre. The Notice will be posted on the Township website and will be in two issues of the Orangeville Banner.

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Yours truly,

R.J. Burnside & Associates Limited

A handwritten signature in black ink that reads "Carley Dixon". The signature is written in a cursive, flowing style.

Carley Dixon, P.Eng.
CD:sgd

Enclosure(s) Notice of Public Information Centre

cc Christine Gervais, Director of Planning, Township of Amaranth
 Sue Stone, CAO, Township of Amaranth



Township of Amaranth Notice of Public Information Centre for the Waldemar Water Storage Class Environmental Assessment Study



The Study

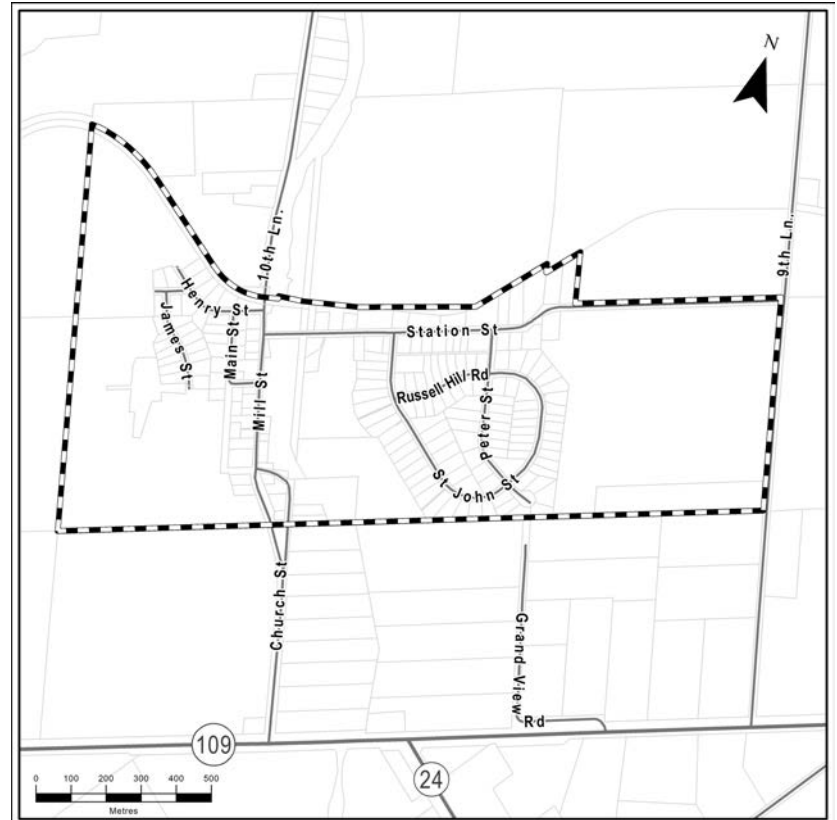
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 Time: **7:00 p.m. to 9:00 p.m.**
 Place: **Township of Amaranth - 374028 6th Line, Amaranth, ON L9W 0M6**

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

Township of Amaranth
Director of Planning
Christine Gervais
374028 6th Line
Amaranth ON L9W 0M6
Phone: 519-941-1007
cgervais@amaranth-eastgary.ca

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This Notice first issued on February 21, 2019.

Carley Dixon

From: Carley Dixon
Sent: Thursday, February 21, 2019 10:35 AM
To: 'Switzman, Allyson (MMA)'
Cc: Berlin, Hayley (MMA)
Subject: RE: Waldemar Water Storage Municipal Class Environmental Assessment Study - Township of Amaranth
Attachments: 041042 Notice of Commencement-Notice of PIC Agency Letter_Andrea Roberts.pdf

Hi Allyson and Hayley,

Attached is the letter I had sent.

From: Switzman, Allyson (MMA) <Allyson.Switzman@ontario.ca>
Sent: Thursday, February 21, 2019 10:32 AM
To: Carley Dixon <Carley.Dixon@rjburnside.com>; Ren, Wendy (MOI) <Wendy.Ren@ontario.ca>
Cc: Berlin, Hayley (MMA) <Hayley.Berlin@ontario.ca>
Subject: Re: Waldemar Water Storage Municipal Class Environmental Assessment Study - Township of Amaranth

Sorry - now copying Hayley so that you have her contact info

Get [Outlook for iOS](#)

From: Switzman, Allyson (MMA) <allyson.switzman@ontario.ca>
Sent: Thursday, February 21, 2019 10:25 AM
To: Carley Dixon; Ren, Wendy (MOI)
Subject: Re: Waldemar Water Storage Municipal Class Environmental Assessment Study - Township of Amaranth

Thanks Wendy

Carley - could you please forward the attachment to my colleague Hayley Berlin (copied) and I? Thanks!

Get [Outlook for iOS](#)

From: Carley Dixon <carley.dixon@rjburnside.com>
Sent: Thursday, February 21, 2019 10:16 AM
To: Ren, Wendy (MOI)
Cc: Switzman, Allyson (MMA)
Subject: RE: Waldemar Water Storage Municipal Class Environmental Assessment Study - Township of Amaranth

Thanks Wendy. That's who I intended on sending itto.

Carley Dixon, P.Eng.

R.J. Burnside & Associates Limited | www.rjburnside.com

Office: +1 800-265-9662 Direct: +1 226-486-1542

From: Ren, Wendy (MOI) <Wendy.Ren@ontario.ca>
Sent: Wednesday, February 20, 2019 6:52 PM

To: Carley Dixon <Carley.Dixon@rjburnside.com>

Cc: Switzman, Allyson (MMA) <Allyson.Switzman@ontario.ca>

Subject: RE: Waldemar Water Storage Municipal Class Environmental Assessment Study - Township of Amaranth

Hi Carley,

Andrea is not Growth Plan policy manager. If you intended to send to Ontario Growth Secretariat, you could send to Allyson Switzman, One of Policy managers in OGS.

I copied Allyson in the e-mail.

Thanks

Wendy

Sent with BlackBerry Work

(www.blackberry.com)

From: Carley Dixon <Carley.Dixon@rjburnside.com>

Date: Wednesday, Feb 20, 2019, 4:51 PM

To: Ren, Wendy (MOI) <Wendy.Ren@ontario.ca>

Subject: FW: Waldemar Water Storage Municipal Class Environmental Assessment Study – Township of Amaranth

Hi Wendy,

I received a bounce back email from Andrea and your name was a contact. If you're not the correct contact, can you please let me know.

Thanks,

Carley

Carley Dixon, P.Eng.

R.J. Burnside & Associates Limited | www.rjburnside.com

Office: +1 800-265-9662 Direct: +1 226-486-1542

From: Carley Dixon

Sent: Wednesday, February 20, 2019 2:36 PM

To: 'andrea.roberts@ontario.ca' <andrea.roberts@ontario.ca>

Subject: Waldemar Water Storage Municipal Class Environmental Assessment Study - Township of Amaranth

Hi Andrea,

Please see the attached letter with respect to the Municipal Class Environmental Assessment Study being undertaken for water storage in Waldemar. Please do not hesitate to contact me if you have any questions.

Regards,

Carley



February 20, 2019

Andrea Roberts
Manager Growth Policy
Ministry of Infrastructure - Ontario Growth Secretariat, Growth Policy, Planning and Analysis
Branch
777 Bay Street
4th Floor, Suite 425
Toronto, ON M5G 2E5

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Waldemar Water Storage
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CD:sgd

Enclosure(s) Notice of Public Information Centre

cc Christine Gervais, Director of Planning, Township of Amaranth
 Sue Stone, CAO, Township of Amaranth



**Township of Amaranth
Notice of Public Information Centre for the
Waldemar Water Storage
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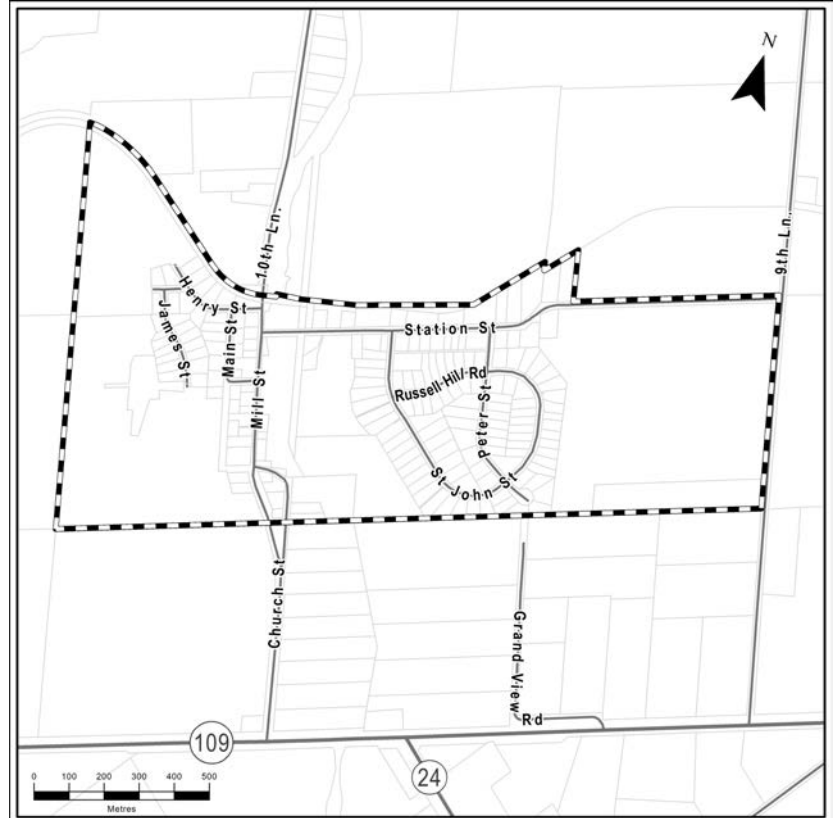
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 cgervais@amaranth-eastgary.ca

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Carley Dixon

From: Carley Dixon
Sent: Wednesday, February 20, 2019 2:43 PM
To: 'dlaforme@sixnations.ca'
Cc: Sue Stone (suestone@amaranth-eastgary.ca); Christine Gervais (cgervais@amaranth-eastgary.ca)
Subject: Waldemar Water Storage Municipal Class Environmental Assessment Study - Township of Amaranth
Attachments: 041042 Notice of Commencement-Notice of PIC Agency Letter_Dawn LaForme.pdf

Hi Dawn,

Please see the attached letter with respect to the Municipal Class Environmental Assessment Study being undertaken for water storage in Waldemar. Please do not hesitate to contact me if you have any questions.

Regards,
Carley



February 20, 2019

Ms. Dawn LaForme
Consultation Admin Assistant
Six Nations of the Grand River
2498 Chiefwood Road
P.O. Box 5000
Ohswegan, ON N0A 1M0

Dear Ms. LaForme:

**Re: Notice of Study Commencement & Notice of Public Information Centre
Waldemar Water Storage
Municipal Class Environmental Assessment Study
File No: 300041042.0000**

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Yours truly,

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Carley Dixon, P.Eng.
CD:sgd

Enclosure(s) Notice of Public Information Centre

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Township of Amaranth Notice of Public Information Centre for the Waldemar Water Storage Class Environmental Assessment Study



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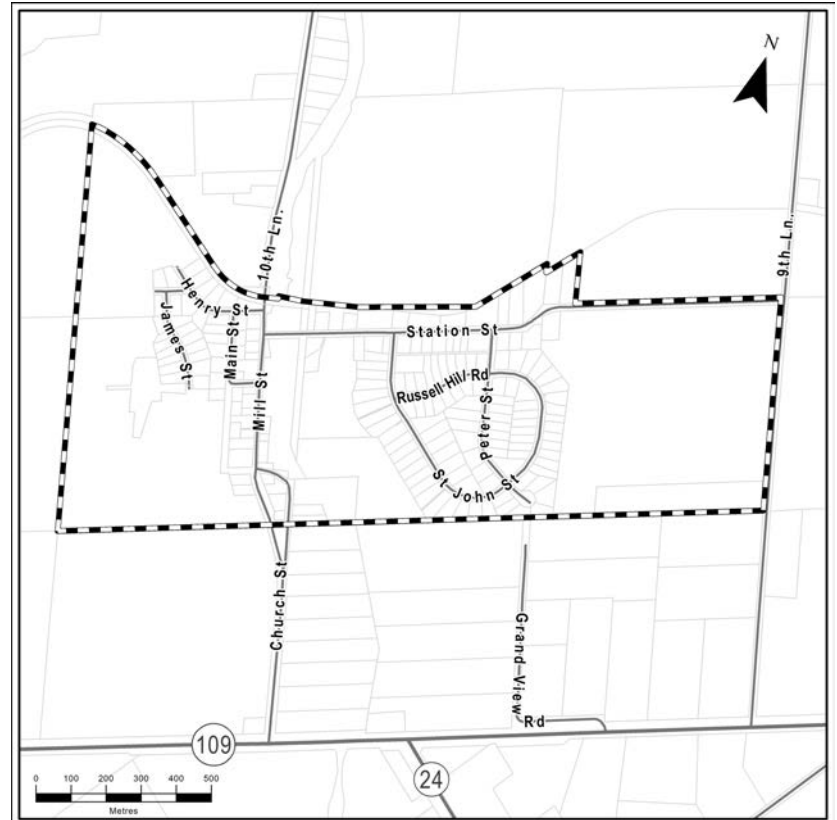
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Carley Dixon

From: Carley Dixon
Sent: Wednesday, February 20, 2019 4:21 PM
To: 'erick.boyd@ontario.ca'
Cc: Sue Stone (suestone@amaranth-eastgary.ca); Christine Gervais (cgervais@amaranth-eastgary.ca)
Subject: Waldemar Water Storage Municipal Class Environmental Assessment Study - Township of Amaranth
Attachments: 041042 Notice of Commencement-Notice of PIC Agency Letter_Erick Boyd.pdf

Hi Erick,

Please see the attached letter with respect to the Municipal Class Environmental Assessment Study being undertaken for water storage in Waldemar. Please do not hesitate to contact me if you have any questions.

Regards,
Carley



February 20, 2019

Mr. Erick Boyd
Manager, Community Planning and Development
Ministry of Municipal Affairs
Western Municipal Services Office
659 Exeter Road
Exeter Road Complex 2nd Floor
London, ON N6E 1L3

Dear Mr. Boyd:

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File No: 300041042.0000**

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Carley Dixon, P.Eng.
CD:sgd

Enclosure(s) Notice of Public Information Centre

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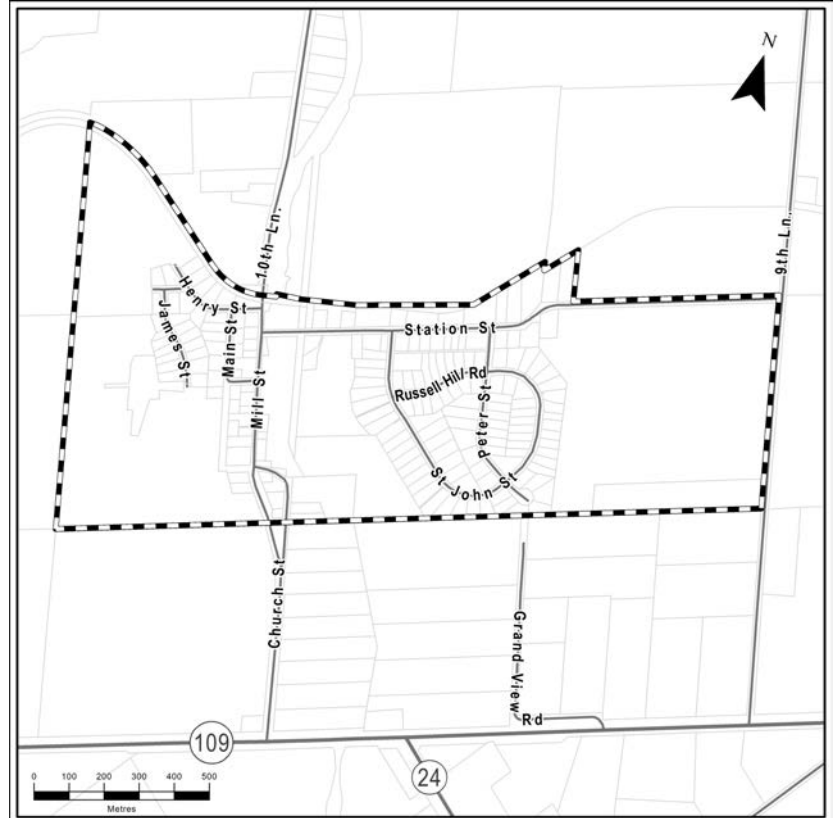
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Carley Dixon

From: Carley Dixon
Sent: Wednesday, February 20, 2019 2:45 PM
To: 'fawn.sault@mncfn.ca'
Cc: Sue Stone (suestone@amaranth-eastgary.ca); Christine Gervais (cgervais@amaranth-eastgary.ca)
Subject: Waldemar Water Storage Municipal Class Environmental Assessment Study - Township of Amaranth
Attachments: 041042 Notice of Commencement-Notice of PIC Agency Letter_Fawn Sault.pdf

Hi Fawn,

Please see the attached letter with respect to the Municipal Class Environmental Assessment Study being undertaken for water storage in Waldemar. Please do not hesitate to contact me if you have any questions.

Regards,
Carley



February 20, 2019

Ms. Fawn Sault
Consultation Manager
Mississaugas of the New Credit First Nation
2789 Mississauga Road
RR #6
Hagersville, ON N0A 1H0

Dear Ms. Sault:

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File No: 300041042.0000**

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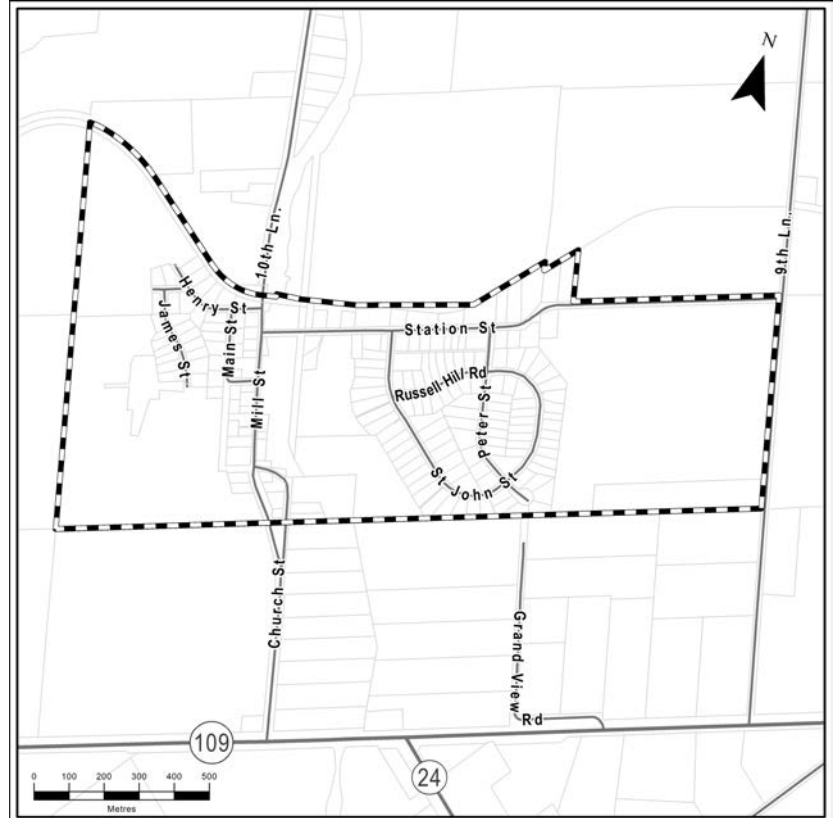
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Place: Township of Amaranth - 374028 6th Line, Amaranth, ON L9W 0M6

To provide comment or to request additional information concerning this project, or if you are unable to attend and would like to provide comments, please contact either of the following Project Team members by March 18th, 2019.

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

Township of Amaranth
 Director of Planning
 Christine Gervais
 374028 6th Line
 Amaranth ON L9W 0M6
 Phone: 519-941-1007
 cgervais@amaranth-eastgary.ca

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This Notice first issued on February 21, 2019.

Carley Dixon

From: Carley Dixon
Sent: Wednesday, February 20, 2019 2:41 PM
To: 'Mark.Christie@ontario.ca'
Cc: Sue Stone (suestone@amaranth-eastgary.ca); Christine Gervais (cgervais@amaranth-eastgary.ca)
Subject: Waldemar Water Storage Municipal Class Environmental Assessment Study - Township of Amaranth
Attachments: 041042 Notice of Commencement-Notice of PIC Agency Letter_Mark Christie.pdf

Hi Mark,

Please see the attached letter with respect to the Municipal Class Environmental Assessment Study being undertaken for water storage in Waldemar. Please do not hesitate to contact me if you have any questions.

Regards,
Carley



February 20, 2019

Mr. Mark Christie
Manager, Community Planning and Development
Ministry of Municipal Affairs
Central Municipal Services Office
777 Bay Street
13th Floor
Toronto, ON M5G 2E5

Dear Mr. Christie:

**Re: Notice of Study Commencement & Notice of Public Information Centre
Waldemar Water Storage
Municipal Class Environmental Assessment Study
File No: 300041042.0000**

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Yours truly,

R.J. Burnside & Associates Limited

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Carley Dixon, P.Eng.
CD:sgd

Enclosure(s) Notice of Public Information Centre

cc Christine Gervais, Director of Planning, Township of Amaranth
 Sue Stone, CAO, Township of Amaranth



**Township of Amaranth
Notice of Public Information Centre for the
Waldemar Water Storage
Class Environmental Assessment Study**



The Study

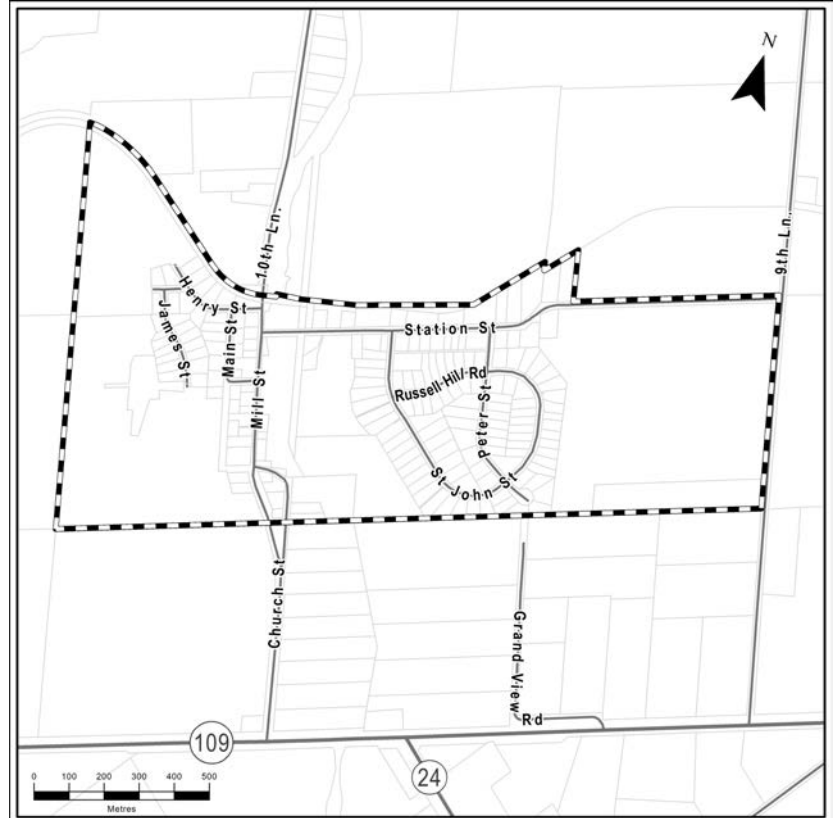
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This Notice first issued on February 21, 2019.

Carley Dixon

From: Carley Dixon
Sent: Wednesday, February 20, 2019 2:48 PM
To: 'consultations@metisnation.org'
Cc: Sue Stone (suestone@amaranth-eastgary.ca); Christine Gervais (cgervais@amaranth-eastgary.ca)
Subject: Waldemar Water Storage Municipal Class Environmental Assessment Study - Township of Amaranth
Attachments: 041042 Notice of Commencement-Notice of PIC Agency Letter_Metis.pdf

Please see the attached letter with respect to the Municipal Class Environmental Assessment Study being undertaken for water storage in Waldemar. Please do not hesitate to contact me if you have any questions.

Regards,
Carley



February 20, 2019

Métis Nation of Ontario
Lands, Resources and Consultations

To Whom It May Concern:

**Re: Notice of Study Commencement & Notice of Public Information Centre
Waldemar Water Storage
Municipal Class Environmental Assessment Study
File No: 300041042.0000**

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Yours truly,

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Carley Dixon, P.Eng.
CD:sgd

Enclosure(s) Notice of Public Information Centre

cc Christine Gervais, Director of Planning, Township of Amaranth
 Sue Stone, CAO, Township of Amaranth

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19/02/2019 4:11 PM



**Township of Amaranth
Notice of Public Information Centre for the
Waldemar Water Storage
Class Environmental Assessment Study**



The Study

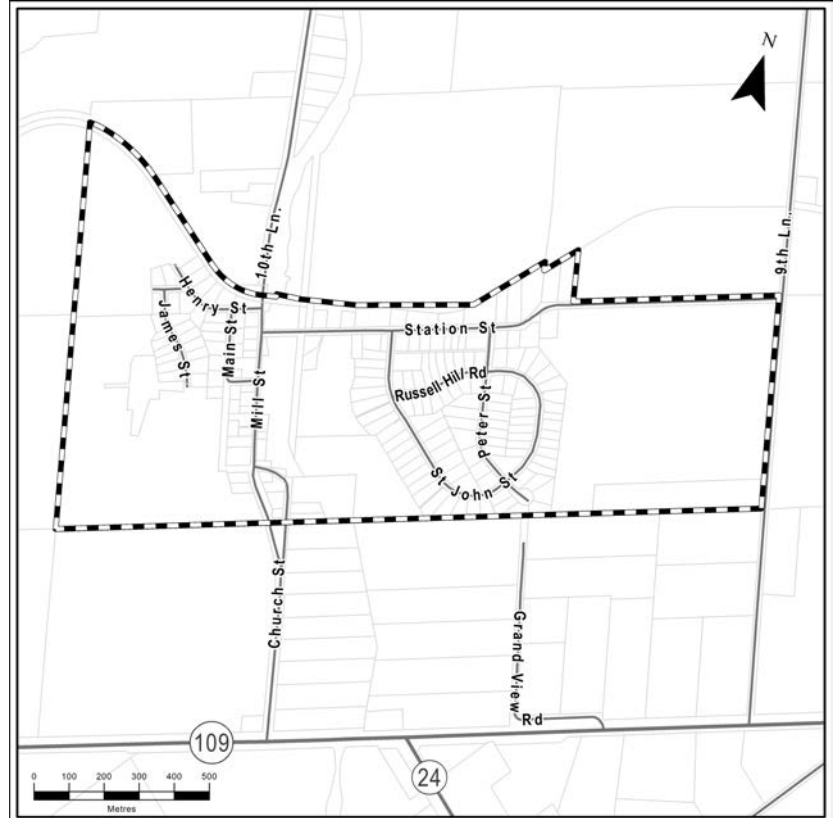
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Carley Dixon

From: Carley Dixon
Sent: Wednesday, February 20, 2019 3:45 PM
To: 'PHI.Intake@wdgpublichealth.ca'
Cc: Sue Stone (suestone@amaranth-eastgary.ca); Christine Gervais (cgervais@amaranth-eastgary.ca)
Subject: Waldemar Water Storage Municipal Class Environmental Assessment Study - Township of Amaranth
Attachments: 041042 Notice of Commencement-Notice of PIC Agency Letter_Public Health.pdf

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Regards,
Carley



February 20, 2019

EA contact
Wellington- Dufferin- Guelph Public Health Unit

To Whom It May Concern:

**Re: Notice of Study Commencement & Notice of Public Information Centre
Waldemar Water Storage
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File No: 300041042.0000**

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Carley Dixon, P.Eng.
CD:sgd

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**Township of Amaranth
Notice of Public Information Centre for the
Waldemar Water Storage
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The Study

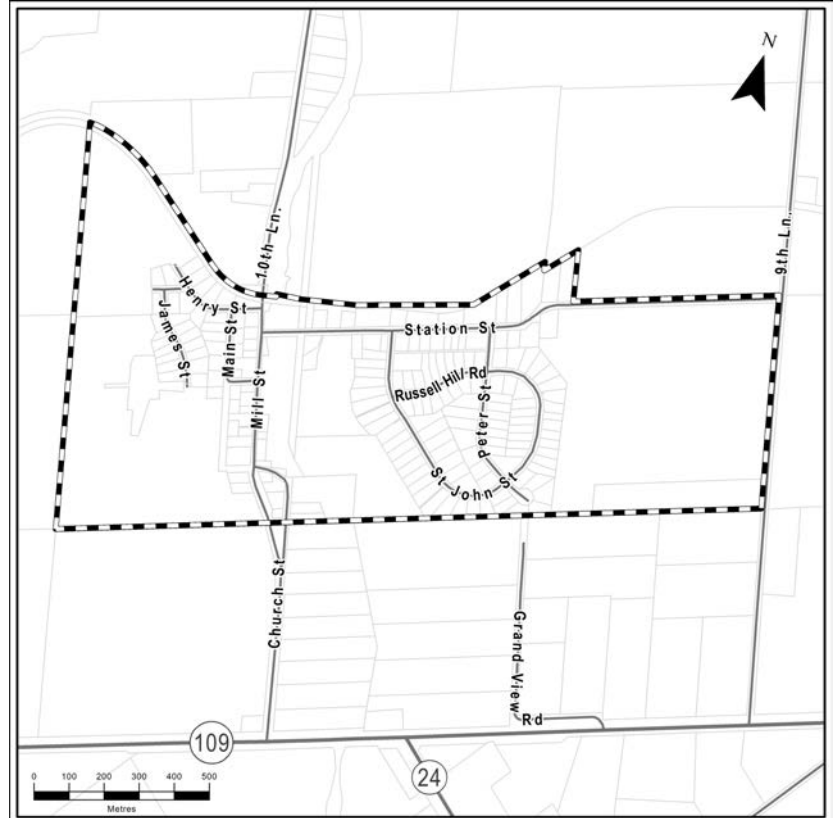
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Township of Amaranth
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Carley Dixon

From: Carley Dixon
Sent: Wednesday, February 20, 2019 2:54 PM
To: 'municipal.circulations@ugdsb.on.ca'
Cc: Sue Stone (suestone@amaranth-eastgary.ca); Christine Gervais (cgervais@amaranth-eastgary.ca)
Subject: Waldemar Water Storage Municipal Class Environmental Assessment Study - Township of Amaranth
Attachments: 041042 Notice of Commencement-Notice of PIC Agency Letter_UGDSB.pdf

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Carley



February 20, 2019

Planner
Upper Grand District School Board

To Whom It May Concern:

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File No: 300041042.0000**

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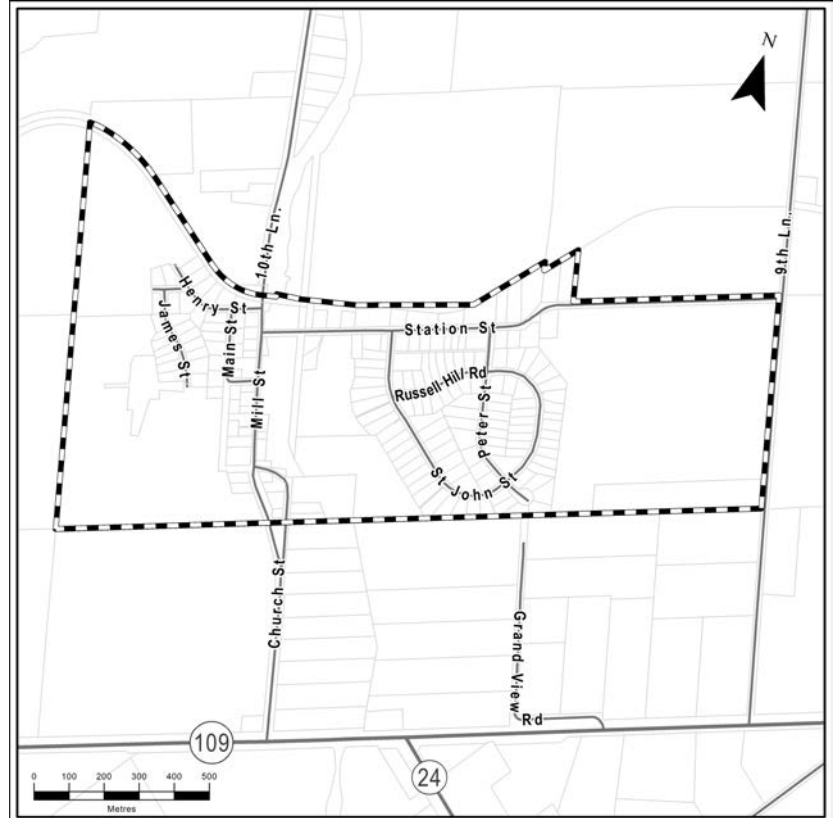
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From: Carley Dixon
Sent: Wednesday, February 20, 2019 2:49 PM
To: 'Utility.Circulations@zayo.com'
Cc: Sue Stone (suestone@amaranth-eastgary.ca); Christine Gervais (cgervais@amaranth-eastgary.ca)
Subject: Waldemar Water Storage Municipal Class Environmental Assessment Study - Township of Amaranth
Attachments: 041042 Notice of Commencement-Notice of PIC Agency Letter_Zayo.pdf

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Carley



February 20, 2019

Zayo

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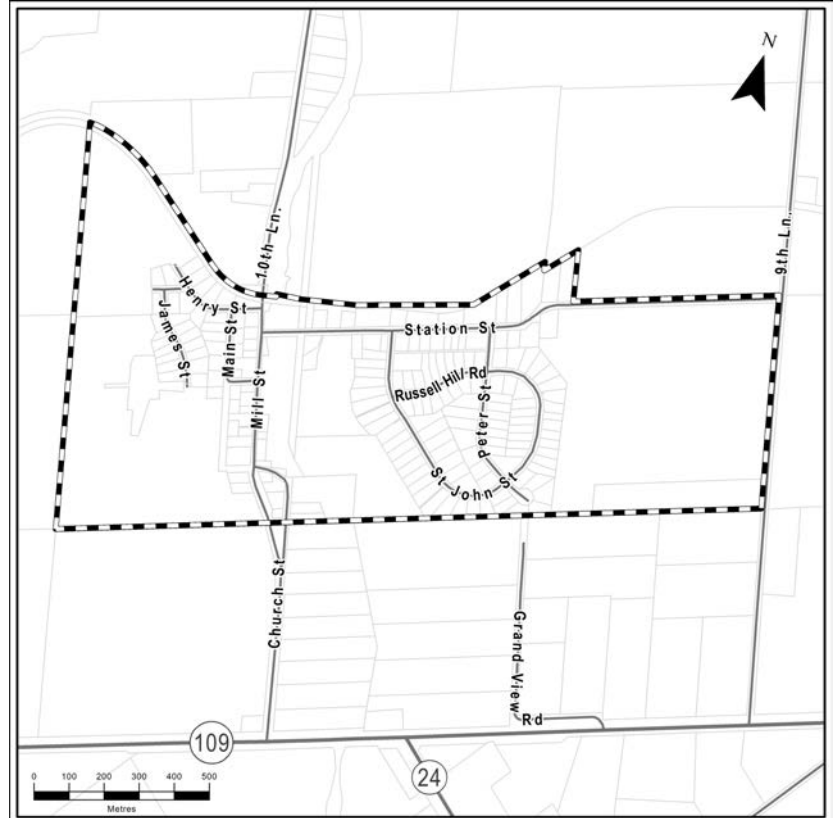
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Time: 7:00 p.m. to 9:00 p.m.
Place: Township of Amaranth - 374028 6th Line, Amaranth, ON L9W 0M6

To provide comment or to request additional information concerning this project, or if you are unable to attend and would like to provide comments, please contact either of the following Project Team members by March 18th, 2019.

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

Township of Amaranth
 Director of Planning
 Christine Gervais
 374028 6th Line
 Amaranth ON L9W 0M6
 Phone: 519-941-1007
 cgervais@amaranth-eastgary.ca

Information will be collected in accordance with the Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.

This Notice first issued on February 21, 2019.

Carley Dixon

From: Utility Circulations <utility.circulations+canned.response@zayo.com>
Sent: Wednesday, February 20, 2019 2:49 PM
To: Carley Dixon
Subject: Re: Waldemar Water Storage Municipal Class Environmental Assessment Study - Township of Amaranth

Thank you for your submission, it has been placed in the queue and will be replied to within 15 business days.

Utility Circulations

Carley Dixon

From: Carley Dixon
Sent: Wednesday, February 20, 2019 3:31 PM
To: 'eanotification.wcregion@ontario.ca'
Cc: Christine Gervais (cgervais@amaranth-eastgary.ca); Sue Stone (suestone@amaranth-eastgary.ca)
Subject: Township of Amaranth, MEA Class EA, Waldemar Water Storage Municipal Class Environmental Assessment
Attachments: 41042_Notice of PIC.pdf; Notice of Study Commencement - Waldemar Water Storage.pdf; streamlined_ea_project_information_form.xlsx

Please see attached. Should you have any questions, please contact me.

Regards,
Carley

What to do:

Step 1: Look for the type of EA project in column B that applies to you.

Step 2: Complete columns C to J for that project.

Step 3: Send this form in Excel format to the MECP regional office email address where the project is located.

MECP regional office email addresses are listed at www.ontario.ca/page/preparing-environmental-assessments

Class EA/Streamlined EA	Proponent Name	Proponent Contact	Project Name	Project Schedule	Project Type	Project Location	MOECC Region	Project Initiation Date
1 CO - Remedial flood and erosion control projects								
2 GO Transit - Class EA								
3 Hydro One - Minor transmission facilities								
4 MEA - Class EA for municipal infrastructure projects	Township of Amaranth	Carley Dixon Carley.Dixon@rjburnside.com	Waldemar Water Storage Municipal Class Environmental Assessment	Schedule B	Municipal water and wastewater projects	Amaranth, Township of	West Central	Notice of Commencement - October 4, 2018 (non-mandatory, published on Township website only)) Notice of Public Information Centre - First issued Feb 21, 2019 (this is considered first mandatory notice, will be posted on Township website, two consecutive editions of Orangeville Banner and sent to agencies/stakeholders and those requested to be on contact list)
5 Ministry of Infrastructure - Public work								
6 MNDM - Activities of the Ministry of Northern Development and Mines under the Mining Act								
7 MNRF - Provincial parks and conservation reserves								
8 MNRF - Resource stewardship and facility development projects								
9 MTO - Provincial transportation facilities								
10 O. Reg. 101/07 - Waste management projects								
11 O. Reg. 116/01 - Electricity projects								
12 OWA - Waterpower projects								

Enter the proponent's name.

Enter the name and email address of the person who the MECP should contact about your project. This should be the same contact person who is listed on the notice.

Enter the project name as it appears on the notice.

Select the project schedule from the drop-down menu.

Select the project type from the drop-down menu.

Select the name of the municipality or unorganized/unsurveyed area where your project is located from the drop-down menu.

Select the MECP region from the drop-down menu. Read the "MECP regions" worksheet to find the MECP region where your project is located.

Enter the date that the streamlined EA process was initiated (e.g. notice of commencement). This date may be when the project notice was first published.



Township of Amaranth Notice of Public Information Centre for the Waldemar Water Storage Class Environmental Assessment Study



The Study

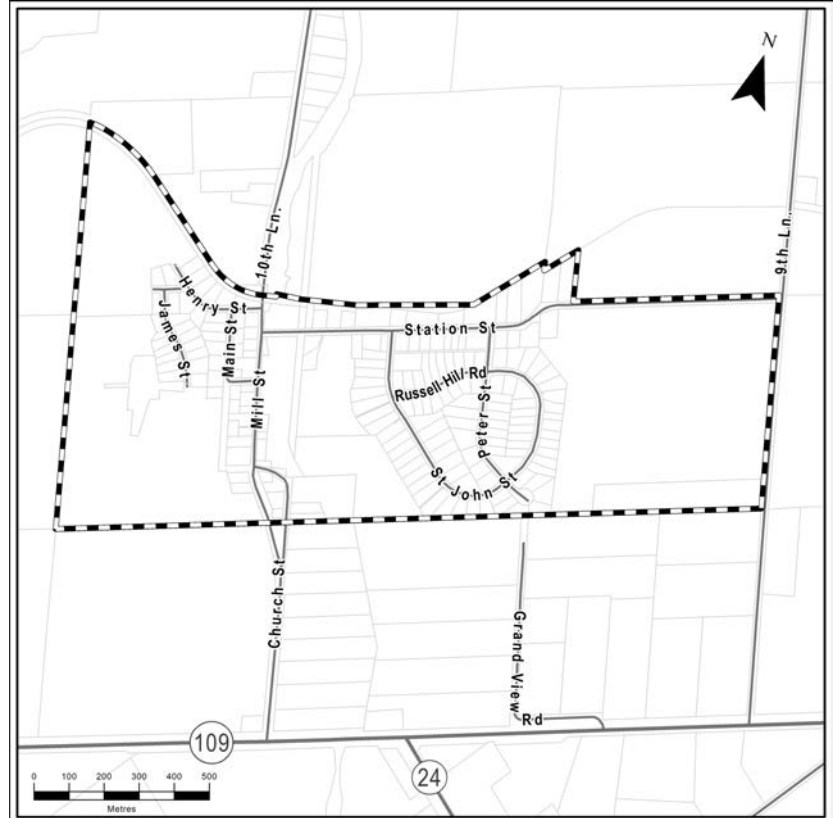
The Township of Amaranth has identified that the existing water storage in Waldemar does not have the volume required to support future water demands. The Township is initiating a Municipal Class Environmental Assessment (EA) to identify the preferred method of providing for these demands. The EA will review all lands designated within the Community Boundary of Waldemar in the Official Plan as part of this study.

Reasoning for Initiating the Study

The municipal drinking water system needs to be expanded to provide drinking water to a 73 lot subdivision near Station Street and 9th Line. The Developer is required to finance upgrades to the water system needed to service this development. The Township has identified that additional water storage is required and is initiating the EA to determine the preferred upgrades for the system.

Waldemar Drinking Water System

The existing drinking water system serves a portion of residents within Waldemar. The system has three wells to supply water, and a pump house and reservoir for treatment and storage of water. The water storage provides water to use when there are high demands on the system and for firefighting.



Public Information Centre (PIC) – Comments Invited

Public consultation is vital to this study. The Township would like to ensure that anyone interested in this study has the opportunity to get involved and provide input on the project's implementation. A PIC has been arranged to: describe the proposed project and the preliminary preferred solution; obtain feedback from the public; and, identify the next steps in the process. Presentation materials pertaining to the study will be made available on the Township's website (www.amaranth.ca) following the PIC.

PIC Drop-in Centre

Date: Monday, March 4, 2019

Time: 7:00 p.m. to 9:00 p.m.

Place: Township of Amaranth - 374028 6th Line, Amaranth, ON L9W 0M6

To provide comment or to request additional information concerning this project, or if you are unable to attend and would like to provide comments, please contact either of the following Project Team members by March 18th, 2019.

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

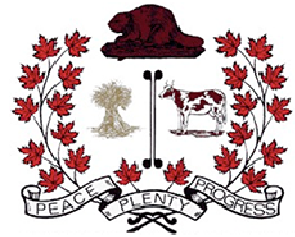
Township of Amaranth
Director of Planning
Christine Gervais
374028 6th Line
Amaranth ON L9W 0M6
Phone: 519-941-1007
cgervais@amaranth-eastgary.ca

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This Notice first issued on February 21, 2019.



**Township of Amaranth
Notice of Study Commencement
Waldemar Water Storage
Class Environmental Assessment Study**



The Study

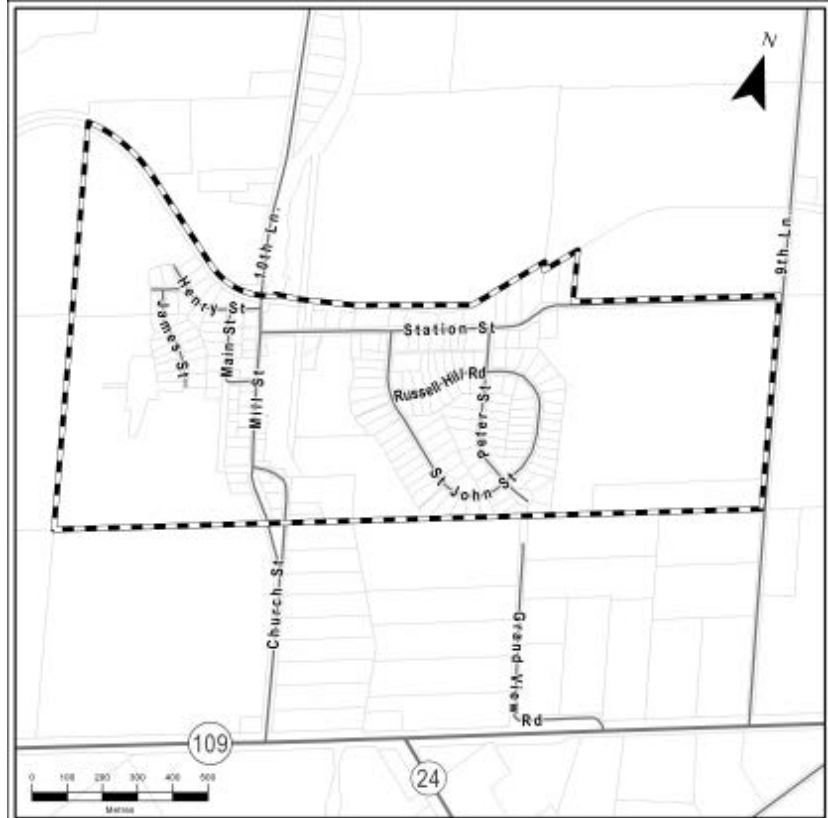
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Reasoning for Initiating the Study

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The Process

This study is being carried out in accordance with the requirements of a Schedule "B" undertaking as outlined in the Municipal Engineers Association *Municipal Class Environmental Assessment document* (2000, as amended in 2007, 2011, and 2015). A key component of the study will be consultation with interested stakeholders (public and agencies) as well as indigenous communities.

This notice is intended to inform residents of Waldemar that the Township is initiating the study. The Township will be holding a Public Information Centre expected to occur in the Fall, where further information related to the study including alternatives will be available for input and comment.

Notification for the date, location, and time of the upcoming Public Information Centre will be posted on the Township's website and will be published in the Orangeville Banner. If you wish to be placed on the contact list to receive future notices or have questions or comments related to this project, please contact Carley Dixon or Christine Gervais.

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

Township of Amaranth
Director of Planning
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cgervais@amaranth-eastgary.ca

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This Notice first issued on October 4, 2018.

Carley Dixon

From: Carley Dixon
Sent: Saturday, February 23, 2019 2:50 PM
To: 'SecondaryLandUse@HydroOne.com'
Cc: Sue Stone (suestone@amaranth-eastgary.ca); Christine Gervais (cgervais@amaranth-eastgary.ca)
Subject: Waldemar Water Storage Municipal Class Environmental Assessment Study - Township of Amaranth
Attachments: 041042 Notice of Commencement-Notice of PIC Agency Letter_Hydro One.pdf

Please see the attached letter with respect to the Municipal Class Environmental Assessment Study being undertaken for water storage in Waldemar. Please do not hesitate to contact me if you have any questions.

Regards,
Carley



February 23, 2019

Hydro One Networks Inc.

To Whom It May Concern:

**Re: Notice of Study Commencement & Notice of Public Information Centre
Waldemar Water Storage
Municipal Class Environmental Assessment Study
File No: 300041042.0000**

The existing drinking water storage in Waldemar does not have the volume required to support future water demands. The Township has initiated a Class Environmental Assessment (EA) to identify the preferred storage alternative. Please refer to the enclosed Notice of Public Information Centre. The Notice will be posted on the Township website and will be in two issues of the Orangeville Banner.

This study is being carried out in accordance with the planning and design process for Schedule 'B' projects as outlined in the Municipal Class Environmental Assessment (October 2000, as amended in 2007, 2011 and 2015). A key component of the study will be consultation with interested stakeholders (public and agency). Input and comments received from the public and from agencies will be incorporated into the planning and design of this project. Upon completion of the study, a Project File Report will be prepared for public review and comment. Subject to comments received and the receipt of necessary approvals, the Township of Amaranth intends to proceed with the planning, design and construction of this project.

The Township is holding a Public Information Centre (PIC) on Monday, March 4, 2019 to provide additional information on the project. The materials from the PIC will be posted on the Township's website (www.amaranth.ca) following the PIC.

The Township is requesting that your agency provide comments on the proposed project. The Township is seeking information on:

- Any preliminary comments or concerns that your agency has on the proposed project; and
- Other projects proposed within or near the general area of study.

It is essential to the success of this project that the concerns of your agency, and other stakeholders, are identified early in the planning process, such that the appropriate environmental protection measures are incorporated into the overall project design.

All interested stakeholders will be kept up-to-date on project status by means of future mailings, or inclusion in project meetings, as deemed appropriate.

Your participation in this EA study is much appreciated. To provide the study team with your comments or for further information, or you wish to be removed from our contact list, please contact Carley Dixon at 226-486-1592 or by email at Carley.Dixon@rjburnside.com.

Yours truly,

R.J. Burnside & Associates Limited

A handwritten signature in black ink that reads "Carley Dixon". The signature is written in a cursive, flowing style.

Carley Dixon, P.Eng.
CD:sgd

Enclosure(s) Notice of Public Information Centre

cc Christine Gervais, Director of Planning, Township of Amaranth
 Sue Stone, CAO, Township of Amaranth

041042_Notice of Commencement-Notice of PIC Agency Letter
19/02/2019 4:11 PM



**Township of Amaranth
Notice of Public Information Centre for the
Waldemar Water Storage
Class Environmental Assessment Study**



The Study

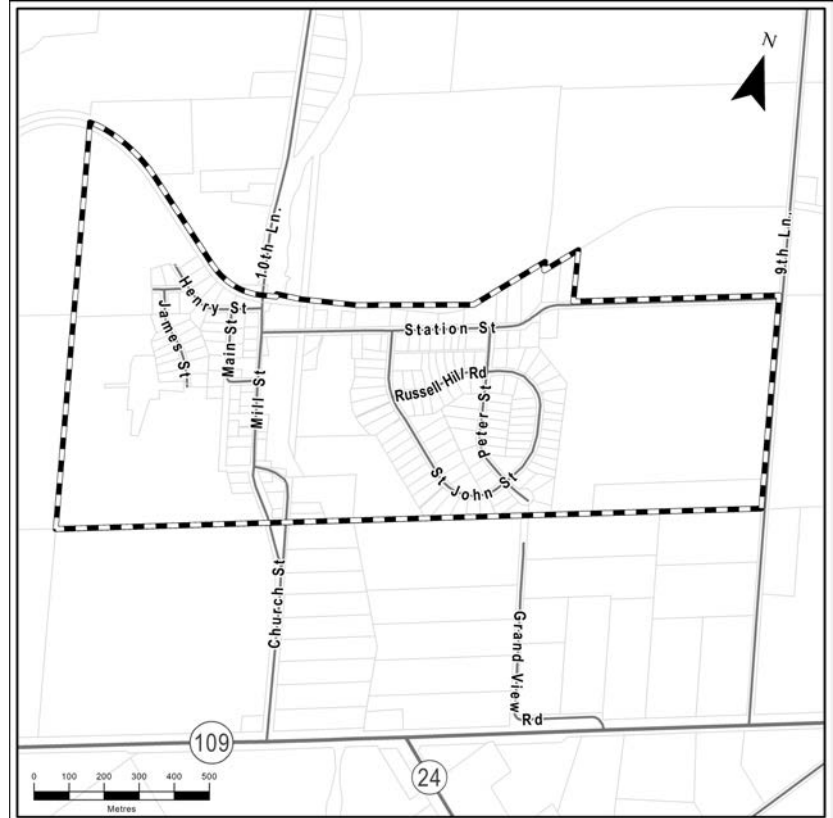
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To provide comment or to request additional information concerning this project, or if you are unable to attend and would like to provide comments, please contact either of the following Project Team members by March 18th, 2019.

Project Manager
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 R.J. Burnside & Associates Ltd.
 15 Townline
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 Phone: 226-486-1542
 Carley.Dixon@rjburnside.com

Township of Amaranth
 Director of Planning
 Christine Gervais
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 Phone: 519-941-1007
 cgervais@amaranth-eastgary.ca

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This Notice first issued on February 21, 2019.

Carley Dixon

From: Christine Gervais <cgervais@amaranth-eastgary.ca>
Sent: Thursday, February 28, 2019 5:40 PM
To: Slattery, Barbara (MECP)
Cc: Carley Dixon
Subject: RE: Waldemar Water Storage EA - Acknowledgement letter

Hi Barb,
Thank you for your comments.
Regards,
Christine

Christine Gervais, MCIP, RPP, Director of Planning
Township of Amaranth & Township of East Garafraxa
Tel.: 519-941-1007 | Email: cgervais@amaranth-eastgary.ca

From: Slattery, Barbara (MECP) <barbara.slattery@ontario.ca>
Sent: Thursday, February 28, 2019 2:57 PM
To: Christine Gervais <cgervais@amaranth-eastgary.ca>
Subject: FW: Waldemar Water Storage EA - Acknowledgement letter

From: Slattery, Barbara (MECP)
Sent: February 28, 2019 2:53 PM
To: carley.dixon@rjburnside.com; cgervais@amarath-eastgary.ca
Subject: Waldemar Water Storage EA - Acknowledgement letter

With best regards,

Barb Slattery, EA/Planning Coordinator
Ministry of the Environment, Conservation and Parks
West Central Region
(905) 521-7864



**Ministry of the Environment,
Conservation and Parks**
West Central Region
119 King Street West, 12th Fl.

**Ministère de l'Environnement,
de la Protection de la nature et
des Parcs**

February 28, 2019

Ms. Carley Dixon
R.J. Burnside & Associates

Ms Christine Gervais
Township of Amaranth

Dear Ms. Dixon and Ms. Gervais:

Re: **Waldemar Water Storage - Township of Amaranth
MEA Class EA - Response to Notice of Commencement**

This letter is in response to the Notice of Commencement for the above noted project. The Ministry of the Environment, Conservation and Parks (MECP) acknowledges that Amaranth Township has indicated that its study is following the MEA Class EA process for Schedule "B" projects. It is understood that the purpose of the study is to determine how to address the water storage/demand requirements for Waldemar. We have included a map of the study area to show features that should be taken into consideration during the completion of the EA study. Most notable are the WHPA areas and water takings that are known to the ministry.

The Crown has a legal duty to consult Aboriginal communities when it has knowledge, real or constructive, of the existence or potential existence of an Aboriginal or treaty right and contemplates conduct that may adversely impact that right. Before the Township may proceed with this project, the Crown must ensure that its duty to consult has been fulfilled, where such a duty is triggered. Although the duty to consult with Aboriginal peoples is a duty of the Crown, the Crown may delegate procedural aspects of consultation to project proponents while retaining oversight of the process.

Your proposed project may have the potential to affect Aboriginal or treaty rights protected under section 35 of Canada's *Constitution Act 1982*. Where the Crown's duty to consult is triggered in relation to your proposed project, **the MECP is delegating the procedural aspects of rights-based consultation to you through this letter**. The Crown intends to rely on the delegated consultation process in discharging its duty to consult and maintains the right to participate in the consultation process as it sees fit. Based on information you have provided to date and the Crown's preliminary assessment you are required to consult with the following communities who have been identified as potentially affected by your proposed project.

- Saugeen First Nation
- Chippewas of Nawash Unceded First Nation

- Beausoleil First Nation
- Chippewas of Rama First Nation
- Georgina Island First Nation

If the Township has an ongoing relationship with Metis Communities, you may wish to proactively and notify them of the project. The study area is also within a larger area of asserted interest of the Huron-Wendat Nation who should also be notified if there are potential impacts to archeological resources.

Steps that you may need to take in relation to Aboriginal consultation for your proposed project are outlined in the "Code of Practice for Consultation in Ontario's Environmental Assessment Process" which can be found at the following link:

<https://www.ontario.ca/document/consultation-ontarios-environmental-assessment-process>

Additional information related to Ontario's *Environmental Assessment Act* is available online at: www.ontario.ca/environmentalassessments

You must contact the Director of Environmental Assessment and Permissions Branch (Director) under the following circumstances following any initial discussions with the communities identified by MEC:

- Aboriginal or treaty rights impacts are identified to you by the communities;
- You have reason to believe that your proposed project may adversely affect an Aboriginal or treaty right;
- Consultation has reached an impasse;
- A Part II Order request or elevation request is expected.

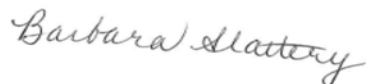
The Director can be notified either by email, mail or fax using the information provided below:

Email:	enviropemissions@ontario.ca Subject: Potential Duty to Consult
Fax:	416-314-8452
Address:	Environmental Assessment and Permissions Branch 135 St. Clair Avenue West, 1 st Floor Toronto, ON, M4V 1P5

The MECP will then assess the extent of any Crown duty to consult for the circumstances and will consider whether additional steps should be taken, including what role the Township will be asked to play should additional steps and activities be required.

A draft copy of the Project File should be sent to my attention for review before the Township issues its Notice of Completion of the final report. We would appreciate having a minimum of 30 days for MECP's technical reviewers to provide comments on the draft Project. Should you or any members of your project team have any questions regarding the material above, please contact me directly at (905) 521-7864 or by email at Barbara.slattery@ontario.ca.

Yours truly,



A PROPONENT'S INTRODUCTION TO THE DELEGATION OF PROCEDURAL ASPECTS OF CONSULTATION WITH ABORIGINAL COMMUNITIES

DEFINITIONS

The following definitions are specific to this document and may not apply in other contexts:

Aboriginal communities – the First Nation or Métis communities identified by the Crown for the purpose of consultation.

Consultation – the Crown's legal obligation to consult when the Crown has knowledge of an established or asserted Aboriginal or treaty right and contemplates conduct that might adversely impact that right. This is the type of consultation required pursuant to s. 35 of the *Constitution Act, 1982*. Note that this definition does not include consultation with Aboriginal communities for other reasons, such as regulatory requirements.

Crown – the Ontario Crown, acting through a particular ministry or ministries.

Procedural aspects of consultation – those portions of consultation related to the process of consultation, such as notifying an Aboriginal community about a project, providing information about the potential impacts of a project, responding to concerns raised by an Aboriginal community and proposing changes to the project to avoid negative impacts.

Proponent – the person or entity that wants to undertake a project and requires an Ontario Crown decision or approval for the project.

I. PURPOSE

The Crown has a legal duty to consult Aboriginal communities when it has knowledge of an existing or asserted Aboriginal or treaty right and contemplates conduct that may adversely impact that right. In outlining a framework for the duty to consult, the Supreme Court of Canada has stated that the Crown may delegate procedural aspects of consultation to third parties. This document provides general information about the Ontario Crown's approach to delegation of the procedural aspects of consultation to proponents.

This document is not intended to instruct a proponent about an individual project, and it does not constitute legal advice.

II. WHY IS IT NECESSARY TO CONSULT WITH ABORIGINAL COMMUNITIES?

The objective of the modern law of Aboriginal and treaty rights is the *reconciliation* of Aboriginal peoples and non-Aboriginal peoples and their respective rights, claims and interests. Consultation is an important component of the reconciliation process.

The Crown has a legal duty to consult Aboriginal communities when it has knowledge of an existing or asserted Aboriginal or treaty right and contemplates conduct that might adversely impact that right. For example, the Crown's duty to consult is triggered when it considers issuing a permit, authorization or approval for a project which has the potential to adversely impact an Aboriginal right, such as the right to hunt, fish, or trap in a particular area.

The scope of consultation required in particular circumstances ranges across a spectrum depending on both the nature of the asserted or established right and the seriousness of the potential adverse impacts on that right.

Depending on the particular circumstances, the Crown may also need to take steps to accommodate the potentially impacted Aboriginal or treaty right. For example, the Crown may be required to avoid or minimize the potential adverse impacts of the project.

III. THE CROWN'S ROLE AND RESPONSIBILITIES IN THE DELEGATED CONSULTATION PROCESS

The Crown has the responsibility for ensuring that the duty to consult, and accommodate where appropriate, is met. However, the Crown may delegate the procedural aspects of consultation to a proponent.

There are different ways in which the Crown may delegate the procedural aspects of consultation to a proponent, including through a letter, a memorandum of understanding, legislation, regulation, policy and codes of practice.

If the Crown decides to delegate procedural aspects of consultation, the Crown will generally:

- Ensure that the delegation of procedural aspects of consultation and the responsibilities of the proponent are clearly communicated to the proponent;
- Identify which Aboriginal communities must be consulted;
- Provide contact information for the Aboriginal communities;
- Revise, as necessary, the list of Aboriginal communities to be consulted as new information becomes available and is assessed by the Crown;
- Assess the scope of consultation owed to the Aboriginal communities;

- Maintain appropriate oversight of the actions taken by the proponent in fulfilling the procedural aspects of consultation;
- Assess the adequacy of consultation that is undertaken and any accommodation that may be required;
- Provide a contact within any responsible ministry in case issues arise that require direction from the Crown; and
- Participate in the consultation process as necessary and as determined by the Crown.

IV. THE PROPONENT'S ROLE AND RESPONSIBILITIES IN THE DELEGATED CONSULTATION PROCESS

Where aspects of the consultation process have been delegated to a proponent, the Crown, in meeting its duty to consult, will rely on the proponent's consultation activities and documentation of those activities. The consultation process informs the Crown's decision of whether or not to approve a proposed project or activity.

A proponent's role and responsibilities will vary depending on a variety of factors including the extent of consultation required in the circumstance and the procedural aspects of consultation the Crown has delegated to it. Proponents are often in a better position than the Crown to discuss a project and its potential impacts with Aboriginal communities and to determine ways to avoid or minimize the adverse impacts of a project.

A proponent can raise issues or questions with the Crown at any time during the consultation process. If issues or concerns arise during the consultation that cannot be addressed by the proponent, the proponent should contact the Crown.

a) What might a proponent be required to do in carrying out the procedural aspects of consultation?

Where the Crown delegates procedural aspects of consultation, it is often the proponent's responsibility to provide notice of the proposed project to the identified Aboriginal communities. The notice should indicate that the Crown has delegated the procedural aspects of consultation to the proponent and should include the following information:

- a description of the proposed project or activity;
- mapping;
- proposed timelines;
- details regarding anticipated environmental and other impacts;
- details regarding opportunities to comment; and
- any changes to the proposed project that have been made for seasonal conditions or other factors, where relevant.

Proponents should provide enough information and time to allow Aboriginal communities to provide meaningful feedback regarding the potential impacts of the project. Depending on the nature of consultation required for a project, a proponent also may be required to:

- provide the Crown with copies of any consultation plans prepared and an opportunity to review and comment;
- ensure that any necessary follow-up discussions with Aboriginal communities take place in a timely manner, including to confirm receipt of information, share and update information and to address questions or concerns that may arise;
- as appropriate, discuss with Aboriginal communities potential mitigation measures and/or changes to the project in response to concerns raised by Aboriginal communities;
- use language that is accessible and not overly technical, and translate material into Aboriginal languages where requested or appropriate;
- bear the reasonable costs associated with the consultation process such as, but not limited to, meeting hall rental, meal costs, document translation(s), or to address technical & capacity issues;
- provide the Crown with all the details about potential impacts on established or asserted Aboriginal or treaty rights, how these concerns have been considered and addressed by the proponent and the Aboriginal communities and any steps taken to mitigate the potential impacts;
- provide the Crown with complete and accurate documentation from these meetings and communications; and
- notify the Crown immediately if an Aboriginal community not identified by the Crown approaches the proponent seeking consultation opportunities.

b) What documentation and reporting does the Crown need from the proponent?

Proponents should keep records of all communications with the Aboriginal communities involved in the consultation process and any information provided to these Aboriginal communities.

As the Crown is required to assess the adequacy of consultation, it needs documentation to satisfy itself that the proponent has fulfilled the procedural aspects of consultation delegated to it. The documentation required would typically include:

- the date of meetings, the agendas, any materials distributed, those in attendance and copies of any minutes prepared;
- the description of the proposed project that was shared at the meeting;
- any and all concerns or other feedback provided by the communities;
- any information that was shared by a community in relation to its asserted or established Aboriginal or treaty rights and any potential adverse impacts of the proposed activity, approval or disposition on such rights;

- any proposed project changes or mitigation measures that were discussed, and feedback from Aboriginal communities about the proposed changes and measures;
- any commitments made by the proponent in response to any concerns raised, and feedback from Aboriginal communities on those commitments;
- copies of correspondence to or from Aboriginal communities, and any materials distributed electronically or by mail;
- information regarding any financial assistance provided by the proponent to enable participation by Aboriginal communities in the consultation;
- periodic consultation progress reports or copies of meeting notes if requested by the Crown;
- a summary of how the delegated aspects of consultation were carried out and the results; and
- a summary of issues raised by the Aboriginal communities, how the issues were addressed and any outstanding issues.

In certain circumstances, the Crown may share and discuss the proponent's consultation record with an Aboriginal community to ensure that it is an accurate reflection of the consultation process.

c) Will the Crown require a proponent to provide information about its commercial arrangements with Aboriginal communities?

The Crown may require a proponent to share information about aspects of commercial arrangements between the proponent and Aboriginal communities where the arrangements:

- include elements that are directed at mitigating or otherwise addressing impacts of the project;
- include securing an Aboriginal community's support for the project; or
- may potentially affect the obligations of the Crown to the Aboriginal communities.

The proponent should make every reasonable effort to exempt the Crown from confidentiality provisions in commercial arrangements with Aboriginal communities to the extent necessary to allow this information to be shared with the Crown.

The Crown cannot guarantee that information shared with the Crown will remain confidential. Confidential commercial information should not be provided to the Crown as part of the consultation record if it is not relevant to the duty to consult or otherwise required to be submitted to the Crown as part of the regulatory process.

V. WHAT ARE THE ROLES AND RESPONSIBILITIES OF ABORIGINAL COMMUNITIES' IN THE CONSULTATION PROCESS?

Like the Crown, Aboriginal communities are expected to engage in consultation in good faith. This includes:

- responding to the consultation notice;
- engaging in the proposed consultation process;
- providing relevant information;
- clearly articulating the potential impacts of the proposed project on Aboriginal or treaty rights; and
- discussing ways to mitigate any adverse impacts.

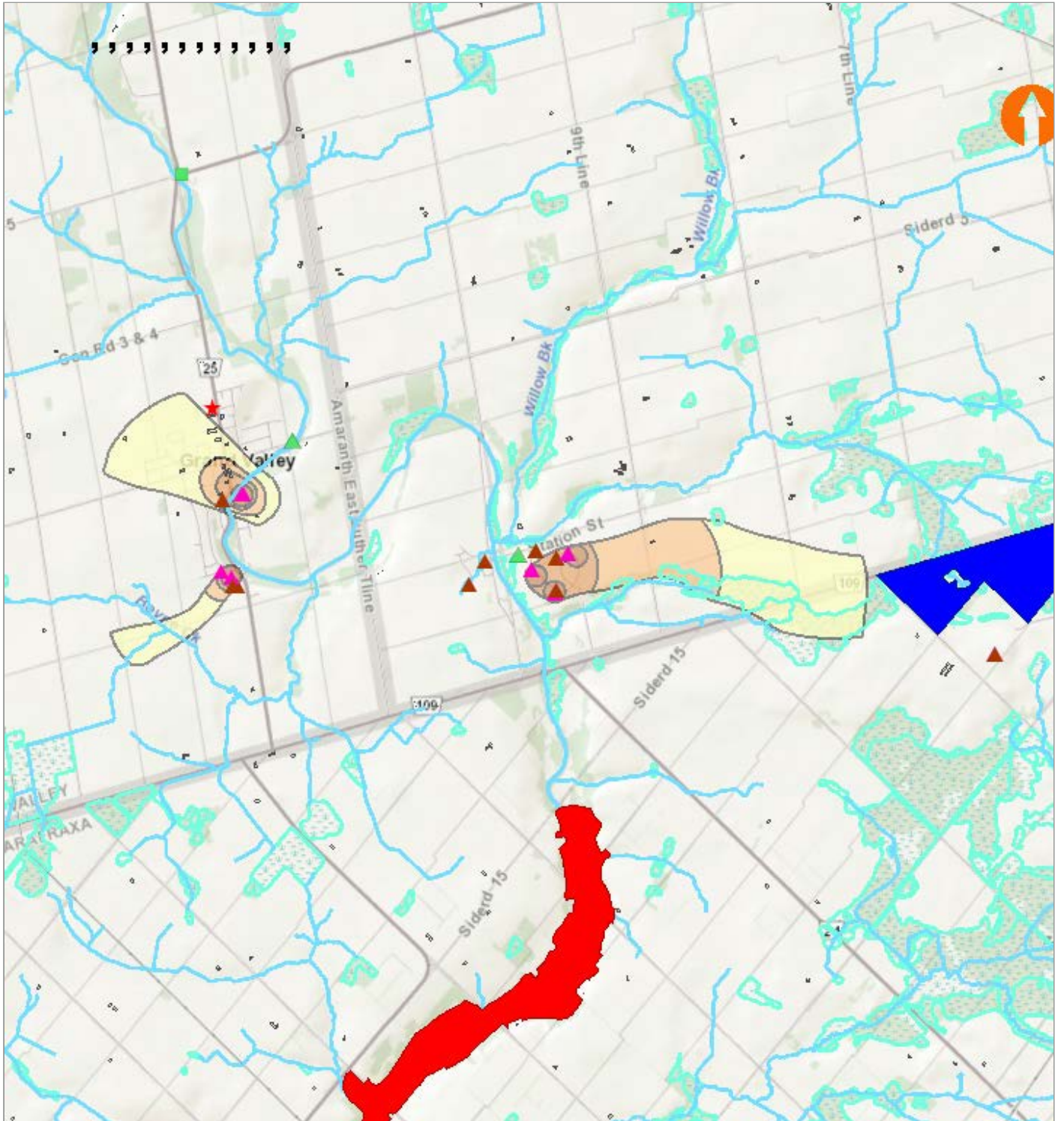
Some Aboriginal communities have developed tools, such as consultation protocols, policies or processes that provide guidance on how they would prefer to be consulted. Although not legally binding, proponents are encouraged to respect these community processes where it is reasonable to do so. Please note that there is no obligation for a proponent to pay a fee to an Aboriginal community in order to enter into a consultation process.

To ensure that the Crown is aware of existing community consultation protocols, proponents should contact the relevant Crown ministry when presented with a consultation protocol by an Aboriginal community or anyone purporting to be a representative of an Aboriginal community.

VI. WHAT IF MORE THAN ONE PROVINCIAL CROWN MINISTRY IS INVOLVED IN APPROVING A PROPONENT'S PROJECT?

Depending on the project and the required permits or approvals, one or more ministries may delegate procedural aspects of the Crown's duty to consult to the proponent. The proponent may contact individual ministries for guidance related to the delegation of procedural aspects of consultation for ministry-specific permits/approvals required for the project in question. Proponents are encouraged to seek input from all involved Crown ministries sooner rather than later.

WALDEMAR WATER STORAGE, TOWNSHIP OF AMARANTH



Map Printed On 2019-02-21 14:25

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LEGEND

Layers

Large Landfill Sites (LIMO)

- Municipal (Active)

TYPE

- Private (Active)

Drinking Water Systems Profile Data (O. Reg 170)

- ▲ MRDWS, Cistern

DWS_CAT

- ▲ MRDWS, Distribution

- ▲ MRDWS, Ground Water

- ▲ MRDWS, Ground Water and Ground Under Direct Influence (GUDI)

- ▲ MRDWS, GUDI

- ▲ MRDWS, Surface Water

- ▲ MRDWS, Surface Water and GUDI

- NMYRR, Cistem

- NMYRR, Distribution

- NMYRR, Ground Water

- NMYRR, Ground Water and GUDI

- NMYRR, GUDI

- NMYRR, Surface Water, Ground Water and GUDI

- NMYRR, Surface Water

- NMYRR, Surface Water and GUDI

- DF, Cistem

- DF, Distribution

- DF, Ground Water

- DF, Ground Water and GUDI

- DF, GUDI

- DF, Surface Water, Ground Water and GUDI

- DF, Surface and Ground Water

- DF, Surface Water

- DF, Surface Water and GUDI

Permit To Take Water (PTTW)

- ▲ Active-Ground

LEGEND

- ▲ Active-Surface

- ▲ Active-Both

- ▲ Active-Pumping Test

- ▲ Inactive

- ★ Schools

- 🏥 Hospitals

- ▨ Buildings

Areas of Natural and Scientific Interest (ANSI)

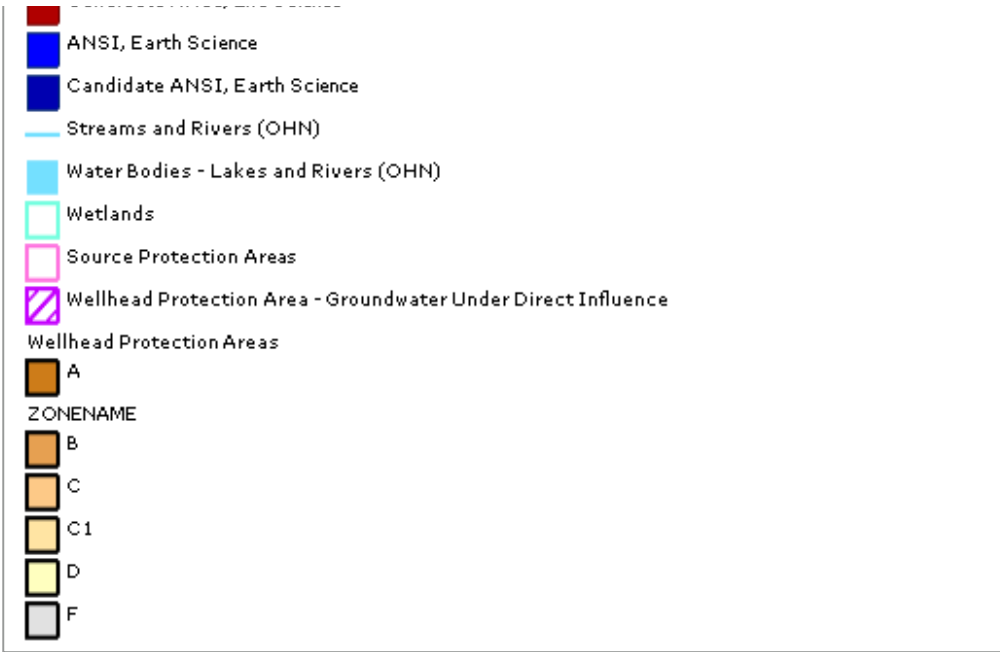
- ANSI, Life Science

DESCR

- Candidate ANSI, Life Science

OVERVIEW MAP





© Queen's Printer for Ontario, 2018.

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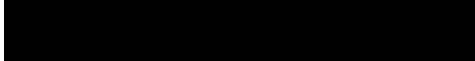
February 27, 2019-02-27

Christine Gervais, Director of Planning


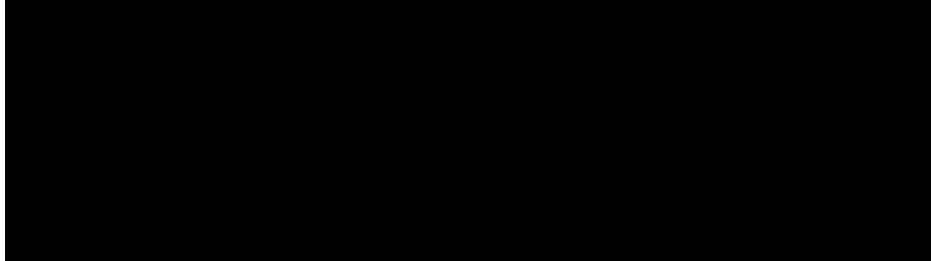
Township of Amaranth,

374028 6th Line, Amaranth, ON

L9W 1E5

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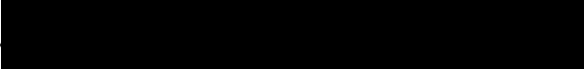
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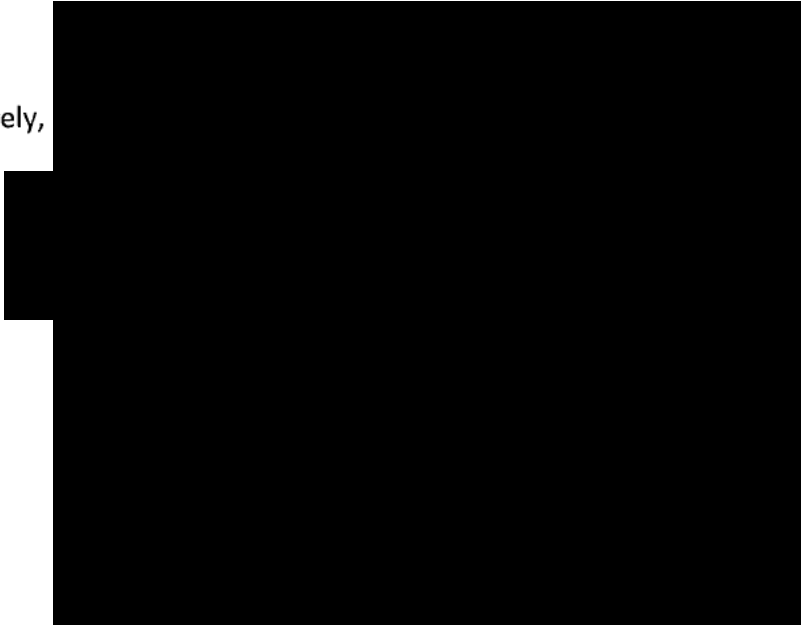
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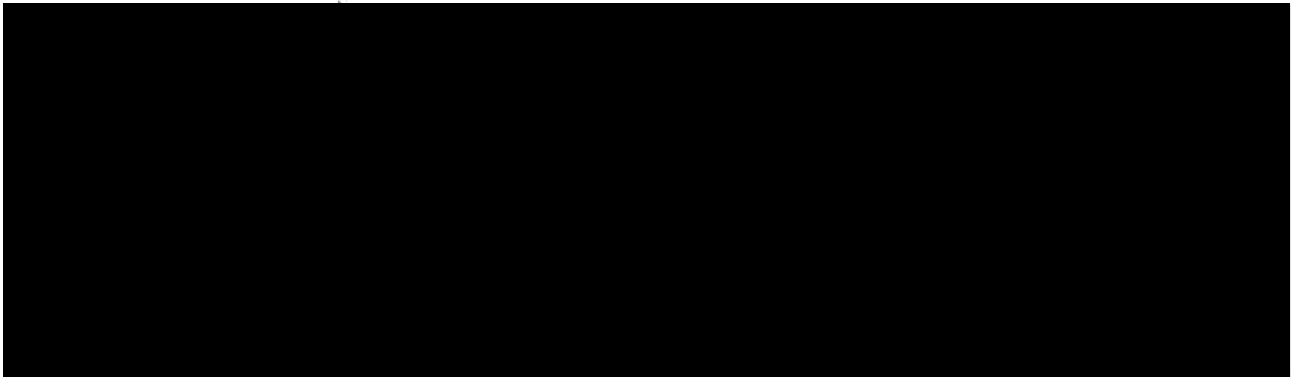
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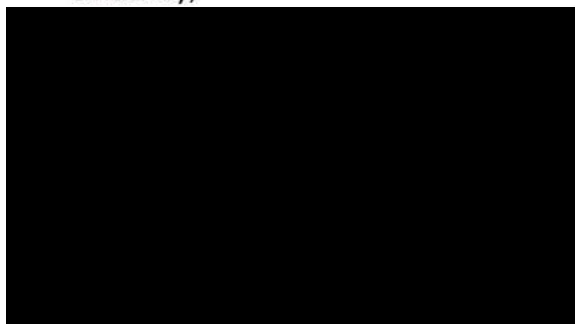
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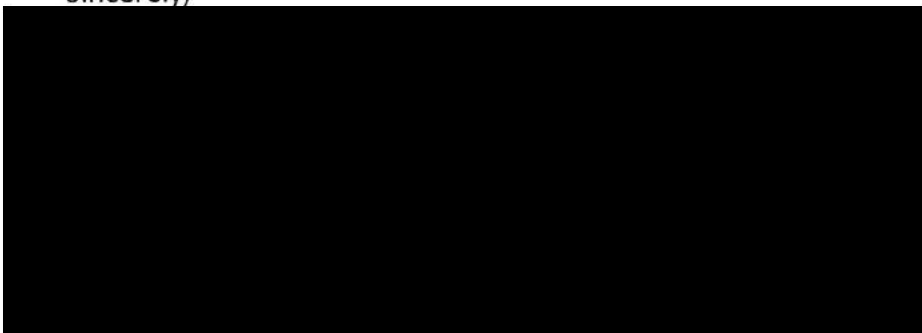
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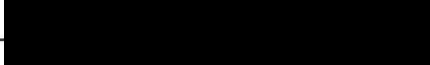
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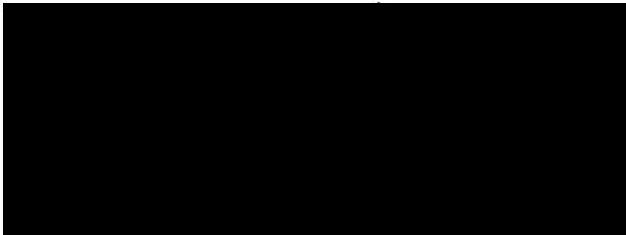
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7:00 p.m. – 9:00 p.m.

Name:**Address:****Postal Code:****Email:**

[Redacted area containing personal information]

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1. My interest is: (please check all that apply) resident agency representative general interest developer interest other: _____**2. If you live in Waldemar and you obtain your water from a private well, do you have any interest in connecting to the Municipal Drinking Water System at some point?** Yes, I do have interest in a future connection to the municipal water system. No, I do not have any interest in a future connection.

NOTE: The purpose of this EA is to expand the water system to service new development only. However, this study allows us the opportunity to reach out to existing residents to confirm whether there is any interest in future connections, so we can properly consider the alternatives.

3. Comments/Questions/Suggestions (additional space on back of page):

MY CONCERN IS TO BE ASSURED THAT THERE WILL BE WATER FOR EVERYONE INCLUDING WE WHO ARE ON PRIVATE WELLS

The Township of Amaranth and R.J. Burnside & Associates Limited thank you for your involvement in the Municipal Class Environmental Assessment. Information will be collected in accordance with the *Municipal Freedom of Information and Protection of Privacy Act*. With the exception of personal information, all comments will become part of the public record and published with the final Project File Report.

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Address: [REDACTED]
Postal Code: [REDACTED]
Email: [REDACTED]

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Obviously, to me, the expansion of the current site has a number of advantages.

1. Esthetically more pleasing
2. least expensive with equal capacity

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3. Least intrusive construction noise, dust etc.

For current residents

4. Above ground structures will require regular, ongoing maintenance

The detail and discussion provided (albeit mandated) is much appreciated

Please submit completed forms to either of the study team members below on or before **Monday, March 18th, 2019**. Your input and comments are appreciated.

Carley Dixon, P.Eng.

Project Manager

15 Townline

Orangeville, ON L9W 3R4

T: 226-486-1542

E: Carley.Dixon@rjburnside.com

Christine Gervais

Director of Planning

374028 6th Line

Amaranth, ON L9W 0M6

T: 519-941-1007

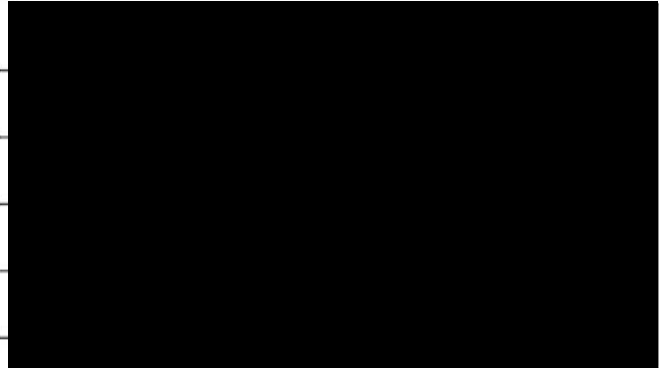
E: cgervais@amaranth-eastgary.ca

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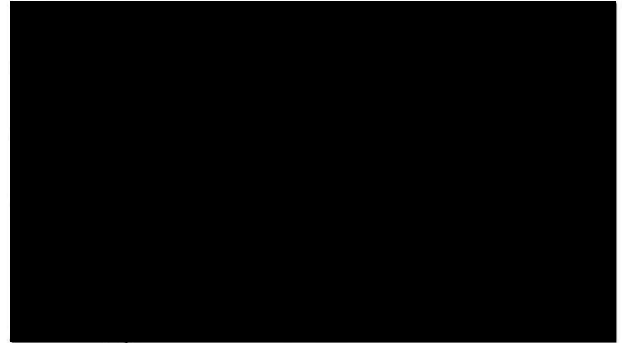
3. Comments/Questions/Suggestions (additional space on back of page):

Concern About money spent by each resident in Waldemar 15 years ago that is to be given back to each resident. Money was for well upgrades. In minutes when developer ties into our w/m system, Our upgrade money to be returned to us.

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- | | |
|--|--|
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|--|---|
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I am closer to Centurion Properties. My worry would be if or how my well might be affected. They did gather names and info to study wells on Grand View Rd in the fall but I was not available and so I'm not part of the study, though they have my name.

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PUBLIC CO

Public Information Centre:Monday, March 4th, 2019

7:00 p.m. – 9:00 p.m.

Ad

Postal

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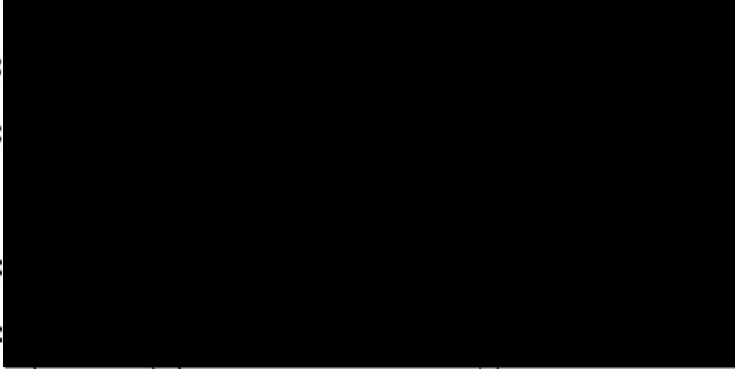
3. Comments/Questions/Suggestions (additional space on back of page):

As a condition that the developer be responsible for private well water flow (testing), and for re-constructing deeper well.

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3. Comments/Questions/Suggestions (additional space on back of page):

I DO NOT HAVE ANY INTEREST IN A FUTURE CONNECTION TO THE MUNICIPAL DRINKING WATER SYSTEM. I HAD A NEW WELL DOG 5 YEARS AGO AND AM VERY SATISFIED WITH

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BOTH THE QUALITY AND QUANTITY OF
WATER SO PROVIDED.

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Carley Dixon, P.Eng.

Project Manager
15 Townline
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E: Carley.Dixon@rjburnside.com

Christine Gervais

Director of Planning
374028 6th Line
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- All costs should be covered by Developer +
Township as a whole, not Waldemar residents only
- Private wells should be tested for water flow
& capacity, since double amount of water

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will be used by the public.

- ~~the~~ If private wells are affected by loss of water, the cost of new wells should be covered by Developer, or any loss should be covered by Developer

- 15 years ago - agreement with Waldemar residents & township about costs of upgrades to be reimbursed to residents

- Would prefer option A, inground ~~reservoir~~ reservoir.

- Do not appreciate the water tower.

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3. Comments/Questions/Suggestions (additional space on back of page):

I DO NOT WANT MY WATER/TAXES TO INCREASE
DUE TO THE FUTURE SURDIVISIONS HOOKING UP TO THE
SYSTEM THAT WE, THE WALDEMAR RESIDENTS, PAID
FOR TO UPGRADE AFTER WALKERTON. DO NOT LET
CORPORATE GREED PREVAIL! WE WERE ALSO →

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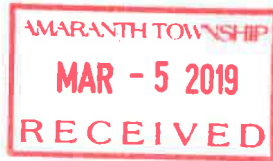
ADVISED BACK THEN THAT WE WOULD BE REIMBURSED
SHOULD A DEVELOPER HOOK UP TO THE SYSTEM
UPGRADE THAT WE PAID FOR- THIS IS NOT
FAR OFF FROM THE 407!

Please submit completed forms to either of the study team members below on or before **Monday, March 18th, 2019**. Your input and comments are appreciated.

Carley Dixon, P.Eng.
Project Manager
15 Townline
Orangeville, ON L9W 3R4
T: 226-486-1542
E: Carley.Dixon@rjburnside.com

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

The Township of Amaranth and R.J. Burnside & Associates Limited thank you for your involvement in the Municipal Class Environmental Assessment. Information will be collected in accordance with the *Municipal Freedom of Information and Protection of Privacy Act*. With the exception of personal information, all comments will become part of the public record and published with the final Project File Report.

**PUBLIC COMMENT SHEET****Public Information Centre:**Monday, March 4th, 2019

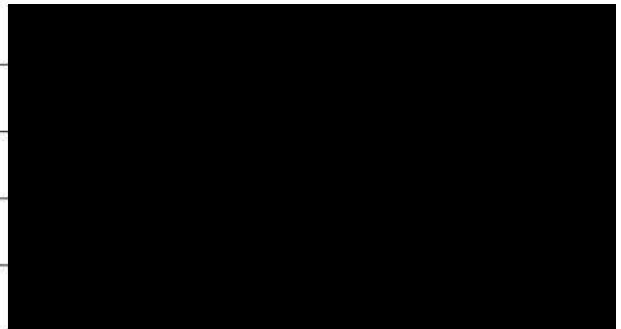
7:00 p.m. – 9:00 p.m.

Name:

Address:

Postal Code:

Email:



The Township is undertaking a Municipal Class Environmental Assessment to identify the preferred method of providing additional water storage required to support future water demands for the remainder of the developable lands within the community boundary of Waldemar. R.J. Burnside & Associates Limited has been retained by the Township to review various alternatives. This questionnaire is your opportunity to comment on this study and indicate your concerns and preferences.

1. My interest is: (please check all that apply)

- resident agency representative
 general interest developer interest
 other: _____

2. If you live in Waldemar and you obtain your water from a private well, do you have any interest in connecting to the Municipal Drinking Water System at some point?

- Yes, I do have interest in a future connection to the municipal water system. No, I do not have any interest in a future connection.

NOTE: The purpose of this EA is to expand the water system to service new development only. However, this study allows us the opportunity to reach out to existing residents to confirm whether there is any interest in future connections, so we can properly consider the alternatives.

3. Comments/Questions/Suggestions (additional space on back of page):

* AS UNDERSTOOD THIS EA IS "ONLY" COORDINATED TO SUIT THE TOWNSHIP PLAN AS STATED AT THIS MEETING.
73 LOTS CENTURION, 53 LOTS SARAH.

* THE FIRE WATER SUPPLY OF 100 L/S IS A PREFERENCE OF

The Township of Amaranth and R.J. Burnside & Associates Limited thank you for your involvement in the Municipal Class Environmental Assessment. Information will be collected in accordance with the *Municipal Freedom of Information and Protection of Privacy Act*. With the exception of personal information, all comments will become part of the public record and published with the final Project File Report.

GRAND VALLEY FIRE CHIEF. THIS SHOULD BE INVESTIGATED
TO COINCIDE WITH CODE. THERE IS A 20% INCREASE
OVER RJB FIGURES WHICH REFLECTS ON RESERVOIR SIZE
THEREFORE COST. [REDACTED]

Please submit completed forms to either of the study team members below on or before **Monday, March 18th, 2019**. Your input and comments are appreciated.

Carley Dixon, P.Eng. Project Manager 15 Townline Orangeville, ON L9W 3R4 T: 226-486-1542 E: Carley.Dixon@rjburnside.com	Christine Gervais Director of Planning 374028 6 th Line Amaranth, ON L9W 0M6 T: 519-941-1007 E: cgervais@amaranth-eastgary.ca
---	--

The Township of Amaranth and R.J. Burnside & Associates Limited thank you for your involvement in the Municipal Class Environmental Assessment. Information will be collected in accordance with the *Municipal Freedom of Information and Protection of Privacy Act*. With the exception of personal information, all comments will become part of the public record and published with the final Project File Report.

Carley Dixon

From: Carley Dixon
Sent: Tuesday, March 05, 2019 2:37 PM
To: 'John Perks'
Cc: Colin Gaudet; cgervais@amaranth-eastgary.ca
Subject: RE: Amaranth - Public Information Centre for Water Storage Study

Hi John,

As requested, here is a link to the PIC materials from last night that are posted on the Township website.

<http://www.amaranth.ca/Modules/News/index.aspx?newsId=fe5ec8f8-d191-40aa-9f3a-0be0837763a4>

From: John Perks <John.Perks@IBIGroup.com>
Sent: Wednesday, February 27, 2019 4:10 PM
To: Carley Dixon <Carley.Dixon@rjburnside.com>; cgervais@amaranth-eastgary.ca
Cc: Colin Gaudet <colin.gaudet@ibigroup.com>
Subject: RE: Amaranth - Public Information Centre for Water Storage Study

Yes – Colin is in Waterloo with me.

Email correspondence is fine (we do not need Smail).

Thx

John Perks MBA P.ENG.

Associate Director | Practice Lead, Infrastructure
mob +1 519 577 2238

IBI GROUP
410 Albert Street, Suite 101
Waterloo ON N2L 3V3 Canada
tel +1 519 585 2255 ext 63221



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NOTE: Ce courriel peut contenir de l'information privilégiée et confidentielle. Si vous avez reçu ce message par erreur, veuillez le mentionner immédiatement à l'expéditeur et effacer ce courriel.

From: Carley Dixon [mailto:Carley.Dixon@rjburnside.com]
Sent: Wednesday, February 27, 2019 1:24 PM
To: John Perks; cgervais@amaranth-eastgary.ca
Cc: Colin Gaudet
Subject: RE: Amaranth - Public Information Centre for Water Storage Study

Hi John,

I've added both you and Colin to the contact list. Is Colin also from the Waterloo office?
I can send you the PIC materials after the PIC date of March 4th. The same materials will also be available on the Township website after the PIC.

Thanks,
Carley

Carley Dixon, P.Eng.

R.J. Burnside & Associates Limited | www.rjburnside.com
Office: +1 800-265-9662 Direct: +1 226-486-1542

From: John Perks <John.Perks@IBIGroup.com>
Sent: Tuesday, February 26, 2019 11:07 AM
To: Carley Dixon <Carley.Dixon@rjburnside.com>; cgervais@amaranth-eastgary.ca
Cc: Colin Gaudet <colin.gaudet@ibigroup.com>
Subject: RE: Amaranth - Public Information Centre for Water Storage Study

Please add me and Colin (cc'd this email) to the distribution list for this project.

If there are any presentation or other documentation related to this project, please forward this to me as well.

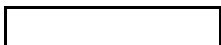
Thanks

John

John Perks MBA P.ENG.

Associate Director | Practice Lead, Infrastructure
mob +1 519 577 2238

IBI GROUP
410 Albert Street, Suite 101
Waterloo ON N2L 3V3 Canada
tel +1 519 585 2255 ext 63221



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BUILDING AND BY-LAW

Date: March 7, 2019

To: R.J. Burnside & Associates Limited
Carley Dixon, P. Eng.
15 Townline
Orangeville, ON L9W 3R4

Township of Amaranth
Director of Planning
Christine Gervais

Re: Request for Comments
File Number: 300041042.0000
Waldemar Water Storage Municipal Class Environmental Assessment Study

This letter serves to confirm that I have commenced a preliminary review on the notice of study information submitted with your request for comments.

Please be advised that the information submitted for the above noted location has not revealed any issues. The Building Department has no other comments at this time.

If you should have any questions pertaining to this letter, please do not hesitate to contact the undersigned.

Regards,

Rita Geurts, M.A.A.T.O., CBCO
Building Inspector / Plans Examiner
T: 519-941-2816 ext. 2704
rgeurts@dufferincounty.ca

Carley Dixon

From: Christine Gervais <cgervais@amaranth-eastgary.ca>
Sent: Friday, March 08, 2019 4:45 PM
To: Carley Dixon
Cc: Gord Feniak; Susan Stone
Subject: FW: County Comments RE Amaranth Municipal Class EA Waldemar Water Storage
Attachments: Waldemar Water Storage - RJ Burnside.pdf

Hi Carley,

Here's comments from the County Building and Planning Departments. Note that comments from the County Public Works will come separately.

Have a good weekend,

Christine

Christine Gervais, MCIP, RPP
Director of Planning
Township of Amaranth / Township of East Garafraxa
374028 6th Line , Amaranth ON L9W 0M6
Email: cgervais@amaranth-eastgary.ca
Phone: 519-9421-1007 / Fax: 519-941-1802

From: Jenny Li <jli@dufferincounty.ca>
Sent: Friday, March 8, 2019 3:33 PM
To: Christine Gervais <cgervais@amaranth-eastgary.ca>
Subject: County Comments RE Amaranth Municipal Class EA Waldemar Water Storage

Hi Christine,

Please see the attached comments from Rita in regards to the Municipal Class EA Study. County Consulting Planner provide the following comments on behalf of the Planning Department:

Based on our review, the Municipal Class Environmental Assessment (EA) in the Township of Amaranth, we have no comments on this application provided that the water storage solution chosen through the EA process meets the Town's Source Protection Plan and GRCA guidelines and does not negatively impact nearby environmental features including the Natural Heritage System, woodlands and the unevaluated wetlands. Consultation with the Township and the Ministry of Energy, Northern Development and Mines is also recommended to confirm the significance of the mineral resources on the site.

I emailed Mike and ask him to forward any comment he may have directly to you since I will be away next week.

Have a great weekend and I will see you at our Planners meeting on March 19th!

Best regards,

Jenny Li, Planning Coordinator | Planning, Economic Development and Culture
County of Dufferin | Phone: 519-941-2816 Ext. 2509 | jli@dufferincounty.ca | 55 Zina St., Orangeville, ON L9W 1E5

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Carley Dixon

From: Christine Gervais <cgervais@amaranth-eastgary.ca>
Sent: Monday, March 11, 2019 2:27 PM
To: Carley Dixon; Gord Feniak
Cc: Susan Stone
Subject: FW: Request for Comments Municipal Class EA Study Waldemar Water Storage Township of Amaranth

Hi Carley & Gord,

Here are the comments from the County Public Works.

Christine

Christine Gervais, MCIP, RPP
Director of Planning
Township of Amaranth / Township of East Garafraxa
374028 6th Line , Amaranth ON L9W 0M6
Email: cgervais@amaranth-eastgary.ca
Phone: 519-9421-1007 / Fax: 519-941-1802

From: Mike Hooper <mhooper@dufferincounty.ca>
Sent: Monday, March 11, 2019 1:46 PM
To: Christine Gervais <cgervais@amaranth-eastgary.ca>
Cc: Scott Burns <sburns@dufferincounty.ca>; Jenny Li <jli@dufferincounty.ca>
Subject: RE: Request for Comments Municipal Class EA Study Waldemar Water Storage Township of Amaranth

Hi Christine

We have completed a review of the documents provided as part of the Waldemar Water Storage Municipal Class EA Study.

Based on the information provided and the preliminary preferred option of constructing an in-ground reservoir at the existing pump house the County of Dufferin Public Works Department does not have any comments at this time. Please continue to provide updates as the project progresses.

Thanks Christine

Mike Hooper, C.E.T. | Manager of Engineering | Public Works Department | County of Dufferin
Phone: 519-941-2816 Ext. 2604 | mhooper@dufferincounty.ca | 55 Zina Street, Orangeville, ON L9W 1E5

From: Jenny Li <jli@dufferincounty.ca>
Sent: Tuesday, February 26, 2019 12:00 PM
To: Scott Burns <sburns@dufferincounty.ca>; Bender, Gregory <Gregory.Bender@wsp.com>
Cc: Mike Hooper <mhooper@dufferincounty.ca>; Bacani, Stephanie <stephanie.bacani@wsp.com>
Subject: Request for Comments Municipal Class EA Study Waldemar Water Storage Township of Amaranth

Good afternoon all,

Please see the attached notice in regards to the study commencement of a Municipal Class EA Study in the Township of Amaranth. The purpose of the study is to identify the preferred storage alternative to the existing drinking water storage in Waldemar that currently does not have the volume require to support future water demands.

The Township/Burnside is requesting comments from us **before March 18th, 2019**. I would appreciate to receive any comments you may have before that date.

Thank you.

Jenny Li, Planning Coordinator | Planning, Economic Development and Culture
County of Dufferin | Phone: 519-941-2816 Ext. 2509 | jli@dufferincounty.ca | 55 Zina St., Orangeville, ON L9W 1E5

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Carley Dixon

From: Christine Gervais <cgervais@amaranth-eastgary.ca>
Sent: Wednesday, March 13, 2019 9:51 AM
To: dave.h@zpplan.com
Cc: Susan Stone; Carley Dixon; Gord Feniak
Subject: RE: REQUEST: Waldemar Water Storage Class EA Study

Dave,
We received your email and comments.
Regards,

Christine Gervais, MCIP, RPP
Director of Planning
Township of Amaranth / Township of East Garafraxa
374028 6th Line , Amaranth ON L9W 0M6
Email: cgervais@amaranth-eastgary.ca
Phone: 519-9421-1007 / Fax: 519-941-1802

From: Dave Hannam - Zelinka Priamo Ltd. <dave.h@zpplan.com>
Sent: Tuesday, March 12, 2019 3:44 PM
To: 'Carley Dixon' <Carley.Dixon@rjburnside.com>; Christine Gervais <cgervais@amaranth-eastgary.ca>
Subject: RE: REQUEST: Waldemar Water Storage Class EA Study

Carley, Christine, attached are preliminary comments on behalf of Sarah Properties Ltd.

Please confirm receipt by return email.

If you have any questions or require anything further please let me know.

Thanks and regards

Dave Hannam, BRP, MCIP, RPP
Associate

Zelinka Priamo Ltd.

London Office
318 Wellington Road
London, ON N6C 4P4
(519) 474-7137 office
(416) 312-1412 cell
dave.h@zpplan.com
www.zpplan.com

VACATION ALERT: I will be out of the office from Wednesday, March 13 until Monday, March 25

From: Carley Dixon [<mailto:Carley.Dixon@rjburnside.com>]
Sent: Tuesday, February 19, 2019 11:07 AM
To: dave.h@zpplan.com; cgervais@amaranth-eastgary.ca
Subject: RE: REQUEST: Waldemar Water Storage Class EA Study

Hi Dave,

You are on the contact list so you will be receiving it via a mail out which is happening this week. It is being posted in the Orangeville Banner in this week's addition as well, including on the Township website this week.

Regards,
Carley

Carley Dixon, P.Eng.

R.J. Burnside & Associates Limited | www.rjburnside.com
Office: +1 800-265-9662 Direct: +1 226-486-1542

From: Dave Hannam - Zelinka Priamo Ltd. <dave.h@zpplan.com>
Sent: Tuesday, February 19, 2019 10:35 AM
To: Carley Dixon <Carley.Dixon@rjburnside.com>; cgevrais@amaranth-eastgary.ca
Subject: RE: REQUEST: Waldemar Water Storage Class EA Study

Hi, I believe there is a public info. centre notice available for this project. The Council agenda for the Feb. 20 meeting indicates this under item 10.2.1, however, the notice is not in the agenda package. Please forward me a copy of the notice ASAP.

Thanks and regards

Dave Hannam

From: Dave Hannam - Zelinka Priamo Ltd. [<mailto:dave.h@zpplan.com>]
Sent: Tuesday, November 13, 2018 1:33 PM
To: 'Carley.Dixon@rjburnside.com' <Carley.Dixon@rjburnside.com>; 'cgevrais@amaranth-eastgary.ca' <cgevrais@amaranth-eastgary.ca>
Subject: REQUEST: Waldemar Water Storage Class EA Study

Hi, please add my contact details to the notification list for all future correspondence pertaining to the Waldemar Water Storage Class EA Study.

An acknowledgement of my request by way of return email would be appreciated.

Thanks and regards

Dave Hannam, BRP, MCIP, RPP
Associate

Zelinka Priamo Ltd.
London Office
318 Wellington Road
London, ON N6C 4P4
(519) 474-7137 office
(416) 312-1412 cell
dave.h@zpplan.com
www.zpplan.com



ZELINKA PRIAMO LTD

A Professional Planning Practice

VIA EMAIL

March 12, 2019

Township of Amaranth
374028 6th Line
Amaranth ON
L9W 0M6

ATTN: Ms. Christine Gervais, Director of Planning

Dear Ms. Gervais:

Re: **Waldemar Water Storage Class Environmental Assessment Study
Preliminary Comments on behalf of Sarah Properties Limited
Lands known legally as Part of Lots 2 and 3, Concession 10,
Registered Plan 4A Waldemar, Ontario**

Our File: BRS/WLD/19-01

We are the planning consultants for Sarah Properties Limited ("Sarah"). Sarah is the owner of the property legally known as Part of Lots 2 and 3, Concession 10, Registered Plan 4A (the "Site"). The Site is located in the western portion of the Community of Waldemar, northeast of the intersection of County Road 109 and the Amaranth-East Luther Townline, and south of a former railway corridor. The Site measures approximately 35 hectares (86 acres).

The community of Waldemar, including the subject lands, is defined as a Settlement Area under Provincial land use policies. The subject lands are designated "Community Settlement Area" in the County of Dufferin Official Plan, "Community Residential" in the Township of Amaranth Official Plan; and zoned, in the northern portion of the subject lands "Hamlet Residential (HR)", and "Rural (RU), in the Township of Amaranth Zoning Bylaw No. 2-2009.

We are pleased to provide preliminary comments on behalf of Sarah regarding the Waldemar Water Storage Class Environmental Assessment Study, as outlined below.

At this time, our preliminary comments are as follows:

- The purpose of the Township initiated Municipal Class Environmental Assessment (Class EA) is to identify the preferred method of providing the water storage volume required to support future water demands, and is reviewing all lands designated within the Community Boundary of Waldemar in the Official Plan as part of this study.

- It was confirmed at the Public Information Centre (PIC) on March 4, 2019, that the service population considered for the Class EA includes a future estimate of 53 lots for the Sarah Site, assuming servicing with individual septic systems. It is noted that Policy 4.2.4.b of the Township Official Plan states that for development within Communities, communal services are the preferred means of servicing multiple lots/units in areas where full municipal sewage and water services are not or cannot be provided. The Study does not disclose how this estimate was calculated, nor does the Study justify or substantiate such a limitation for the Sarah lands. In our opinion, as noted below, using an assumption of 53 lots represents a significant underestimation of the development potential of the Sarah lands.
- As you know, there are active Draft Plan of Subdivision and Zoning By-law Amendment applications for a new residential subdivision on the Sarah Site for up to 334 lots to be serviced by a communal wastewater system and an expansion to the municipal water system; moreover the Township's decision to refuse the concurrent Official Plan Amendment application has been appealed to the Local Planning Appeal Tribunal (LPAT). The Case Management Conference for the appeal is scheduled for April 3, 2019.
- In our opinion, given the unresolved nature of our proposed development, the Class EA should be conducted with due consideration for a maximum possible number of lots contemplated for the Sarah Site, as well as for the potential connection of existing homes to the water distribution system, at the very least as a provision for a potential further expansion of the water storage facility. It is our opinion that this would be prudent infrastructure planning. In addition, it would eliminate the additional cost and time of a subsequent Class EA study, if and when required, to service the full potential growth and municipal water servicing in Waldemar.
- We are in agreement with the preliminary preferred solution of an in-ground water storage facility. However, it should be designed with due consideration for a more conservative serviced population or at least accommodate a future expansion. As acknowledged by R.J. Burnside (Township's Consulting Engineers) at the PIC, the cost of expanding the reservoir at a later date will be significantly higher than building a larger reservoir at this time, and the increase in water storage volume for equalization associated with a larger serviced population is marginal compared with the proposed storage volume for fire protection. Based on our preliminary calculations, the total equalization and emergency (non fire) storage requirements for a serviced population of 1,653 is 530 m³ (assuming an MDF of 2.5), while it is 392 m³ for a population of 810. This represents a modest increase of less than 15% to the proposed total reservoir volume of 961 m³.
- The Class EA should not be limited to considering storage expansion only, but also consider an increase in the groundwater supply. We are concerned that the decision not to consider the ultimate servicing scenario is short-sighted from a municipal infrastructure planning point of view. It is our opinion that analysis of potential future needs and the identification of an ultimate water servicing plan would provide the infrastructure planning information needed by the Township.

We appreciate your consideration of our comments, and we will continue to participate in the Class EA process. We may provide additional comments as required in the future.

Please also accept this letter as our request for all further notifications or any decision made in respect to this matter. Should you have any questions, or require further information, please do not hesitate to call.

Yours very truly,

ZELINKA PRIAMO LTD.



Dave Hannam, BRP, MCIP, RPP
Associate

Cc: Walter Broos, Sarah Properties Limited (Via Email)
Suzanne Troxler, C.C. Tatham (Via Email)
Patrick Harrington, Aird & Berlis LLP (Via Email)

Carley Dixon

From: Christine Gervais <cgervais@amaranth-eastgary.ca>
Sent: Wednesday, March 13, 2019 2:00 PM
To: Laura Warner
Cc: Carley Dixon; Gord Feniak; Susan Stone
Subject: FW: Waldemar Water Storage EA - GRCA Comments
Attachments: GRCA Comments_Waldemar Water Storage.pdf

Thank you Laura.
Christine

Christine Gervais, MCIP, RPP
Director of Planning
Township of Amaranth / Township of East Garafraxa
374028 6th Line , Amaranth ON L9W 0M6
Email: cgervais@amaranth-eastgary.ca
Phone: 519-9421-1007 / Fax: 519-941-1802

From: Laura Warner <lwarner@grandriver.ca>
Sent: Wednesday, March 13, 2019 1:48 PM
To: Christine Gervais <cgervais@amaranth-eastgary.ca>; Carley Dixon <Carley.Dixon@rjburnside.com>
Cc: Susan Stone <suestone@amaranth-eastgary.ca>
Subject: Waldemar Water Storage EA - GRCA Comments

Good afternoon Christine and Carley,

Please see attached GRCA's comments for Notice of Study Commencement and Public Information Centre for the Waldemar Water Storage EA.

Kind regards,
Laura



Laura Warner | Resource Planner
Grand River Conservation Authority
400 Clyde Road, Cambridge ON N1R 5W6
P: (519) 621-2763 x 2231 | F: (519) 621-4844
lwarner@grandriver.ca | www.grandriver.ca



February 25, 2019

Ms. Christine Gervais
Director of Planning
Township of Amaranth
374028 6th Line
Amaranth ON L9W 0M6

Mrs. Carley Dixon, P.Eng.
Project Engineer
R.J. Burnside & Associates Limited
292 Speedvale Ave. West, Unit 20
Guelph, ON N1H 1C4

Dear Ms. Gervais and Mrs. Dixon

**Re: Township of Amaranth – Waldemar Water Storage
Schedule B Class Environmental Assessment
Notice of Study Commencement and Notice of Public Information Centre**

Thank-you for circulating our office the Notice of Study Commencement and Public Information Centre for the Waldemar Water Storage Environmental Assessment (EA). We request that our office remains notified of any information pertaining to the EA as it becomes available.

The study area contains natural hazard and natural heritage features including the Grand River and its tributaries, floodplain, and areas with slope hazards as well as the regulated allowances to these features. The study area is also adjacent to several wetland features.

These features and their allowances are regulated under Ontario Regulation 150/06. Any future development within the regulated areas may require the issuance of a Development, Interference with Wetlands and Alterations to Shorelines and Watercourses permit from GRCA. A copy of our resource mapping is attached for your reference.

Should you have any further questions or comments, please contact Laura Warner at 519-621-2763 x2231.

Yours truly,

A handwritten signature in blue ink, appearing to read "Fred Natolochny".

Fred Natolochny, MCIP, RPP
Supervisor of Resource Planning
Grand River Conservation Authority
FN/lw

cc: Sue Stone, Township of Amaranth

Carley Dixon

From: Christine Gervais <cgvais@amaranth-eastgary.ca>
Sent: Monday, March 18, 2019 9:17 AM
To: [REDACTED]; Carley Dixon
Subject: RE: Waldemar EA

Good morning [REDACTED],
Thank you for your comments.
Regards,

Christine Gervais, MCIP, RPP
Director of Planning
Township of Amaranth / Township of East Garafraxa
374028 6th Line , Amaranth ON L9W 0M6
Email: cgvais@amaranth-eastgary.ca
Phone: 519-9421-1007 / Fax: 519-941-1802

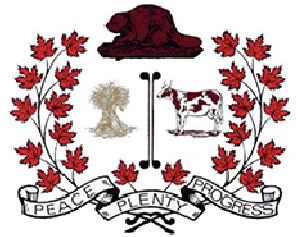
From: [REDACTED]
Sent: Friday, March 15, 2019 9:06 PM
To: carley.dixon@rjburnside.com; Christine Gervais <cgvais@amaranth-eastgary.ca>
Subject: Waldemar EA

Good Evening,

I have attached the completed EA Questionnaire for the Waldemar Water Storage EA.

Thank you,

[REDACTED]

**PUBLIC COMMENT SHEET**

Name: [REDACTED]
Public Information Centre: **Address:** [REDACTED]
Monday, March 4th, 2019
7:00 p.m. – 9:00 p.m. **Postal Code:** [REDACTED]
Email: [REDACTED]

The Township is undertaking a Municipal Class Environmental Assessment to identify the preferred method of providing additional water storage required to support future water demands for the remainder of the developable lands within the community boundary of Waldemar. R.J. Burnside & Associates Limited has been retained by the Township to review various alternatives. This questionnaire is your opportunity to comment on this study and indicate your concerns and preferences.

1. My interest is: (please check all that apply)

- | | |
|--|--|
| <input checked="" type="checkbox"/> resident | <input type="checkbox"/> agency representative |
| <input type="checkbox"/> general interest | <input type="checkbox"/> developer interest |
| <input type="checkbox"/> other: _____ | |

2. If you live in Waldemar and you obtain your water from a private well, do you have any interest in connecting to the Municipal Drinking Water System at some point?

- | | |
|--|---|
| <input type="checkbox"/> Yes, I do have interest in a future connection to the municipal water system. | <input type="checkbox"/> No, I do not have any interest in a future connection. |
|--|---|

NOTE: The purpose of this EA is to expand the water system to service new development only. However, this study allows us the opportunity to reach out to existing residents to confirm whether there is any interest in future connections, so we can properly consider the alternatives.

3. Comments/Questions/Suggestions (additional space on back of page):

As an existing resident on the current system I have strong concerns about the addition of any more homes
because we already experience quite low water pressure coming from the municipal well. In a home equipped
with 3 bathrooms it is impossible for 2 people to shower at the same time due to the lack of pressure as soon as
1 tap is turned on. We are not able to have a shower if the washing machine is running as there is not enough

The Township of Amaranth and R.J. Burnside & Associates Limited thank you for your involvement in the Municipal Class Environmental Assessment. Information will be collected in accordance with the *Municipal Freedom of Information and Protection of Privacy Act*. With the exception of personal information, all comments will become part of the public record and published with the final Project File Report.

pressure to have a proper shower. I believe that before the township starts looking into adding more homes to the existing system, they should take care of those of us already on it. If more homes were to be added, the system would definitely need to be upgraded.

Please submit completed forms to either of the study team members below on or before **Monday, March 18th, 2019**. Your input and comments are appreciated.

Carley Dixon, P.Eng. Project Manager 15 Townline Orangeville, ON L9W 3R4 T: 226-486-1542 E: Carley.Dixon@rjburnside.com	Christine Gervais Director of Planning 374028 6 th Line Amaranth, ON L9W 0M6 T: 519-941-1007 E: cgervais@amaranth-eastgary.ca
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The Township of Amaranth and R.J. Burnside & Associates Limited thank you for your involvement in the Municipal Class Environmental Assessment. Information will be collected in accordance with the *Municipal Freedom of Information and Protection of Privacy Act*. With the exception of personal information, all comments will become part of the public record and published with the final Project File Report.

Carley Dixon

From: [REDACTED] >
Sent: Tuesday, March 19, 2019 4:48 PM
To: Carley Dixon
Cc: Christine Gervais
Subject: Waldemar Water - These are my comments - [REDACTED]

My name is [REDACTED] and I am one of the original resident of Grand River Estates in Waldemar. I am connected to the Waldemar Water System for over 25 years.

My comments with respect to the water is as follows:

- 1). We have paid and paid with respect to the water in Waldemar. Since Walkerton anyone connected to the Waldemar Water System paid in excess of \$10,000.00 to bring the pump house up to Ontario regulation standards.
- 2). In almost 30 years there has been two fires in Waldemar. One was a garage and one was a grass fire.
- 3). Many years ago when we were told we would have to pay \$10,000.00 in order to upgrade the pump house. Mind you we had already paid somewhat in the cost of our house for a pump house/community well. As the Acchione subdivision has turbidity in their wells the Acchione subdivision had to hook up to our pump house. It was acknowledged by council at that time that no one else would be able to hook up to our pump house. Now apparently everyone wants to hook up.
- 4). There is NOT enough water in Waldemar to service two huge subdivisions currently planned for Waldemar. We already water on odd and even numbers. How can you expect to provide enough water for two more subdivisions.
- 5). I have read through previous reports with respect to the Waldemar water system and there have been no reported problems.
- 6). With respect to a reservoir, does Burnside remember that there was a pond in the vicinity where they plan a reservoir which was filled in. It was the run off from Grand River Estate Subdivision.

6). If Developers want to build more subdivisions in Waldemar I strongly feel that they should build and service their own pump house and leave our pump house as is.

These are my comments.



Carley Dixon

From: Brown, Franklin <franklin.brown@bell.ca>
Sent: Tuesday, March 19, 2019 12:21 PM
To: Carley Dixon
Subject: RE: Waldemar Water Storage

Thanks Carley for passing this along.

Regards,
Frank

Frank Brown
Bell Implementation Mgr.
21 First Ave.
Orangeville Ontario
L9W 1H7
franklin.brown@bell.ca
519-939-1011

From: Carley Dixon <Carley.Dixon@rjburnside.com>
Sent: March-19-19 11:23 AM
To: Brown, Franklin <franklin.brown@bell.ca>
Cc: Christine Gervais (cgervais@amaranth-eastgary.ca) <cgervais@amaranth-eastgary.ca>; Sue Stone (suestone@amaranth-eastgary.ca) <suestone@amaranth-eastgary.ca>
Subject: FW: Waldemar Water Storage

Hi Frank,

Sorry I had the wrong contact information. I will update our distribution list. I've attached a letter related to the project. The public information centre was held on March 4th. The link below is the presentation materials which are on the Township's website. If you would like me to mail you the attached letter, please let me know.

<http://www.amaranth.ca/Modules/News/index.aspx?newsId=fe5ec8f8-d191-40aa-9f3a-0be0837763a4>

Thanks,
Carley

Carley Dixon, P.Eng.

R.J. Burnside & Associates Limited | www.rjburnside.com
Office: +1 800-265-9662 Direct: +1 226-486-1542

From: Bergeron, Renee <renee.bergeron@bell.ca>
Sent: Monday, March 18, 2019 12:44 PM
To: Carley Dixon <Carley.Dixon@rjburnside.com>
Cc: Brown, Franklin <franklin.brown@bell.ca>
Subject: Waldemar Water Storage

Hi Carley,

I just found a notice of commencement addressed to Wendy Lefebvre for Bell Canada at 5115 Creekbank, in Mississauga. Please note that Wendy no longer works for Bell and anything regarding the Township of Amaranth, and in Orangeville in general, should be addressed to Frank Brown, copied here. His address is 21 FIRST AVE. floor 1 ORANGEVILLE (ONTARIO) Canada L9W 1H7.

Please update your distribution list with this contact information.

Thanks,

Best regards,

Renee Bergeron

Bell Canada

Access Network Provisioning

905-853-6981



March 19, 2019

Mr. Frank Brown
Bell Canada
21 First Avenue
Floor 1
Orangeville ON L9W 1H7

Dear Mr. Brown:

**Re: Notice of Study Commencement & Notice of Public Information Centre
Waldemar Water Storage
Municipal Class Environmental Assessment Study
File No: 300041042.0000**

The existing drinking water storage in Waldemar does not have the volume required to support future water demands. The Township has initiated a Class Environmental Assessment (EA) to identify the preferred storage alternative. Please refer to the enclosed Notice of Public Information Centre. The Notice was posted on the Township website and in two issues of the Orangeville Banner.

This study is being carried out in accordance with the planning and design process for Schedule 'B' projects as outlined in the Municipal Class Environmental Assessment (October 2000, as amended in 2007, 2011 and 2015). A key component of the study will be consultation with interested stakeholders (public and agency). Input and comments received from the public and from agencies will be incorporated into the planning and design of this project. Upon completion of the study, a Project File Report will be prepared for public review and comment. Subject to comments received and the receipt of necessary approvals, the Township of Amaranth intends to proceed with the planning, design and construction of this project.

The Township held a Public Information Centre (PIC) on Monday, March 4, 2019 to provide additional information on the project. The materials from the PIC is posted on the Township's website (www.amaranth.ca).

The Township is requesting that your agency provide comments on the proposed project. The Township is seeking information on:

- Any preliminary comments or concerns that your agency has on the proposed project; and
- Other projects proposed within or near the general area of study.

It is essential to the success of this project that the concerns of your agency, and other stakeholders, are identified early in the planning process, such that the appropriate environmental protection measures are incorporated into the overall project design.

All interested stakeholders will be kept up-to-date on project status by means of future mailings, or inclusion in project meetings, as deemed appropriate.

Your participation in this EA study is much appreciated. To provide the study team with your comments or for further information, or you wish to be removed from our contact list, please contact Carley Dixon at 226-486-1592 or by email at Carley.Dixon@rjburnside.com.

Yours truly,

R.J. Burnside & Associates Limited

A handwritten signature in cursive script that reads "Carley Dixon".

Carley Dixon, P.Eng.
CD:sgd

Enclosure(s) Notice of Public Information Centre

cc Christine Gervais, Director of Planning, Township of Amaranth
 Sue Stone, CAO, Township of Amaranth



Township of Amaranth Notice of Public Information Centre for the Waldemar Water Storage Class Environmental Assessment Study



The Study

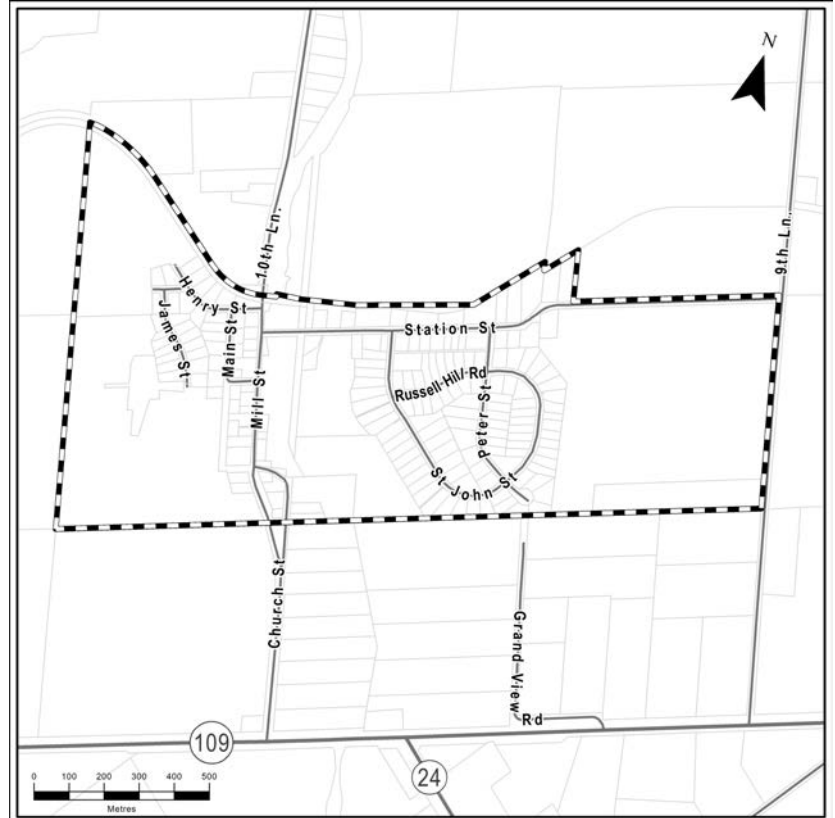
The Township of Amaranth has identified that the existing water storage in Waldemar does not have the volume required to support future water demands. The Township is initiating a Municipal Class Environmental Assessment (EA) to identify the preferred method of providing for these demands. The EA will review all lands designated within the Community Boundary of Waldemar in the Official Plan as part of this study.

Reasoning for Initiating the Study

The municipal drinking water system needs to be expanded to provide drinking water to a 73 lot subdivision near Station Street and 9th Line. The Developer is required to finance upgrades to the water system needed to service this development. The Township has identified that additional water storage is required and is initiating the EA to determine the preferred upgrades for the system.

Waldemar Drinking Water System

The existing drinking water system serves a portion of residents within Waldemar. The system has three wells to supply water, and a pump house and reservoir for treatment and storage of water. The water storage provides water to use when there are high demands on the system and for firefighting.



Public Information Centre (PIC) – Comments Invited

Public consultation is vital to this study. The Township would like to ensure that anyone interested in this study has the opportunity to get involved and provide input on the project's implementation. A PIC has been arranged to: describe the proposed project and the preliminary preferred solution; obtain feedback from the public; and, identify the next steps in the process. Presentation materials pertaining to the study will be made available on the Township's website (www.amaranth.ca) following the PIC.

PIC Drop-in Centre

Date: Monday, March 4, 2019

Time: 7:00 p.m. to 9:00 p.m.

Place: Township of Amaranth - 374028 6th Line, Amaranth, ON L9W 0M6

To provide comment or to request additional information concerning this project, or if you are unable to attend and would like to provide comments, please contact either of the following Project Team members by March 18th, 2019.

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

Township of Amaranth
Director of Planning
Christine Gervais
374028 6th Line
Amaranth ON L9W 0M6
Phone: 519-941-1007
cgervais@amaranth-eastgary.ca

Information will be collected in accordance with the Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.

This Notice first issued on February 21, 2019.

Carley Dixon

From: Kevin McNeilly <kmcneilly@gvdfd.com>
Sent: Wednesday, March 20, 2019 12:24 PM
To: Carley Dixon
Subject: NFPA1142
Attachments: nfpa1142.docx

I copied most of the document but not all of it as some of it was about fire hose.

Kevin McNeilly
Fire Chief
Grand Valley & District Fire Department

519-939-6495 cell

NFPA 1142: Standard on Water Supplies for Suburban and Rural Fire Fighting, 2017 Edition - Chapter 1 Administration

[top](#)

1.1 Scope.

1.1.1

This standard identifies a method of determining the minimum requirements for alternative water supplies for structural fire-fighting purposes in areas where the authority having jurisdiction (AHJ) determines that adequate and reliable water supply systems for fire-fighting purposes do not otherwise exist.

1.1.2

An adequate and reliable municipal-type water supply is one that is sufficient every day of the year to control and extinguish anticipated fires in the jurisdiction, particular building, or building group served by the water supply.

1.2 * Purpose.

The purpose of this standard is to assist the AHJ to establish the minimum water supply necessary for structural fire-fighting purposes in those areas where it has been determined that there is no water or inadequate water for fire fighting.

1.3 Application.

1.3.1

This standard does not address fireground operational procedures dealing with the rate or method of water application.

1.3.2 *

This standard does not apply to the calculation of an adequate amount of water for large, special fire protection problems, such as bulk flammable liquid storage, bulk flammable gas storage, large varnish and paint factories, some plastics manufacturing and storage, aircraft hangars, distilleries, refineries, lumberyards, grain elevators, large chemical plants, coal mines, tunnels, subterranean structures, and warehouses using high rack storage for flammables or pressurized aerosols.

1.3.3

This standard does not exclude the use of this water for other fire-fighting or emergency activities.

1.4 Equivalency.

Nothing in this standard is intended to prevent the use of systems, methods, or devices of equivalent or superior quality, strength, fire resistance, effectiveness, durability, and safety in place of those prescribed by this standard, provided technical documentation is submitted to the AHJ to demonstrate equivalency and the system, method, or device is approved for the intended purpose.

1.5 Alternatives.

The specific requirements of this standard shall be permitted to be altered by the AHJ to allow alternative methods that will secure equivalent fire safety, but in no case shall the alternative afford less fire safety, in the judgment of the AHJ, than that which would be provided by compliance with the provisions contained in this standard.

1.6 Modifications.

The AHJ is authorized to modify any of the provisions of this standard upon application in writing by the owner, a lessee, or a duly authorized representative where there are practical difficulties in the way of carrying out the provisions of the standard, provided that the intent of the standard shall be complied with, public safety secured, and substantial justice done.

1.7 Units and Formulas.

In this standard, values for measurement in U.S. units are followed by equivalents in SI units. Either set of values can be used, but the same set of values (either U.S. units or SI units) shall be used consistently.

2.1 General.

The documents or portions thereof listed in this chapter are referenced within this standard and shall be considered part of the requirements of this document.

2.2 NFPA Publications.

National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 13, *Standard for the Installation of Sprinkler Systems*, 2016 edition.

NFPA 13D, *Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes*, 2016 edition.

NFPA 13R, *Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height*, 2016 edition.

NFPA 25, *Standard for Inspection, Testing and Maintenance of Water-Based Fire Protection Systems*, 2017 edition.

NFPA 220, *Standard on Types of Building Construction*, 2015 edition.

NFPA 285, *Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components*, 2012 edition.

NFPA 1963, *Standard for Fire Hose Connections*, 2014 edition.

2.3 Other Publications.

Merriam-Webster's Collegiate Dictionary, 11th edition, Merriam-Webster, Inc., Springfield, MA, 2003.

2.4 References for Extracts in Mandatory Sections.

NFPA 1, *Fire Code*, 2015 edition.

NFPA 13D, *Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes*, 2016 edition.

NFPA 101®, *Life Safety Code®*, 2015 edition.

NFPA 1141, *Standard for Fire Protection Infrastructure for Land Development in Wildland, Rural, and Suburban Areas*, 2017 edition.

NFPA 1600®, *Standard on Disaster/Emergency Management and Business Continuity Programs*, 2016 edition.

NFPA 1901, *Standard for Automotive Fire Apparatus*, 2016 edition.

NFPA 1911, *Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus*, 2012 edition.

NFPA 1925, *Standard on Marine Fire-Fighting Vessels*, 2013 edition.

NFPA 1961, *Standard on Fire Hose*, 2013 edition.

NFPA 5000®, *Building Construction and Safety Code®*, 2015 edition.

3.1 General.

The definitions contained in this chapter shall apply to the terms used in this standard. Where terms are not defined in this chapter or within another chapter, they shall be defined using their ordinarily accepted meanings within the context in which they are used. *Merriam-Webster's Collegiate Dictionary*, 11th edition, shall be the source for the ordinarily accepted meaning.

3.2 NFPA Official Definitions.

3.2.1 * Approved.

Acceptable to the authority having jurisdiction.

3.2.2 * Authority Having Jurisdiction (AHJ).

An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.

3.2.3 Shall.

Indicates a mandatory requirement.

3.2.4 Should.

Indicates a recommendation or that which is advised but not required.

3.2.5 Standard.

An NFPA Standard, the main text of which contains only mandatory provisions using the word "shall" to indicate requirements and that is in a form generally suitable for mandatory reference by another standard or code or for adoption into law. Nonmandatory provisions are not to be considered a part of the requirements of a standard and shall be located in an appendix, annex, footnote, informational note, or other means as permitted in the NFPA Manuals of Style. When used in a generic sense, such as in the phrase "standards development process" or "standards development activities," the term "standards" includes all NFPA Standards, including Codes, Standards, Recommended Practices, and Guides.

3.3 General Definitions.

3.3.1 Alternative Water Supply.

Water supplies provided to meet the minimum fire flow/duration requirements where no municipal-type water system exists or to supplement an inadequate municipal-type water supply.

3.3.2 Automatic Aid.

A plan developed between two or more fire departments for immediate joint response on first alarms.

3.3.3 Building.

Any structure used or intended for supporting or sheltering any use or occupancy. [**101**, 2015]

3.3.4 Construction Classification Number.

A series of numbers from 0.5 through 1.5 that are mathematical factors used in a formula to determine the total water supply requirements.

3.3.5 Dry Hydrant.

An arrangement of pipe permanently connected to a water source other than a piped, pressurized water supply system that provides a ready means of water supply for fire-fighting purposes and that utilizes the drafting (suction) capability of a fire department pump.

3.3.6 Dwelling.

Any detached building, or any part of a townhouse structure that is separated from the remainder of the townhouse structure with fire resistance rated assemblies in accordance with local building code, that contains no more than two dwelling units intended to be used, rented, leased, let, or hired out to be occupied or that are occupied for habitation purposes. [**13D**, 2016]

3.3.7 Dwelling Unit.

One or more rooms arranged for complete, independent housekeeping purposes, with space for eating, living, and sleeping; facilities for cooking; and provisions for sanitation. [5000, 2015]

3.3.8 Eductor.

A device that uses the Venturi principle to siphon a liquid in a water stream. [1925, 2013]

3.3.9 Ejector.

A siphon device used to fill an engine's tank when the water source is below or beyond the engine's drafting capability.

3.3.10 * Exposure Hazard.

A structure within 50 ft (15.24 m) of another building and 100 ft² (9.3 m²) or larger in area.

3.3.11 * Fire Department.

An organization providing fire suppression, rescue, and related activities.

3.3.12 * Large Diameter Hose.

A hose of 3½ in. (90 mm) or larger size. [1961, 2013]

3.3.13 Lift.

The vertical height that water must be raised during a drafting operation, measured from the surface of a static source of water to the centerline of the pump intake. [1911, 2012]

3.3.14 Minimum Water Supply.

The quantity of water required for fire control and extinguishment.

3.3.15 Mobile Water Supply Apparatus (Tanker, Tender).

A vehicle designed primarily for transporting (pickup, transporting, and delivering) water to fire emergency scenes to be applied by other vehicles or pumping equipment. [1901, 2016]

3.3.16 Municipal-Type Water System.

A system having water pipes servicing fire hydrants and designed to furnish, over and above domestic consumption, a minimum of 250 gpm (950 L/min) at 20 psi (138 kPa) residual pressure for a 2-hour duration. [1141, 2017]

3.3.17 * Mutual Aid/Assistance Agreement.

A prearranged agreement between two or more entities to share resources in response to an incident. [1600, 2016]

3.3.18 Occupancy Hazard Classification Number.

A series of numbers from 3 through 7 that are mathematical factors used in a formula to determine total water supply requirements.

3.3.19 Reducer.

A fitting used to connect a small hose line or pipe to a larger hose line or pipe.

3.3.20 Rural.

Those areas that are not unsettled wilderness or uninhabitable territory but are sparsely populated with densities below 500 persons per square mile.

3.3.21 Structure.

That which is built or constructed; an edifice or building of any kind, or any piece of work artificially built up or composed of parts joined together in some definite manner.

3.3.22 * Suburb or Suburban.

Those moderately inhabited areas with population densities of at least 500 persons per square mile but less than 1000 persons per square mile.

3.3.23 Water Delivery Rate.

The minimum amount of water per minute (in gpm or L/min), required by this standard or the AHJ, to be delivered to the fire scene via mobile water supply apparatus, hose lines, or a combination of both.

3.3.24 * Water Supply Officer (WSO).

The fire department officer or designee responsible for providing water for fire-fighting purposes.

4.1 General.

4.1.1

Prior to calculating the minimum water supply for a structure, the structure shall be surveyed to obtain the following information:

1. (1)

Occupancy hazard

2. (2)

Type of construction

3. (3)

Structure dimensions (length, width, and height)

4. (4)

Exposures, if any

4.1.1.1

For new construction, plans shall be submitted to the fire department or the AHJ for determination of the minimum water supply required before construction is started.

4.1.1.2

Changes made in the structural design, dimensions, occupancy, or contents of a planned or existing structure that affect the occupancy hazard or the construction type shall require that the structure be resurveyed to determine if changes are necessary in the minimum water supply required.

4.1.1.3

If there are changes in automatic fire suppression systems in a structure that would affect the protection afforded, the property owner(s) shall notify the AHJ in writing of such changes, including temporary impairment.

4.1.2 *

The methodology in this chapter shall be used to calculate the required minimum water supply necessary for structural fire-fighting purposes.

4.1.3 *

The minimum requirements shall be subject to increase by the AHJ to compensate for particular conditions such as the following:

1. (1)

Limited fire department resources

2. (2)
Extended fire department response time or distance
3. (3)
Potential for delayed discovery of the fire
4. (4)
Limited access
5. (5)
Hazardous vegetation
6. (6)
Structural attachments, such as decks and porches
7. (7)
Unusual terrain
8. (8)
Special uses and unusual occupancies

4.1.4

The AHJ shall be permitted to specify how the water supplies required in this document are provided, giving consideration to local conditions and need.

4.1.5

For the purpose of calculating minimum water supply requirement, a structure shall be considered an exposure hazard under the following conditions:

1. (1)
It is 100 ft² (9.3 m²) or larger in area and is within 50 ft (15.24 m) of another structure.
2. (2)
The structure, regardless of size, is of occupancy hazard classification 3 or 4 as determined in Chapter 5 and is within 50 ft (15.24 m) of another structure.

4.2 Structures Without Exposure Hazards.

4.2.1 *

For structures with no exposure hazards, the minimum water supply, in gallons (liters), shall be determined by calculating the total enclosed volume, in cubic feet (cubic meters), of the structure, including any attached structures, dividing by the occupancy hazard classification number as determined from Chapter 5, and multiplying by the construction classification number as determined from Chapter 6 as follows:

[4.2.1]

$$WS_{\min} = \frac{VS_{\text{tot}}}{OHC}(CC)$$

WS_{\min}

minimum water supply in gal (For results in L, multiply by 3.785.)

VS_{tot}

total volume of structure in ft³ (If volume is measured in m³, multiply by 35.3.)

OHC

occupancy hazard classification number

CC

construction classification number

4.2.2

The minimum water supply required for any structure without exposure hazards shall not be less than 2000 gal (7600 L).

4.3 Structures with Exposure Hazards.

4.3.1 *

For structures with unattached structural exposure hazards, the minimum water supply, in gallons (liters), shall be determined by calculating the total enclosed volume, in cubic feet (cubic meters), of the structure, dividing by the occupancy hazard classification number as determined from Chapter 5, multiplying by the construction classification number as determined from Chapter 6, and multiplying by 1.5 as follows:

[4.3.1]

$$WS_{\min} = \frac{VS_{\text{tot}}}{OHC}(CC) \times 1.5$$

WS_{\min}

minimum water supply in gal (For results in L, multiply by 3.785.)

VS_{tot}

total volume of structure in ft³ (If volume is measured in m³, multiply by 35.3.)

OHC

occupancy hazard classification number

CC

construction classification number

4.3.2

The minimum water supply required for a structure with exposure hazards shall not be less than 3000 gal (11,355 L).

4.4 * Structures with Automatic Sprinkler Protection.

4.4.1

The AHJ shall be permitted to reduce the water supply required by this standard for manual fire-fighting purposes when a structure is protected by an automatic sprinkler system that fully meets the requirements of **NFPA 13**, **NFPA 13D**, or **NFPA 13R**. (See *Annex F*.)

4.4.2

If a sprinkler system protecting a building does not fully meet the requirements of **NFPA 13**, **NFPA 13D**, or **NFPA 13R**, a water supply shall be provided in accordance with this standard.

4.5 Structures with Other Automatic Fire Suppression Systems.

For any structure fully or partially protected by an automatic fire suppression system other than as specified in Section 4.4, the AHJ shall determine the minimum water supply required for fire-fighting purposes.

4.6 Water Delivery Rate to the Fire Scene.

4.6.1

The minimum water supply is determined using Sections 4.2 through 4.5 and shall be delivered in accordance with Table 4.6.1.

Table 4.6.1 Water Delivery Rate

Total Water Supply Required		Water Delivery Rate	
gal	L	gpm	L/min
<2,500	9,459	250	950
2,500–9,999	9,460–37,849	500	1,900
10,000–19,999	37,850–75,699	750	2,850
≥20,000	≥75,700	1,000	3,800

4.6.2

The AHJ shall be permitted to adjust the water delivery rate, giving consideration to local conditions and need.

4.6.3

The minimum water delivery rate shall not be less than 250 gpm (950 L/min).

4.7 Other Uses.

Water supplies developed to meet this standard shall be permitted to be used for fighting fires in other than structures or for use during other emergency activities.

5.1 General.

5.1.1

This chapter shall be used to determine the occupancy hazard classification number used in the calculation of water supply requirements in Chapter 4.

5.1.2

Where more than one occupancy is present in a structure, the occupancy hazard classification number for each occupancy shall be determined separately, and the classification number for the most hazardous occupancy shall be used for the entire structure.

5.2 * Occupancy Hazard Classification Number.

5.2.1 Occupancy Hazard Classification Number 3.

5.2.1.1 *

Occupancy hazard classification number 3 shall be used for severe hazard occupancies.

5.2.1.2

Occupancies having conditions similar to the following shall be assigned occupancy hazard classification number 3:

1. (1)

Cereal or flour mills

2. (2)
Combustible hydraulics
3. (3)
Cotton picking and opening operations
4. (4)
Die casting
5. (5)
Explosives and pyrotechnics manufacturing and storage
6. (6)
Feed and gristmills
7. (7)
Flammable liquid spraying
8. (8)
Flow coating/dipping
9. (9)
Linseed oil mills
10. (10)
Manufactured homes/modular building assembly
11. (11)
Metal extruding
12. (12)
Plastic processing
13. (13)
Plywood and particleboard manufacturing
14. (14)
Printing using flammable inks
15. (15)

Rubber reclaiming

16. (16)

Sawmills

17. (17)

Solvent extracting

18. (18)

Straw or hay in bales

19. (19)

Textile picking

20. (20)

Upholstering with plastic foams

5.2.2 Occupancy Hazard Classification Number 4.

5.2.2.1 *

Occupancy hazard classification number 4 shall be used for high hazard occupancies.

5.2.2.2

Occupancies having conditions similar to the following shall be assigned occupancy hazard classification number 4:

1. (1)

Barns and stables (commercial)

2. (2)

Building materials supply storage

3. (3)

Department stores

4. (4)

Exhibition halls, auditoriums, and theaters

5. (5)

Feed stores (without processing)

6. (6)

Freight terminals

7. (7)

Mercantiles

8. (8)

Paper and pulp mills

9. (9)

Paper processing plants

10. (10)

Piers and wharves

11. (11)

Repair garages

12. (12)

Rubber products manufacturing and storage

13. (13)

Warehouses, such as those used for furniture, general storage, paint, paper, and woodworking industries

5.2.3 Occupancy Hazard Classification Number 5.

5.2.3.1

Occupancy hazard classification number 5 shall be used for moderate hazard occupancies, in which the quantity or combustibility of contents is expected to develop moderate rates of spread and heat release. The storage of combustibles shall not exceed 12 ft (3.66 m) in height.

5.2.3.2

Occupancies having conditions similar to the following shall be assigned occupancy hazard classification number 5:

1. (1)

Amusement occupancies

2. (2)

Clothing manufacturing plants

3. (3)

Cold storage warehouses

4. (4)

Confectionery product warehouses

5. (5)

Farm storage buildings, such as corn cribs, dairy barns, equipment sheds, and hatcheries

6. (6)

Laundries

7. (7)

Leather goods manufacturing plants

8. (8)

Libraries (with large stockroom areas)

9. (9)

Lithography shops

10. (10)

Machine shops

11. (11)

Metalworking shops

12. (12)

Nurseries (plant)

13. (13)

Pharmaceutical manufacturing plants

14. (14)

Printing and publishing plants

15. (15)

Restaurants

16. (16)

Rope and twine manufacturing plants

17. (17)

Sugar refineries

18. (18)

Tanneries

19. (19)

Textile manufacturing plants

20. (20)

Tobacco barns

21. (21)

Unoccupied buildings

5.2.4 Occupancy Hazard Classification Number 6.

5.2.4.1

Occupancy hazard classification number 6 shall be used for low hazard occupancies, in which the quantity or combustibility of contents is expected to develop relatively low rates of spread and heat release.

5.2.4.2

Occupancies having conditions similar to the following shall be assigned occupancy hazard classification number 6:

1. (1)

Armories

2. (2)

Automobile parking garages

3. (3)

Bakeries

4. (4)

Barber or beauty shops

5. (5)

Beverage manufacturing plants/breweries

6. (6)

Boiler houses

7. (7)

Brick, tile, and clay product manufacturing plants

8. (8)

Canneries

9. (9)
Cement plants
10. (10)
Churches and similar religious structures
11. (11)
Dairy products manufacturing and processing plants
12. (12)
Doctors' offices
13. (13)
Electronics plants
14. (14)
Foundries
15. (15)
Fur processing plants
16. (16)
Gasoline service stations
17. (17)
Glass and glass products manufacturing plants
18. (18)
Horse stables
19. (19)
Mortuaries
20. (20)
Municipal buildings
21. (21)
Post offices
22. (22)

Slaughterhouses

23. (23)

Telephone exchanges

24. (24)

Tobacco manufacturing plants

25. (25)

Watch and jewelry manufacturing plants

26. (26)

Wineries

5.2.5 Occupancy Hazard Classification Number 7.

5.2.5.1

Occupancy hazard classification number 7 shall be used for light hazard occupancies, in which the quantity or combustibility of contents is expected to develop relatively light rates of spread and heat release.

5.2.5.2

Occupancies having conditions similar to the following shall be assigned occupancy hazard classification number 7:

1. (1)

Apartments

2. (2)

Colleges and universities

3. (3)

Clubs

4. (4)

Dormitories

5. (5)

Dwellings

6. (6)

Fire stations

7. (7)

Fraternity or sorority houses

8. (8)

Hospitals

9. (9)

Hotels and motels

10. (10)

Libraries (except large stockroom areas)

11. (11)

Museums

12. (12)

Nursing and convalescent homes

13. (13)

Offices (including data processing)

14. (14)

Police stations

15. (15)

Prisons

16. (16)

Schools

17. (17)

Theaters without stages

6.1 General.

6.1.1

This chapter shall be used to determine the construction classification number used in the calculation of water supply requirements in Chapter 4.

6.1.2

Where more than one type of construction is present in a structure, the classification number for each type of construction shall be determined separately, and the higher construction classification number shall be used for the entire structure.

6.2 * Construction Classification Number.

6.2.1

The construction classification number shall be as shown in [Table 6.2.1](#) based on the construction of the structure as determined in accordance with Section [6.3](#).

Table 6.2.1 Construction Classification Number

Construction Type	Classification Number
Type I (442 or 332)	0.5
Type II (222, 111, or 000)	0.75
Type III (211 or 200)	1.0
Type IV (2HH)	0.75
Type V (111 or 000)	1.5

6.2.2

For dwellings, the maximum construction classification number shall be 1.0.

6.3 Classification of Types of Building Construction.

6.3.1 *

Classification of types of building construction shall be in accordance with [6.3.3](#) through [6.3.7](#) and [Table 6.3.1](#).

Table 6.3.1 Fire Resistance Ratings for Type I through Type V Construction (hr)

	Type I		Type II			Type III		Type IV	Type V	
	442	332	222	111	000	211	200	2HH	111	000
Exterior Bearing Walls										
Supporting more than one floor, columns, or other bearing walls	4	3	2	1	0	2	2	2	1	0
Supporting one floor only	4	3	2	1	0	2	2	2	1	0
Supporting a roof only	4	3	1	1	0	2	2	2	1	0
Interior Bearing Walls										
Supporting more than one floor, columns, or other bearing walls	4	3	2	1	0	1	0	2	1	0

Table 6.3.1 Fire Resistance Ratings for Type I through Type V Construction (hr)

	Type I		Type II			Type III		Type IV	Type V	
	442	332	222	111	000	211	200	2HH	111	000
Supporting one floor only	3	2	2	1	0	1	0	1	1	0
Supporting roofs only	3	2	1	1	0	1	0	1	1	0
Columns										
Supporting more than one floor, columns, or other bearing walls	4	3	2	1	0	1	0	H*	1	0
Supporting one floor only	3	2	2	1	0	1	0	H*	1	0
Supporting roofs only	3	2	1	1	0	1	0	H*	1	0
Beams, Girders, Trusses, and Arches										
Supporting more than one floor, columns, or other bearing walls	4	3	2	1	0	1	0	H*	1	0
Supporting one floor only	2	2	2	1	0	1	0	H*	1	0
Supporting roofs only	2	2	1	1	0	1	0	H*	1	0
Floor Construction	2	2	2	1	0	1	0	H*	1	0
Roof Construction	2	1½	1	1	0	1	0	H*	1	0
Interior Nonbearing Walls	0	0	0	0	0	0	0	0	0	0
Exterior Nonbearing Walls†	0	0	0	0	0	0	0	0	0	0

Note: Shaded columns indicate those members that are permitted to be of approved combustible material.

*"H" indicates heavy timber members; see 6.3.6 for requirements.

†Exterior nonbearing walls meeting the conditions of acceptance of NFPA 285 are permitted to be used.

6.3.2

If the type of construction of the structure has been determined using [NFPA 220](#) that type of construction shall be permitted to be used in lieu of determining the type of construction in accordance with [6.3.3](#) through [6.3.7](#).

6.3.3 Type I (442 or 332) Construction.

6.3.3.1

Type I (442 or 332) construction shall be those types in which the fire walls, structural elements, walls, arches, floors, and roofs are of approved noncombustible or limited-combustible materials.

6.3.3.2

Structural members shall have fire resistance ratings not less than those specified in [Table 6.3.1](#).

6.3.4 Type II (222, 111, or 000) Construction.

6.3.4.1

Type II (222, 111, or 000) construction shall be those types not qualifying as Type I construction in which the fire walls, structural elements, walls, arches, floors, and roofs are of approved noncombustible or limited-combustible materials.

6.3.4.2

Structural members shall have fire resistance ratings not less than those specified in [Table 6.3.1](#).

6.3.5 Type III (211 or 200) Construction.

6.3.5.1

Type III (211 or 200) construction shall be that type in which exterior walls and structural members that are portions of exterior walls are of approved noncombustible or limited-combustible materials.

6.3.5.2

Fire walls, interior structural elements, walls, arches, floors, and roofs shall be permitted to be entirely or partially constructed of wood of smaller dimensions than required for Type IV construction or of approved noncombustible, limited-combustible, or other approved combustible materials.

6.3.5.3

In addition, structural members shall have fire resistance ratings not less than those specified in [Table 6.3.1](#).

6.3.6 Type IV (2HH) Construction.

6.3.6.1

Type IV (2HH) construction shall be that type in which fire walls, exterior walls, and interior bearing walls and structural elements that are portions of such walls are of approved noncombustible or limited-combustible materials.

6.3.6.1.1

Other interior structural elements, arches, floors, and roofs shall be of solid or laminated wood without concealed spaces and shall comply with the allowable dimensions of [6.3.6.5](#) through [6.3.6.10](#).

6.3.6.1.2

In addition, structural members shall have fire resistance ratings not less than those specified in [Table 6.3.1](#).

6.3.6.2

Interior columns, arches, beams, girders, and trusses of approved materials other than wood shall be permitted, provided they are protected to provide a fire resistance rating of not less than 1 hour.

6.3.6.3

Certain concealed spaces shall be permitted in accordance with [6.3.6.7.4](#).

6.3.6.4

All dimensions in 6.3.6.5 through 6.3.6.10 shall be considered nominal.

6.3.6.5 Columns.

6.3.6.5.1

Wood columns supporting floor loads shall be not less than 8 in. (200 mm) in any dimension.

6.3.6.5.2

Wood columns supporting only roof loads shall be not less than 6 in. (150 mm) in width and not less than 8 in. (200 mm) in depth.

6.3.6.6 Beams.

6.3.6.6.1

Wood beams and girders supporting floor loads shall be not less than 6 in. (150 mm) in width and not less than 10 in. (250 mm) in depth.

6.3.6.6.2

Wood beams and girders and other roof framing supporting only roof loads shall be not less than 4 in. (100 mm) in width and not less than 6 in. (150 mm) in depth.

6.3.6.7 Arches.

6.3.6.7.1

Framed or glued laminated arches that spring from grade or the floor line and timber trusses that support floor loads shall be not less than 8 in. (200 mm) in width or depth.

6.3.6.7.2

Framed or glued laminated arches for roof construction that spring from grade or the floor line and do not support floor loads shall have members not less than 6 in. (150 mm) in width and not less than 8 in. (200 mm) in depth for the lower half of the member height, and not less than 6 in. (150 mm) in depth for the upper half of the member height.

6.3.6.7.3

Framed or glued laminated arches for roof construction that spring from the top of walls or wall abutments, and timber trusses that do not support floor loads, shall have members not less than 4 in. (100 mm) in width and not less than 6 in. (150 mm) in depth.

6.3.6.7.4

Spaced members shall be permitted to be composed of two or more pieces not less than 3 in. (75 mm) in thickness where blocked solidly throughout their intervening spaces or where such spaces are tightly closed by a continuous wood cover plate not less than 2 in. (50 mm) in thickness that is secured to the underside of the members.

6.3.6.8 Splice Plates.

Splice plates shall be not less than 3 in. (75 mm) in thickness.

6.3.6.9 Floors.

Floors shall be constructed of spline or tongue-and-groove plank not less than 3 in. (75 mm) in thickness that is covered with 1 in. (25 mm) tongue-and-groove flooring, laid crosswise or diagonally to the plank, or with $\frac{1}{2}$ in. (12.5 mm) wood structural panel; or they shall be constructed of laminated planks not less than 4 in. (100 mm) in width, set close together on edge, spiked at intervals of 18 in. (460 mm), and covered with 1 in. (25 mm) tongue-and-groove flooring, laid crosswise or diagonally to the plank, or with $\frac{1}{2}$ in. (12.5 mm) wood structural panel.

6.3.6.10 Roof Decks.

Roof decks shall be constructed of spline or tongue-and-groove plank not less than 2 in. (50 mm) in thickness; or of laminated planks not less than 3 in. (75 mm) in width, set close together on edge, and laid as required for floors; or of

1 $\frac{1}{8}$ in. (28.5 mm) thick interior wood structural panel (exterior glue); or of approved noncombustible or limited-combustible materials of equivalent fire durability.

6.3.7 Type V (111 or 000) Construction.

Type V (111 or 000) construction shall be that type in which exterior walls, bearing walls, columns, beams, girders, trusses, arches, floors, and roofs are entirely or partially of wood or other approved combustible material smaller than material required for Type IV construction. In addition, structural members shall have fire resistance ratings not less than those specified in [Table 6.3.1](#).

7.1 Approved Water Supply.

7.1.1 *

Any water supply source used to meet the requirements of this standard shall be of a quality approved by the AHJ.

7.1.2

Where required by the AHJ, the minimum water supply shall be available prior to combustibles being brought on site.

7.1.3

Water storage tanks shall be inspected, tested, and maintained in accordance with [NFPA 25](#).

7.1.4

The water supply source shall be maintained and accessible on a year-round basis.

7.1.5

In locations where adequate municipal-type water systems are not provided and additional fire protection is needed, minimum water supplies shall be established in, or transportable to, the designated area.

7.1.6

Unless otherwise permitted by the AHJ, all approved nonpressurized water supply sources shall be accessible using dry hydrants that meet the requirements of this standard.

7.1.7 *

To be acceptable, water supply sources shall maintain the minimum capacity and delivery requirements on a year-round basis, based on the 50-year drought for the water source.

7.2 * Water Use Agreements.

The AHJ shall enter into a water use agreement when a private water supply source is to be used to meet the requirements of this standard.

7.3 Identifying Water Sources.

A water source indicator approved by the AHJ shall be erected at each water point identifying the site for fire department emergency use.

7.4 Fire Hose Connections.

Any fitting provided at a water source to permit a fire apparatus to connect to the water source shall be approved by the AHJ and shall conform to [NFPA 1963](#).

7.5 * Access to Water Sources.

Roads providing a means of access to any required water supply shall be constructed and maintained in accordance with the following:

1. (1)

Roadways shall have a minimum clear width of 12 ft (3.7 m) for each lane of travel.

2. (2)

Turns shall be constructed with a minimum radius of 100 ft (30.5 m) to the centerline.

3. (3)

The maximum sustained grade shall not exceed 8 percent.

4. (4)

All cut-and-fill slopes shall be stable for the soil involved.

5. (5)

Bridges, culverts, or grade dips shall be provided at all drainageway crossings; roadside ditches shall be deep enough to provide drainage with special drainage facilities (tile, etc.) at all seep areas and high water-table areas.

6. (6)

The surface shall be treated as required for year-round travel.

7. (7)

Erosion control measures shall be used as needed to protect road ditches, cross drains, and cut-and-fill slopes.

8. (8)*

Where turnarounds are utilized during fire-fighting operations, they shall be designed with a diameter of 120 ft (36.5 m) or larger, as required, to accommodate the equipment of the responding fire department.

9. (9)

Load-carrying capacity shall be adequate to carry the maximum vehicle load expected.

10. (10)

The road shall be suitable for all-weather use.

11. (11)

When a bridge is required to be used as part of a fire department access road, it shall be constructed and maintained in accordance with nationally recognized standards. [1:18.2.3.4.5.1]

12. (12)

The bridge shall be designed for a live load sufficient to carry the imposed loads of fire apparatus. [1:18.2.3.4.5.2]

13. (13)

Vehicle load limits shall be posted at both entrances to bridges where required by the AHJ. [1:18.2.3.4.5.3]

7.6 Mobile Water Supply Training.

To promote operational safety and effectiveness, the AHJ shall determine what training is required. (See C.9.)

7.7 Records.

7.7.1

A record of each water supply shall be prepared and periodically updated.

7.7.2

The records shall be retained in accordance with the record retention policy of the jurisdiction or state.

7.7.3

Records developed to meet the requirements of this standard shall be retained for a minimum of 3 years after the agreement, facility, or equipment is no longer used for its original purpose.

8.1 * General.

The AHJ shall ensure that generally accepted design practices are employed during the following:

1. (1)

Dry hydrant location planning

2. (2)

The permit process

3. (3)

Design criteria

4. (4)

Construction

8.2 Planning and Permits.

The planning, permitting, and design processes shall be completed before the actual construction begins.

8.2.1

Planning shall be coordinated among public and private entities that could be impacted by the installation of a dry hydrant.

8.2.2 *

Required permits to install a dry hydrant shall be obtained prior to installation.

8.3 * Dry Hydrant Design.

8.3.1 *

The AHJ shall approve all aspects of the dry hydrant design and construction, including the type of materials, pipe size, and system fittings to be used.

8.3.2 *

As a minimum, Schedule 40 pipe and component fittings shall be used.

8.3.3 *

All dry hydrant systems shall be designed and constructed to provide a minimum flow of 1000 gpm (3800 L/min) at draft.

8.3.4 *

The water supply source for the dry hydrant shall provide, on a year-round basis, the required quantity of water, as determined in Chapter 4, and the minimum flow as required in **8.3.3**.

8.3.5 *

Dry hydrant systems shall be designed and constructed so that slope and piping configurations do not impede drafting capability.

8.3.6 *

All exposed surfaces and all underground metal surfaces shall be protected to prevent deterioration.

8.3.7 *

A minimum number of elbows shall be used in the piping system.

8.3.8

Suction hose connection(s) shall be compatible with the fire department's hard suction hose size and shall conform to **NFPA 1963**. The connection(s) shall include a protective cap. The cap and adapter shall be of materials that minimize rust and galvanic corrosion.

8.3.9

Dry hydrant system piping shall be supported and/or stabilized using approved engineering design practices.

8.3.10

Stabilization or equivalent protection shall be employed at elbows and other system stress points.

8.3.11

In addition to strength of materials and structural support criteria, design shall specify appropriate aggregates and soil materials to be used to backfill/cover piping during installation.

8.3.12

All connections shall be clean, and the appropriate sealing materials shall be used according to manufacturer's specifications so as to ensure that all joints are airtight.

8.3.13 *

System strainers shall be constructed to permit required fire flow.

8.4 * Dry Hydrant Locations.

8.4.1

A minimum of 3 ft (0.9144 m) of clear, unobstructed space shall be provided around the dry hydrant.

8.4.2 *

Dry hydrants shall be located so that they are accessible under all weather conditions.

8.4.3

The dry hydrant system and access to the site shall be developed in a manner that allows the fire department pump to connect to the hydrant using not more than 20 ft (6 m) of hard suction hose.

8.4.4

Dry hydrants shall be located a minimum of 100 ft (30 m) from any structure.

8.4.5

No parking or other obstacles shall be allowed within 20 ft (6 m) of the access side of the hydrant.

8.4.6 *

Dry hydrants shall be protected from damage by vehicular and other perils, including freezing and damage from ice and other objects.

8.4.7 *

Dry hydrant locations shall be made visible from the main roadway during emergencies by reflective marking and signage approved by the AHJ.

8.4.8

All identification signs shall be approved by the highway authority prior to installation if they are to be located on the right-of-way or are subject to state laws.

8.5 * Depth of Water Sources.

8.5.1

There shall be not less than 2 ft (0.6 m) of water above the strainer and not less than 1 ft (0.3 m) below the strainer.

8.5.2

Depth of the water shall be based on the 50-year drought level for the water source.

8.6 * Installation Procedure for Dry Hydrant System.

The AHJ shall ensure that the installation meets all design criteria.

8.7 Inspection and Maintenance of Dry Hydrants.

8.7.1 *

Dry hydrants shall be inspected at least quarterly and maintained as necessary to keep them in good operating condition.

8.7.2

Thorough surveys shall be conducted, to reveal any deterioration in the water supply situation in ponds, streams, or cisterns.

8.7.3

Vegetation shall be cleared for a minimum 3 ft (0.9 m) radius from around hydrants.

8.7.4

The reflective material marking the hydrant and signage shall be inspected at least annually to verify that it is being maintained in accordance with 8.4.7.

8.7.5

Hydrant risers shall be protected from ultraviolet (UV) degradation by painting or other measures.

8.7.6 *

The hydrants shall be flow tested at least annually with an approved pump to ensure that the minimum design flow is maintained.

8.8 * Records for Dry Hydrants.

The AHJ shall maintain, in a safe location, maps and records of each dry hydrant installation and the subsequent tests, inspections, maintenance, and repairs to the dry hydrant.

A Explanatory Material

Annex A is not a part of the requirements of this NFPA document but is included for informational purposes only. This annex contains explanatory material, numbered to correspond with the applicable text paragraphs.

A.1.2

In some areas, water supply systems have been installed for domestic water purposes only. These systems could be equipped with hydrants that might not have the volume, pressure, and duration of flow needed for adequate fire-fighting purposes. Where such conditions exist, this standard and annex should be applied in water supply matters.

A.1.3.2

Locations such as these require individual evaluations to determine the minimum water supply to protect the hazards present.

A.3.2.1 Approved.

The National Fire Protection Association does not approve, inspect, or certify any installations, procedures, equipment, or materials; nor does it approve or evaluate testing laboratories. In determining the acceptability of installations, procedures, equipment, or materials, the authority having jurisdiction may base acceptance on compliance with NFPA or other appropriate standards. In the absence of such standards, said authority may require evidence of proper installation, procedure, or use. The authority having jurisdiction may also refer to the listings or labeling practices of an organization that is concerned with product evaluations and is thus in a position to determine compliance with appropriate standards for the current production of listed items.

A.3.2.2 Authority Having Jurisdiction (AHJ).

The phrase "authority having jurisdiction," or its acronym AHJ, is used in NFPA documents in a broad manner, since jurisdictions and approval agencies vary, as do their responsibilities. Where public safety is primary, the authority having jurisdiction may be a federal, state, local, or other regional department or individual such as a fire chief; fire marshal; chief of a fire prevention bureau, labor department, or health department; building official; electrical inspector; or others having statutory authority. For insurance purposes, an insurance inspection department, rating bureau, or other insurance company representative may be the authority having jurisdiction. In many circumstances, the property owner or his or her designated agent assumes the role of the authority having jurisdiction; at government installations, the commanding officer or departmental official may be the authority having jurisdiction.

A.3.3.10 Exposure Hazard.

If a structure is a Class 3 or Class 4 occupancy hazard, it is an exposure hazard if within 50 ft (15.24 m) of another building, regardless of size.

A.3.3.11 Fire Department.

The AHJ and the fire department having jurisdiction can be the same agency. The term *fire department* includes any public, governmental, private, industrial, tribal, or military organization engaging in this type of activity.

A.3.3.12 Large Diameter Hose.

Supply hose is designed to be used at operating pressures not exceeding 185 psi (1275 kPa). Attack hose is designed for use at operating pressures up to at least 275 psi (1895 kPa).

A.3.3.17 Mutual Aid/Assistance Agreement.

Often the request for such aid to be rendered comes only after an initial response has been made and the emergency incident status has been determined.

A.3.3.22 Suburb or Suburban.

Suburban areas can include populous towns or large villages or be located outside the official limits of a densely settled city of 2500 to 50,000 people per census block, or those areas that interface with the outer rim of an urban cluster (UC). Suburban communities usually exist within commuting distance of urban areas but exhibit their own jurisdictional autonomy.

A.3.3.24 Water Supply Officer (WSO).

Many progressive rural fire departments depend on a water supply officer (WSO). The WSO is the individual who implements the water supply pre-fire planning. The work of a properly trained and equipped WSO makes it possible for the officer supervising the actual fire attack to operate on the basis of reliable water supply information, to coordinate the attack with the available water supplies, and to avoid diverting his or her attention from the attack to the logistics of backing it up with an adequate water supply.

The WSO's overall responsibilities are to determine water supply requirements of the targeted structures, to plan availability of and access to water sources, and to ensure sufficient water is provided at each fire site. The WSO should maintain and have available a complete set of files, including locations of water sources and lists of available automatic and mutual aid mobile water supply apparatus. Modern technology in computers makes it feasible for even a relatively low-budget department to reduce this data to electronic files that can be maintained at the fire alarm communication center and provided at the scene of every fire.

The WSO participates in the pre-fire planning and in calculating the water supply requirements for the various buildings in the area under the department's jurisdiction. To satisfy these water supply requirements, the WSO should survey the district and the surrounding areas for available water for fire-fighting purposes. Water supplies might exist on the property to be protected or might need to be transported. The WSO should develop preplans and see that the fire department is kept aware of all the water supplies available to the entire area. The WSO maintains close coordination with the fire department training officer and provides assistance in joint water supply training sessions with neighboring fire departments. The WSO should make periodic inspections of all water supplies and structural changes in the department's jurisdiction.

A list of all apparatus, equipment, and personnel available to the WSO's department should be developed. Arrangements should be developed for specific apparatus and personnel to respond under an automatic aid agreement (first alarm response) or a mutual aid agreement (called as needed). Needs will be dictated by the nature of the structure(s) involved and the quantity of water required.

At the fire scene, the WSO's duty is to maintain continuous fire streams by establishing several water-hauling facilities, assembling water-carrying equipment of automatic and mutual aid departments, and calculating estimated arrival times of mobile water supply apparatus, through a thorough knowledge of available water supplies throughout a wide area of fire department jurisdiction.

Developing and sustaining large fire flow requires the use of several water sources as well as several drop tanks where water can be dumped. Therefore, reliable and effective communication is necessary in directing mobile water supplies so that time is not lost at the fill and the dump points. To obtain water supply efficiency, a radio frequency separate from that used for the fireground operations should be assigned to the WSO and the water supply site and the mobile water supply apparatus. The WSO will also require efficient communication with the incident commander.

The WSO (or designee) meets with property owners and others to secure their permission to use the water supply, to develop an all-weather road to the supply, and to install dry hydrants. The installation of roads to, or dry hydrants in, navigable water or wetlands might require a permit from appropriate local, state, or national agencies. The WSO should also consult with the owner in the design of a water source on a property to be protected.

A.4.1.2

Information needed to compute the minimum water supplies that should be collected during building surveys includes the following:

1. (1)
Area of all floors, including attics, basements, and crawl spaces
2. (2)
Height between floors or crawl spaces and in the attics from floor to ridgepole
3. (3)
Construction materials used in each building, including walls, floors, roofs, ceilings, interior partitions, stairs, and so forth
4. (4)
Occupancy(ies) of buildings

5. (5)

Exposures to the structure from other buildings or yard storage and separation distances

6. (6)

Fire protection systems — automatic and manual protection systems, hydrants, yard mains, and other protection facilities

7. (7)

On-premises water supplies, including natural and constructed sources of water

A.4.1.3

The water supply for fire-fighting purposes, as specified in Chapter 4, is considered the minimum water supply. The AHJ could determine that a municipal-type water supply is warranted (see *Annex G*). This determination might be made as a result of on-site survey of buildings by the fire department having jurisdiction or by review of architectural plans of proposed construction and planned development.

A.4.2.1

Annex H provides tables with precalculated minimum water supplies by occupancy hazard and construction classification where no exposures are present.

A.4.3.1

See Annex H for sample calculations for structures with exposure hazards.

A.4.4

The following information on permitted reductions of fire flow and other fire flow provisions is based on **NFPA 1**, Section 18.4.

One- and Two-Family Dwellings. The minimum fire flow and flow duration requirements for one- and two-family dwellings having a fire flow area that does not exceed 5000 ft² (334.5 m²) should be at 1000 gpm (3785 L/min) or 500 gpm (1900 L/min) when an approved automatic sprinkler system is installed throughout and/or separated from other buildings by a minimum of 30 ft (9.1 m). The minimum fire flow duration is 1 hour.

A reduction in required fire flow of 50 percent is permitted where the building is provided with an approved automatic sprinkler system.

A reduction in the required fire flow of 25 percent is also permitted where the building is separated from other buildings by a minimum of 30 ft (9.1 m).

The reduction for an approved automatic sprinkler system and/or separated from other buildings cannot reduce the required fire flow to less than 500 gpm (1900 L/min).

Fire flow and flow duration for dwellings having a fire flow area in excess of 5000 ft² (334.5 m²) cannot be less than that specified for buildings other than one- and two-family dwellings.

Buildings Other Than One- and Two-Family Dwellings. The minimum fire flow and flow duration for buildings other than one- and two-family dwellings should not be less than 1000 gpm (3785 L/min) or 600 gpm (2270 L/min) when the building is protected throughout by an approved automatic sprinkler system and quick response sprinklers are utilized throughout.

A reduction in the required fire flow of 75 percent is permitted when the building is protected throughout by an approved automatic sprinkler system.

A reduction in the required fire flow of 75 percent is permitted when the building is protected throughout by an approved automatic sprinkler system, which utilizes quick response sprinklers throughout. The resulting fire flow should not be less than 600 gpm (2270 L/min).

A.5.2

The occupancy hazard classification number is a mathematical factor to be used in calculating minimum water supplies. The lowest occupancy hazard classification number is 3, and it is assigned to the highest hazard group. The highest occupancy hazard classification number is 7, and it is assigned to the lowest hazard group.

A.5.2.1.1

In severe hazard occupancies, the quantity or combustibility of contents is expected to develop very high rates of spread and heat release.

A.5.2.2.1

In high hazard occupancies, the quantity or combustibility of contents is expected to develop high rates of spread and heat release.

A.6.2

The construction classification number is a mathematical factor to be used in calculating minimum water supplies. The slowest burning or lowest hazard type of construction, fire-resistive, is construction classification 0.5. The fastest burning or highest hazard type of construction, wood frame, is construction classification 1.5.

A.6.3.1

The types of construction include five basic types designated by roman numerals as Type I, Type II, Type III, Type IV, and Type V. This system of designating types of construction also includes a specific breakdown of the types of construction through the use of arabic numbers. These numbers follow the roman numeral notation where identifying a type of construction (e.g., Type I-442, Type II-111, Type III-200).

The arabic numbers following each basic type of construction (e.g., Type I, Type II) indicate the fire resistance rating requirements for certain structural elements as follows:

1. (1)

First arabic number: Exterior bearing walls

2. (2)

Second arabic number: Columns, beams, girders, trusses and arches, supporting bearing walls, columns, or loads from more than one floor

3. (3)

Third arabic number: Floor construction

Specific fire resistance ratings are found in [Table 6.3.1](#), and additional information is found in [NFPA 20](#).

A.7.1.1

Although most water is acceptable for fire-fighting purposes, there might be suspended particulates or contaminants that could prove harmful to the fire pump systems or fire-fighting agents being used and should be avoided.

A.7.1.7

For a supply flowing from a stream, the quantity to be considered available is the minimum rate of flow [at not over 15 ft (4.5 m) total lift] during a drought having an average 50-year (2.0 percent chance) recurrence interval. A minimum flow rate of 250 gpm (950 L/min) without interruption for 2 hours as determined by a registered/licensed professional engineer, hydrologist, or similarly qualified person is considered a dependable supply. The maximum rate of flow is determined by testing using the pumpers(s), hose arrangement, and dry hydrant normally used at the site.

Historical stream flow data are available for most streams from the *United States Geological Survey (USGS) Water Resources Information*. These data can also be accessed at <http://waterdata.usgs.gov/nwis/sw/>. The USGS does not establish flow rates but provides historical data to assist with assessment. Additional assistance is available from individual state and organization contacts at the National Drought Mitigation Center (NDMC). *The National Drought Mitigation Center Directory of Drought Contacts* can be accessed from their home page at <http://www.drought.unl.edu/index.htm>.

For an impounded supply, cistern, tank, or storage facility, the quantity to be considered available is the minimum available [at not over 15 ft (4.5 m) total lift] during a drought having an average 50-year (2.0 percent chance) recurrence interval. A minimum of 30,000 gal (113,560 L) (1.1 acre-in.) of pumpable impoundment water or a minimum rate of 250 gpm (950 L/min) without interruption for 2 hours (certified by a registered/licensed professional engineer, hydrologist, or similarly qualified person) is considered a dependable supply. The maximum rate of flow should be determined by testing using the pumpers(s), hose arrangement, and dry hydrant normally used at the site.

The Natural Resources Conservation Service (NRCS) provides *Conservation Practice Standard Dry Hydrant Code 432*, which can be of assistance in determining appropriate drought levels in some states. Conservation practice specifications are detailed requirements for installing the practice in the state. They are localized so that they apply specifically to the geographic area for which they are prepared. Practice standards define the practice where the requirement applies and for installing the practice in the state. These documents are referred to as Field Office Technical Guides (FOTGs). These data can be accessed from the NRCS website at <http://www.nrcs.usda.gov/technical/efotg>.

A.7.2

During pre-fire planning, the fire department should make arrangements with the owners of water supplies to use the water during an emergency. Such agreements should be made in writing in close cooperation with legal counsel.

The agreements should identify who will build, service, and maintain necessary access roads to the supplies, including such functions as snow plowing in certain areas of the country. [Figure A.7.2](#) shows a sample water usage agreement.

Figure A.7.2 Sample Water Usage Agreement.

SAMPLE WATER USAGE AGREEMENT

It is understood by the owner(s) and the _____ government (hereinafter _____ Fire Department) that this agreement is subject to the following

1. The owner(s) are permitted to terminate this agreement by written notice if the _____ breaches any terms and conditions contained in this agreement.
2. Neither this agreement nor any right or duty in whole or in part by the owner(s) _____ assigned, delegated, or subcontracted without the written consent of the owner(s).
3. All items placed on the property of the owner(s) by the _____ will remain _____ . If this agreement is terminated, the owner(s) will permit the _____ adequate time to remove said property and return the land to its natural state.
4. Any and all debris that is created by and during the establishment of the drafting _____ by the _____ .
5. No cutting or trimming of trees will be done on the property of the owner(s) unless _____ Department states that such cutting is/will be necessary to provide uninterrupted _____ however, in no case will such cutting be actually completed without prior approval _____
6. The _____ will maintain the area covered by this agreement in a safe _____ maintenance will also include the groundskeeping around the site.
7. The _____ agrees to save, keep harmless, defend, and indemnify the _____ employees, and agents, against any and all liability claims, costs of whatever kind _____ of any person or persons, and for loss or damage to any property occurring in connection _____ incidental to or arising out of the occupancy, use, service, operation, or performance _____ agreement or omissions of the _____ 's employees, agents, or representatives _____ NOT AND WILL NOT APPLY TO ANY EVENTS INVOLVING AN ACTUAL FIRE _____ THE OWNER(S).
8. The owner(s) as well as any heirs, executors, administrators, and assigns do hereby _____ discharge the _____ and any officer, agent, or employee thereof of _____ firm, or legal entity for any act of omission, or any injuries, damages, or deaths claimed _____ [describe the work to be performed at the site] unless the act of omission amounts _____ is entered into for and in consideration of the drafting site and access roadway. This _____ is acknowledged by the owner's(s') signature(s) below.
9. The owner(s) grant the rights to the _____ and _____ property cited in this agreement only for the express purpose as stated by owner(s)

A.7.5

Most artificial lakes are constructed with heavy earth-moving equipment. In order for the property owner to construct a roadway for fire department use, the AHJ should make the property owner aware of the needs of the fire department while the heavy equipment is still on the job.

Accessibility should always be considered. Many recreational lakes are provided with access by roads, driveways, and boat-launching ramps and are available for fire department use. Some large lakes, formed by a dam on a river, might have been constructed for such purposes as to generate power, for flood control, or to regulate the flow of a river. During certain periods of the year (droughts, drawdowns, etc.), such bodies of water can have very low water levels. The water under such conditions might not be accessible to the fire department for drafting by the fire department pumping unit, even where a paved road for boat launching has been provided and extended into the water at normal water levels for several feet or meters. Under such conditions, other provisions should be made to make the water supply fully accessible to the fire department.

A.7.5(8)

Where a 120 ft (36.5 m) diameter turnaround or other means for the mobile water supply apparatus to exit the water supply location is not feasible, a large underground pipe transmission line can be laid from the water supply to the highway and the mobile water supply apparatus filled on the highway right-of-way. However, a turnaround or looped facility could still be needed if the mobile water supply apparatus needs to return to the fire scene over the same roads used to reach the water supply site.

A.8.1

Factors to consider when determining the need and location for a dry hydrant system should include, but not be limited to, the following:

1. (1)
Current and future population and building trends
2. (2)
Property values protected
3. (3)
Potential for loss
4. (4)
Proximity to structures [e.g., not closer than 100 ft (30 m) from a structure it is designed to protect]
5. (5)
Fire history of the area protected
6. (6)
Current water supply systems
7. (7)
Potential water supply sources and reliability (i.e., constructed or natural)
8. (8)

Cost of project

9. (9)

Other factors of local concern

The Volunteer Fire Assistance program provides grants to rural fire departments for training, organizing, and equipment serving communities with a population of 10,000 or less. The U.S. Forest Service sponsors and funds this program, which is delivered by the State Forester in each state.

Grants may be available through the State Forester's office on a cost-sharing basis. It is appropriate to seek funding from the Volunteer Fire Assistance program for material for dry hydrants since rural fire departments provide much of the initial attack on wildland fires. More information about the Volunteer Fire Assistance program can be found on the USDA Forest Service website at www.fs.fed.us/fire/partners/vfa/. Click on VFA Desk Guide. Contact your local State Forester's office for application procedures. The name and contact information for State Foresters can be found on the National Association of State Foresters website at www.stateforesters.org/SFlist.html, or you can view the homepage at www.stateforesters.org.

A.8.2.2

Permits to install a dry hydrant should be obtained from the AHJ. These can include local, state, and federal agencies charged with fire protection, zoning, water, environmental protection, agriculture and resource conservation, among others.

A.8.3

Since there might be resources available to assist in the planning and installation of dry hydrants, it is desirable to identify and consult with the persons responsible for those resources early in the process.

A.8.3.1

Factors including local topography, climatic conditions, and access to materials will determine the design characteristics of each installation. Distance to the water combined with the difference in elevation between the hydrant head and the water source, and the desired flow, in gpm (L/min) will affect the pipe size that should be used.

Local preferences and experience, along with access to materials, will determine the type of pipe and fittings best suited for the job. In some parts of the country, brass and bronze caps and suction hose connections, along with iron, steel, and bituminous cement pipe and fittings, are being used for dry hydrant installations.

A.8.3.2

Many fire service hose appliance manufacturers now offer pre-manufactured and pre-assembled PVC suction screens, hydrant heads, and supports that come ready to attach to the pipe [see [Figure A.8.3.2\(a\)](#)].

[Figure A.8.3.2\(b\)](#) is an example of a dry hydrant installation showing a minimum 6 in. (150 mm) pipe and screen. Installations can involve larger pipes and screens.

Figure A.8.3.2(a) Commercially Available Dry Hydrant Components.

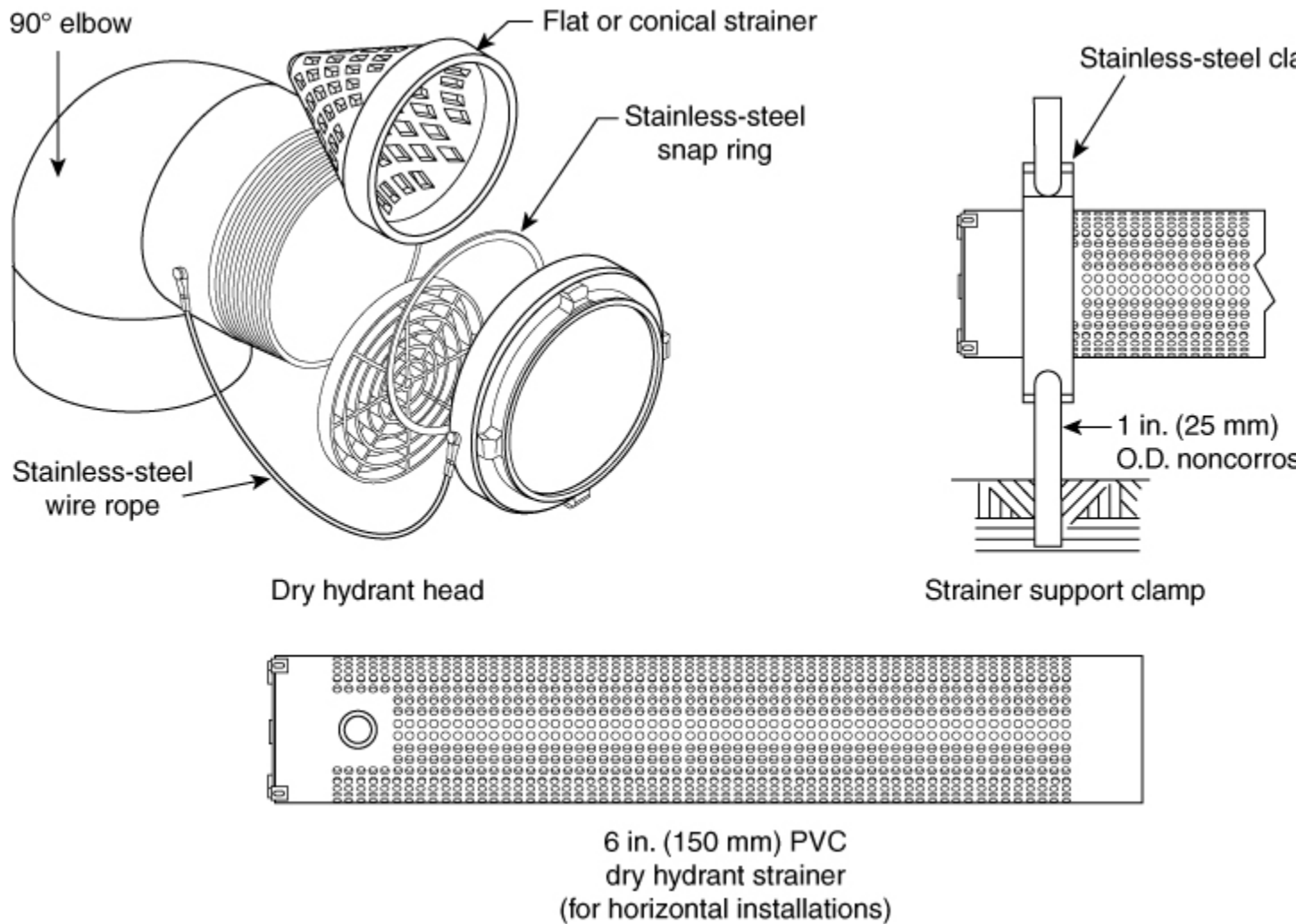
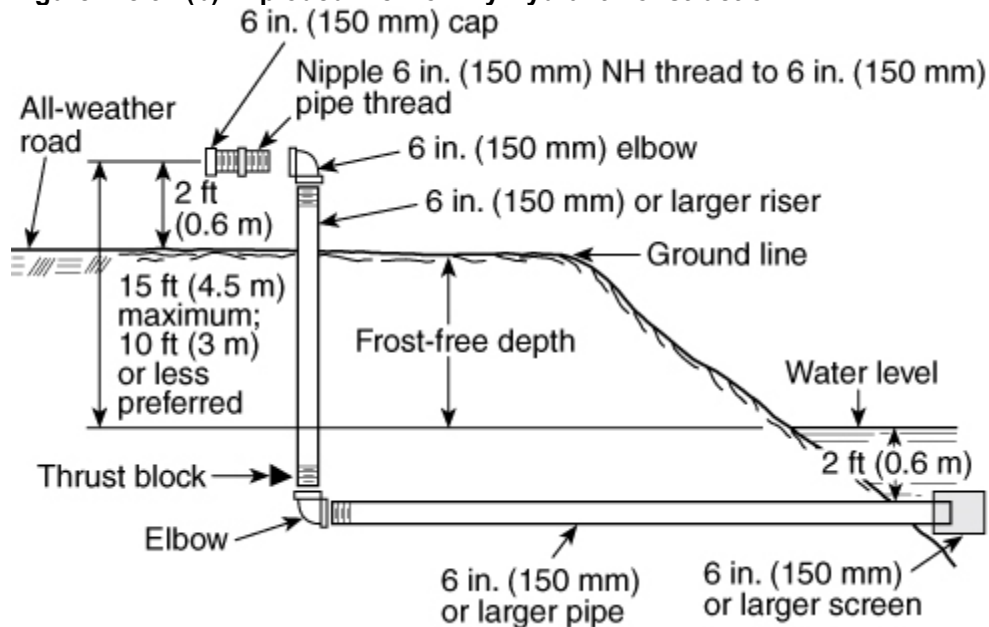


Figure A.8.3.2(b) Exploded View of Dry Hydrant Construction.



A.8.3.3

System design requirements should allow for required fire flow, atmospheric pressure, lift, vapor pressure, length of required pipe run, coefficient of materials (C factor), piping configuration, and other design factors that approved engineering practices would necessitate.

The following are some factors that should be considered when a dry hydrant system is designed:

1. (1)

Lift should be as low as possible and not exceed 10 ft to 12 ft (3.1 m to 3.7 m), if possible. This loss cannot be overcome by enlarging the pipe size.

2. (2)

Total head loss should not exceed 20 ft (6.1 m), or the pump might not supply its rated gpm (L/min). If the fire department will be using portable pumps on the dry hydrant, those pumps generally have less capability to create a vacuum and head loss needs to be as low as possible.

A.8.3.4

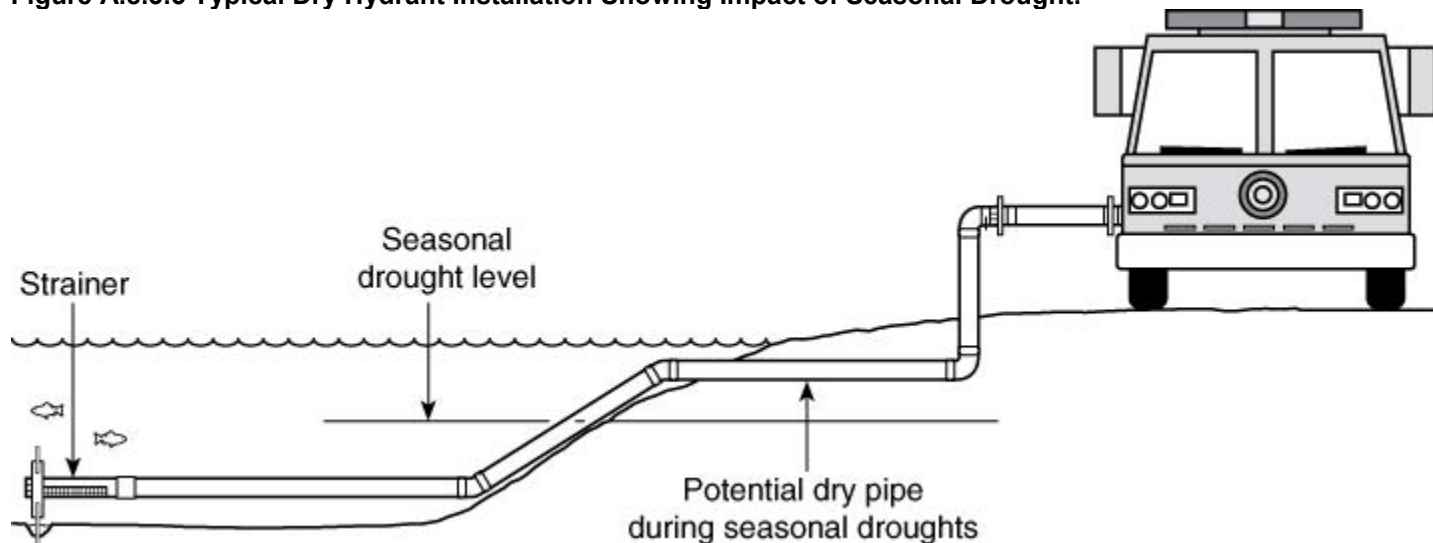
The required flow at the dry hydrant can exceed the delivery flow shown in Chapter 4 to allow for rapidly filling mobile water supply fire apparatus.

A.8.3.5

See Annex I for information on dry hydrant design.

Figure A.8.3.5 shows a typical dry hydrant installation where freezing is not a concern. During seasonal droughts, more of the pipe will be empty, requiring the primer on the pump to be operated longer before water reaches the pump.

Figure A.8.3.5 Typical Dry Hydrant Installation Showing Impact of Seasonal Drought.



A.8.3.6

Metal piping and exposed PVC pipe surfaces should be primed and painted to prevent deterioration.

A.8.3.7

Preferably no more than two 90-degree elbows should be used. It might be desirable to have a wide-sweep elbow [using two 45-degree elbows and a 2 ft (0.6 m) length of pipe] installed at the bottom of the riser where the lateral run connects. In the event of a broken-off hydrant connection, this could permit sections of 2½ in. (65 mm) suction hose

to be inserted down the 6 in. (150 mm) pipe to the water and would permit drafting to continue, although at a much reduced rate of flow.

A.8.3.13

Strainers or screens have been locally fabricated by drilling sufficient $\frac{3}{8}$ in. (10 mm) holes in a length of pipe to equal 4 times the cross-sectional area of the pipe and capping the end with a removable or hinged cover. Remember to leave a solid strip of pipe approximately 4 in. to 5 in. (100 mm to 125 mm) wide along the top to act as a baffle to prevent whirlpooling during periods of low water.

A.8.4

Each dry hydrant site should be evaluated by the fire department to determine the best way, within the fire department's means, for using the water supply. [Figure A.8.4\(a\)](#) and [Figure A.8.4\(b\)](#) show two examples of how dry hydrant installations can be adapted to support the water supply needs of the fire department for specific situations.

Figure A.8.4(a) Multiple Water Supply Points for an Industrial Occupancy.

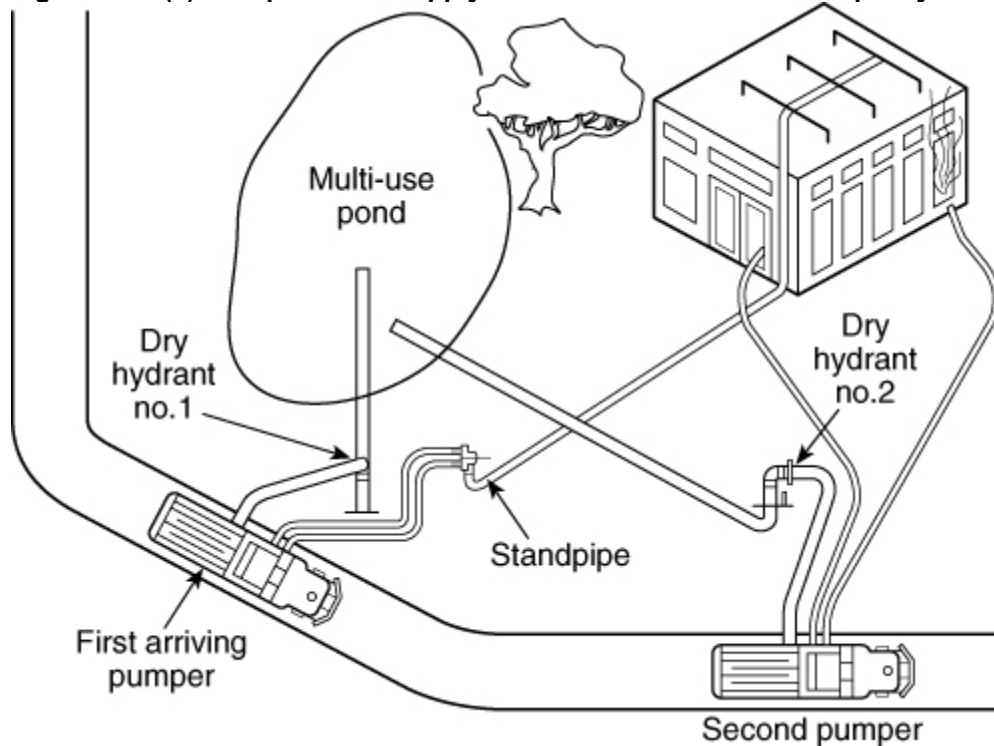
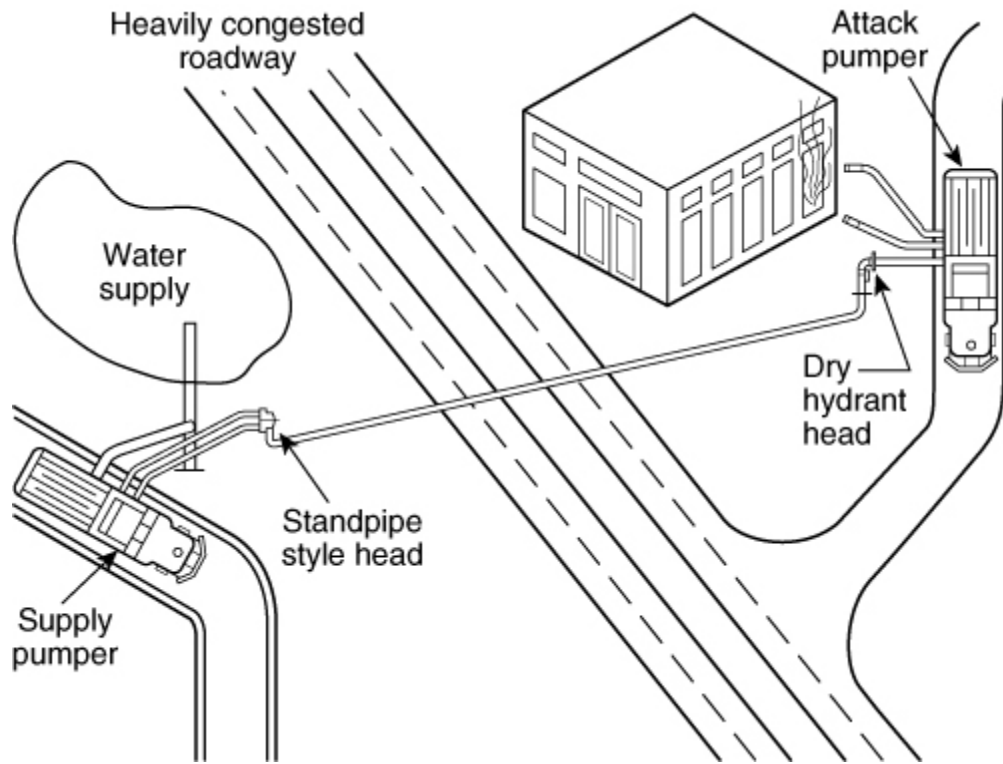


Figure A.8.4(b) Overcoming Roadway Obstructions in Supplying Water to a Building.



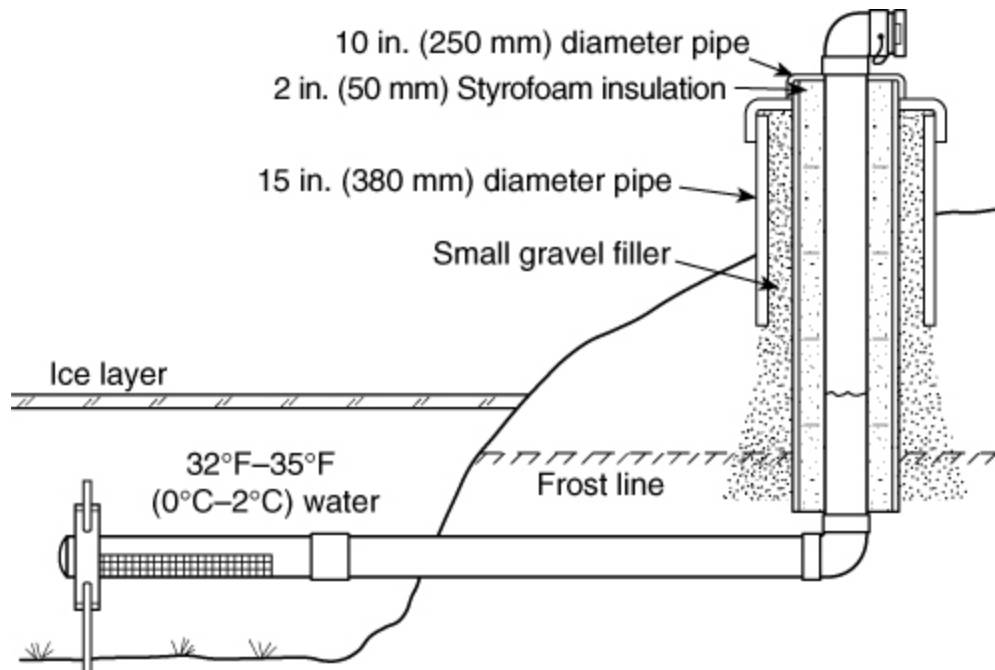
A.8.4.2

It is the responsibility of the AHJ to make inspections of all water sources as often as conditions warrant to note any changes and take appropriate action. This is particularly true during adverse weather conditions, such as droughts, very wet periods, heavy freezing, and following snowstorms.

A.8.4.6

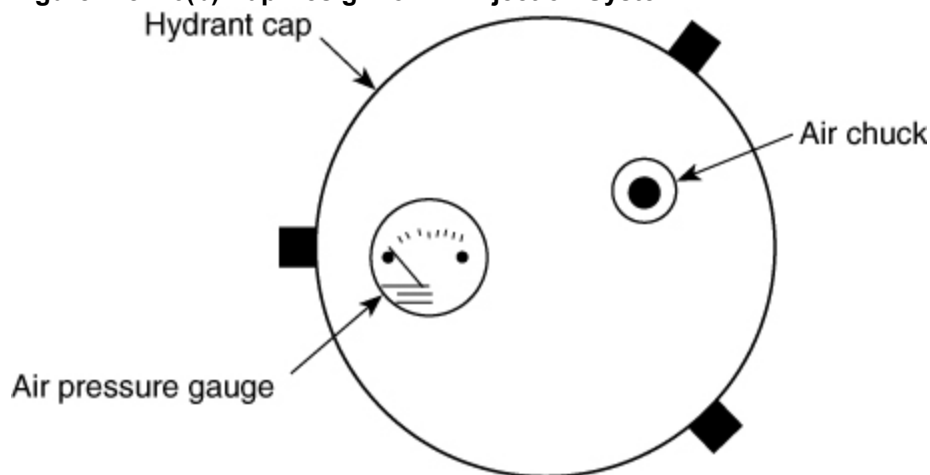
In areas where frost is a problem, the design should ensure that no frost will reach the water in the pipe. One method of preventing the frost from reaching the water in the pipe is to bury the pipe below the frost line and mound up the soil over the pipe and around the riser. Another method is to place an insulating barrier, such as Styrofoam, between the pipe and the surface as shown in [Figure A.8.4.6\(a\)](#) to prevent the frost from reaching the water in the pipe.

Figure A.8.4.6(a) Example of Freeze Protection for Dry Hydrant Subject to Severe Freezing Conditions.



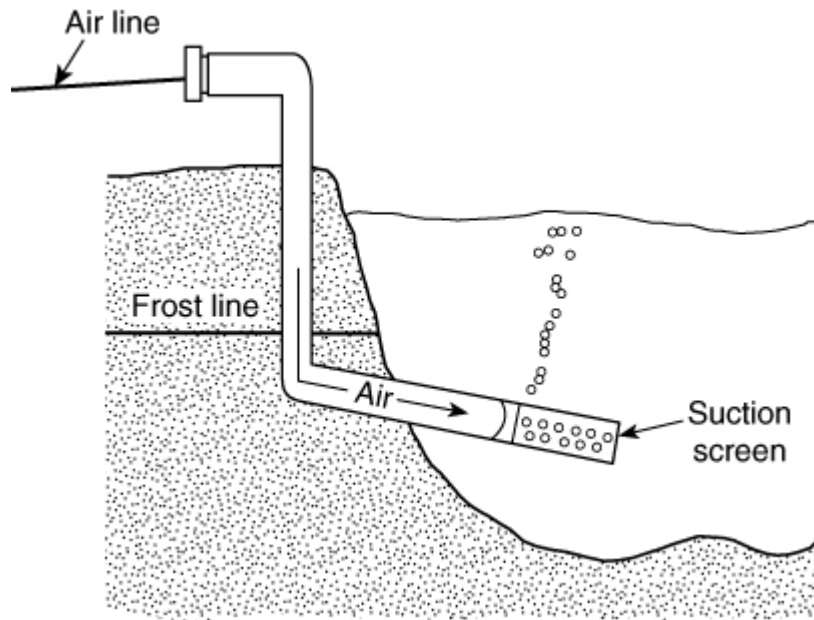
A third method is to inject air into the hydrant and displace the water to prevent freezing. With the water displaced below the frost line, the hydrant is usable year-round. This method requires an air pressure gauge and air chuck to be installed in the cap of the hydrant by drilling and tapping into the metal. [See [Figure A.8.4.6\(b\)](#).] The air pressure gauge should read from 0 psi to 10 psi (0 kPa to 69 kPa), as it is important to be able to accurately monitor the air pressure. In most cases, the air pressure will not read over 5 psi to 6 psi (34 kPa to 41 kPa). If there is a chain for the hydrant cap, it should be removed. Teflon® tape is applied to the threads of the gauge and air chuck.

Figure A.8.4.6(b) Cap Design for Air Injection System.



Air is injected into the hydrant until it bubbles out of the suction screen or the air pressure gauge no longer rises. [See [Figure A.8.4.6\(c\)](#).] This low-pressure air should not cause a safety problem, but all personnel should be advised to remove the hydrant cap slowly to prevent any possible injury. The air pressure gauge should be checked periodically to be sure the water remains displaced in the hydrant. This method requires periodic repressurization. Also, if damage has occurred to cause loss of air pressure, freezing and blockage can occur immediately, making the system unusable in an emergency. The advantage of this method is that if the air chuck or gauge is damaged, it will not affect the airtight integrity of the hydrant while drafting, because the cap is removed for drafting.

Figure A.8.4.6(c) Air Injection Frost-Proofing System.



It is important in any installation where freezing could occur that the suction screen is placed deep enough in the body of water to ensure that ice will not reach the screen. In such cases, divers might be needed to assist in proper screen placement.

A.8.4.7

The AHJ should ensure that an appropriate sign is erected at each water point identifying the site for fire department emergency use and including the name, or a number, for the water supply. Letters and numbers should be at least 3 in. (76 mm) high, with a 1/2 in. (13 mm) stroke, and reflective, as allowed by state and local regulations.

A.8.5

The installation of dry hydrants calls for care in measuring water storage capacities. The useful depth of a lake with a dry hydrant installation, for instance, is from the minimum foreseeable low-water surface level to the top of the suction strainer, not to the bottom of the lake, and cannot be less than 2 ft (0.6 m) of water. This becomes a very important point where hydrants are installed on a body of water affected by tide, or on a lake that is lowered to maintain the flow of a river during drought conditions, to generate power, or that freezes over. Pump suction requires submergence below the water surface of 2 ft (0.6 m) or more, depending on the rate of pumping, to prevent the formation of a vortex or whirlpool. Baffle and anti-swirl plates should be added to minimize vortex problems and allow additional water use. The vortex allows air to enter the pump, which can cause the loss of the pump prime. Therefore, pumping rates should be adjusted as the water level is lowered. This factor should be considered by the WSO when estimating the effective rate at which water can be drawn from all suction supplies.

In water sources where heavy sediment and silt could present a problem of clogged suction screens, the intake screens should be raised above the bottom. [Figure A.8.5\(a\)](#) and [Figure A.8.5\(b\)](#) show two examples of how the strainer can be kept out of mud and silt conditions.

Figure A.8.5(a) Offset Screen Installation for Silt and Mud Conditions.

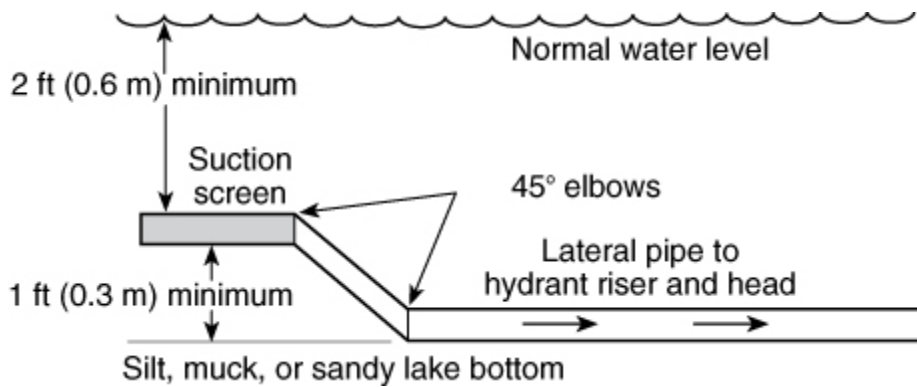
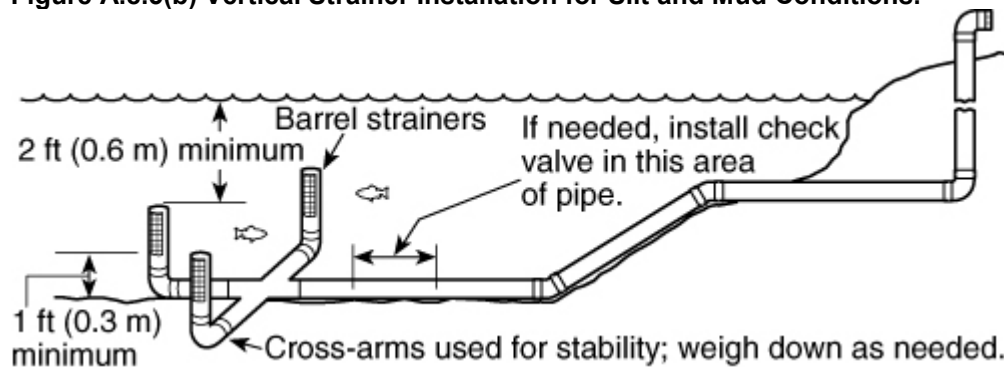


Figure A.8.5(b) Vertical Strainer Installation for Silt and Mud Conditions.



A.8.6

A typical installation process includes the need to excavate or trench soil that might be somewhat unstable and which is often on sloping terrain. Only persons with experience and proper equipment to install underground piping should endeavor to install dry hydrant systems.

A.8.7.1

There could be a need for more frequent inspections due to freezing and droughts. Particular attention should be given to streams and ponds where frequent removal of debris, dredging or excavation of silt, and protection from erosion might be required.

The pond should be maintained as free of aquatic growth as possible. At times it might be necessary to drain the pond to control this growth. Helpful information is available from such sources as the county agricultural extension agent or the U.S. Department of Agriculture.

A.8.7.6

Dry hydrants can be checked and tested by actual drafting as part of the fire department training program. If the tests do not produce the design flow, the fire department should determine what the problem is. It could be necessary to back flush the system to clear leaves and other debris. When a dry hydrant is back flushed, pump pressures should not exceed 20 psi.

A.8.8

Individual records should be kept for each water source. Each water source should also be noted on a master grid map of the area in a manner that will indicate the water source record that contains the pertinent data on that water source.

The water source record should include type of source (stream, cistern, domestic system, etc.), point of access [100 ft (30.5 m) north of barn, etc.], gallons available [flows minimum 250 gpm (950 L/min), 10,000 gal (37,850 L) storage, etc.], and any particular problem such as weather condition or seasonal fluctuations that can make a source unusable. It is good practice to attach a photograph of the water point to the record.

Figure A.8.8(a) shows one way of keeping the information needed on a water source record.

Figure A.8.8(a) Example of Dry Hydrant Water Source Record.

Dry Hydrant Water Source Record

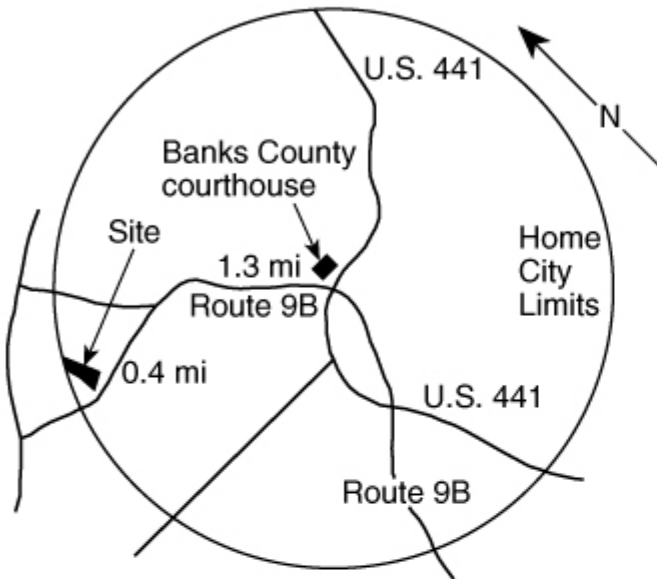
Dry hydrant location: *On the north side of Rt. 9B, 1.7 miles west of US 441. All-weather access*

Latitude/Longitude: 37.345 / 118.575

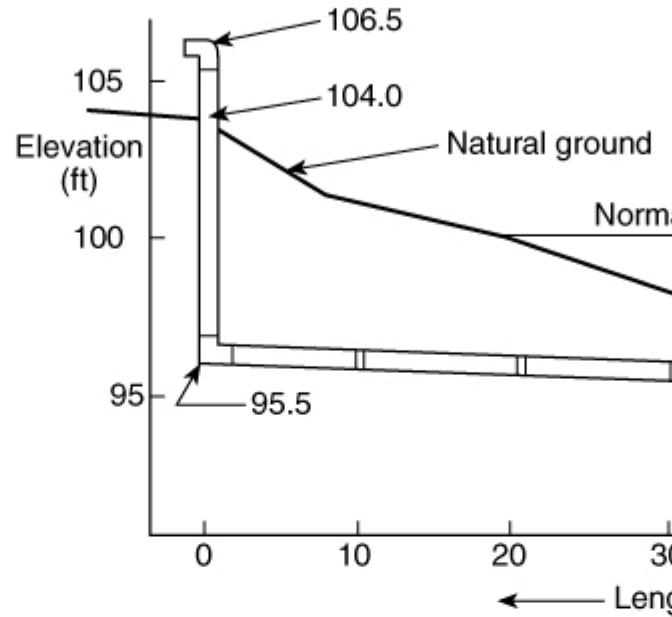
Datum: NAD 83

Dry hydrant ID number: SFD 06

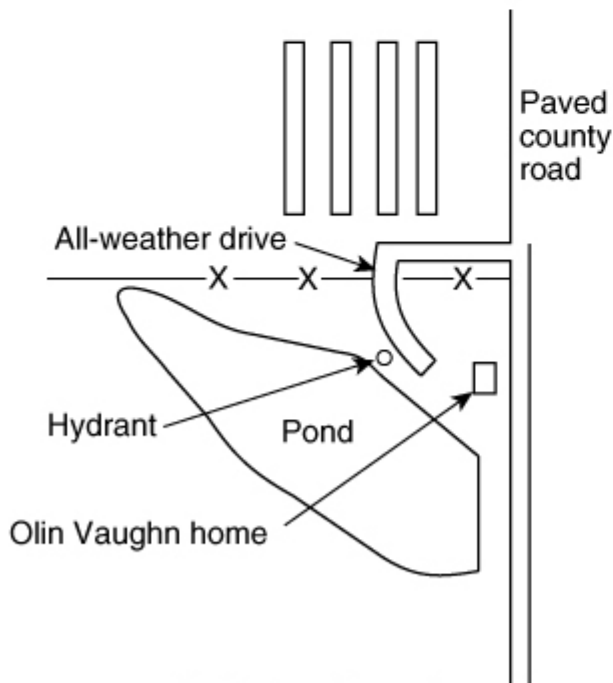
Design flow rate: 1000 gpm



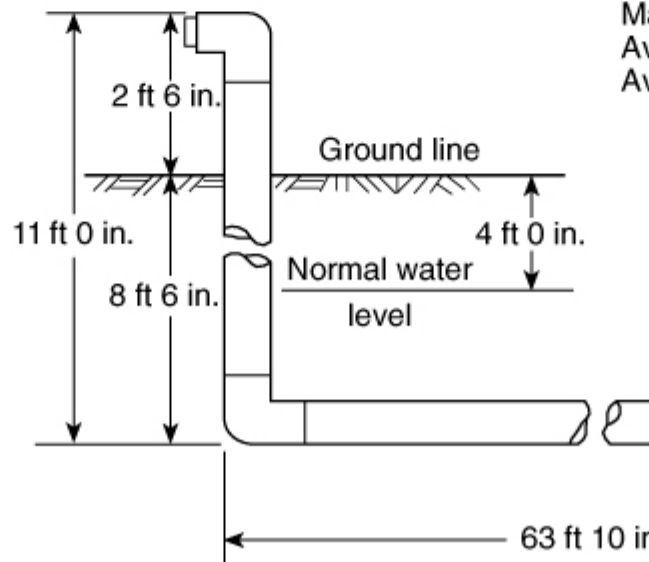
(a) General Location



(c) Profile



(b) Hydrant Location (Site detail)



(d) Pipeline Dimensions

Note: For SI units, 1 in. = 25.4 mm; 1 ft = 0.3048 m.

A map showing the location and amount of water available at each water site should be kept at the fire alarm dispatch center, and copies should be carried on the apparatus most likely to arrive first at the scene, with additional copies in the incident commander's vehicle and the WSO's vehicle.

The water source records should be used as the basis of regular inspections to make sure the source continues to be available and to note any improvement or deterioration of its usefulness. It is suggested that a separate record of inspection and maintenance be maintained on each dry hydrant. [See *Figure A.8.8(b)*.]

Figure A.8.8(b) Inspection and Maintenance Record for Dry Hydrant.

DRY HYDRANT INSPECTION AND MAINTENANCE

Dry hydrant location: _____

Latitude/Longitude: _____ / _____ Datum: _____

Dry hydrant ID number: _____ Design flow rate: _____

Elevation of site above sea level: _____

Date of inspection: _____ By: _____

Depth of water from surface to top of strainer: _____

Amount of water available leaving 2 ft (0.6 m) over strainer: _____

Environmental conditions affecting hydrant (silting, debris, vegetation growth): _____

Erosion around hydrant, access road, bank of water supply: _____

System back flushed? Yes No Problems found: _____

Flow available by actual test: _____

Weed control measures taken: _____

Condition of access road, drainage: _____

Sign present? Yes No Accuracy and clarity of information on sign: _____

Maintenance performed, special observations, remarks: _____

B Alternative Water Supply

This annex is not a part of the requirements of this NFPA document but is included for informational purposes only.

B.1 General.

The fire department operating without a water system or with hydrants on a weak distribution system has the following three means of getting adequate water for fire fighting:

1. (1)

From supplies at or near the incident scene, which can be either constructed or natural supplies

2. (2)

From supplies transported to the scene

3. (3)

By relaying water from a source to the fire scene using large-diameter hose

B.2 Locating Water Sources.

Aircraft and aerial photographs can be very helpful in a survey of static water availability. Such photographs are usually available from the county agriculture department or the county office of planning and zoning. Up-to-date topographical maps from the United States Geological Survey also can be of value in surveying an area for available water sources. Once sites are located, they should be prepared for use according to the recommendations of this annex.

B.3 Natural Water Sources.

B.3.1 Streams.

Streams, including rivers, bays, creeks, and irrigation canals, can represent a continuously flowing source of substantial capacity. Where assessing water from flowing streams as potential water sources, the fire department should consider the following factors:

1. (1)

Flowing Capacity. The stream should deliver water in capacities compatible with those outlined in the water supply requirements of this standard. (See Chapter 4.)

2. (2)

Climatic Characteristics. Streams that deliver water throughout the year and are not susceptible to drought are desirable for fire protection. However, where such streams are not available, a combination of supplies might be necessary. In many sections of the country, streams cannot be relied on during drought seasons. If the stream is subject to flooding or freezing, special evolutions might be necessary to make the stream usable under such conditions. Similar circumstances might exist during wet periods or when the ground is covered with snow.

3. (3)

Accessibility. A river or other source of water might not be accessible to the fire department for use during a fire. Distance and terrain from the all-weather road to the source should be such as to make the water readily available. In some cases, special equipment might be needed to obtain the water. Where roadways are provided to the water source, they should be constructed in accordance with Section 7.5.

4. (4)

Calculating the Flow of a Stream. A simple method for estimating the flow of water in a stream is to measure the width and depth of the stream. Drop a cork or any light floating object into the water, and determine the time it takes the cork to travel 10 ft (3.1 m). To obtain complete accuracy, the sides of the stream should be perpendicular, the bottom flat, and the floating object should not be affected by the wind. Where the sides and bottom of the stream are not uniform, the width and depth can be averaged.

For example, in a stream that is 4 ft (1.2 m) wide and 6 in. (150 mm) deep, the flow of water is such that it takes 45 seconds for a cork to travel 10 ft (3.1 m). Therefore the following formula should be used:

[B.3.1]

$$W \times D \times TD = \text{ft}^3 (\text{m}^3) \text{ of water}$$

W

width of 4 ft (1.2 m)

D

depth of 6 in. (150 mm) = 1/2 ft (0.15 m)

TD

travel distance of 10 ft (3.1 m)

Calculate the flow of water as follows:

$$4 \text{ ft} \times \frac{1}{2} \text{ ft} \times 10 \text{ ft} = 20 \text{ ft}^3 \quad (1.2 \text{ m} \times 0.15 \text{ m} \times 3.1 \text{ m} = 0.56 \text{ m}^3)$$

The cork takes 45 seconds to flow the 10 ft (3.1 m) distance. Divide the volume by the time as follows:

$$20 \text{ ft}^3 (0.56 \text{ m}^3) / 45 \text{ sec} = 0.44 \text{ ft}^3/\text{sec} (0.0125 \text{ m}^3/\text{sec})$$

Convert the flow from seconds to minutes:

$$0.444 \text{ ft}^3/\text{sec} (0.0125 \text{ m}^3/\text{sec}) \times 60 \text{ sec} = 26.64 \text{ ft}^3/\text{min} (0.75 \text{ m}^3/\text{min})$$

Using conversion factors [1 ft³ = 7.48 gal (28.31 L); and 1 gal = 3.785 L], convert these values to gal/min (L/min):

$$26.64 \text{ ft}^3/\text{min} \times 7.48 = 199.27 \text{ gal}/\text{min} (754 \text{ L}/\text{min})$$

For assistance in more accurately determining stream flow, contact the state department of natural resources, soil conservation service, county cooperative extension agents, or U.S. Geological Survey.

B.3.2 Ponds.

Ponds can include lakes or farm ponds used for watering livestock, irrigation, fish culture, recreation, or other purposes, while serving a secondary function for fire protection. Valuable information concerning the design of ponds can be obtained from county agricultural agents, cooperative extension offices, county engineers, and so forth. Most of the factors for assessing water from streams are pertinent to ponds, with the following items to be considered:

1. (1)

Minimum annual level should be adequate to meet water supply needs of the fire potential the pond serves.

2. (2)

Freezing of a stationary water supply, contrasted with the flowing stream, presents a greater problem.

3. (3)

Silt and debris can accumulate in a pond or lake, reducing its actual capacity, while its surface area and level remain constant. These conditions can provide a deceptive impression of capacity and call for at least

seasonal inspections. See [Figure A.8.5\(b\)](#) for an example of protective measures for silt and mud conditions.

B.3.3 Other Natural Sources.

Other natural sources might include springs and artesian wells. Individual springs and occasional artesian water supplies exist in some areas and, again, while generally of more limited capacity, they can be a useful water supply, subject to reasonable application of the factors listed for ponds and streams. In many cases, it might be necessary to create a temporary natural pool or pond with a salvage cover for the purpose of collecting enough water for the fire department's use.

B.4 Cisterns.

B.4.1 General.

Cisterns are one of the oldest sources of emergency water supply, both for fire fighting and drought storage. They are very important sources of water for domestic consumption, as well as for fire fighting and drought storage in many rural and beach areas.

Cisterns should have a minimum usable volume as determined by the AHJ, based on the methods described in Chapter 4. There is no real limit to the maximum capacity. It is convenient for a cistern to be adjacent to a public right-of-way for winter maintenance and access. [See [Figure B.4.1\(a\)](#).] The dry hydrant associated with the cistern should be located at least 100 ft (30 m) from the closest structure.

Figure B.4.1(a) Cistern Site.

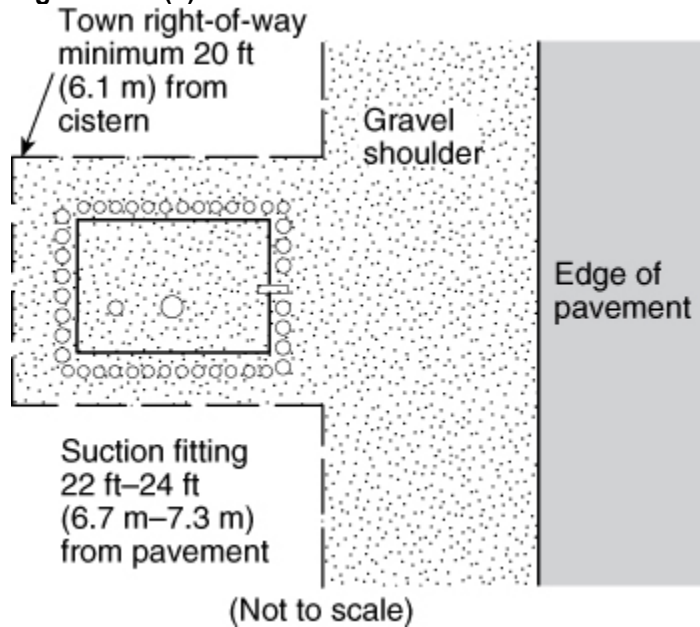
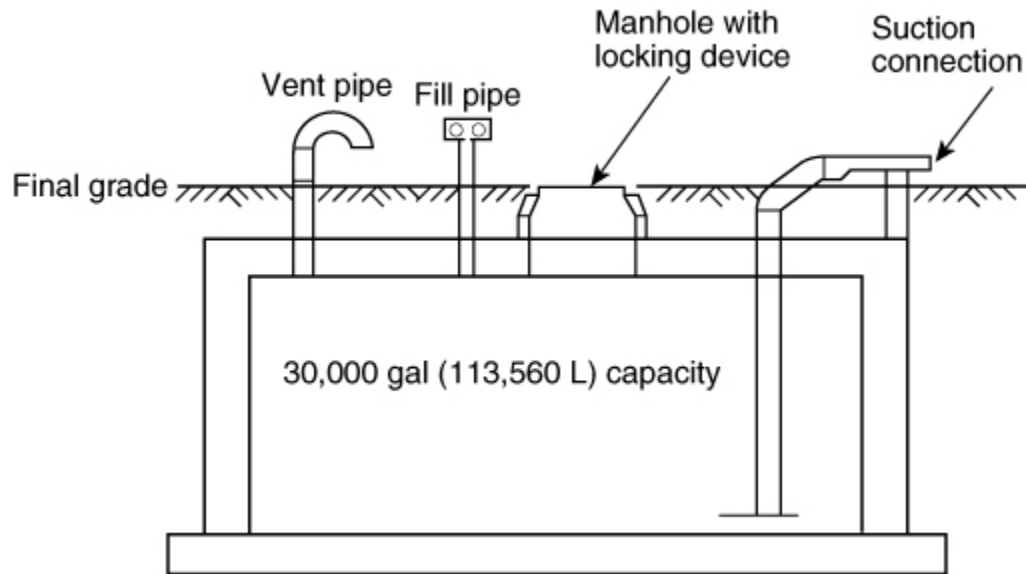


Figure B.4.1(b) Typical Cistern.



The water level of a cistern can be maintained by rainfall, water pumped from a well, water hauled by a mobile water supply apparatus, or the seasonal high water of a stream or river. The top of the cistern should be a minimum of 2 ft (0.6 m) below grade.

Cisterns should be capped for safety, but they should have openings to permit inspections and use of suction hose when needed. [See [Figure B.4.1\(b\)](#).]

B.4.2 Construction of Cisterns.

Construction of cisterns is governed by local conditions of soil and material availability. Some engineering considerations to be used in designing cisterns include the following:

1. (1)

The base, walls, and roof should be designed for highway loading and for the prevailing soil conditions.

2. (2)

If groundwater conditions are high, the cistern should not float when it is empty.

3. (3)

Suction piping should be designed to minimize whirlpooling.

4. (4)

Vent piping should be of sufficient size to allow drafting from the cistern at the maximum capability permitted by the suction piping.

Maintenance factors to be considered by the fire department include the danger of silting, evaporation or other low water conditions, and the freezing problems discussed in [B.3.2](#).

B.4.3 Cistern Specifications.

Some governing bodies require developers to provide cisterns with all subdivisions that are constructed, where on-site water systems are not available or adequate.

The following specifications for cistern design and construction are used by the New Boston Fire Department, New Boston, NH:

1. (1)

Cisterns must be located no more than 2200 ft (671 m) truck travel distance from the nearest lot line of the furthest lot.

2. (2)

The design of a cistern must be trouble-free and last a lifetime.

3. (3)

The cistern capacity must be 30,000 gal (113,560 L) minimum, available through the suction piping system.

4. (4)

The suction piping system must be capable of delivering 1000 gpm (3800 L/min).

5. (5)

The design of the cistern must be submitted to the AHJ for approval prior to construction. All plans must be signed by a licensed/registered professional engineer.

6. (6)

The entire cistern must be rated for highway loading, unless specifically exempted by the AHJ.

7. (7)

Each cistern must be sited to the particular location by a registered engineer and approved by the AHJ.

8. (8)

Cast-in-place concrete must achieve a 28-day strength of a gauge pressure of 3000 psi (20,700 kPa). It must be placed with a minimum of 4 in. (100 mm) slump and vibrated in a professional manner.

9. (9)

The concrete must be mixed, placed, and cured without the use of calcium chloride. Winter placement and curing must follow the accepted American Concrete Institute (ACI) codes.

10. (10)

All suction and fill piping must be ASTM International Schedule 40 steel. All vent piping must be ASTM Schedule 40 PVC.

11. (11)

All PVC piping must have glued joints.

12. (12)

Any reducing fittings used in the piping must be an eccentric reducer.

13. (13)

The final suction connection must be 4 1/2 in. (115 mm) male National Standard hose thread and must be capped.

14. (14)

The filler pipe siamese must have 2 1/2 in. (65 mm) female National Standard threads with plastic caps.

15. (15)

The entire cistern must be completed and inspected before any backfilling is done.

16. (16)

All backfill material must be screened gravel with no stones larger than 1 1/2 in. (38 mm) and must be compacted to 95 percent in accordance with ASTM D1557, *Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort [56,000 ft-lbf/ft³ (2,700 kN-m/m³)]*.

17. (17)

Bedding for the cistern must consist of a minimum of 12 in. (300 mm) of 3/4 in. to 1 1/2 in. (20 mm to 40 mm) crushed, washed stone, compacted. No fill can be used under the stone.

18. (18)

The filler pipe siamese must be 36 in. (900 mm) above final backfill grade.

19. (19)

The suction pipe connection must be 20 in. to 24 in. (500 mm to 600 mm) above the level of the shoulder where vehicle wheels will be located when the cistern is in use.

20. (20)

The suction pipe must be supported either to the top of the tank or to a level below the frost line.

21. (21)

The base must be designed so that the cistern will not float when empty.

22. (22)

The perimeter of the cistern at floor/wall joint must be sealed with 8 in. (200 mm) PVC waterstop.

23. (23)

After backfilling, the cistern must be protected by fencing or large stones.

24. (24)

Backfill over the tank must have one of the following characteristics:

1. (a)

4 ft (1.2 m) of fill.

2. (b)

The top and highest 2 ft (0.6 m) of sides of the cistern must be insulated with vermin-resistant foam insulation and 2 ft (0.6 m) of fill.

3. (c)

All backfill must extend 10 ft (3.1 m) beyond the edge of the cistern, and have a maximum 3:1 slope, loamed and seeded.

25. (25)

The bottom of the suction pipe to the pumper connection must not exceed 14 ft (4.25 m) vertical distance.

26. (26)

The pitch of the shoulder and vehicle pad from the edge of the pavement to the pumper suction connection must be 1 percent to 6 percent downgrade.

27. (27)

The shoulder and vehicle pad must be of sufficient length to permit convenient access to suction connection when the pumper is set at 45 degrees to road.

28. (28)

All construction, backfill, and grading material must be in accordance with proper construction practices and acceptable to the AHJ.

29. (29)

All horizontal suction piping must slope slightly uphill toward the pumper connection.

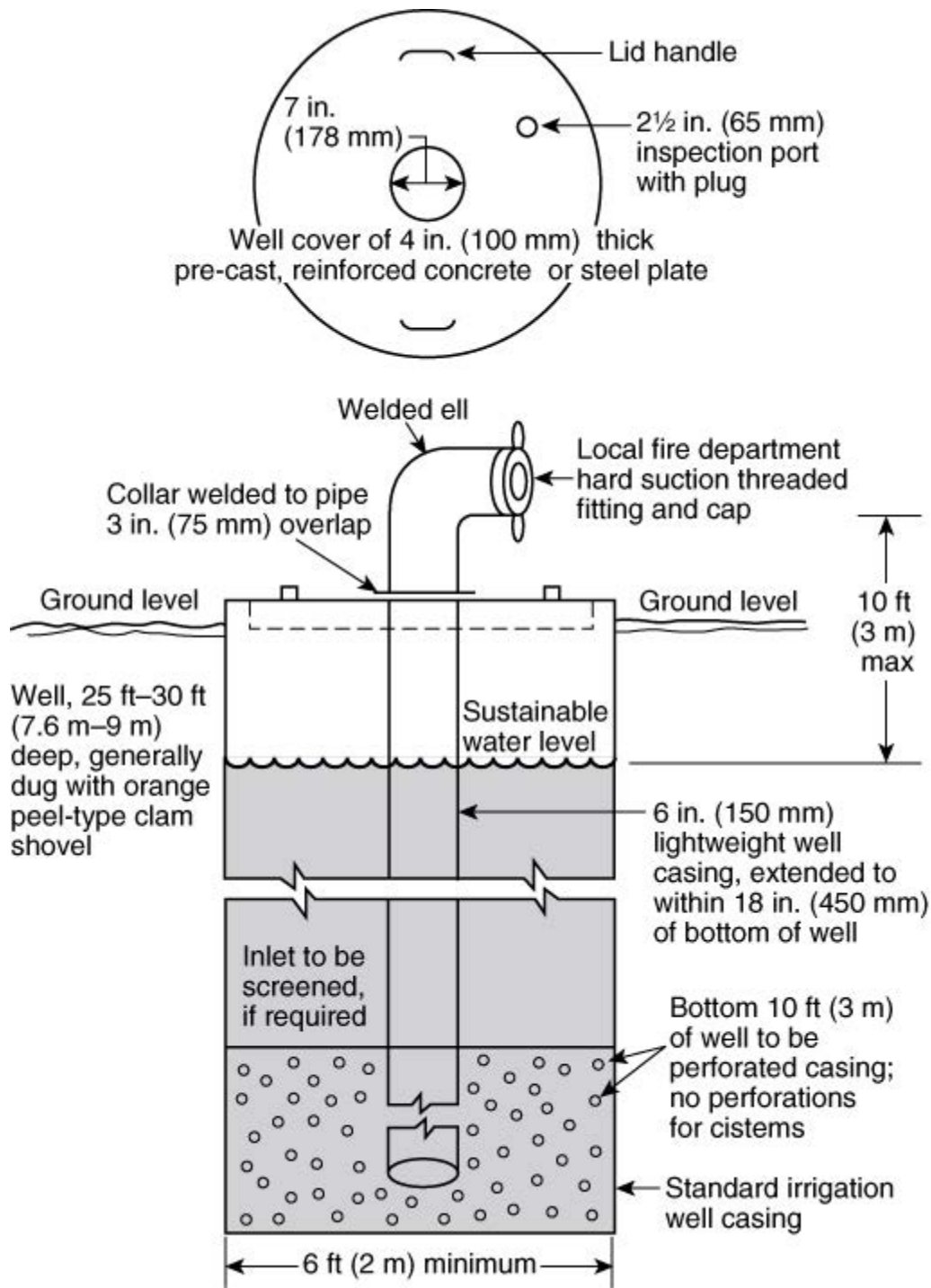
30. (30)

The installer is responsible for completely filling the cistern and maintaining it full until the installation is accepted by the AHJ.

As an alternative where soil and groundwater level conditions permit, a properly designed well can be used to provide water. **Figure B.4.3** illustrates a typical well with a dry hydrant installed. Local conditions must be considered in all cases. A high water table that allows a suction lift of not more than 10 ft (3 m) must be present. The well must be installed in gravel or sand, not clay.

The same design is suitable for a cistern if the bottom of the casing is not perforated.

Figure B.4.3 Typical Well or Cistern with Dry Hydrant Installed.



B.4.4 Guide to Cistern Capacity.

The following formula can also be used to calculate the usable amount of water in a round cistern with vertical sides:

[B.4.4a]

$$23.56 \times \left(\frac{D_f}{2} \right)^2 \times H_f = \text{capacity in gallons}$$

[B.4.4b]

$$3141.6 \times \left(\frac{D_m}{2} \right)^2 \times H_m = \text{capacity in liters}$$

D_f

inside diameter of the cistern in feet, or D_m inside diameter in meters

H_f

usable depth of water in the cistern in feet, or H_m = usable depth of water in meters

The following formula can be used to calculate the usable amount of water in a rectangular cistern:

[B.4.4c]

$$L_f \times W_f \times H_f \times 7.5 \text{ gal} = \text{capacity in gallons,}$$

or

[B.4.4d]

$$L_m \times W_m \times H_m \times 1000 \text{ L} = \text{capacity in liters}$$

L_f

length in feet, or L_m = length in meters

W_f

width in feet, or W_m = width in meters

H_f

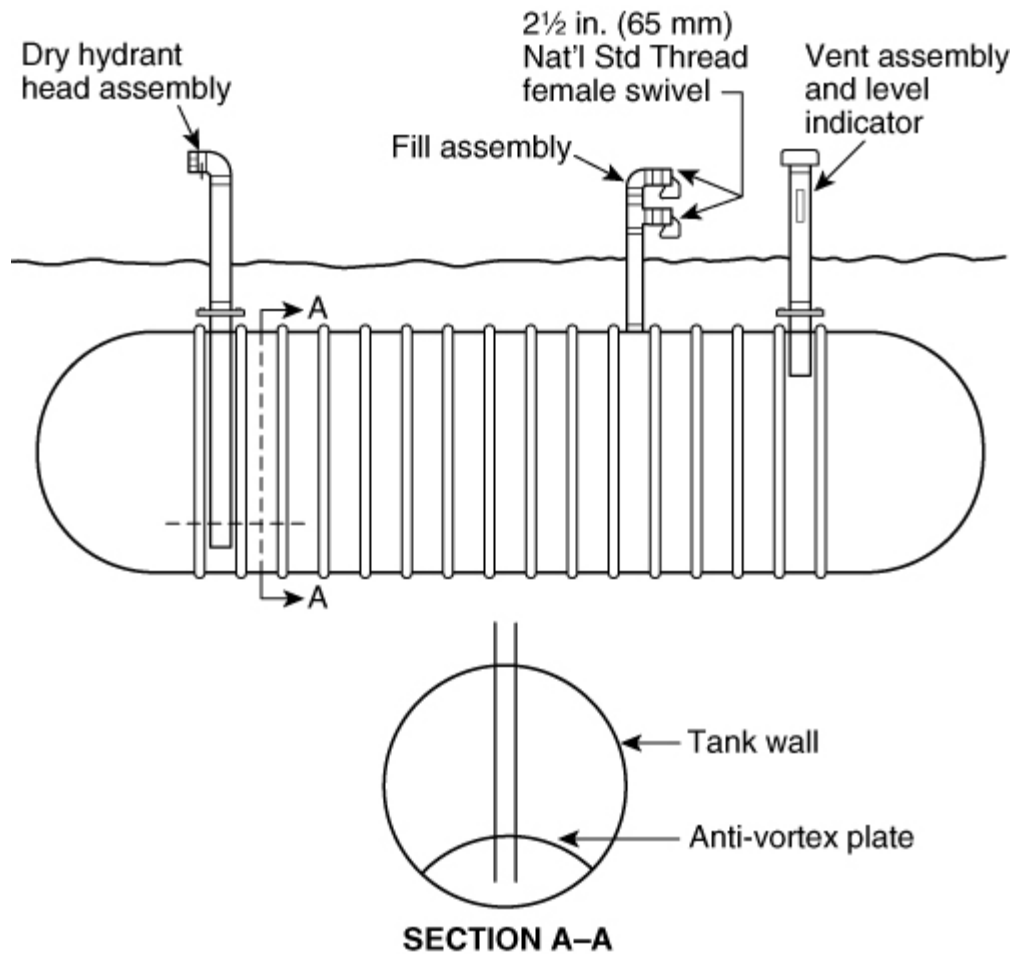
usable depth of water in feet, or H_m = usable depth of water in meters

When reference is made to water depths in cisterns, swimming pools, streams, lakes, and other sources, it should always be remembered that the depth with which the fire fighter is concerned is the usable depth. In a cistern, a bottom bed of gravel protecting a dry hydrant inlet, for instance, reduces the usable depth of the area above the gravel.

B.5 Fiberglass Underground Storage Tanks.

Some fire departments are using new fiberglass underground storage tanks to store water for fire protection. This application is very similar to using a cistern, except that the tanks are manufactured off site whereas a cistern is built on site. These tanks are fitted with suction and fill piping and placed strategically around the community. (See *Figure B.5.*)

Figure B.5 Example of Construction of Water Cisterns Using an Underground Fiberglass Storage Tank.



B.6 Swimming Pools.

Swimming pools are an increasingly common source of water for fire protection. Even in some areas with normally adequate water supplies from hydrants, pools have been a factor in providing protection, such as where water demands have exceeded availability because of wildfires or natural disasters. Swimming pools provide an advantage in that they are sources of clean water, but a major drawback is their poor accessibility for large, heavy fire apparatus. There are some areas of the country in which there are more swimming pools than fire hydrants. If the fire department intends to use a swimming pool as a supply of water, it is a good practice to work with the pool owner and preplan how the water will be accessed.

B.6.1 Pool Accessibility.

If fire department accessibility is considered at the time the pool is designed, a usable water supply should be available to the fire department for directly supplying hose lines or filling mobile water supply apparatus. Most swimming pools are built in areas requiring security fencing or walls, and these can complicate accessibility. Fences and walls can be designed for fire department use or, depending on construction, can be entered forcibly. In most cases, a solution to the problem of accessibility can be achieved through preplanning. A solution might call for long lengths of suction hose, portable pumps, dry hydrants, siphon ejectors, or properly spaced gates. Lightweight or flexible-type suction hose can be advantageous in these situations. Portable (or floating) pumps designed for large-volume delivery at limited pressures can deliver water to portable folding tanks or fire department pumpers and are frequently ideal where accessibility problems exist. (See Section E.3.)

A swimming pool located virtually under the eaves of a burning house can be a very poor location from which to pump if there is fire exposure to the work area. Pumping from a neighboring pool if it is close enough or using a water-hauling program is frequently preferable to pumping from a pool adjacent to the burning house.

B.6.2 Pool Capacity.

The following formula is a short-form method of estimating pool capacity:

[B.6.2a]

$$L_f \times W_f \times D_f \times 7.5 \text{ gal/ft}^3 = \text{estimated capacity in gallons}$$

or

[B.6.2b]

$$L_m \times W_m \times D_m \times 1000 \text{ L/m}^3 = \text{estimated capacity in liters}$$

L_f

length in feet or L_m = length in meters

W_f

width in feet or W_m = width in meters

D_f

estimated average depth from water line in feet or D_m = estimated average depth from water line in meters

Note that the dimensions used in the formula should be an average if the pool is of a stylized construction.

Consideration should be given for providing more suction hose on fire apparatus responding in areas dependent on swimming pools. Fast rigging of such suction hose demands special training. Using long lengths of hose over walls and other obstacles typical of areas around swimming pools demands techniques other than those used for drafting from ponds or streams. Adequate pre-fire planning will provide knowledge of individual pools so that the method of obtaining water at the property is known.

B.6.3 Care in Use of Pools.

Care has to be exercised to be sure structural damage will not be done to a pool and the surrounding area if the water is used for fire fighting. Lightly built cement, Gunite®, or poured concrete pools can present a danger of structural damage, cracking, or collapse when drained. If a pool is located in extremely wet soil, it will tend to float upwards when drained. In these cases, the pool should be refilled as soon as the fire is under control and mobile water supply apparatus can be released from fire duties.

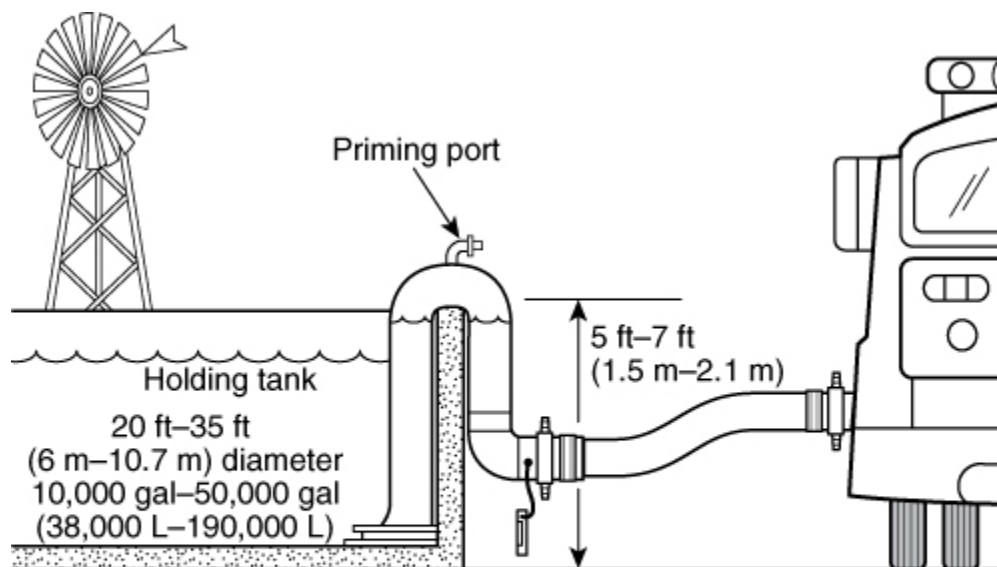
Some pools are compacted earth covered by a plastic surfacing or light-gauge metal panels placed against such earth or a special fill. Such pools can collapse internally if emptied. It might be possible to use a limited portion of such water sources but not possible to use the entire depth apparently available. It might be prudent not to use these pools at all.

Another consideration is whether the ground surrounding a pool will support the weight of a fire department vehicle without collapsing. The fire department should consult with the builder or installer of any pool being considered as a water source to determine the various pool limitations.

B.7 Livestock Watering Ponds and Tanks.

Many farms have livestock water tanks and other similar water facilities. If the owner is made aware of the water needs for fire fighting on the farm, such tanks and ponds can be sized to provide adequate volume for both farm and fire department use and located to be readily available to the fire department. Tanks should be placed on the edge of the barnyard where they are accessible for fire apparatus to take suction through a connection on the tank or with suction hose directly into the tank. These watering tanks and ponds are often filled and maintained full by a pump operated by a windmill or by an electric pump. **Figure B.7** illustrates a dry hydrant system for holding tanks and procedures for successfully using the system as a water source.

Figure B.7 Drafting Procedure for Farm Holding Tanks.



- (1) Connect hard suction
- (2) Open apparatus tank valve and flood suction hose
- (3) Connect hand priming pump to priming port
- (4) Operate priming pump until water is flowing from priming pump
- (5) Engage the fire pump and open needed discharge lines

B.8 Stored Water for Sprinkler Systems.

In some rural areas, the only large water supply might be the storage provided for the sprinkler system in a building. The supply might be from an underground water distribution system, a pond or suction tank with pumps, an elevated tank, or a combination of these. In many cases, pre-plan arrangements can be made to use some of the stored water for fire protection away from the property. This is particularly true if the property owner is contacted before installation of the sprinkler protection, as it might be necessary to increase the storage capacity or to install a hydrant that is accessible to the fire department and connected to the private yard distribution system.

Extreme care should be exercised in the use of water supplies provided for sprinkler protection. Unless the water supply has been specifically designed to provide water for fire protection away from the property, it should not be used. (See Annex F for additional information on sprinkler systems.)

B.9 Driven Wells.

Wells, well systems, and irrigation pumps are becoming increasingly popular as water supplies for fire-fighting purposes at industrial properties, shopping centers, subdivisions, and farmhouses located in rural areas beyond the reach of a municipal-type water distribution system.

In areas with suitable soil conditions such as those of a very sandy nature, it might be possible to use driven wells or water-jetted wells to obtain water for fire fighting. These wells are, in essence, pipes driven into the ground, usually with perforations about the base to permit entry of water. From the threaded pipe head (or a fitting attached to the body of the pipe), a pump connection can be made to draft water the same as from a well head hydrant. A high water table is a prerequisite to using this method. Fire-fighting units in areas where well head hydrants are available should have the necessary adapters to utilize such sites.

B.10 Pre-Fire Planning for Water Supply Operations.

Once the water supply requirements have been calculated and the water sources identified, the type and amount of fire equipment needed to respond on the first alarm to deliver that requirement should be determined. The objective should be to have the response of fire apparatus match the need to deliver a constant flow at least equal to the water flow requirements. The fire department should develop standard operating guidelines for hauling or relaying water to fires. The guidelines should be verified under training conditions prior to a fire emergency. Training exercises should include locating fire equipment at a fire scene to protect the fire property and the exposures, establishing operations at the water source to either fill water tanks on fire apparatus or pump into a relay, designating fire lanes or routes

between the water source and the incident scene, and reviewing and modifying the operations to meet unusual conditions. Once implemented, the standard operating guidelines should be initiated for all reported structure fires, recognizing that they can be discontinued or canceled after the officer in charge has evaluated the fire and determined that additional water supply will not be needed.

G Municipal-Type Water System

This annex is not a part of the requirements of this NFPA document but is included for informational purposes only.

G.1 General.

The water supply for fire-fighting purposes, as specified in Chapter 4, is considered the minimum water supply necessary for basic fire fighting. It is assumed that the water is made available at the fire scene from a single water point such as a dry hydrant, often using a mobile water supply shuttle in conjunction with a portable folding tank(s) or a water supply relay.

The AHJ can determine that a municipal-type water system is warranted. This determination might be made as a result of an on-site survey of buildings by the fire department having jurisdiction or by review of architectural plans of proposed construction and planned development.

G.2 Need for Municipal-Type Water System.

The determination of the need of a municipal-type water system is based on anticipation of a large-scale fire situation in a commercial building or a large area residential building. Such a situation would require a water supply delivery system that can best be achieved by a water system that includes hydrants, a distribution system, storage, and a source of supply capable of delivering a minimum flow of 250 gpm (950 L/min) at a gauge pressure of 20 psi (140 kPa) residual pressure for a 2-hour duration.

G.3 Developing Fire Flow Requirements for a Municipal-Type Water System.

The *Guide for Determination of Needed Fire Flow* is available from ISO (Insurance Service Office) and can be of assistance in determining the needed fire flow (NFF) of commercial and residential structures. The guide can be accessed from the Verisk Analytics website at <http://www.isomitigation.com/ppc/3000/ppc3001.html> or it may be ordered by mail from:

ISO National Processing Center

1000 Bishops Gate Boulevard, Suite 300

P.O. Box 5404

Mt. Laurel, NJ 08054-5404

H Calculating Minimum Water Supplies

This annex is not a part of the requirements of this NFPA document but is included for informational purposes only.

H.1 General.

This annex provides examples of calculations of minimum water supplies as required in Chapter 4, and precalculated minimum water supply tables by occupancy hazard classification and construction classification where no exposures are present.

H.2 Structures Without Exposure Hazards.

The examples in H.2.1 through H.2.3 show calculations of minimum water supplies for structures where there are no exposures.

H.2.1 Residential.

A dwelling has the following characteristics: (1) a ground floor of 50 ft × 24 ft; (2) two stories of 8 ft each; (3) a pitched roof, 8 ft from attic floor to ridgepole; and (4) wood frame (Type V) construction. The calculations for minimum water supply are as follows:

Ground floor area = 50 ft × 24 ft = 1200 ft²

Height = 8 ft + 8 ft + 4 ft = 20 ft (For pitched roofs, use half the distance from attic floor to ridgepole.)

Total volume = 1200 ft² × 20 ft = 24,000 ft³

The occupancy hazard classification number is 7 (see 5.2.5). The construction classification number is 1.0, maximum for a frame dwelling (see 6.2.2), resulting in the following calculations:

[H.2.1]

$$\frac{24,000}{7} \times 1.0 = 3429 \text{ gal}$$

The minimum water supply equals 3429 gal.

For SI units: 1 ft = 0.305 m; 1 ft² = 0.092 m²; 1 ft³ = 0.028 m³; 1 gal = 3.785 L.

H.2.2 Commercial.

A farm equipment shed has the following characteristics: (1) a ground floor of 125 ft × 100 ft; (2) height of 14 ft; (3) one story; (4) flat roof; and (5) noncombustible (Type II) construction. The calculations for minimum water supply are as follows:

Ground floor area = 125 ft × 100 ft = 12,500 ft²

Height = 14 ft

Total volume = 12,500 ft² × 14 ft = 175,000 ft³

The occupancy hazard classification number is 5 (see 5.2.3), and the construction classification number is 0.75 (see Table 6.2.1), resulting in the following calculations:

[H.2.2]

$$\frac{175,000}{5} \times 0.75 = 26,250 \text{ gal}$$

The minimum water supply equals 26,250 gal.

For SI units: 1 ft = 0.305 m; 1 ft² = 0.092 m²; 1 ft³ = 0.028 m³; 1 gal = 3.785 L.

H.2.3 Multiple-Structure Calculations.

A property has two structures on it, a church and an office, which are 60 ft apart, so there is no exposure hazard. However, the two buildings will be served by a single water source, which will need to be sized for the largest demand.

The church has the following characteristics: (1) a ground floor of 130 ft × 60 ft; (2) height of 25 ft to ridgepole (15 ft from ground to eaves, with pitched roof 10 ft above the eaves); and (3) brick (Type III) construction. The calculations for minimum water supply are as follows:

Ground floor area = 130 ft × 60 ft = 7800 ft²

Height = 15 ft + 5 ft = 20 ft (For pitched roofs, use half the distance from attic floor to ridgepole.)

Total volume = 7800 ft² × 20 ft = 156,000 ft³

The occupancy hazard classification number is 6 (see 5.2.4), and the construction classification number is 1.0 (see Table 6.2.1), resulting in the following calculation:

[H.2.3(1)]

$$\frac{156,000}{6} \times 1.0 = 26,000 \text{ gal}$$

The minimum water supply for the church equals 26,000 gal.

The office building has the following characteristics: (1) a ground floor of 175 ft × 100 ft; (2) two stories, each story 10 ft high; (3) a flat roof; and (4) fire-resistive (Type I) construction. The calculations for minimum water supply are as follows:

Ground floor area = 175 ft × 100 ft = 17,500 ft²

Height = 10 ft + 10 ft = 20 ft

Total volume = 17,500 ft² × 20 ft = 350,000 ft³

The occupancy hazard classification number is 7 (see 5.2.5), and the construction classification number is 0.5 (see Table 6.2.1), resulting in the following calculations:

[H.2.3(2)]

$$\frac{350,000}{7} \times 0.5 = 25,000 \text{ gal}$$

The minimum water supply for the office equals 25,000 gal.

This is a multiple-structure location served from a single water source, with the supply determined by the structure having the larger water supply requirement. The water supply for the church is 26,000 gal, and the water supply for the office is 25,000 gal. Therefore, the church has the larger water supply requirement and the minimum water supply for the site equals 26,000 gal.

For SI units: 1 ft = 0.305 m; 1 ft² = 0.092 m²; 1 ft³ = 0.028 m³; 1 gal = 3.785 L.

H.2.4 Precalculated Water Supply.

Table H.2.4(a) through Table H.2.4(c) provide a quick method for determining the water supply requirements of this standard for structures without exposures.

To use the tables, first determine the total volume of the structure in cubic feet. Then, locate the closest corresponding volume in the left-hand column and read across to find the total gallons of water supply required for the occupancy hazard classification and the construction classification of the structure.

For example, a farm storage building such as a barn (occupancy hazard classification 4) of ordinary (Type III) construction (construction classification 1.0) with a total volume of 160,000 ft³ (4480 m³) will produce, using Table H.2.4(a), a water supply requirement of 40,000 gal (151,400 L).

Table H.2.4(a) Precalculated Minimum Water Supplies (in Gallons) for Occupancy Hazard Classifications 3 and 4 by Construction Classification (No Exposures)

Volume (ft ³)	Occupancy Hazard Classification 3				Occupancy Hazard Classification 4			
	Construction Classification				Construction Classification			
	0.5	0.75	1.0	1.5	0.5	0.75	1.0	1.5
8,000	2,000	2,000	2,667	4,000	2,000	2,000	2,000	3,000
10,000	2,000	3,000	4,000	6,000	2,000	2,250	3,000	4,500
16,000	2,667	4,000	5,333	8,000	2,000	3,000	4,000	6,000
20,000	3,333	5,000	6,667	10,000	2,500	3,750	5,000	7,500
24,000	4,000	6,000	8,000	12,000	3,000	4,500	6,000	9,000
28,000	4,667	7,000	9,333	14,000	3,500	5,250	7,000	10,500
32,000	5,333	8,000	10,667	16,000	4,000	6,000	8,000	12,000
36,000	6,000	9,000	12,000	18,000	4,500	6,750	9,000	13,500
40,000	6,667	10,000	13,333	20,000	5,000	7,500	10,000	15,000
44,000	7,333	11,000	14,667	22,000	5,500	8,250	11,000	16,500
48,000	8,000	12,000	16,000	24,000	6,000	9,000	12,000	18,000
52,000	8,667	13,000	17,333	26,000	6,500	9,750	13,000	19,500
56,000	9,333	14,000	18,667	28,000	7,000	10,500	14,000	21,000
60,000	10,000	15,000	20,000	30,000	7,500	11,250	15,000	22,500

Table H.2.4(a) Precalculated Minimum Water Supplies (in Gallons) for Occupancy Hazard Classifications 3 and 4 by Construction Classification (No Exposures)

Volume (ft ³)	Occupancy Hazard Classification 3				Occupancy Hazard Classification 4			
	Construction Classification				Construction Classification			
	0.5	0.75	1.0	1.5	0.5	0.75	1.0	1.5
64,000	10,667	16,000	21,333	32,000	8,000	12,000	16,000	24,000
68,000	11,333	17,000	22,667	34,000	8,500	12,750	17,000	25,500
72,000	12,000	18,000	24,000	36,000	9,000	13,500	18,000	27,000
76,000	12,667	19,000	25,333	38,000	9,500	14,250	19,000	28,500
80,000	13,333	20,000	26,667	40,000	10,000	15,000	20,000	30,000
84,000	14,000	21,000	28,000	42,000	10,500	15,750	21,000	31,500
88,000	14,667	22,000	29,333	44,000	11,000	16,500	22,000	33,000
92,000	15,333	23,000	30,667	46,000	11,500	17,250	23,000	34,500
96,000	16,000	24,000	32,000	48,000	12,000	18,000	24,000	36,000
100,000	16,667	25,000	33,333	50,000	12,500	18,750	25,000	37,500
104,000	17,333	26,000	34,667	52,000	13,000	19,500	26,000	39,000
108,000	18,000	27,000	36,000	54,000	13,500	20,250	27,000	40,500
112,000	18,667	28,000	37,333	56,000	14,000	21,000	28,000	42,000
116,000	19,333	29,000	38,667	58,000	14,500	21,750	29,000	43,500
120,000	20,000	30,000	40,000	60,000	15,000	22,500	30,000	45,000
124,000	20,667	31,000	41,333	62,000	15,500	23,250	31,000	46,500
128,000	21,333	32,000	42,667	64,000	16,000	24,000	32,000	48,000

Table H.2.4(a) Precalculated Minimum Water Supplies (in Gallons) for Occupancy Hazard Classifications 3 and 4 by Construction Classification (No Exposures)

Volume (ft ³)	Occupancy Hazard Classification 3				Occupancy Hazard Classification 4			
	Construction Classification				Construction Classification			
	0.5	0.75	1.0	1.5	0.5	0.75	1.0	1.5
132,000	22,000	33,000	44,000	66,000	16,500	24,750	33,000	49,500
136,000	22,667	34,000	45,333	68,000	17,000	25,500	34,000	51,000
140,000	23,333	35,000	46,667	70,000	17,500	26,250	35,000	52,500
144,000	24,000	36,000	48,000	72,000	18,000	27,000	36,000	54,000
148,000	24,667	37,000	49,333	74,000	18,500	27,750	37,000	55,500
152,000	25,333	38,000	50,667	76,000	19,000	28,500	38,000	57,000
156,000	26,000	39,000	52,000	78,000	19,500	29,250	39,000	58,500
160,000	26,667	40,000	53,333	80,000	20,000	30,000	40,000	60,000
175,000	29,167	43,750	58,333	87,500	21,875	32,813	43,750	65,625
200,000	33,333	50,000	66,667	100,000	25,000	37,500	50,000	75,000
225,000	37,500	56,250	75,000	112,500	28,125	42,188	56,250	84,375
250,000	41,667	62,500	83,333	125,000	31,250	46,875	62,500	93,750
275,000	45,833	68,750	91,667	137,500	34,375	51,563	68,750	103,125
300,000	50,000	75,000	100,000	150,000	37,500	56,250	75,000	112,500
325,000	54,167	81,250	108,333	162,500	40,625	60,938	81,250	121,875
350,000	58,333	87,500	116,667	175,000	43,750	65,625	87,500	131,250
375,000	62,500	93,750	125,000	187,500	46,875	70,313	93,750	140,625

Table H.2.4(a) Precalculated Minimum Water Supplies (in Gallons) for Occupancy Hazard Classifications 3 and 4 by Construction Classification (No Exposures)

Volume (ft ³)	Occupancy Hazard Classification 3				Occupancy Hazard Classification 4			
	Construction Classification				Construction Classification			
	0.5	0.75	1.0	1.5	0.5	0.75	1.0	1.5
400,000	66,667	100,000	133,333	200,000	50,000	75,000	100,000	150,000
425,000	70,833	106,250	141,667	212,500	53,125	79,688	106,250	159,375
450,000	75,000	112,500	150,000	225,000	56,250	84,376	112,500	168,750
475,000	79,167	118,750	158,333	237,500	59,375	89,063	118,750	178,125
500,000	83,333	125,000	166,667	250,000	62,500	93,751	125,000	187,500
525,000	87,500	131,250	175,000	262,500	65,625	98,438	131,250	196,875
550,000	91,667	137,500	183,333	275,000	68,750	103,126	137,500	206,250
575,000	95,833	143,750	191,667	287,500	71,875	107,813	143,750	215,625
600,000	100,000	150,000	200,000	300,000	75,000	112,501	150,000	225,000
625,000	104,167	156,250	208,333	312,500	78,125	117,188	156,250	234,375
650,000	108,333	162,500	216,667	325,000	81,250	121,876	162,500	243,750
675,000	112,500	168,750	225,000	337,500	84,375	126,563	168,750	253,125
700,000	116,667	175,000	233,333	350,000	87,500	131,251	175,000	262,500
725,000	120,833	181,250	241,667	362,500	90,625	135,938	181,250	271,875
750,000	125,000	187,500	250,000	375,000	93,750	140,626	187,500	281,250
775,000	129,167	193,750	258,333	387,500	96,875	145,313	193,750	290,625
800,000	133,333	200,000	266,667	400,000	100,000	150,001	200,000	300,000

Table H.2.4(a) Precalculated Minimum Water Supplies (in Gallons) for Occupancy Hazard Classifications 3 and 4 by Construction Classification (No Exposures)

Volume (ft ³)	Occupancy Hazard Classification 3				Occupancy Hazard Classification 4			
	Construction Classification				Construction Classification			
	0.5	0.75	1.0	1.5	0.5	0.75	1.0	1.5
825,000	137,500	206,250	275,000	412,500	103,125	154,688	206,250	309,375
850,000	141,667	212,500	283,333	425,000	106,250	159,376	212,500	318,750
875,000	145,833	218,750	291,667	437,500	109,375	164,064	218,750	328,125
900,000	150,000	225,000	300,000	450,000	112,500	168,751	225,000	337,500
925,000	154,167	231,250	308,333	462,500	115,265	173,439	231,250	346,875
950,000	158,333	237,500	316,667	475,000	118,750	178,126	237,500	356,250
975,000	162,500	243,750	325,000	487,500	121,875	182,814	243,750	365,625
1,000,000	166,667	250,000	333,333	500,000	125,000	187,501	250,000	375,000

For SI units, 1 m³ = 35.3 ft³, 1 gal = 3.785 L

Note: For structures with exposures, multiply the water supply requirements in the table by 1.5.

Table H.2.4(b) Precalculated Minimum Water Supplies (in Gallons) for Occupancy Hazard Classifications 5 and 6 by Construction Classification (No Exposures)

Volume (ft ³)	Occupancy Hazard Classification 5				Occupancy Hazard Classification 6			
	Construction Classification				Construction Classification			
	0.5	0.75	1.0	1.5	0.5	0.75	1.0	1.5
8,000	2,000	2,000	2,000	2,400	2,000	2,000	2,000	2,000
10,000	2,000	2,000	2,400	3,600	2,000	2,000	2,000	3,000
16,000	2,000	2,400	3,200	4,800	2,000	2,000	2,667	4,000

Table H.2.4(b) Precalculated Minimum Water Supplies (in Gallons) for Occupancy Hazard Classifications 5 and 6 by Construction Classification (No Exposures)

Volume (ft ³)	Occupancy Hazard Classification 5				Occupancy Hazard Classification 6			
	Construction Classification				Construction Classification			
	0.5	0.75	1.0	1.5	0.5	0.75	1.0	1.5
20,000	2,000	3,000	4,000	6,000	2,000	2,500	3,333	5,000
24,000	2,400	3,600	4,800	7,200	2,000	3,000	4,000	6,000
28,000	2,800	4,200	5,600	8,400	2,333	3,500	4,667	7,000
32,000	3,200	4,800	6,400	9,600	2,667	4,000	5,333	8,000
36,000	3,600	5,400	7,200	10,800	3,000	4,500	6,000	9,000
40,000	4,000	6,000	8,000	12,000	3,333	5,000	6,667	10,000
44,000	4,400	6,600	8,800	13,200	3,667	5,500	7,333	11,000
48,000	4,800	7,200	9,600	14,400	4,000	6,000	8,000	12,000
52,000	5,200	7,800	10,400	15,600	4,333	6,500	8,667	13,000
56,000	5,600	8,400	11,200	16,800	4,667	7,000	9,333	14,000
60,000	6,000	9,000	12,000	18,000	5,000	7,500	10,000	15,000
64,000	6,400	9,600	12,800	19,200	5,333	8,000	10,667	16,000
68,000	6,800	10,200	13,600	20,400	5,667	8,500	11,333	17,000
72,000	7,200	10,800	14,400	21,600	6,000	9,000	12,000	18,000
76,000	7,600	11,400	15,200	22,800	6,333	9,500	12,667	19,000
80,000	8,000	12,000	16,000	24,000	6,667	10,000	13,333	20,000
84,000	8,400	12,600	16,800	25,200	7,000	10,500	14,000	21,000

Table H.2.4(b) Precalculated Minimum Water Supplies (in Gallons) for Occupancy Hazard Classifications 5 and 6 by Construction Classification (No Exposures)

Volume (ft ³)	Occupancy Hazard Classification 5				Occupancy Hazard Classification 6			
	Construction Classification				Construction Classification			
	0.5	0.75	1.0	1.5	0.5	0.75	1.0	1.5
88,000	8,800	13,200	17,600	26,400	7,333	11,000	14,667	22,000
92,000	9,200	13,800	18,400	27,600	7,667	11,500	15,333	23,000
96,000	9,600	14,400	19,200	28,800	8,000	12,000	16,000	24,000
100,000	10,000	15,000	20,000	30,000	8,333	12,500	16,667	25,000
104,000	10,400	15,600	20,800	31,200	8,667	13,000	17,333	26,000
108,000	10,800	16,200	21,600	32,400	9,000	13,500	18,000	27,000
112,000	11,200	16,800	22,400	33,600	9,333	14,000	18,667	28,000
116,000	11,600	17,400	23,200	34,800	9,667	14,500	19,333	29,000
120,000	12,000	18,000	24,000	36,000	10,000	15,000	20,000	30,000
124,000	12,400	18,600	24,800	37,200	10,333	15,500	20,667	31,000
128,000	12,800	19,200	25,600	38,400	10,667	16,000	21,333	32,000
132,000	13,200	19,800	26,400	39,600	11,000	16,500	22,000	33,000
136,000	13,600	20,400	27,200	40,800	11,333	17,000	22,667	34,000
140,000	14,000	21,000	28,000	42,000	11,667	17,500	23,333	35,000
144,000	14,400	21,600	28,800	43,200	12,000	18,000	24,000	36,000
148,000	14,800	22,200	29,600	44,400	12,333	18,500	24,667	37,000
152,000	15,200	22,800	30,400	45,600	12,667	19,000	25,333	38,000

Table H.2.4(b) Precalculated Minimum Water Supplies (in Gallons) for Occupancy Hazard Classifications 5 and 6 by Construction Classification (No Exposures)

Volume (ft ³)	Occupancy Hazard Classification 5				Occupancy Hazard Classification 6			
	Construction Classification				Construction Classification			
	0.5	0.75	1.0	1.5	0.5	0.75	1.0	1.5
156,000	15,600	23,400	31,200	46,800	13,000	19,500	26,000	39,000
160,000	16,000	24,000	32,000	48,000	13,333	20,000	26,667	40,000
175,000	17,500	26,250	35,000	52,500	14,583	21,875	29,167	43,750
200,000	20,000	30,000	40,000	60,000	16,667	25,000	33,333	50,000
225,000	22,500	33,750	45,000	67,500	18,750	28,125	37,500	56,250
250,000	25,000	37,500	50,000	75,000	20,833	31,250	41,667	62,500
275,000	27,500	41,250	55,000	82,500	22,917	34,375	45,833	68,750
300,000	30,000	45,000	60,000	90,000	25,000	37,500	50,000	75,000
325,000	32,500	48,750	65,000	97,500	27,083	40,625	54,167	81,250
350,000	35,000	52,500	70,000	105,000	29,167	43,750	58,333	87,500
375,000	37,500	56,250	75,000	112,500	31,250	46,875	62,500	93,750
400,000	40,000	60,000	80,000	120,000	33,333	50,000	66,667	100,000
425,000	42,500	63,750	85,000	127,500	35,417	53,125	70,833	106,250
450,000	45,000	67,500	90,000	135,000	37,500	56,250	75,000	112,500
475,000	47,500	71,250	95,000	142,500	39,583	59,375	79,167	118,750
500,000	50,000	75,000	100,000	150,000	41,667	62,500	83,333	125,000
525,000	52,500	78,750	105,000	157,500	43,750	65,625	87,500	131,250

Table H.2.4(b) Precalculated Minimum Water Supplies (in Gallons) for Occupancy Hazard Classifications 5 and 6 by Construction Classification (No Exposures)

Volume (ft ³)	Occupancy Hazard Classification 5				Occupancy Hazard Classification 6			
	Construction Classification				Construction Classification			
	0.5	0.75	1.0	1.5	0.5	0.75	1.0	1.5
550,000	55,000	82,500	110,000	165,000	45,833	68,750	91,667	137,500
575,000	57,500	86,250	115,000	172,500	47,917	71,875	95,833	143,750
600,000	60,000	90,000	120,000	180,000	50,000	75,000	100,000	150,000
625,000	62,500	93,750	125,000	187,500	52,083	78,125	104,167	156,250
650,000	65,000	97,500	130,000	195,000	54,167	81,250	108,333	162,500
675,000	67,500	101,250	135,000	202,500	56,250	84,375	112,500	168,750
700,000	70,000	105,000	140,000	210,000	58,333	87,500	116,667	175,000
725,000	72,500	108,750	145,000	217,500	60,417	90,625	120,833	181,250
750,000	75,000	112,500	150,000	225,000	62,500	93,750	125,000	187,500
775,000	77,500	116,250	155,000	232,500	64,583	96,875	129,167	193,750
800,000	80,000	120,000	160,000	240,000	66,667	100,000	133,333	200,000
825,000	82,500	123,750	165,000	247,500	68,750	103,125	137,500	206,250
850,000	85,000	127,500	170,000	255,000	70,833	106,250	141,667	212,500
875,000	87,500	131,250	175,000	262,500	72,917	109,375	145,833	218,750
900,000	90,000	135,000	180,000	270,000	75,000	112,500	150,000	225,000
925,000	92,500	138,750	185,000	277,500	77,083	115,625	154,167	231,250
950,000	95,000	142,500	190,000	285,000	79,167	118,750	158,333	237,500

Table H.2.4(b) Precalculated Minimum Water Supplies (in Gallons) for Occupancy Hazard Classifications 5 and 6 by Construction Classification (No Exposures)

Volume (ft ³)	Occupancy Hazard Classification 5				Occupancy Hazard Classification 6			
	Construction Classification				Construction Classification			
	0.5	0.75	1.0	1.5	0.5	0.75	1.0	1.5
975,000	97,500	146,250	195,000	292,500	81,250	121,875	162,500	243,750
1,000,000	100,000	150,000	200,000	300,000	83,333	125,000	166,667	250,000

For SI units, 1 m³ = 35.3 ft³, 1 gal = 3.785 L

Note: For structures with exposures, multiply the water supply requirements in the table by 1.5.

Table H.2.4(c) Precalculated Minimum Water Supplies (in Gallons) for Occupancy Hazard Classification 7 by Construction Classification (No Exposures)

Volume (ft ³)	Occupancy Hazard Classification 7			
	Construction Classification			
	0.5	0.75	1.0	1.5
8,000	2,000	2,000	2,000	2,000
10,000	2,000	2,000	2,000	2,571
16,000	2,000	2,000	2,286	3,429
20,000	2,000	2,143	2,857	4,286
24,000	2,000	2,571	3,429	5,143
28,000	2,000	3,000	4,000	6,000
32,000	2,286	3,429	4,571	6,857
36,000	2,572	3,857	5,143	7,714
40,000	2,857	4,286	5,714	8,571

Table H.2.4(c) Precalculated Minimum Water Supplies (in Gallons) for Occupancy Hazard Classification 7 by Construction Classification (No Exposures)

Volume (ft ³)	Occupancy Hazard Classification 7			
	Construction Classification			
	0.5	0.75	1.0	1.5
44,000	3,143	4,714	6,286	9,429
48,000	3,429	5,143	6,857	10,286
52,000	3,715	5,571	7,429	11,143
56,000	4,000	6,000	8,000	12,000
60,000	4,286	6,429	8,571	12,857
64,000	4,572	6,857	9,143	13,714
68,000	4,857	7,286	9,714	14,571
72,000	5,143	7,714	10,286	15,429
76,000	5,429	8,143	10,857	16,286
80,000	5,715	8,571	11,429	17,143
84,000	6,000	9,000	12,000	18,000
88,000	6,286	9,429	12,571	18,857
92,000	6,572	9,857	13,143	19,714
96,000	6,857	10,286	13,714	20,571
100,000	7,143	10,714	14,286	21,429
104,000	7,429	11,143	14,857	22,286
108,000	7,715	11,571	15,429	23,143

Table H.2.4(c) Precalculated Minimum Water Supplies (in Gallons) for Occupancy Hazard Classification 7 by Construction Classification (No Exposures)

Volume (ft ³)	Occupancy Hazard Classification 7			
	Construction Classification			
	0.5	0.75	1.0	1.5
112,000	8,000	12,000	16,000	24,000
116,000	8,286	12,429	16,571	24,857
120,000	8,572	12,857	17,143	25,714
124,000	8,857	13,286	17,714	26,571
128,000	9,143	13,714	18,286	27,429
132,000	9,429	14,143	18,857	28,286
136,000	9,715	14,571	19,429	29,143
140,000	10,000	15,000	20,000	30,000
144,000	10,286	15,429	20,571	30,857
148,000	10,572	15,857	21,143	31,714
152,000	10,857	16,286	21,714	32,571
156,000	11,143	16,714	22,286	33,429
160,000	11,429	17,143	22,857	34,286
175,000	12,500	18,750	25,000	37,500
200,000	14,286	21,429	28,571	42,857
225,000	16,071	24,107	32,143	48,214
250,000	17,857	26,786	35,714	53,571

Table H.2.4(c) Precalculated Minimum Water Supplies (in Gallons) for Occupancy Hazard Classification 7 by Construction Classification (No Exposures)

Volume (ft ³)	Occupancy Hazard Classification 7			
	Construction Classification			
	0.5	0.75	1.0	1.5
275,000	19,643	29,464	39,286	58,929
300,000	21,429	32,143	42,857	64,286
325,000	23,214	34,821	46,429	69,643
350,000	25,000	37,500	50,000	75,000
375,000	26,786	40,179	53,571	80,357
400,000	28,571	42,857	57,143	85,714
425,000	30,357	45,536	60,714	91,071
450,000	32,143	48,214	64,286	96,429
475,000	33,929	50,893	67,857	101,786
500,000	35,714	53,571	71,429	107,143
525,000	37,500	56,250	75,000	112,500
550,000	39,286	58,929	78,571	117,857
575,000	41,071	61,607	82,143	123,214
600,000	42,857	64,286	85,714	128,571
625,000	44,643	66,964	89,286	133,929
650,000	46,429	69,643	92,857	139,286
675,000	48,214	72,321	96,429	144,643

Table H.2.4(c) Precalculated Minimum Water Supplies (in Gallons) for Occupancy Hazard Classification 7 by Construction Classification (No Exposures)

Volume (ft ³)	Occupancy Hazard Classification 7			
	Construction Classification			
	0.5	0.75	1.0	1.5
700,000	50,000	75,000	100,000	150,000
725,000	51,786	77,679	103,571	155,357
750,000	53,571	80,357	107,143	160,714
775,000	55,357	83,036	110,714	166,071
800,000	57,143	85,714	114,286	171,429
825,000	58,929	88,393	117,857	176,786
850,000	60,714	91,071	121,429	182,143
875,000	62,500	93,750	125,000	187,500
900,000	64,286	96,429	128,571	192,857
925,000	66,071	99,107	132,143	198,214
950,000	67,857	101,786	135,714	203,571
975,000	69,643	104,464	139,286	208,929
1,000,000	71,429	107,143	142,857	214,286

For SI units, 1 m³ = 35.3 ft³, 1 gal = 3.785 L

Note: For structures with exposures, multiply the water supply requirements in the table by 1.5.

H.3 Structures with Exposure Hazards.

Examples of calculations for minimum water supply for structures with exposure hazards are shown in H.3.1 and H.3.2.

H.3.1 Residential.

A dwelling has the following characteristics: (1) a ground floor of 50 ft × 24 ft; (2) one story, 8 ft high; (3) pitched roof, 8 ft from attic floor to ridgepole; (4) Type III construction; and (5) exposed on one side by a frame (Type V construction) dwelling with an area greater than 100 ft² and a separation of less than 50 ft. The calculations for minimum water supply are as follows:

$$\text{Ground floor area} = 50 \text{ ft} \times 24 \text{ ft} = 1200 \text{ ft}^2$$

$$\text{Height} = 8 \text{ ft} + 4 \text{ ft} = 12 \text{ ft} \text{ (For pitched roofs, use half the distance from attic floor to ridgepole.)}$$

$$\text{Total volume} = 1200 \text{ ft}^2 \times 12 \text{ ft} = 14,400 \text{ ft}^3$$

The occupancy hazard classification number is 7 (see 5.2.5), and the construction classification number is 1.0 (see Table 6.2.1), resulting in the following calculation:

[H.3.1]

$$\frac{14,400}{7} \times 1.0 = 2057 \text{ gal}$$

The dwelling exposure is a frame dwelling; therefore, multiply by the exposure factor of 1.5 as follows:

$$2057 \text{ gal} \times 1.5 = 3086 \text{ gal}$$

The minimum water supply equals 3086 gal.

For SI units: 1 ft = 0.305 m; 1 ft² = 0.092 m²; 1 ft³ = 0.028 m³; 1 gal = 3.785 L.

H.3.2 Multiple-Structure Calculations.

The following are examples of minimum water supply calculations where there are multiple structures.

Example 1. A row of five dwellings is identical to the dwelling in H.2.1, except that one dwelling has a brick barn (Type III construction) measuring 80 ft × 40 ft that is located 35 ft from the dwelling. The barn is larger than 100 ft² in area and is less than 50 ft from the dwelling. Therefore, the minimum water supply for this dwelling, 3429 gal, should be multiplied by 1.5 for the exposure:

$$3429 \text{ gal} \times 1.5 = 5144 \text{ gal}$$

If the dwellings and barn are to be protected by the same water supply, as is likely, the water supply should be calculated based on the structure that requires the largest minimum water supply. If the barn has no hay storage and is 25 ft in height to the pitched ridgepole, and the ridgepole is 10 ft above the eaves, the calculations would be as follows:

$$\text{Ground floor area} = 80 \text{ ft} \times 40 \text{ ft} = 3200 \text{ ft}^2$$

$$\text{Height} = 15 \text{ ft} + 5 \text{ ft} = 20 \text{ ft} \text{ (For pitched roofs, use half the distance from attic floor to ridgepole.)}$$

$$\text{Total volume} = 3200 \text{ ft}^2 \times 20 \text{ ft} = 64,000 \text{ ft}^3$$

The occupancy hazard classification number is 4 for the barn with no hay storage (see 5.2.2), and the construction classification number is 1.0 (see Table 6.2.1), resulting in the following calculations:

[H.3.2(a)]

$$\frac{64,000}{4} \times 1.0 = 16,000 \text{ gal}$$

16,000 gal × 1.5 for exposure hazard = 24,000 gal

The minimum water supply equals 24,000 gal. Since this is larger than the 5144 gal required for the dwelling, 24,000 gal would be the minimum water supply for the barn and dwelling.

For SI units: 1 ft = 0.305 m; 1 ft² = 0.092 m²; 1 ft³ = 0.028 m³; 1 gal = 3.785 L.

Example 2. A farm equipment shed is identical to commercial occupancy in H.2.2, except that it has a one-story, pitched-roof frame dwelling (Type V Construction) measuring 50 ft × 25 ft that is located 45 ft from the equipment shed. The dwelling is an exposure because it is larger than 100 ft² in area and is less than 50 ft from the equipment shed. Therefore, the minimum water supply for the equipment shed is 26,250 gal × 1.5, or 39,375 gal.

The minimum water supply for the farm equipment shed equals 39,375 gal.

The total water supply for the dwelling is calculated as follows:

Ground floor area = 50 ft × 25 ft = 1250 ft²

Height = 8 ft + 4 ft = 12 ft

Total volume = 1250 ft² × 12 ft = 15,000 ft³

The occupancy hazard classification number is 7 (see 5.2.5), and the construction classification number is 1.0 (see 6.2.2), resulting in the following calculation:

H.3.2(b)]

$$\frac{15,000}{7} \times 1.0 = 2143 \text{ gal}$$

The dwelling has an exposure from the farm equipment shed; therefore, multiply by the exposure factor of 1.5 as follows:

2143 gal × 1.5 = 3215 gal

The farm equipment shed requires the larger minimum water supply. Therefore, if these two buildings were to be protected by the same water supply, the minimum water supply would be 39,375 gal.

For SI units: 1 ft = 0.305 m; 1 ft² = 0.092 m²; 1 ft³ = 0.028 m³; 1 gal = 3.785 L.

Example 3. If the church and office building described in H.2.3 are less than 50 ft from each other, they would be exposures to each other. Therefore, the required water supply for the church would be 26,000 gal × 1.5 for the exposure factor, or 39,000 gal. Likewise, the water supply for the office building would be 25,000 gal × 1.5 for the exposure factor, or 37,500 gal. The larger amount would dictate the minimum water supply requirement for the site, which in this case would be 39,000 gal.

For SI units: 1 ft = 0.305 m; 1 ft² = 0.092 m²; 1 ft³ = 0.028 m³; 1 gal = 3.785 L.

Carley Dixon

From: Carley Dixon
Sent: Thursday, March 21, 2019 9:13 AM
To: 'Kevin McNeilly'
Cc: Sue Stone (suestone@amaranth-eastgary.ca); Christine Gervais (cgervais@amaranth-eastgary.ca)
Subject: Waldemar Water Storage EA - Public Information Centre Presentation Boards

Hi Kevin,

Thanks for meeting with me yesterday. In the link below, you will see the Waldemar EA Public Information Centre Presentation in the attachments. If you have any questions don't hesitate to give me a call.

<http://www.amaranth.ca/Modules/News/index.aspx?newsId=fe5ec8f8-d191-40aa-9f3a-0be0837763a4>

Carley Dixon

From: Dwight Smikle
Sent: Thursday, March 21, 2019 2:22 PM
To: Carley Dixon
Cc: Sue Stone (suestone@amaranth-eastgary.ca); Christine Gervais (cgervais@amaranth-eastgary.ca)
Subject: RE: Waldemar Water Storage Municipal Class Environmental Assessment

Carley

Thanks for your email and the map indicating the location of the site. Based on the location indicated being outside of the WHPA there are no source protection policies that apply to the site. The creation of an in-ground reservoir does not constitute a transport pathway at this location as it is not within the WHPA.

Additionally the area is underlain by a layer of clay/ till that separates the bedrock aquifer from surficial activities forming a confining layer. . Transport pathways are only considered when an aquifer is unconfined and there is no confining layer. The location is also down gradient of the WHPA which further reduces the potential of any impacts.

The fuel tank that you have noted is not considered a threat (outside of WHPA) but it would be best practice to include spill management as part of the operational procedures for fuel handling at the location.

Dwight

Dwight Smikle, M.Sc., P.Geo.
Senior Hydrogeologist

R.J. Burnside & Associates Limited | www.rjburnside.com
Office: +1 800-265-9662 Direct: +1 226-486-1554

From: Carley Dixon <Carley.Dixon@rjburnside.com>
Sent: Thursday, March 21, 2019 11:46 AM
To: Dwight Smikle <Dwight.Smikle@rjburnside.com>
Cc: Sue Stone (suestone@amaranth-eastgary.ca) <suestone@amaranth-eastgary.ca>; Christine Gervais (cgervais@amaranth-eastgary.ca) <cgervais@amaranth-eastgary.ca>
Subject: Waldemar Water Storage Municipal Class Environmental Assessment

Hi Dwight,

I'm reaching out to you as the Township's Risk Management Official for Source Water Protection. We have identified the preliminary preferred alternative as an in-ground reservoir (with associate piping) at the existing pumphouse site located at 10 Station Street in Waldemar. I have attached a map showing where the site is located in relation to the Well Head Protection Areas. The work may also include locating a back-up generator (with potential to have a fuel tank) outside on the site. Can you please confirm that there are no concerns with respect to source water protection. If you have any questions, please don't hesitate to let me know.

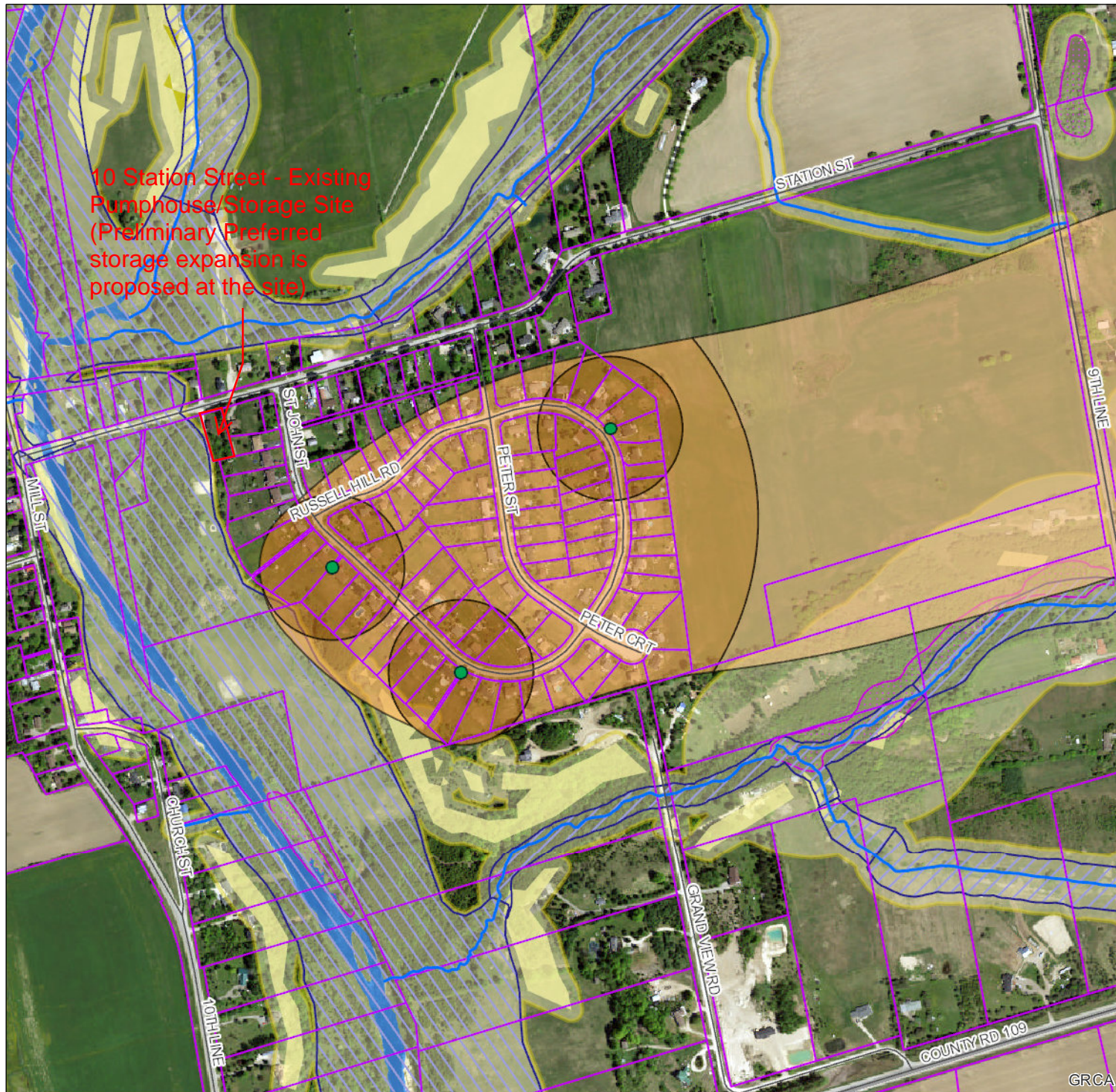
Thanks,
Carley

 **BURNSIDE**
Carley Dixon, P.Eng.

R.J. Burnside & Associates Limited
292 Speedvale Avenue West, Unit 20, Guelph, Ontario N1H 1C4
Office: +1 800-265-9662 Direct: +1 226-486-1542
www.rjburnside.com

**** CONFIDENTIALITY NOTICE ****

This electronic transmission and any accompanying attachments may contain privileged or confidential information intended only for the use of the individual or organization named above. Any distribution, copying or action taken in reliance on the contents of this communication by anyone other than the intended recipient(s) is STRICTLY PROHIBITED. If you have received this communication in error please notify the sender at the above email address and delete this email immediately.
Thank you.



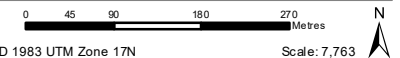
10 Station Street - Existing Pumphouse/Storage Site (Preliminary Preferred storage expansion is proposed at the site)

Legend

- Regulation Limit (GRCA)
- Regulated Watercourse (GRCA)
- Regulated Waterbody (GRCA)
- Wetland (GRCA)
- Floodplain (GRCA)
 - Engineered
 - Estimated
 - Approximate
 - Special Policy Area
- Slope Valley (GRCA)
 - Steep
 - Oversteep
 - Steep
- Slope Erosion (GRCA)
 - Oversteep
 - Toe
- Lake Erie Flood (GRCA)
- Lake Erie Shoreline Reach (GRCA)
- Lake Erie Dynamic Beach (GRCA)
- Lake Erie Erosion (GRCA)
- Parcel - Assessment (MPAC/MNRF)

This legend is static and may not fully reflect the layers shown on the map. The text of Ontario Regulation 150/06 supercedes the mapping as represented by these layers.

Copyright Grand River Conservation Authority, 2019. Disclaimer: This map is for illustrative purposes only. Information contained herein is not a substitute for professional review or a site survey and is subject to change without notice. The Grand River Conservation Authority takes no responsibility for, nor guarantees, the accuracy of the information contained on this map. Any interpretations or conclusions drawn from this map are the sole responsibility of the user. The source for each data layer is shown in parentheses in the map legend. For a complete listing of sources and citations go to: <https://maps.grandriver.ca/Sources-and-Citations.pdf>



Carley Dixon

From: Carley Dixon
Sent: Sunday, March 24, 2019 6:25 PM
To: [REDACTED]
Subject: RE: Waldemar Water Storage EA comments

Thanks for getting back to me. I've forwarded on your information and I've asked that they get in touch with you.

From: [REDACTED]
Sent: Friday, March 22, 2019 8:40 PM
To: Carley Dixon <Carley.Dixon@rjburnside.com>
Subject: Re: Waldemar Water Storage EA comments

Hello Carley,

I did talk to them, but, yes, I would appreciate my information being forwarded to them.

Thank you, [REDACTED]

From: [Carley Dixon](#)
Sent: Thursday, March 21, 2019 11:09 AM
To: [REDACTED]
Cc: <mailto:suestone@amaranth-eastgary.ca> ; <mailto:cgervais@amaranth-eastgary.ca>
Subject: Waldemar Water Storage EA comments

Hi [REDACTED]

Thanks for the comments you provided. You are still able to participate in the monitoring study that Centurian is required to do as part of their development. Would you like me to forward your name and contact info to the Developer's Engineer (IBI). They can then provide it to Terraprobe who will be the ones doing the monitoring.



Carley Dixon, P.Eng.

R.J. Burnside & Associates Limited
292 Speedvale Avenue West, Unit 20, Guelph, Ontario N1H 1C4
Office: +1 800-265-9662 Direct: +1 226-486-1542
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If you have received this communication in error please notify the sender at the above email address and delete this email immediately.

Thank you.



March 25, 2019

Chief Lester Anoquot
Saugeen First Nation
R.R #1
6493 Highway 21
Southampton, ON N0H 2L0

Dear Chief Anoquot:

**Re: Notice of Study Commencement & Public Information Centre
Waldemar Water Storage
Municipal Class Environmental Assessment Study
File No: 300041042.0000**

R.J. Burnside & Associates Limited (Burnside) circulated the Notice of Public Information Centre near the end of February. After receiving a response from the Environmental Assessment/ Planning Coordinator with Ministry of the Environment, Conservation and Parks, it was determined that we should add Saugeen First Nation to our circulation list related to the above noted Municipal Class Environmental Assessment Study.

The existing drinking water storage in Waldemar does not have the volume required to support future water demands. The Township has initiated a Class Environmental Assessment (EA) to identify the preferred storage alternative. This study is being carried out in accordance with the planning and design process for Schedule 'B' projects as outlined in the Municipal Class Environmental Assessment (October 2000, as amended in 2007, 2011 and 2015). A key component of the study will be consultation with interested stakeholders (public and agency). Input and comments received from the public and from agencies will be incorporated into the planning and design of this project. Upon completion of the study, a Project File Report will be prepared for public review and comment. Subject to comments received and the receipt of necessary approvals, the Township of Amaranth intends to proceed with the planning, design and construction of this project.

The Township held a Public Information Centre (PIC) on March 4, 2019 to provide additional information on the project. The materials from the PIC are posted on the Township's website (<http://www.amaranth.ca/Modules/News/index.aspx?newsId=fe5ec8f8-d191-40aa-9f3a-0be0837763a4>). The preliminary preferred alternative identified at the PIC was to expand in-ground storage at the existing pumphouse/storage site located at 10 Station Street in Waldemar.

The Township is requesting any preliminary comments or concerns that your agency has on the proposed project. It is essential to the success of this project that the concerns of your agency,

and other stakeholders, are identified early in the planning process, such that the appropriate environmental protection measures are incorporated into the overall project design.

All interested stakeholders will be kept up-to-date on project status by means of future mailings, or inclusion in project meetings, as deemed appropriate.

Your participation in this EA study is much appreciated. To provide the study team with your comments or for further information, or if you wish to be removed from our contact list, please contact Carley Dixon at 226-486-1592 or by email at Carley.Dixon@rjburnside.com.

Yours truly,

R.J. Burnside & Associates Limited



Carley Dixon, P.Eng.
CD:sgd

Enclosure(s) Notice of Public Information Centre

cc Christine Gervais, Director of Planning, Township of Amaranth
 Sue Stone, CAO, Township of Amaranth



**Township of Amaranth
Notice of Public Information Centre for the
Waldemar Water Storage
Class Environmental Assessment Study**



The Study

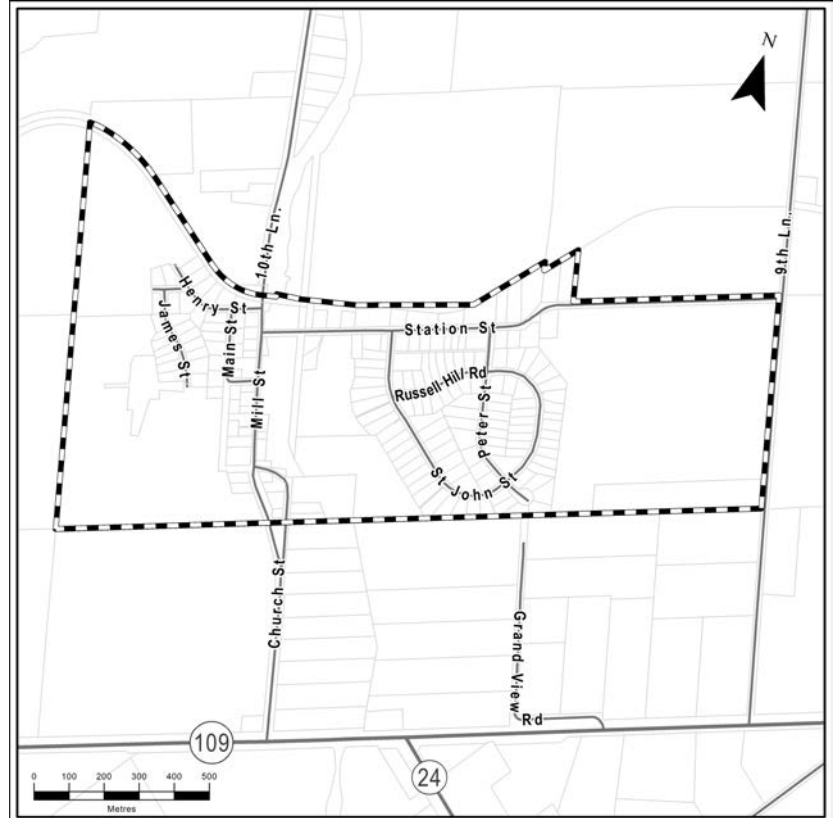
The Township of Amaranth has identified that the existing water storage in Waldemar does not have the volume required to support future water demands. The Township is initiating a Municipal Class Environmental Assessment (EA) to identify the preferred method of providing for these demands. The EA will review all lands designated within the Community Boundary of Waldemar in the Official Plan as part of this study.

Reasoning for Initiating the Study

The municipal drinking water system needs to be expanded to provide drinking water to a 73 lot subdivision near Station Street and 9th Line. The Developer is required to finance upgrades to the water system needed to service this development. The Township has identified that additional water storage is required and is initiating the EA to determine the preferred upgrades for the system.

Waldemar Drinking Water System

The existing drinking water system serves a portion of residents within Waldemar. The system has three wells to supply water, and a pump house and reservoir for treatment and storage of water. The water storage provides water to use when there are high demands on the system and for firefighting.



Public Information Centre (PIC) – Comments Invited

Public consultation is vital to this study. The Township would like to ensure that anyone interested in this study has the opportunity to get involved and provide input on the project’s implementation. A PIC has been arranged to: describe the proposed project and the preliminary preferred solution; obtain feedback from the public; and, identify the next steps in the process. Presentation materials pertaining to the study will be made available on the Township’s website (www.amaranth.ca) following the PIC.

PIC Drop-in Centre Date: Monday, March 4, 2019
Time: 7:00 p.m. to 9:00 p.m.
Place: Township of Amaranth - 374028 6th Line, Amaranth, ON L9W 0M6

To provide comment or to request additional information concerning this project, or if you are unable to attend and would like to provide comments, please contact either of the following Project Team members by March 18th, 2019.

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

Township of Amaranth
 Director of Planning
 Christine Gervais
 374028 6th Line
 Amaranth ON L9W 0M6
 Phone: 519-941-1007
 cgervais@amaranth-eastgary.ca

Information will be collected in accordance with the Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.

This Notice first issued on February 21, 2019.



March 25, 2019

Chief Greg Nadjiwon
Chippewas of Nawash Unceded First Nation
#135 Lakeshore Blvd.
Neyaashiinigiing, ON N0H 2T0

Dear Chief Nadjiwon:

**Re: Notice of Study Commencement & Public Information Centre
Waldemar Water Storage
Municipal Class Environmental Assessment Study
File No: 300041042.0000**

R.J. Burnside & Associates Limited (Burnside) circulated the Notice of Public Information Centre near the end of February. After receiving a response from the Environmental Assessment/ Planning Coordinator with Ministry of the Environment, Conservation and Parks, it was determined that we should add Chippewas of Nawash Unceded First Nation to our circulation list related to the above noted Municipal Class Environmental Assessment Study.

The existing drinking water storage in Waldemar does not have the volume required to support future water demands. The Township has initiated a Class Environmental Assessment (EA) to identify the preferred storage alternative. This study is being carried out in accordance with the planning and design process for Schedule 'B' projects as outlined in the Municipal Class Environmental Assessment (October 2000, as amended in 2007, 2011 and 2015). A key component of the study will be consultation with interested stakeholders (public and agency). Input and comments received from the public and from agencies will be incorporated into the planning and design of this project. Upon completion of the study, a Project File Report will be prepared for public review and comment. Subject to comments received and the receipt of necessary approvals, the Township of Amaranth intends to proceed with the planning, design and construction of this project.

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The Township is requesting any preliminary comments or concerns that your agency has on the proposed project. It is essential to the success of this project that the concerns of your agency, and other stakeholders, are identified early in the planning process, such that the appropriate environmental protection measures are incorporated into the overall project design.

All interested stakeholders will be kept up-to-date on project status by means of future mailings, or inclusion in project meetings, as deemed appropriate.

Your participation in this EA study is much appreciated. To provide the study team with your comments or for further information, or if you wish to be removed from our contact list, please contact Carley Dixon at 226-486-1592 or by email at Carley.Dixon@rjburnside.com.

Yours truly,

R.J. Burnside & Associates Limited

A handwritten signature in black ink that reads "Carley Dixon". The signature is written in a cursive, flowing style.

Carley Dixon, P.Eng.
CD:sgd

Enclosure(s) Notice of Public Information Centre

cc Christine Gervais, Director of Planning, Township of Amaranth
 Sue Stone, CAO, Township of Amaranth



**Township of Amaranth
Notice of Public Information Centre for the
Waldemar Water Storage
Class Environmental Assessment Study**



The Study

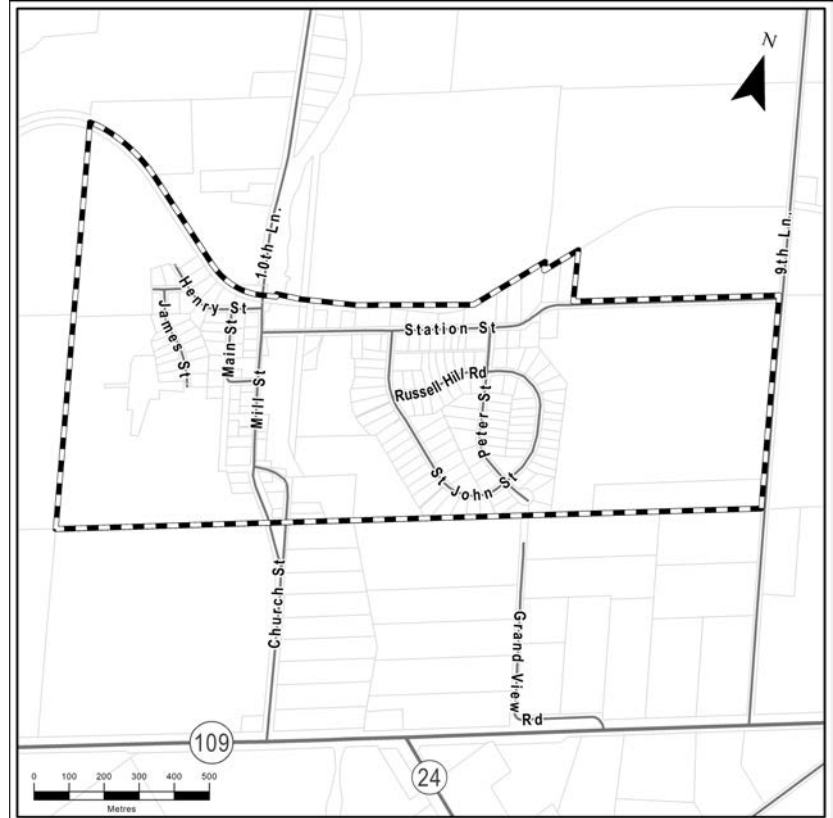
The Township of Amaranth has identified that the existing water storage in Waldemar does not have the volume required to support future water demands. The Township is initiating a Municipal Class Environmental Assessment (EA) to identify the preferred method of providing for these demands. The EA will review all lands designated within the Community Boundary of Waldemar in the Official Plan as part of this study.

Reasoning for Initiating the Study

The municipal drinking water system needs to be expanded to provide drinking water to a 73 lot subdivision near Station Street and 9th Line. The Developer is required to finance upgrades to the water system needed to service this development. The Township has identified that additional water storage is required and is initiating the EA to determine the preferred upgrades for the system.

Waldemar Drinking Water System

The existing drinking water system serves a portion of residents within Waldemar. The system has three wells to supply water, and a pump house and reservoir for treatment and storage of water. The water storage provides water to use when there are high demands on the system and for firefighting.



Public Information Centre (PIC) – Comments Invited

Public consultation is vital to this study. The Township would like to ensure that anyone interested in this study has the opportunity to get involved and provide input on the project’s implementation. A PIC has been arranged to: describe the proposed project and the preliminary preferred solution; obtain feedback from the public; and, identify the next steps in the process. Presentation materials pertaining to the study will be made available on the Township’s website (www.amaranth.ca) following the PIC.

PIC Drop-in Centre Date: Monday, March 4, 2019
Time: 7:00 p.m. to 9:00 p.m.
Place: Township of Amaranth - 374028 6th Line, Amaranth, ON L9W 0M6

To provide comment or to request additional information concerning this project, or if you are unable to attend and would like to provide comments, please contact either of the following Project Team members by March 18th, 2019.

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

Township of Amaranth
 Director of Planning
 Christine Gervais
 374028 6th Line
 Amaranth ON L9W 0M6
 Phone: 519-941-1007
 cgervais@amaranth-eastgary.ca

Information will be collected in accordance with the Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.

This Notice first issued on February 21, 2019.



March 25, 2019

Chief Guy Monague
Beausoleil First Nation
11 O'Gema Miikaan
Christian Island, ON L9M 0A9

Dear Chief Monague:

**Re: Notice of Study Commencement & Public Information Centre
Waldemar Water Storage
Municipal Class Environmental Assessment Study
File No: 300041042.0000**

R.J. Burnside & Associates Limited (Burnside) circulated the Notice of Public Information Centre near the end of February. After receiving a response from the Environmental Assessment/ Planning Coordinator with Ministry of the Environment, Conservation and Parks, it was determined that we should add Beausoleil First Nation to our circulation list related to the above noted Municipal Class Environmental Assessment Study.

The existing drinking water storage in Waldemar does not have the volume required to support future water demands. The Township has initiated a Class Environmental Assessment (EA) to identify the preferred storage alternative. This study is being carried out in accordance with the planning and design process for Schedule 'B' projects as outlined in the Municipal Class Environmental Assessment (October 2000, as amended in 2007, 2011 and 2015). A key component of the study will be consultation with interested stakeholders (public and agency). Input and comments received from the public and from agencies will be incorporated into the planning and design of this project. Upon completion of the study, a Project File Report will be prepared for public review and comment. Subject to comments received and the receipt of necessary approvals, the Township of Amaranth intends to proceed with the planning, design and construction of this project.

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The Township is requesting any preliminary comments or concerns that your agency has on the proposed project. It is essential to the success of this project that the concerns of your agency, and other stakeholders, are identified early in the planning process, such that the appropriate environmental protection measures are incorporated into the overall project design.

All interested stakeholders will be kept up-to-date on project status by means of future mailings, or inclusion in project meetings, as deemed appropriate.

Your participation in this EA study is much appreciated. To provide the study team with your comments or for further information, or if you wish to be removed from our contact list, please contact Carley Dixon at 226-486-1592 or by email at Carley.Dixon@rjburnside.com.

Yours truly,

R.J. Burnside & Associates Limited

A handwritten signature in black ink that reads "Carley Dixon". The signature is written in a cursive, slightly slanted style.

Carley Dixon, P.Eng.
CD:sgd

Enclosure(s) Notice of Public Information Centre

cc Christine Gervais, Director of Planning, Township of Amaranth
 Sue Stone, CAO, Township of Amaranth



**Township of Amaranth
Notice of Public Information Centre for the
Waldemar Water Storage
Class Environmental Assessment Study**



The Study

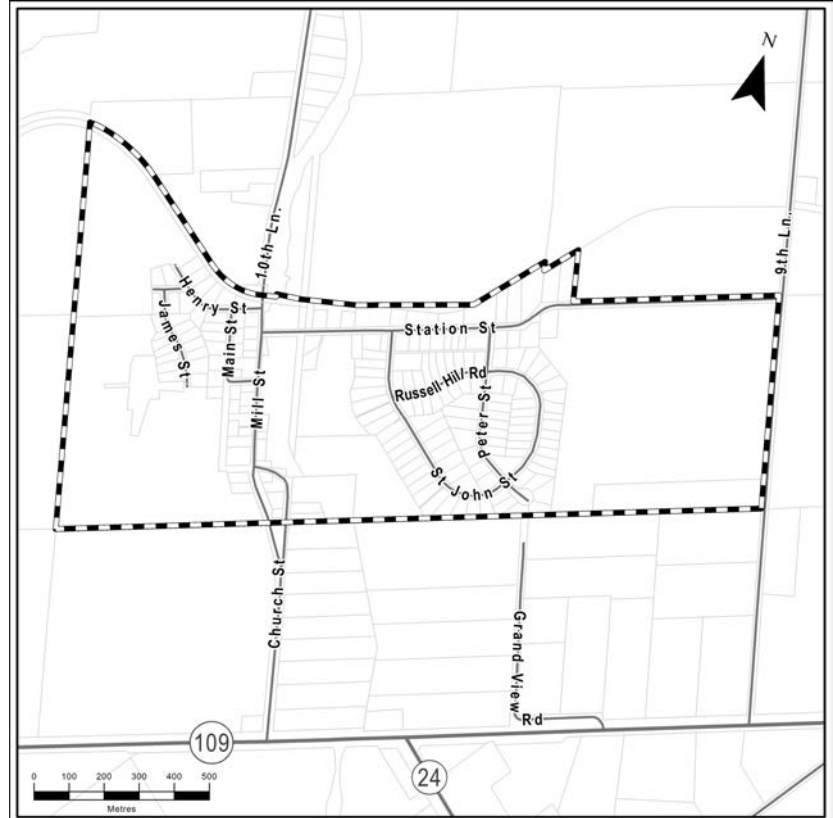
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Reasoning for Initiating the Study

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Public Information Centre (PIC) – Comments Invited

Public consultation is vital to this study. The Township would like to ensure that anyone interested in this study has the opportunity to get involved and provide input on the project’s implementation. A PIC has been arranged to: describe the proposed project and the preliminary preferred solution; obtain feedback from the public; and, identify the next steps in the process. Presentation materials pertaining to the study will be made available on the Township’s website (www.amaranth.ca) following the PIC.

PIC Drop-in Centre Date: Monday, March 4, 2019
Time: 7:00 p.m. to 9:00 p.m.
Place: Township of Amaranth - 374028 6th Line, Amaranth, ON L9W 0M6

To provide comment or to request additional information concerning this project, or if you are unable to attend and would like to provide comments, please contact either of the following Project Team members by March 18th, 2019.

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

Township of Amaranth
 Director of Planning
 Christine Gervais
 374028 6th Line
 Amaranth ON L9W 0M6
 Phone: 519-941-1007
 cgervais@amaranth-eastgary.ca

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This Notice first issued on February 21, 2019.



March 25, 2019

Chief Rodney Noganosh
Chippewas of Rama First Nation
5884 Rama Road
Suite 200
Rama, ON L3V 6H6

Dear Chief Noganosh:

**Re: Notice of Study Commencement & Public Information Centre
Waldemar Water Storage
Municipal Class Environmental Assessment Study
File No: 300041042.0000**

R.J. Burnside & Associates Limited (Burnside) circulated the Notice of Public Information Centre near the end of February. After receiving a response from the Environmental Assessment/ Planning Coordinator with Ministry of the Environment, Conservation and Parks, it was determined that we should add Chippewas of Rama First Nation to our circulation list related to the above noted Municipal Class Environmental Assessment Study.

The existing drinking water storage in Waldemar does not have the volume required to support future water demands. The Township has initiated a Class Environmental Assessment (EA) to identify the preferred storage alternative. This study is being carried out in accordance with the planning and design process for Schedule 'B' projects as outlined in the Municipal Class Environmental Assessment (October 2000, as amended in 2007, 2011 and 2015). A key component of the study will be consultation with interested stakeholders (public and agency). Input and comments received from the public and from agencies will be incorporated into the planning and design of this project. Upon completion of the study, a Project File Report will be prepared for public review and comment. Subject to comments received and the receipt of necessary approvals, the Township of Amaranth intends to proceed with the planning, design and construction of this project.

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and other stakeholders, are identified early in the planning process, such that the appropriate environmental protection measures are incorporated into the overall project design.

All interested stakeholders will be kept up-to-date on project status by means of future mailings, or inclusion in project meetings, as deemed appropriate.

Your participation in this EA study is much appreciated. To provide the study team with your comments or for further information, or if you wish to be removed from our contact list, please contact Carley Dixon at 226-486-1592 or by email at Carley.Dixon@rjburnside.com.

Yours truly,

R.J. Burnside & Associates Limited

A handwritten signature in black ink that reads "Carley Dixon". The signature is written in a cursive, slightly slanted style.

Carley Dixon, P.Eng.
CD:sgd

Enclosure(s) Notice of Public Information Centre

cc Christine Gervais, Director of Planning, Township of Amaranth
 Sue Stone, CAO, Township of Amaranth



**Township of Amaranth
Notice of Public Information Centre for the
Waldemar Water Storage
Class Environmental Assessment Study**



The Study

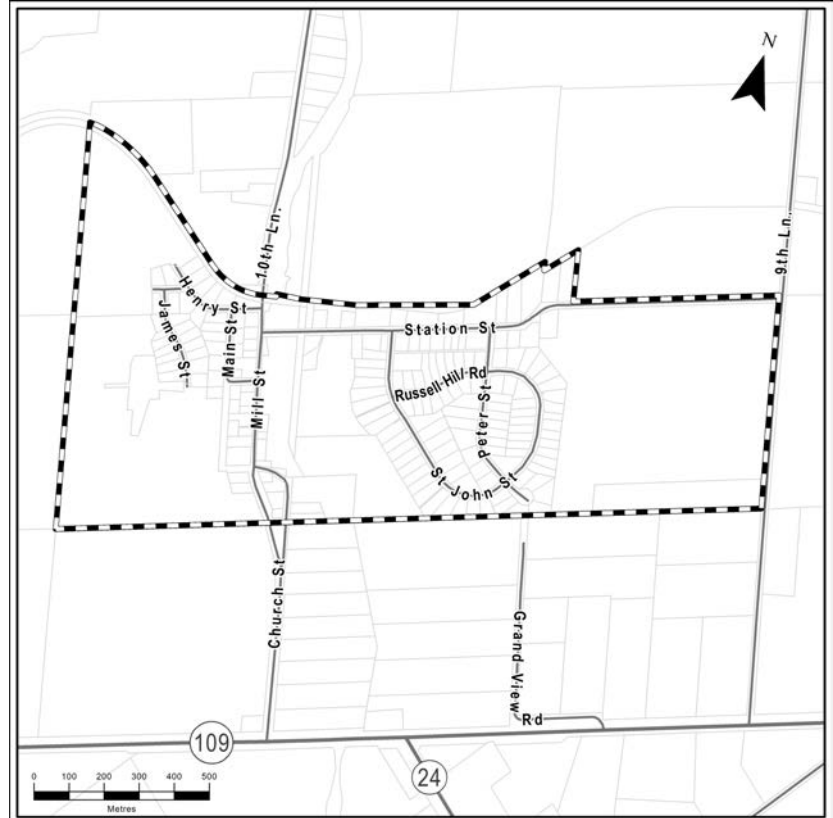
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Reasoning for Initiating the Study

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PIC Drop-in Centre Date: Monday, March 4, 2019
Time: 7:00 p.m. to 9:00 p.m.
Place: Township of Amaranth - 374028 6th Line, Amaranth, ON L9W 0M6

To provide comment or to request additional information concerning this project, or if you are unable to attend and would like to provide comments, please contact either of the following Project Team members by March 18th, 2019.

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

Township of Amaranth
 Director of Planning
 Christine Gervais
 374028 6th Line
 Amaranth ON L9W 0M6
 Phone: 519-941-1007
 cgervais@amaranth-eastgary.ca

Information will be collected in accordance with the Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.

This Notice first issued on February 21, 2019.



March 25, 2019

Chief Donna Big Canoe
Georgina Island First Nation
R.R.#2
Box N-13
Sutton West, ON L0E 1R0

Dear Chief Big Canoe:

**Re: Notice of Study Commencement & Public Information Centre
Waldemar Water Storage
Municipal Class Environmental Assessment Study
File No: 300041042.0000**

R.J. Burnside & Associates Limited (Burnside) circulated the Notice of Public Information Centre near the end of February. After receiving a response from the Environmental Assessment/ Planning Coordinator with Ministry of the Environment, Conservation and Parks, it was determined that we should add Georgina Island First Nation to our circulation list related to the above noted Municipal Class Environmental Assessment Study.

The existing drinking water storage in Waldemar does not have the volume required to support future water demands. The Township has initiated a Class Environmental Assessment (EA) to identify the preferred storage alternative. This study is being carried out in accordance with the planning and design process for Schedule 'B' projects as outlined in the Municipal Class Environmental Assessment (October 2000, as amended in 2007, 2011 and 2015). A key component of the study will be consultation with interested stakeholders (public and agency). Input and comments received from the public and from agencies will be incorporated into the planning and design of this project. Upon completion of the study, a Project File Report will be prepared for public review and comment. Subject to comments received and the receipt of necessary approvals, the Township of Amaranth intends to proceed with the planning, design and construction of this project.

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and other stakeholders, are identified early in the planning process, such that the appropriate environmental protection measures are incorporated into the overall project design.

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Yours truly,

R.J. Burnside & Associates Limited

A handwritten signature in black ink that reads "Carley Dixon". The signature is written in a cursive, slightly slanted style.

Carley Dixon, P.Eng.
CD:sgd

Enclosure(s) Notice of Public Information Centre

cc Christine Gervais, Director of Planning, Township of Amaranth
 Sue Stone, CAO, Township of Amaranth



**Township of Amaranth
Notice of Public Information Centre for the
Waldemar Water Storage
Class Environmental Assessment Study**



The Study

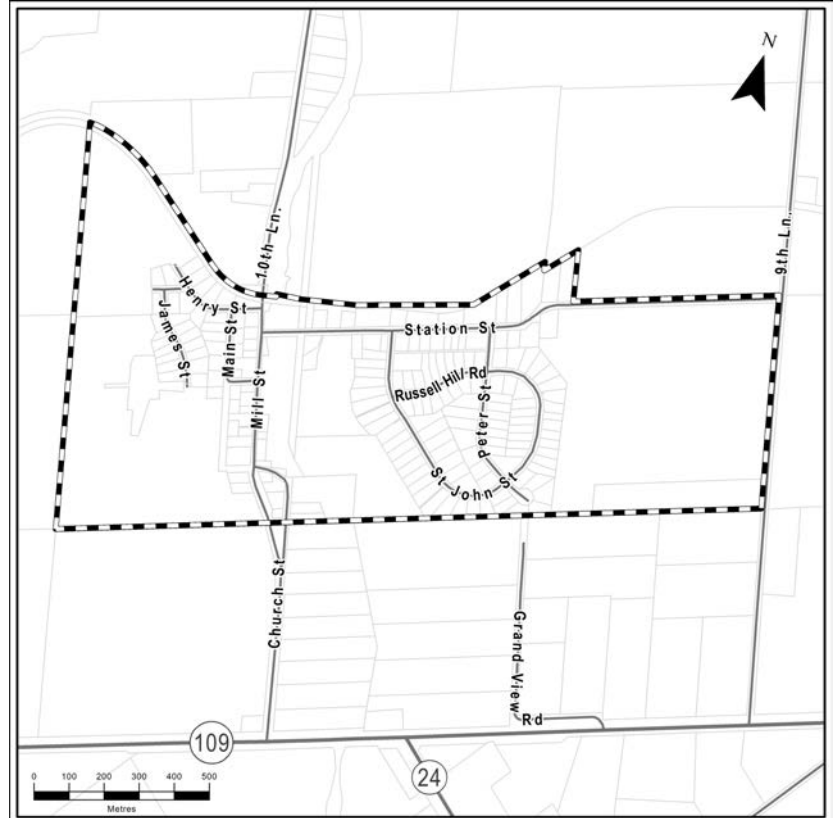
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Place: Township of Amaranth - 374028 6th Line, Amaranth, ON L9W 0M6

To provide comment or to request additional information concerning this project, or if you are unable to attend and would like to provide comments, please contact either of the following Project Team members by March 18th, 2019.

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

Township of Amaranth
 Director of Planning
 Christine Gervais
 374028 6th Line
 Amaranth ON L9W 0M6
 Phone: 519-941-1007
 cgervais@amaranth-eastgary.ca

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This Notice first issued on February 21, 2019.

Carley Dixon

From: Tandon, Priya (ENDM) <Priya.Tandon@ontario.ca>
Sent: Monday, March 25, 2019 9:25 AM
To: Carley Dixon
Subject: Automatic reply: Waldemar Water Storage Municipal Class Environmental Assessment, Township of Amaranth, County of Dufferin

Hello, I am out of the office on maternity/parental leave. Please contact Acting Director Grant Karwacki at 647-292-0903 or Grant.Karwacki@ontario.ca

Thank you,
Priya

Carley Dixon

From: Carley Dixon
Sent: Monday, March 25, 2019 11:29 AM
To: 'Paetz, Jennifer (ENDM)'
Subject: RE: Waldemar Water Storage Municipal Class Environmental Assessment, Township of Amaranth, County of Dufferin

Thanks Jennifer. That timeline is fine.

From: Paetz, Jennifer (ENDM) <Jennifer.Paetz@ontario.ca>
Sent: Monday, March 25, 2019 11:24 AM
To: Carley Dixon <Carley.Dixon@rjburnside.com>
Subject: RE: Waldemar Water Storage Municipal Class Environmental Assessment, Township of Amaranth, County of Dufferin

Hi Carley,

Thank you for your letter. You can send future correspondence to me.

I've sent the letter and PIC presentation to our Mineral Development and Lands Branch for review, with a 2-week deadline. Does that work for you?

Sincerely,

Jennifer Paetz, BES., MCC.

Senior Strategic Initiatives Lead (A)
Strategic Support Unit | Strategic Services Branch | Mines and Minerals Division
Northern Development and Mines
Ministry of Energy, Northern Development and Mines
933 Ramsey Lake Rd, 2nd Floor | Sudbury ON P3E 6B5
(705) 690-8205

From: Karwacki, Grant (ENDM)
Sent: Monday, March 25, 2019 9:37 AM
To: Paetz, Jennifer (ENDM) <Jennifer.Paetz@ontario.ca>
Cc: McLean, Kevin (ENDM) <Kevin.McLean@ontario.ca>; Dixon, Jessica (MNDM) <Jessica.Dixon@ontario.ca>
Subject: FW: Waldemar Water Storage Municipal Class Environmental Assessment, Township of Amaranth, County of Dufferin

FYI

From: Carley Dixon <Carley.Dixon@rjburnside.com>
Sent: March 25, 2019 9:35 AM
To: Karwacki, Grant (ENDM) <Grant.Karwacki@ontario.ca>
Cc: Sue Stone (suestone@amaranth-eastgary.ca) <suestone@amaranth-eastgary.ca>; Christine Gervais (cgervais@amaranth-eastgary.ca) <cgervais@amaranth-eastgary.ca>
Subject: FW: Waldemar Water Storage Municipal Class Environmental Assessment, Township of Amaranth, County of Dufferin

Hi Grant,

I just received a bounce back message from Priya and your name was provided. Please see the attached letter. If you have any questions please don't hesitate to contact me.

Thanks,
Carley

Carley Dixon, P.Eng.

R.J. Burnside & Associates Limited | www.rjburnside.com
Office: +1 800-265-9662 Direct: +1 226-486-1542

From: Carley Dixon

Sent: Monday, March 25, 2019 9:24 AM

To: 'priya.tandon@ontario.ca' <priya.tandon@ontario.ca>

Cc: Sue Stone (suestone@amaranth-eastgary.ca) <suestone@amaranth-eastgary.ca>; Christine Gervais (cgervais@amaranth-eastgary.ca) <cgervais@amaranth-eastgary.ca>

Subject: Waldemar Water Storage Municipal Class Environmental Assessment, Township of Amaranth, County of Dufferin

Hi Priya,

Through initial circulation to agencies regarding a Municipal Class Environmental Assessment for Water Storage in the Township of Amaranth, we received feedback from the County's Planning Department who recommended we add the Ministry of Northern Development and Mines to our circulation list. Please see the attached letter. If I don't have the correct contact or you prefer to be mailed the above letter, please let me know.

Thanks,
Carley



March 25, 2019

Priya Tandon
Director, Corporate Policy Secretariat
Ministry of Northern Development and Mines
5th Floor, 99 Wellesley Street West
Toronto, ON M7A 1W3

Dear Priya:

**Re: Notice of Study Commencement & Public Information Centre
Waldemar Water Storage
Municipal Class Environmental Assessment Study
File No: 300041042.0000**

R.J. Burnside & Associates Limited (Burnside) circulated the Notice of Public Information Centre near the end of February. After receiving a response from the County of Dufferin's Planning Department, it was recommended that we add the Ministry of Northern Development and Mines to our circulation list related to the above noted Municipal Class Environmental Assessment Study to confirm the significance of the mineral resources on the site.

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Yours truly,

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Carley Dixon, P.Eng.
CD:sgd

Enclosure(s) Notice of Public Information Centre

cc Christine Gervais, Director of Planning, Township of Amaranth
 Sue Stone, CAO, Township of Amaranth



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Notice of Public Information Centre for the
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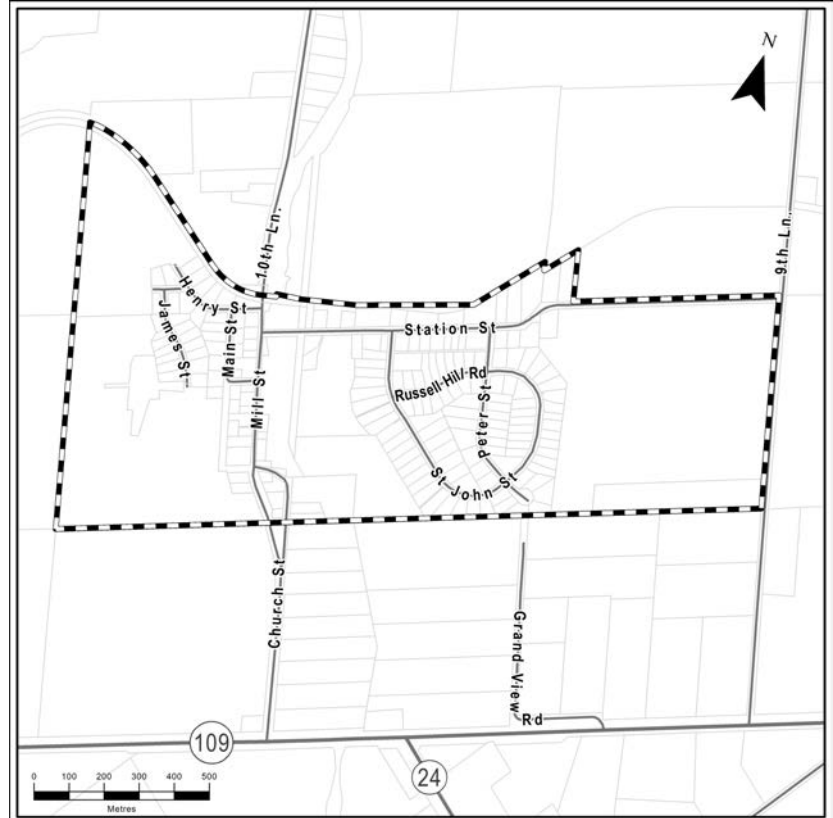
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 R.J. Burnside & Associates Ltd.
 15 Townline
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 Phone: 226-486-1542
 Carley.Dixon@rjburnside.com

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Carley Dixon

From: Carley Dixon
Sent: Monday, April 01, 2019 10:48 AM
To: 'Sharday James'
Cc: Christine Gervais (cgervais@amaranth-eastgary.ca)
Subject: RE: Water Storage Class EA, Waldemar

Hi Sharday,

Thanks for getting back to me so quickly. I will keep Chippewas of Rama First Nation on the contact list and direct any further circulation to you including a digital copy of the project file report.

From: Sharday James <shardayj@ramafirstnation.ca>
Sent: Monday, April 01, 2019 10:40 AM
To: Carley Dixon <Carley.Dixon@rjburnside.com>
Subject: Water Storage Class EA, Waldemar

Hello,

My name is Sharday James and I am a representative from the Chippewas of Rama First Nation. Thank you contacting us about the commencement of a Class EA for the future water storage requirements of Waldemar. At this time we have no comments but ask that we are updated as the project continues. We would appreciate a digital copy of the Project file report upon its completion.

Thank you,
Sharday James

Sharday James

Community Consultation Worker, Communications

Chippewas of Rama First Nation

(ph) 705-325-3611, 1633

(cell)

(fax)

(url) www.ramafirstnation.ca

This email is intended only for the named recipient(s) and may contain information that is privileged, confidential and/or exempt from disclosure under applicable law. No waiver of privilege, confidence or otherwise is intended by virtue of communication via the internet. Any unauthorized or copying is strictly prohibited. If you have received this e-mail in error, or are not named as a recipient, please immediately notify the sender and destroy all copies of this e-mail.

By submitting your or another individual's personal information to Chippewas of Rama First Nation, its service providers and agents, you agree and confirm your authority from such other individual, to our collection, use and disclosure of such personal information in accordance with our privacy policy.

 Please consider the environment before printing this e-mail.

**Ministry of Energy, Northern
Development and Mines**

Strategic Services Branch

933 Ramsey Lake Road, B6
Sudbury ON P3E 6B5
Tel.: (705) 670-3003
Fax: (705) 670-5803
Toll Free: 1-888-415-9845, Ext 3003

**Ministère de l'Énergie, du Développement
du Nord et des Mines**

Direction des services stratégiques

933, chemin du lac Ramsey, étage B6
Sudbury ON P3E 6B5
Tél.: (705) 670-3003
Télééc.: (705) 670-5803
Sans frais : 1-888-415-9845, poste 3003



April 11, 2019

Carley Dixon
R.J. Burnside & Associates Limited
15 Townline
Orangeville ON L9W 3R4

Emailed to Carley.Dixon@rjburnside.com

Dear Carley Dixon:

**Re: Waldemar Water Storage Facility Expansion
Notice of Study Commencement and Public Information Centre
File No: 300041042.000**

Thank you for the opportunity to provide comment on the proposed Water Storage Facility Expansion at Waldemar, Amaranth Township, Country of Dufferin. The Ministry of Energy, Northern Development and Mines has reviewed the information with respect to: energy implications, mine hazards, mining lands, and geology and mineral resource potential.

The Ministry has no comments or concerns with the proposal at this time. However, please be aware that the study area lies within an area of primary significance for aggregate resources, and also within an area of known and potential karst development in bedrock (see Attachment 1).

If you have any questions about the Ministry's response, please feel free to contact me at (705) 670-5918 or Jennifer.Paetz@Ontario.ca.

Sincerely,

A handwritten signature in black ink, appearing to read "Paetz", with a long horizontal flourish extending to the right.

Jennifer Paetz, BES., MCC.
Senior Strategic Initiatives Lead (A)
Strategic Support Unit

Attachment 1: Geology and Mineral Resource Potential

The information below has been provided by the Southern Ontario Regional Land Use Geologist for the Ministry of Energy, Northern Development and Mines regarding mineral values in the area of the proposed Water Storage Facility Expansion project.

Mineral Occurrences: The Ontario Geological Survey's Mineral Deposits Inventory (MDI) database was checked. There is one mineral occurrence, the Waldemar Quarry, located within one kilometre of the proposed project area: MDI point #MDI40P16NW00004, a past-producing dolostone aggregate quarry reported to have been on the west bank of the Grand River in Waldemar. The attached Mineral Occurrence map (see Figure 1) shows the location of the MDI point in the residential area west of the river, but the actual location should be along the river bank, about 250 metres west of the proposed project area (Ontario Geological Survey 2018).

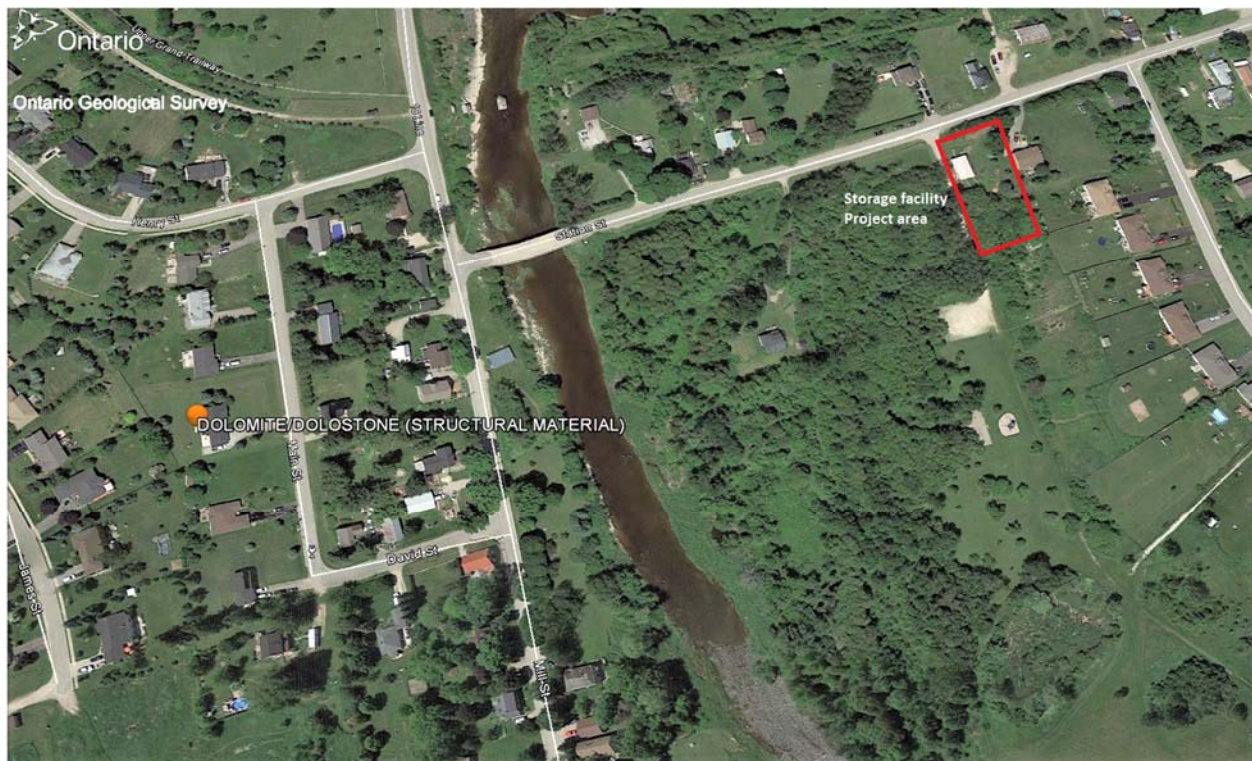


Figure 1. Mineral Deposit Inventory image, Waldemar area; showing location of Waldemar dolostone quarry and Water Storage Facility Project Area.

Bedrock Geology: The project area is underlain by Paleozoic dolostone of the middle-Silurian Guelph Formation, Amabel Member (Armstrong and Dodge 2007).

Aggregate Potential: Aggregate resource mapping of the area (Aggregate Resources Inventory of Dufferin County – ARIP163-Rev2) indicates that the project area lies within an area of sand and gravel resources of primary significance and close to areas of secondary significance (see Figure 2).

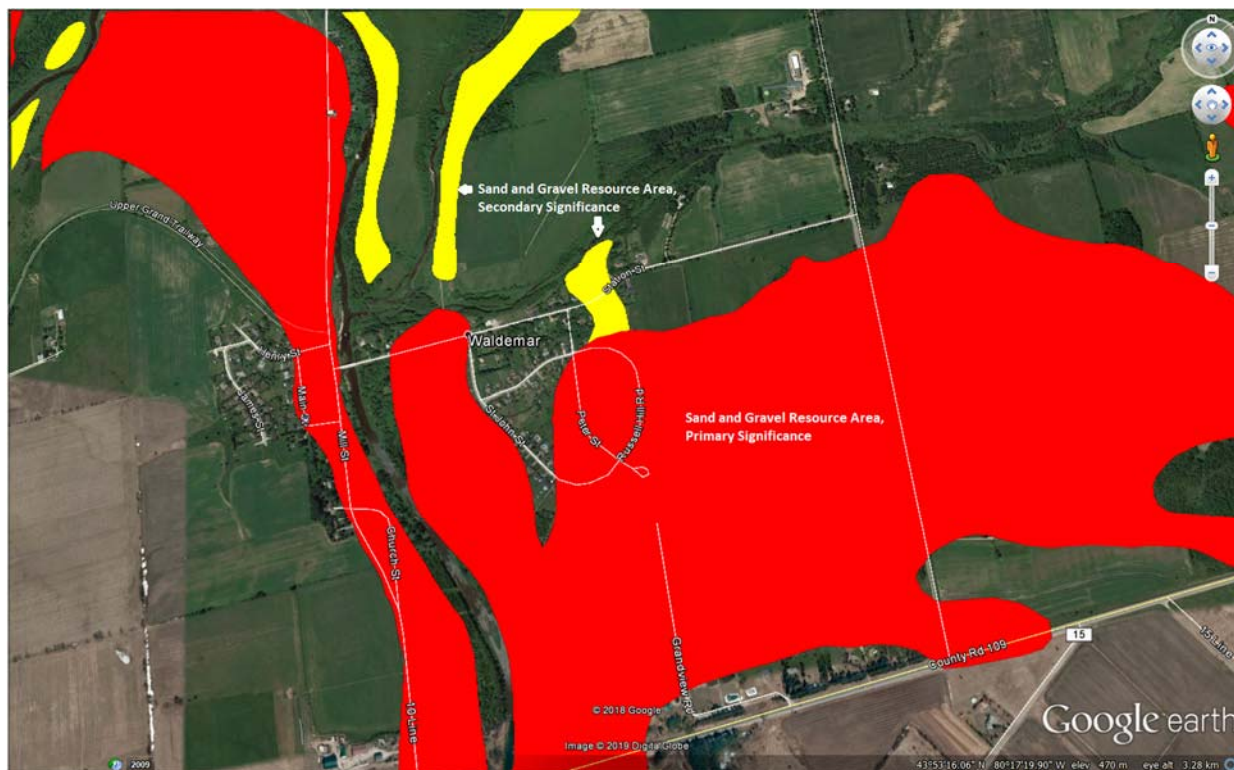


Figure 2. Aggregate Potential (sand and gravel), Waldemar area (from Aggregate Resources of Ontario, Compilation; Ontario Geological Survey, OGS Earth database <http://www.mndm.gov.on.ca/en/mines-and-minerals/applications/ogsearth/aggregate-resources-ontario-compilation>)

Mineral Potential: The Provincially Significant Mineral Potential Index score for the area is 58. A score of 65 or higher represents significant mineral potential.

Karst: Groundwater Study 5, Karst of Southern Ontario and Manitoulin Island (Brunton and Dodge 2008) indicates known karst in bedrock along the Grand River, within 250 metres west of the project area. The surrounding areas in general are classified as “Potential Karst” (see Figure 3).

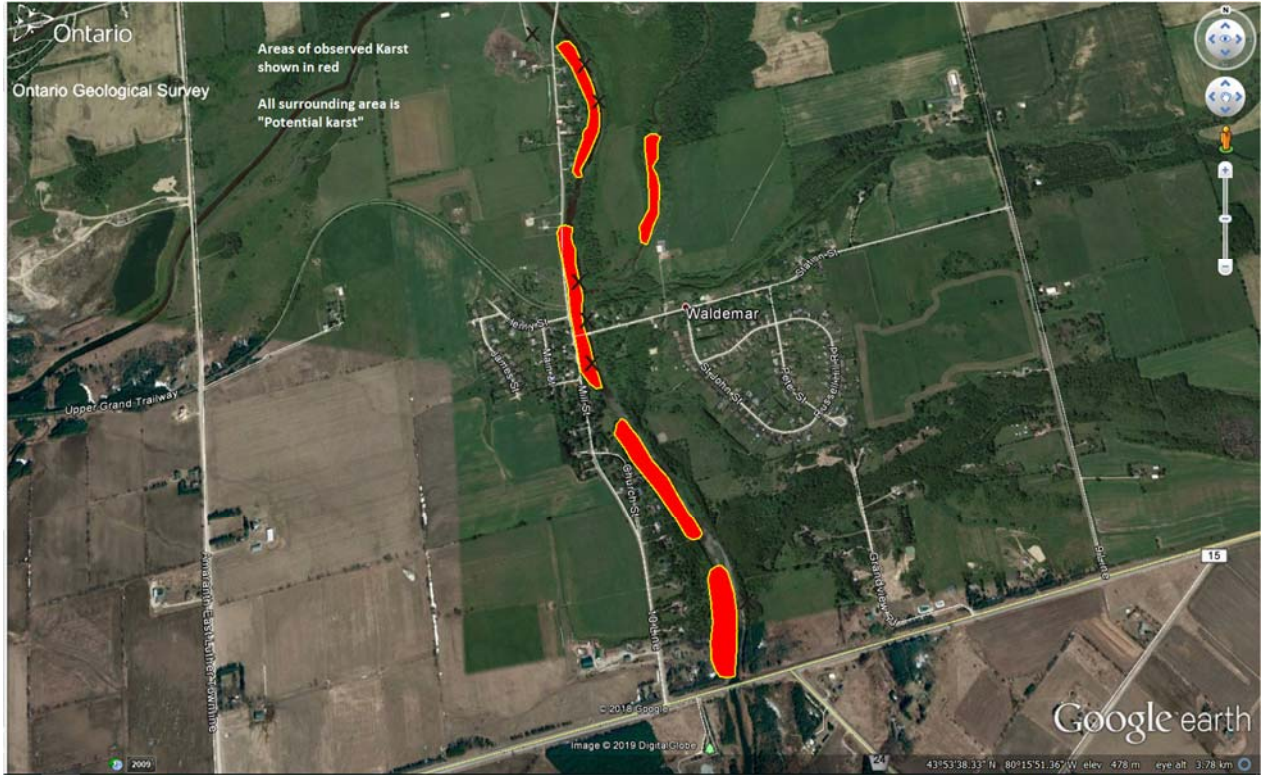


Figure 3. Karst potential, Waldemar area; from Brunton and Dodge 2008; OGS Earth database <http://www.mndm.gov.on.ca/en/mines-and-minerals/applications/ogsearch/karst>

References

Armstrong, D.K. and Dodge, J.E.P. 2007. Paleozoic geology of southern Ontario; Ontario Geological Survey, Miscellaneous Release--Data 219 (May 2017 update).
<http://www.mndm.gov.on.ca/en/mines-and-minerals/applications/ogsearth/paleozoic-geology>

Brunton, F.R. and Dodge, J.E.P. 2008. Karst of southern Ontario and Manitoulin Island; Ontario Geological Survey, Groundwater Resources Study 5 (May 2017 update).
<http://www.mndm.gov.on.ca/en/mines-and-minerals/applications/ogsearth/karst>

Ontario Geological Survey 2018. Mineral Deposit Inventory; Ontario Geological Survey, Mineral Deposit Inventory, online database (April 2, 2019 update).
<http://www.mndm.gov.on.ca/en/mines-and-minerals/applications/ogsearth/mineral-deposits-mdi>

Carley Dixon

From: Carley Dixon
Sent: Friday, April 26, 2019 10:49 AM
To: WALTER BROOS
Cc: Gord Feniak; Christine Gervais (cgervais@amaranth-eastgary.ca); Sue Stone (suestone@amaranth-eastgary.ca); jwilker (jwilker@thomsonrogers.com); Glenn Wellings (glenn@wellingsplanning.ca); Suzanne Troxler; pharrington@airdberlis.com; Dave Hannam - Zelinka Priamo Ltd.
Subject: Waldemar Water Storage EA
Attachments: 300041042.0000_EA response to Walter Broos April 26 2019.pdf

Hi Walter,

Please see the attached letter.

Regards,
Carley



April 26, 2019

Via: Email [REDACTED]

Mr. Walter Broos
Sarah Properties Ltd.

Dear Walter:

**Re: Waldemar Water Storage Municipal Class EA
Response to February 19, 2019 Phone Call and
Response to March 12, 2019 Letter from Zelinka Priamo Ltd.
Project No.: 300041042.0000**

This letter provides the reply that Burnside committed to send during the phone call you made to Carley Dixon on February 19, 2019. It also provides a response to the comments received by your Planning Consultant, Dave Hannam (Zelinka Priamo Ltd.) on March 12, 2019.

To summarize the phone discussion;

- You were concerned with the lot yield that we are predicting for your property.
- Carley Dixon explained that our source document is the Township's existing approved Official Plan, which does not allow communal wastewater servicing without being amended.
- Carley referred back to a previous email sent to Dave Hannam confirming 53 lots were estimated for your land, based on the assumption that servicing would be with private, individual septic systems.
- As we understand your position, you interpret the current Official Plan to suggest a lot yield of 334 lots for your property based on a statement contained within the Official Plan indicating that communal servicing is preferred over private individual septic systems.
- You are of the view that our estimate of 53 lots is based on a perceived outcome of the LPAT process that is underway. You said that you would appeal (request a Part 2 Order on) the Class EA underway unless it allowed for multiple possible outcomes, including 334 lots on your property.

Our response is as follows:

The Class EA process starts with a defined Problem Statement. Considering multiple possible input parameters, such potential amendments to the Official Plan, would not lead to any resultant conclusion. The following list contains examples of possible outcomes that would be included in the multitude:

- New applications that could be made to the Township at any time,

- The possibility of the boundaries of Waldemar expanding to take in more agricultural areas and additional population,
- The possibility of the Centurian Homes approved draft plan of subdivision being abandoned in pursuit of communal servicing because of the statement in the Official Plan that you are relying on,
- Full municipal servicing. By extension, your interpretation of the Official Plan would suggest that the lot yield in Waldemar should be premised on full municipal services as opposed to communal, because municipal services are preferred over communal services in the clause that you are referring to (Section 4.2.5 of Official Plan).
- Various possibilities of lot yield for the small parcel of land located within the current Waldemar boundary, adjacent to the south property line of Centurian Homes.

In short, if the Problem Statement were to include potential amendments to the Official Plan it would not reach any conclusion, even after the results of your LPAT process are known.

We have consulted with the Township's Consulting Planner, Glenn Wellings, on his interpretation of the Official Plan. The existing Official Plan policies permit servicing by private septic systems as set out by those policies. While an application has been made by Sarah Properties to amend the Official Plan to allow for communal wastewater services, he is of the view that it would be premature to assume communal servicing in advance of a decision on the proposed Official Plan Amendment.

There are timing consequences if we await the LPAT decision. That process is just starting, and we don't currently have an expected timeframe for its conclusion. The existing fire reservoir is too small to meet current guidelines and its expansion cannot be put off indefinitely. The reservoir expansion is on the critical path for Centurian Homes who are now clearing their conditions of draft plan approval and who should not be unduly delayed owing to the desires of Sarah Properties.

There are also financial consequences of basing the EA on multiple potential outcomes of lot yield. The completed EA will be used to assess financial costs to the development community and it is highly unlikely that other developers, such as Centurian Homes, will be willing to finance oversizing costs that are reliant on an LPAT decision that may or may not justify the costs. We awaited the decision of Township Council before embarking on the EA as their rejection of your proposal can be taken as confirmation that the Township will not be willing to finance the oversizing on a speculative basis.

There are significant impacts to the water system depending on whether or not your application is approved. They include:

- The density of houses in your proposal drives the required fire flows much higher, as the closer spacing creates additional risk of a house fire spreading to other houses. This is in addition to the increase in fire flows that are required as a direct result of additional population.
- Higher fire flows will require significant replacement and upsizing of existing watermains in order to deliver higher flow volumes of water.
- Higher fire flows will require an entirely different pump selection at the pumping station and potentially different emergency standby generator.

- The number of houses in your proposal could increase the volume of water to be stored in the reservoir by as much as 33%.

While we appreciate your input and your desire to plan for the fulfillment of your development proposal, we have concluded that our study should continue on the basis of addressing our Problem Statement and on the basis of considering a lot yield of 53 lots on your property. We note that this lot yield is substantially greater than that estimated by your engineers for individual wastewater servicing as discussed subsequently.

We have however considered your comments, and in light of this, we will view your application as an Opportunity to also be considered along with the Problem. Our consideration will include the following:

- We considered a water tower (elevated storage) on the Sarah Properties land in the south west corner. However, elevated storage is typically not expandable. Therefore, this would not be suitable if there was a future requirement to accommodate Sarah Properties at a greater density of development. We will include this as a disadvantage should additional lots be permitted on the Sarah Properties lands.
- Another alternative is to construct a standpipe at the existing pumphouse site. Again, these are not often expanded. We will include this as a disadvantage similar to the above bullet.
- The preliminary preferred alternative presented at the Public Information Centre was to expand the underground reservoir system. This type of storage can be expandable, and we will include this as an advantage should additional units beyond 53 lots require accommodation. There can be challenges with expansions, and considerations could be made in the detail design in order to better accommodate a future expansion. This is an added cost and would only be completed should Sarah Properties cover this cost. There would be no guarantees or payback should the LPAT process not approve the Official Plan Amendment to provide for a greater density of development. The pumping system put in place would not accommodate Sarah Properties at this time. This work would need to be done as part of future works, since pumps have a life span, and should be designed to operate at expected flows.

The comments from your Planner, Mr. Hannam indicated that EA did not disclose how our 53 lot estimate was calculated and did not justify or substantiate such a limitation for the Sarah Property lands. Mr. Hannam indicated that in his opinion, using an assumption of 53 lots represented a significant underestimation of the development potential of the lands.

- As a response to the paragraph above, the Problem Statement does not make reference to “development potential”, which is a term that could be interpreted to have speculative outcomes. The actual reference is to “projected growth”, which grounds population estimations to what can be projected from current planning documents. Your engineering consultant (C.C. Tatham) estimated that your land would yield 26 lots on private individual sewage systems. We increased that number to 53 based on a more optimistic calculation. (This optimistic estimate was based on the standard nitrate calculation using no background nitrates, a slightly higher recharge of 175 mm/year, and an area of 33.7 Ha.) We have used a yield that is more than double what your engineering consultant provided for development on septic systems, which is the mode of servicing that can be achieved without amending the Official Plan. Therefore, it is our opinion that 53 lots are a reasonable current projection of the growth on your lands.

The comments from your Planner indicated that the EA should be conducted with due consideration to the potential connection of existing homes to the water distribution system, at the very least as a provision for a potential future expansion. Your planner also indicated that the EA should not be limited to considering storage expansion only, but also consider an increase in the groundwater supply. In response, we have the following comments:

- We have viewed the potential connection of existing homes as an opportunity arising from the Problem Statement.
- The study has given us an opportunity to reach out to existing residents to confirm if they would have any interest in connecting to the Municipal Drinking Water System at some point. This was included as a question in the Public Information Comment Sheet. As of April 26, 2019, no existing residents have indicated any desire for a future connection.
- Council indicated that any cost for upgrades to the water system is to be fully paid for by developers which precludes expansion for existing homes at the expense of the Township.
- We are not including groundwater supply as part of this EA. Centurian has a draft plan condition requiring them to finance upgrades to the water system required for their subdivision. As storage is required before their development can proceed (and not supply), we did not include supply as part of this study. The scenario considered under this EA does not currently predict that the water system will need additional supply. The Township will continue to review water data as Centurian comes online to the system to confirm that supply remains adequate.

Comments from your Planner agreed with the preliminary preferred solution of an in-ground water storage facility however designed with due consideration for a larger service population. The comments provided indicated that there would be less than a 15% increase in total reservoir volume to account for a service population of 1,653.

In response to the paragraph above, we have the following comments:

- The service population of 1,653 was determined by your Planner. Our estimation of existing users on the water system plus new development with 334 units considered for Sarah Properties is 1,709. The letter submitted also indicated that existing residents not currently connected should be included as well. This would equate to a total population of 1,933 people which differs from your Planner's suggestion of 1,653.
- A maximum day factor of 2.5 was assumed by your Planner. This does not consider historical water data. We have applied a factor of 3 for that scenario.
- The 15% does not consider the impacts of Sarah Properties and consideration of fire flow. Sarah Properties proposes reduction to setbacks (meaning houses are closer together), and the overall population increases the fire flow that should be accommodated for in storage.
- An increase of 15% is underestimated based on the above. As noted previously without considering existing residents not currently serviced, the increased number of houses in the proposal could increase the volume of water to be stored in the reservoir as much as 33%.

Should you have any additional comments please respond in writing via email or letter to Carley Dixon and to Christine Gervais at the Township.

Carley Dixon

From: Carley Dixon
Sent: Monday, May 27, 2019 3:08 PM
To: Laura Warner
Cc: Christine Gervais (cgervais@amaranth-eastgary.ca); Sue Stone (suestone@amaranth-eastgary.ca)
Subject: RE: Waldemar Water Storage Municipal Class Environmental Assessment

Hi Laura – Thanks for responding so quickly. Should something change, I'll let you know.

From: Laura Warner <lwarner@grandriver.ca>
Sent: Monday, May 27, 2019 9:48 AM
To: Carley Dixon <Carley.Dixon@rjburnside.com>
Cc: Christine Gervais (cgervais@amaranth-eastgary.ca) <cgervais@amaranth-eastgary.ca>; Sue Stone (suestone@amaranth-eastgary.ca) <suestone@amaranth-eastgary.ca>
Subject: RE: Waldemar Water Storage Municipal Class Environmental Assessment

Hi Carley,

Thank you for the update on this EA. The preliminary preferred site, 10 Station Street, contains a very small portion of the regulated allowance of the floodplain to the west. If all proposed development and site alteration occurs outside this area, a GRCA permit would be not required.

Please notify our office if the preferred alternative changes.

Kind regards,
Laura



Laura Warner | Resource Planner
Grand River Conservation Authority
400 Clyde Road, Cambridge ON N1R 5W6
P: (519) 621-2763 x 2231 | F: (519) 621-4844
lwarner@grandriver.ca | www.grandriver.ca

From: Carley Dixon <Carley.Dixon@rjburnside.com>
Sent: Friday, May 24, 2019 12:32 PM
To: Laura Warner <lwarner@grandriver.ca>
Cc: Christine Gervais (cgervais@amaranth-eastgary.ca) <cgervais@amaranth-eastgary.ca>; Sue Stone (suestone@amaranth-eastgary.ca) <suestone@amaranth-eastgary.ca>
Subject: Waldemar Water Storage Municipal Class Environmental Assessment

Hi Laura,

Back in February, Fred provided comments with respect to the EA we are doing for water storage in Waldemar. During the Public Information Centre on March 4th, we did present the preliminary preferred alternative, which was in-ground storage and the existing pumphouse site located at 10 Station Street in Waldemar. All of the PIC materials are posted on the Township's website and I've included the link below for reference. Based on this preliminary preferred site, does GRCA have any specific comments, would a permit be required for this site?

<http://www.amaranth.ca/Modules/News/index.aspx?newsId=fe5ec8f8-d191-40aa-9f3a-0be0837763a4>

Thanks and feel free to call me if you have any specific questions.



R.J. Burnside & Associates Limited
292 Speedvale Avenue West, Unit 20, Guelph, Ontario N1H 1C4
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www.rjburnside.com

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Thank you.

Carley Dixon

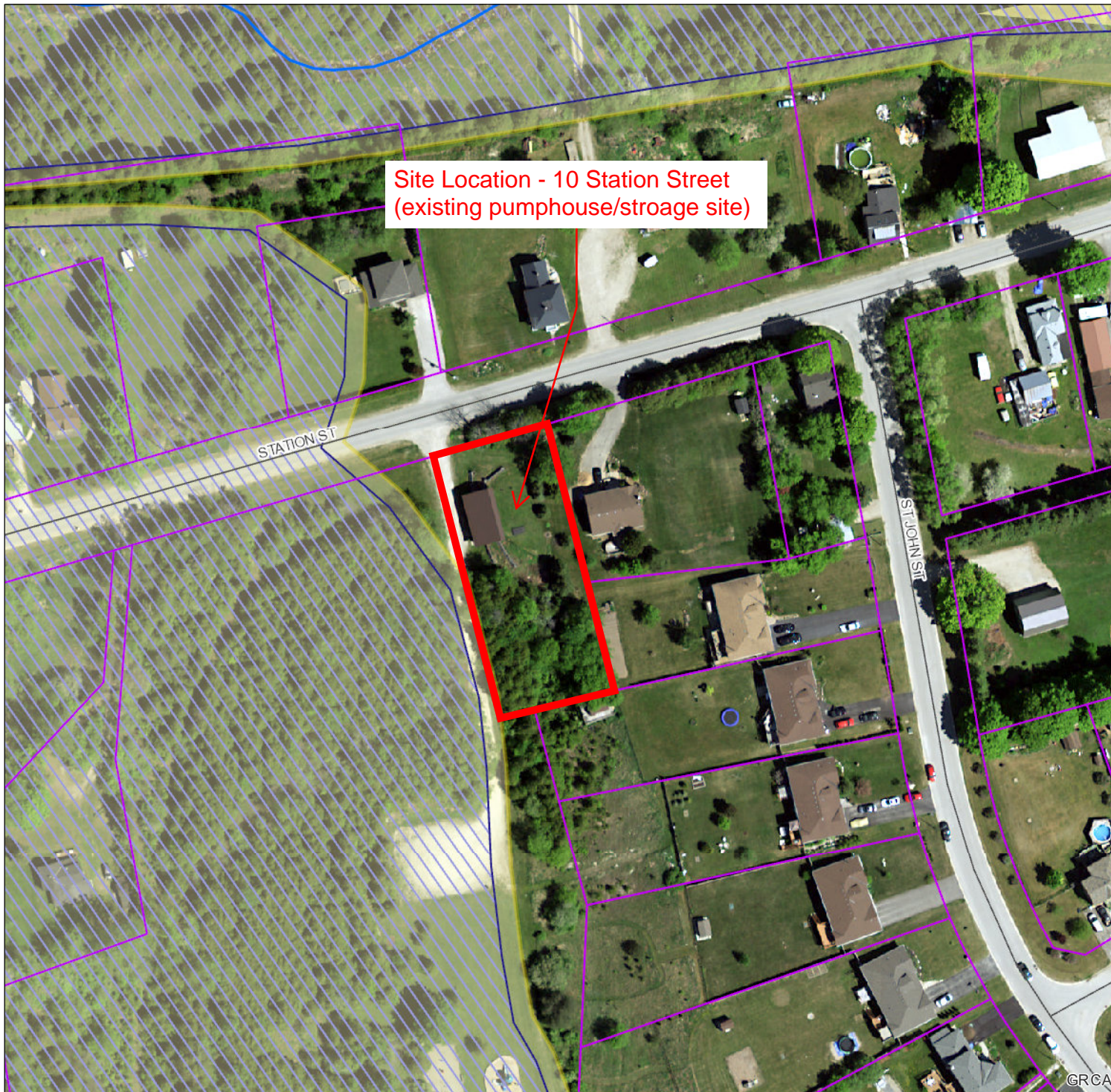
From: Carley Dixon
Sent: Friday, May 24, 2019 12:32 PM
To: Laura Warner
Cc: Christine Gervais (cgervais@amaranth-eastgary.ca); Sue Stone (suestone@amaranth-eastgary.ca)
Subject: Waldemar Water Storage Municipal Class Environmental Assessment
Attachments: GRCA letter dated February 25, 2019.pdf; GRCA Map showing preliminary preferred alternative site location.pdf

Hi Laura,

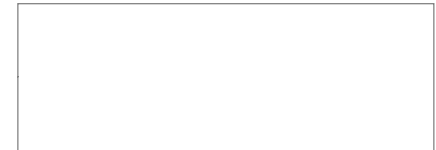
Back in February, Fred provided comments with respect to the EA we are doing for water storage in Waldemar. During the Public Information Centre on March 4th, we did present the preliminary preferred alternative, which was in-ground storage and the existing pumphouse site located at 10 Station Street in Waldemar. All of the PIC materials are posted on the Township's website and I've included the link below for reference. Based on this preliminary preferred site, does GRCA have any specific comments, would a permit be required for this site?

<http://www.amaranth.ca/Modules/News/index.aspx?newsId=fe5ec8f8-d191-40aa-9f3a-0be0837763a4>

Thanks and feel free to call me if you have any specific questions.



Site Location - 10 Station Street
(existing pumphouse/stroage site)



Legend

- Regulation Limit (GRCA)
- Regulated Watercourse (GRCA)
- Regulated Waterbody (GRCA)
- Wetland (GRCA)
- Floodplain (GRCA)
 - Engineered
 - Estimated
 - Approximate
 - Special Policy Area
- Slope Valley (GRCA)
 - Steep
 - Oversteep
 - Steep
- Slope Erosion (GRCA)
 - Oversteep
 - Toe
- Lake Erie Flood (GRCA)
- Lake Erie Shoreline Reach (GRCA)
- Lake Erie Dynamic Beach (GRCA)
- Lake Erie Erosion (GRCA)
- Parcel - Assessment (MPAC/MNRF)

This legend is static and may not fully reflect the layers shown on the map. The text of Ontario Regulation 150/06 supercedes the mapping as represented by these layers.

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The source for each data layer is shown in parentheses in the map legend. For a complete listing of sources and citations go to: <https://maps.grandriver.ca/Sources-and-Citations.pdf>





February 25, 2019

Ms. Christine Gervais
Director of Planning
Township of Amaranth
374028 6th Line
Amaranth ON L9W 0M6

Mrs. Carley Dixon, P.Eng.
Project Engineer
R.J. Burnside & Associates Limited
292 Speedvale Ave. West, Unit 20
Guelph, ON N1H 1C4

Dear Ms. Gervais and Mrs. Dixon

**Re: Township of Amaranth – Waldemar Water Storage
Schedule B Class Environmental Assessment
Notice of Study Commencement and Notice of Public Information Centre**

Thank-you for circulating our office the Notice of Study Commencement and Public Information Centre for the Waldemar Water Storage Environmental Assessment (EA). We request that our office remains notified of any information pertaining to the EA as it becomes available.

The study area contains natural hazard and natural heritage features including the Grand River and its tributaries, floodplain, and areas with slope hazards as well as the regulated allowances to these features. The study area is also adjacent to several wetland features.

These features and their allowances are regulated under Ontario Regulation 150/06. Any future development within the regulated areas may require the issuance of a Development, Interference with Wetlands and Alterations to Shorelines and Watercourses permit from GRCA. A copy of our resource mapping is attached for your reference.

Should you have any further questions or comments, please contact Laura Warner at 519-621-2763 x2231.

Yours truly,

A handwritten signature in blue ink, appearing to read "Fred Natolochny".

Fred Natolochny, MCIP, RPP
Supervisor of Resource Planning
Grand River Conservation Authority
FN/lw

cc: Sue Stone, Township of Amaranth

Yours truly,

R.J. Burnside & Associates Limited



Carley Dixon, P.Eng.
CD/GF:sgd



Gord Feniak, P.Eng.

cc: Christine Gervais, Township of Amaranth (Via: Email)
Sue Stone, Township of Amaranth (Via: Email)
Glenn Wellings, Wellings Planning Consultants (Via: Email)
Jeff Wilker, Thomson Rogers (Via: Email)
Dave Hannam, Zelinka Priamo Ltd. (Via: Email)
Suzanne Troxler, C.C. Tatham (Via: Email)
Patrick Harrington, Aird & Berlis LLP (Via: Email)

Carley Dixon

From: [REDACTED]
Sent: Wednesday, June 05, 2019 8:38 AM
To: Carley Dixon
Subject: Re: FW: waldemar water management

Carley Dixon,
thank you for your reply. Comprehensive and to the point.

[REDACTED]

On Wed, Jun 5, 2019 at 8:16 AM Carley Dixon <Carley.Dixon@rjburnside.com> wrote:

Hi [REDACTED]

I'm responding on the Township's behalf to your email below. Sorry for the delay in getting back to you. I will add your contact info to our overall distribution list for the Municipal Class EA for water storage in Waldemar. There are no impacts anticipated to supply as well pumping is not going to be exceeding current permitted rates by the existing wells permit to take water.

The monitoring that Terraprobe is doing is separate from the Municipal Class EA and is a requirement that Centurian (the Developer of the 73 lot subdivision) has to do. We suggest you request to participate in the on-going monitoring since you have concerns. If you don't have their contact information, please let me know and I will forward that to you.

The subdivision proposed in the west is not approved. As you may already know, Township Council refused their Official Plan Amendment (OPA) which the Developer has appealed, but a decision has not been made by the Local Planning Appeal Tribunal (LPAT). Should LPAT approve the OPA, that still leaves the Developer with work to do. The existing municipal wells would not be sufficient to meet their needs at the density they proposed and testing would be needed for any new wells that would have to be added to the system which includes reviewing any potential impacts on private wells. Should a development proceed, the west Developer will have a similar condition like Centurian that they have to monitor wells regardless of what their density might end up being.

Begin forwarded message:

From: [REDACTED]
Date: May 10, 2019 at 9:56:28 AM EDT

To: <cgervais@amaranth-eastgary.ca>

Subject: waldemar water management

Thank you for your email responses in regards to past inquiries to do with the proposed subdivisions in Waldemar.

Regarding the water storage and environmental assessment study for Waldemar my wife and I only have concerns as such management might impact upon our well water.

We, my wife and I , had discussed our well status during the Terraprobe Inc.'s private well survey.

Our only concerns centre around any decrease in the level, availability and quality of our well water in light of the water requirements needed to accommodate the development of the subdivision next to our property. We also have concerns should the water needs for the proposed subdivision on the west side of the Grand River impact upon the water levels, availability and quality of our well water.

Please keep us informed of developments as you have done in the past

Respectfully,

[Redacted signature]

Origin: <http://www.amaranth.ca/en/municipal-government/Contact-Us.aspx>

This email was sent to you by [Redacted] through <http://www.amaranth.ca/>.

 **BURNSIDE**
Carley Dixon, P.Eng.
Project Engineer

R.J. Burnside & Associates Limited
292 Speedvale Avenue West, Unit 20, Guelph, Ontario N1H 1C4
Office: +1 800-265-9662 Direct: +1 226-486-1542
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Thank you.

Carley Dixon

From: Carley Dixon
Sent: Friday, July 26, 2019 10:36 AM
To: Carley Dixon
Subject: FW: Waldemar Water Storage EA
Attachments: LETTER - Additional Preliminary Comments from Sarah Properties Limited - Waldemar Water Class EA (July 9 2019).pdf

From: Dave Hannam - Zelinka Priamo Ltd. <dave.h@zpplan.com>
Sent: Tuesday, July 9, 2019 8:35 PM
To: Christine Gervais <cgervais@amaranth-eastgary.ca>
Cc: Susan Stone <suestone@amaranth-eastgary.ca>
Subject: FW: Waldemar Water Storage EA

Hi Christine, attached are additional comments on behalf of Sarah Properties. Please confirm receipt via return email.

If you have any questions please let me know.

Thanks and regards

Dave Hannam, BRP, MCIP, RPP
Associate

Zelinka Priamo Ltd.
London Office
318 Wellington Road
London, ON N6C 4P4
(519) 474-7137 office
(416) 312-1412 cell
dave.h@zpplan.com
www.zpplan.com

From: Carley Dixon [<mailto:Carley.Dixon@rjburnside.com>]
Sent: Friday, April 26, 2019 10:49 AM
To: WALTER BROOS [REDACTED]
Cc: Gord Feniak <Gord.Feniak@rjburnside.com>; Christine Gervais (<cgervais@amaranth-eastgary.ca> <cgervais@amaranth-eastgary.ca>); Sue Stone (<suestone@amaranth-eastgary.ca> <suestone@amaranth-eastgary.ca>); jwilker (<jwilker@thomsonrogers.com> <jwilker@thomsonrogers.com>); Glenn Wellings (<glenn@wellingsplanning.ca> <glenn@wellingsplanning.ca>); Suzanne Troxler <stroxler@cctatham.com>; pharrington@airdberlis.com; Dave Hannam - Zelinka Priamo Ltd. <dave.h@zpplan.com>
Subject: Waldemar Water Storage EA

Hi Walter,

Please see the attached letter.

Regards,
Carley



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Thank you.



VIA EMAIL

July 9, 2019

Township of Amaranth
374028 6th Line
Amaranth ON
L9W 0M6

ATTN: Ms. Christine Gervais, Director of Planning

Dear Ms. Gervais:

Re: **Waldemar Water Storage Class Environmental Assessment Study
Additional Preliminary Comments on behalf of Sarah Properties
Limited
Lands known legally as Part of Lots 2 and 3, Concession 10,
Registered Plan 4A Waldemar, Ontario**

Our File: **BRS/WLD/19-01**

This letter provides the following additional preliminary comments on behalf of Sarah Properties Limited ("Sarah"), in response to the R. J. Burnside (Burnside) letter dated April 26, 2019:

- We remain concerned that the Township and its consultants are unwilling to consider that the Hamlet of Waldemar may develop at a greater density than currently exists, or is draft plan approved. It is our opinion that a development of the scale proposed by Sarah is consistent with provincial policy and in conformity with County Official Plan and Township Official Plan policies.
- It still remains our opinion that the Water Storage Class EA should be conducted with due consideration for a maximum possible number of lots contemplated for the Sarah site, as well as for the potential connection of existing homes to the water distribution system, at least as a provision for a potential further expansion of the water storage facility. It is our opinion that this would be prudent infrastructure planning. In addition, it would eliminate the need for a subsequent Class EA study to plan for the municipal water servicing of Waldemar's full potential growth.
- We acknowledge the possible difficulty in premising the Class EA on a scenario that includes more development lots than can pay for the infrastructure costs,

however this could be addressed with a phased solution that would include a planned storage expansion in a second phase, paid for by the benefitting developments.

- Burnside indicates there would be added costs to design the water storage tank and pumping facility for a future expansion. In our opinion, the additional costs to provide adequate space for future larger pumps and process piping would be low and certainly lower than for a subsequent unplanned expansion. For prudent infrastructure planning, the Class EA report should state that a future expansion of the storage and pumping facility may be required to service other developments and existing homes, and that provisions for a second expansion phase should be included in the design of the storage and pumping facility expansion.
- It is understood that pumps to the water distribution system will need to be replaced when the Sarah site is developed. It is not our expectation that the pumping facility would accommodate future development(s) at this time. However, provision for future larger pumps should be included in the design.

We appreciate your consideration of our comments, and we may provide additional comments as required in the future. We will continue to work diligently with Town staff, its consultants and interested parties to affect the best possible outcome for our client's proposal, giving full consideration to all relevant information arising from the ongoing Class EA process in the hopes of avoiding any additional legislative process.

Should you have any questions, or require further information, please do not hesitate to call.

Yours very truly,

ZELINKA PRIAMO LTD.



Dave Hannam, BRP, MCIP, RPP
Associate

Cc: Walter Broos, Sarah Properties Limited (Via Email)
Suzanne Troxler, Tatham Engineering (Via Email)
Patrick Harrington, Aird & Berlis LLP (Via Email)

Carley Dixon

From: Carley Dixon
Sent: Friday, July 26, 2019 11:03 AM
To: dave.h@zpplan.com
Cc: Christine Gervais (cgervais@amaranth-eastgary.ca); Sue Stone (suestone@amaranth-eastgary.ca); Gord Feniak
Subject: FW: Waldemar Water Storage EA

Hi Dave,

We received the letter dated July 9, 2019. Our previous letter dated April 26, 2019 responds to comments in this letter

Regards,
Carley

From: Dave Hannam - Zelinka Priamo Ltd. <dave.h@zpplan.com>
Sent: Tuesday, July 9, 2019 8:35 PM
To: Christine Gervais <cgervais@amaranth-eastgary.ca>
Cc: Susan Stone <suestone@amaranth-eastgary.ca>
Subject: FW: Waldemar Water Storage EA

Hi Christine, attached are additional comments on behalf of Sarah Properties. Please confirm receipt via return email.

If you have any questions please let me know.

Thanks and regards

Dave Hannam, BRP, MCIP, RPP
Associate

Zelinka Priamo Ltd.

London Office
318 Wellington Road
London, ON N6C 4P4
(519) 474-7137 office
(416) 312-1412 cell
dave.h@zpplan.com
www.zpplan.com

From: Carley Dixon [<mailto:Carley.Dixon@rjburnside.com>]
Sent: Friday, April 26, 2019 10:49 AM
To: WALTER BROOS [REDACTED]
Cc: Gord Feniak <Gord.Feniak@rjburnside.com>; Christine Gervais (cgervais@amaranth-eastgary.ca) <cgervais@amaranth-eastgary.ca>; Sue Stone (suestone@amaranth-eastgary.ca) <suestone@amaranth-eastgary.ca>; jwilker (jwilker@thomsonrogers.com) <jwilker@thomsonrogers.com>; Glenn Wellings (glenn@wellingsplanning.ca) <glenn@wellingsplanning.ca>; Suzanne Troxler <stroxler@cctatham.com>; pharrington@airdberlis.com; Dave Hannam - Zelinka Priamo Ltd. <dave.h@zpplan.com>
Subject: Waldemar Water Storage EA

Hi Walter,

Please see the attached letter.

Regards,
Carley



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Thank you.



BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix E

Hydraulic Model Analysis



BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Existing Water System Modelling Results

Pipe Diameter

- 50 mm
- 150 mm
- 200 mm
- 250 mm
- 300 mm

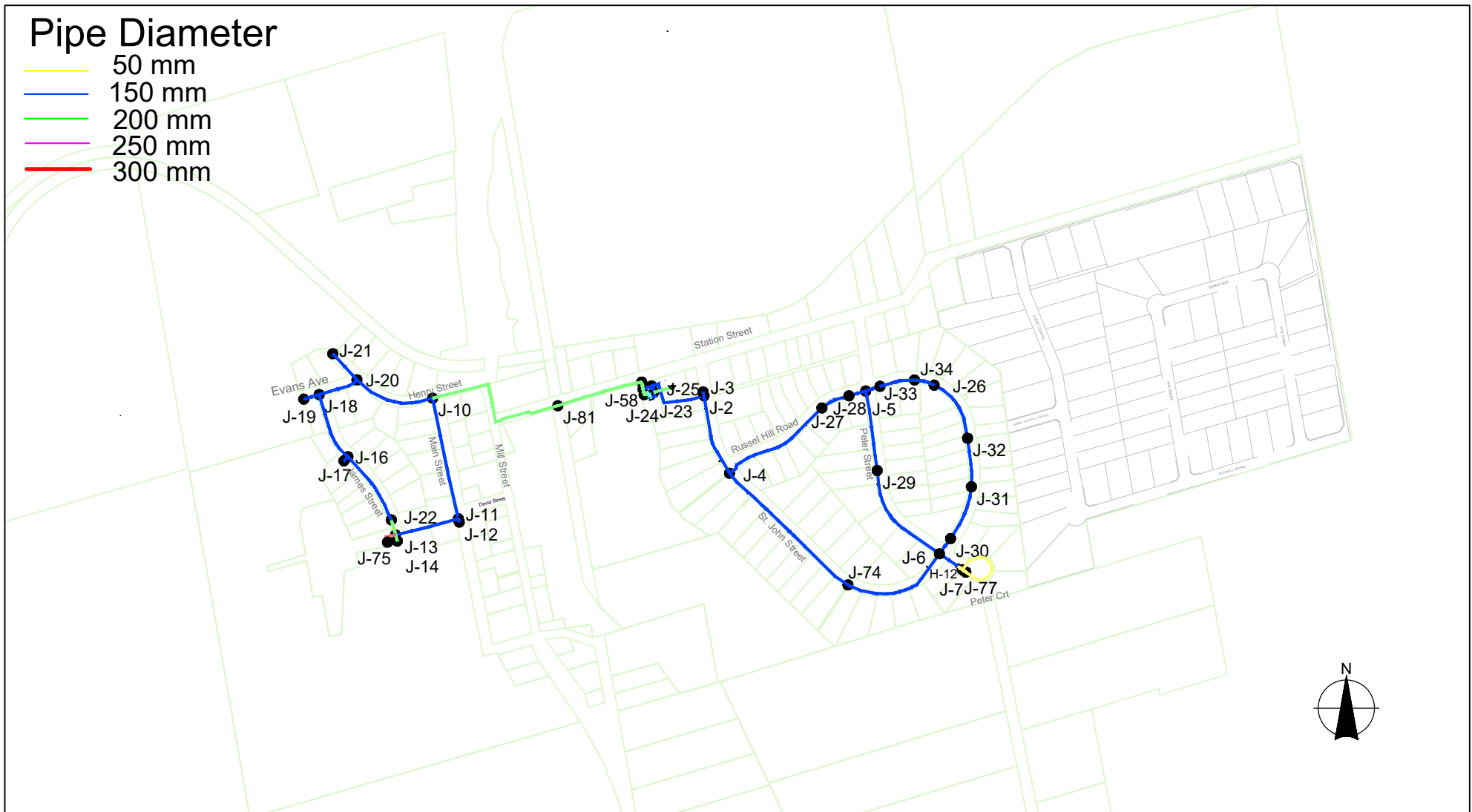


Figure Title
Waldemar Water Distribution System

Existing System

Client
Township of Amaranth

Drawn RW	Checked JMG	Date MAY 2019
Scale NTS	Project No. 300041042.0000	

Figure No.
A1

Existing Water System

Junction	Elevation	Average Day Demand (6.31 L/s pump)			Max. Day Demand (6.31 L/s pump x 2)			Peak Hour Demand (6.31 L/s pump x 2)			Fire Flow Available 1 Fire Pump ON @ 32.17 L/s + 6.31 L/s pump x2 (L/s)
		Demand (L/s)	Pressure (psi)	Pressure (kPa)	Demand (L/s)	Pressure (psi)	Pressure (kPa)	Demand (L/s)	Pressure (psi)	Pressure (kPa)	
J-1	453	0.01	81	558	0.04	86	593	0.07	81	558	56
J-2	459.66	0	72	496	0	76	524	0	71	490	48
J-3	459.66	0	72	496	0	76	524	0	71	490	48
J-4	458.72	0.07	73	503	0.28	77	531	0.4	72	496	42
J-5	465.52	0	63	434	0	68	469	0	62	427	39
J-6	473.77	0.07	52	359	0.28	56	386	0.4	51	352	39
J-7 (off 50 mm dia. watermain on Peter Court)	473.87	0.08	52	359	0.32	56	386	0.47	50	345	N/A
J-9	450.3	0	85	586	0	90	621	0	85	586	57
J-10	452.09	0	82	565	0	87	600	0	82	565	55
J-11	453.94	0.03	80	552	0.12	84	579	0.2	80	552	54
J-12	453.97	0	80	552	0	84	579	0	80	552	54
J-13	460.6	0	70	483	0	75	517	0	70	483	53
J-14	460.6	0	70	483	0	75	517	0	70	483	53
J-16	464.13	0.1	65	448	0.4	70	483	0.6	65	448	52
J-17	464.3	0	65	448	0	69	476	0	65	448	51
J-18	464.31	0.01	65	448	0.04	69	476	0.07	65	448	51
J-19	467.11	0.02	61	421	0.08	65	448	0.13	61	421	50
J-20	460.59	0.01	70	483	0.04	75	517	0.07	70	483	52
J-21	460.91	0.03	70	483	0.12	74	510	0.2	70	483	52
J-22	461.37	0.04	69	476	0.16	74	510	0.27	69	476	53
J-23	450.3	0	85	586	0	90	621	0	85	586	58
J-24	452	0	83	572	0	87	600	0	82	565	57
J-26	467.76	0.08	60	414	0.32	64	441	0.47	59	407	39
J-27	462.99	0.11	67	462	0.44	71	490	0.67	66	455	40
J-28	464.13	0.07	65	448	0.28	70	483	0.4	64	441	40
J-29	471.35	0.14	55	379	0.56	59	407	0.87	54	372	39
J-30	473.18	0.01	53	365	0.04	57	393	0.07	51	352	38
J-31	474.1	0.06	51	352	0.24	55	379	0.33	50	345	38
J-32	472.44	0.07	54	372	0.28	58	400	0.4	52	359	38
J-33	466	0.03	63	434	0.12	67	462	0.2	62	427	39
J-34	469.24	0.03	58	400	0.12	62	427	0.2	57	393	39
J-58	452	0	83	572	38	87	600	0	82	565	57
J-74	467.71	0.21	60	414	0.84	64	441	1.27	59	407	41
J-75	461.3	0	69	476	0	74	510	0	69	476	53
J-77 (off 50 mm dia. watermain on Peter Court)	473.8	0	52	359	0	56	386	0	51	352	N/A
J-81	452.03	0	83	572	0	87	600	0	82	565	57
H-12 (hydrant at Peter Court)	473.79										38

Minimum Pressure

51	352
85	586

Maximum Pressure

55	379
90	621

50	345
85	586

Minimum Fire Flow available in Distribution System

38

Maximum Fire Flow available in Distribution System

58

Average Fire Flow available in Distribution System

48

Based on Ministry of the Environment, Conservation and Parks Guidelines

Scenario	Optimum System Pressure	Max. System Pressure
Average Day Demand	350 – 480 kPa (50 – 70 psi)	700 kPa (100 psi)
Maximum Day Demand	350 – 480 kPa (50 – 70 psi)	700 kPa (100 psi)
Peak Hour Demand	275 – 480 kPa (40 – 70 psi)	700 kPa (100 psi)
Maximum Day plus Fire Flow Demand	140 kPa minimum (20 psi)	700 kPa (100 psi)



BURNSIDE

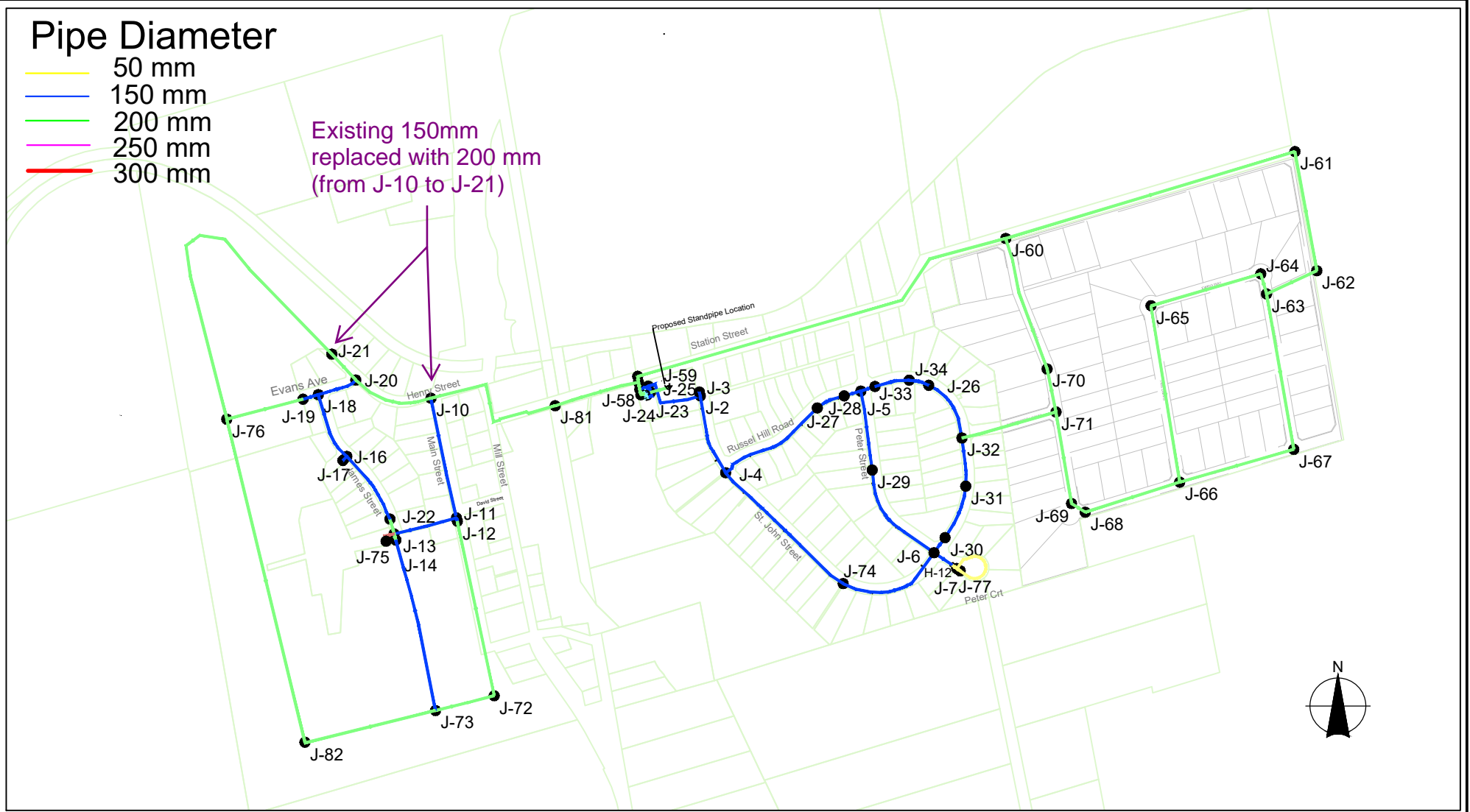
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**Proposed Grade Level Storage (Standpipe)
Modelling Results**

Pipe Diameter

- 50 mm
- 150 mm
- 200 mm
- 250 mm
- 300 mm

Existing 150mm replaced with 200 mm (from J-10 to J-21)



 BURNSIDE		Figure Title			
		Waldemar Water Distribution System			
Client		Option AB			
		Drawn	Checked	Date	Figure No.
		RW	JMG	MAY 2019	
Township of Amaranth		Scale	Project No.		A2
		NTS	300041042.0000		

Proposed Grade Level Storage (Standpipe) - FIGURE A2

Junction	Elevation	Average Day Demand (3.6 L/s pump)			Max. Day Demand (3.6 L/s pump + 10 L/s pump)			Peak Hour Demand (3.6 L/s pump + 10 L/s pump)			Fire Flow Available 1 Fire Pump - ON @ 100 L/s + 3.6 L/s pump + 10 L/s pump (L/s)
		Demand (L/s)	Pressure (psi)	Pressure (kPa)	Demand (L/s)	Pressure (psi)	Pressure (kPa)	Demand (L/s)	Pressure (psi)	Pressure (kPa)	
J-1	453	0.01	84	579	0.05	91	627	0.07	75	517	109.8
J-2	459.66	0	74	510	0	81	558	0	65	448	98.4
J-3	459.66	0	74	510	0	81	558	0	65	448	98.4
J-4	458.72	0.09	76	524	0.26	82	565	0.38	66	455	89.0
J-5	465.52	0	66	455	0	73	503	0	56	386	85.0
J-6	473.77	0.09	54	372	0.26	61	421	0.38	45	310	79.3
J-7 (off 50 mm dia. watermain on Peter Court)	473.87	0.1	54	372	0.3	61	421	0.45	45	310	(N/A)
J-9	450.3	0	88	607	0	95	655	0	79	545	111.6
J-10	452.09	0	85	586	0	92	634	0	76	524	88.3
J-11	453.94	0.04	82	565	0.13	89	614	0.2	73	503	80.6
J-12	453.97	0	82	565	0	89	614	0	73	503	80.4
J-13	460.6	0	73	503	0	80	552	0	64	441	80.8
J-14	460.6	0.76	73	503	2.25	80	552	3.38	64	441	80.8
J-16	464.13	0.13	68	469	0.38	75	517	0.57	59	407	79.4
J-17	464.3	0	68	469	0	75	517	0	58	400	78.0
J-18	464.31	0.01	68	469	0.05	75	517	0.07	58	400	83.2
J-19	467.11	0.03	64	441	0.08	71	490	0.13	55	379	83.0
J-20	460.59	0.01	73	503	0.05	80	552	0.07	64	441	85.1
J-21	460.91	0.04	72	496	0.13	79	545	0.2	63	434	84.9
J-22	461.37	0.05	72	496	0.17	79	545	0.25	63	434	80.9
J-23	450.3	0	88	607	0	95	655	0	79	545	112.4
J-24	452	0	85	586	0	92	634	0	76	524	110.6
J-26	467.76	0.1	63	434	0.3	70	483	0.45	53	365	84.2
J-27	462.99	0.14	70	483	0.43	76	524	0.64	60	414	87.0
J-28	464.13	0.09	68	469	0.26	75	517	0.38	58	400	85.8
J-29	471.35	0.18	58	400	0.56	64	441	0.83	48	331	77.7
J-30	473.18	0.01	55	379	0.05	62	427	0.07	46	317	79.4
J-31	474.1	0.08	54	372	0.21	61	421	0.32	44	303	79.4
J-32	472.44	0.09	56	386	0.26	63	434	0.38	47	324	85.7
J-33	466	0.04	65	448	0.13	72	496	0.2	56	386	85.7
J-34	469.24	0.04	61	421	0.13	67	462	0.2	51	352	82.7
J-58	452	0	85	586	0	92	634	0	76	524	109.5
J-59	449.99	0	88	607	0	95	655	0	79	545	108.7
J-60	467.43	0.08	63	434	0.21	70	483	0.32	54	372	86.5
J-61	473.16	0.05	55	379	0.17	62	427	0.25	46	317	81.1
J-62	475.19	0	52	359	0	59	407	0	43	296	79.1
J-63	473.56	0.09	55	379	0.26	61	421	0.38	45	310	79.4
J-64	471.46	0.1	57	393	0.3	64	441	0.45	48	331	79.5
J-65	469.4	0.13	60	414	0.38	67	462	0.57	51	352	79.5
J-66	472.54	0.14	56	386	0.43	63	434	0.64	47	324	79.5
J-67	476.1	0.12	51	352	0.34	58	400	0.51	41	283	77.1
J-68	476.02	0.2	51	352	0.59	58	400	0.9	42	290	80.8
J-69	475.7	0.05	51	352	0.17	58	400	0.25	42	290	81.3
J-70	473.2	0.14	55	379	0.43	62	427	0.64	46	317	85.2
J-71	471.88	0.1	57	393	0.3	64	441	0.45	47	324	84.6
J-72	460	0	74	510	0	81	558	0	65	448	78.8
J-73	469	0	61	421	0	68	469	0	52	359	78.2
J-74	467.71	0.27	63	434	0.81	70	483	1.21	53	365	78.8
J-75	461.3	0	72	496	0	79	545	0	63	434	80.8
J-76	464.6	0	67	462	0	74	510	0	58	400	82.9
J-77 (off 50 mm dia. watermain on Peter Court)	473.8	0	54	372	0	61	421	0	45	310	(N/A)
J-81	448.3	0	90	621	0	97	669	0	81	558	104.6
J-82	467.73	0	63	434	0	70	483	0	54	372	78.5
H-12 (hydrant at Peter Court)	473.79										72.0

Minimum Pressure	51	352	58	400	41	283
Maximum Pressure	90	621	97	669	81	558

Minimum Fire Flow available in Distribution System	72
Maximum Fire Flow available in Distribution System	112
Average Fire Flow	86

Based on Ministry of the Environment, Conservation and Parks Guidelines

Scenario	Optimum System Pressure	Max. System Pressure
Average Day Demand	350 – 480 kPa (50 – 70 psi)	700 kPa (100 psi)
Maximum Day Demand	350 – 480 kPa (50 – 70 psi)	700 kPa (100 psi)
Peak Hour Demand	275 – 480 kPa (40 – 70 psi)	700 kPa (100 psi)
Maximum Day plus Fire Flow Demand	140 kPa minimum (20 psi)	700 kPa (100 psi)

Notes: Figures A3 are scenarios that show what potential impacts watermain upgrades would do to the system

Pipe Diameter

- 50 mm
- 150 mm
- 200 mm
- 250 mm
- 300 mm

100 L/s Fire Flow Provided?

- True
- False

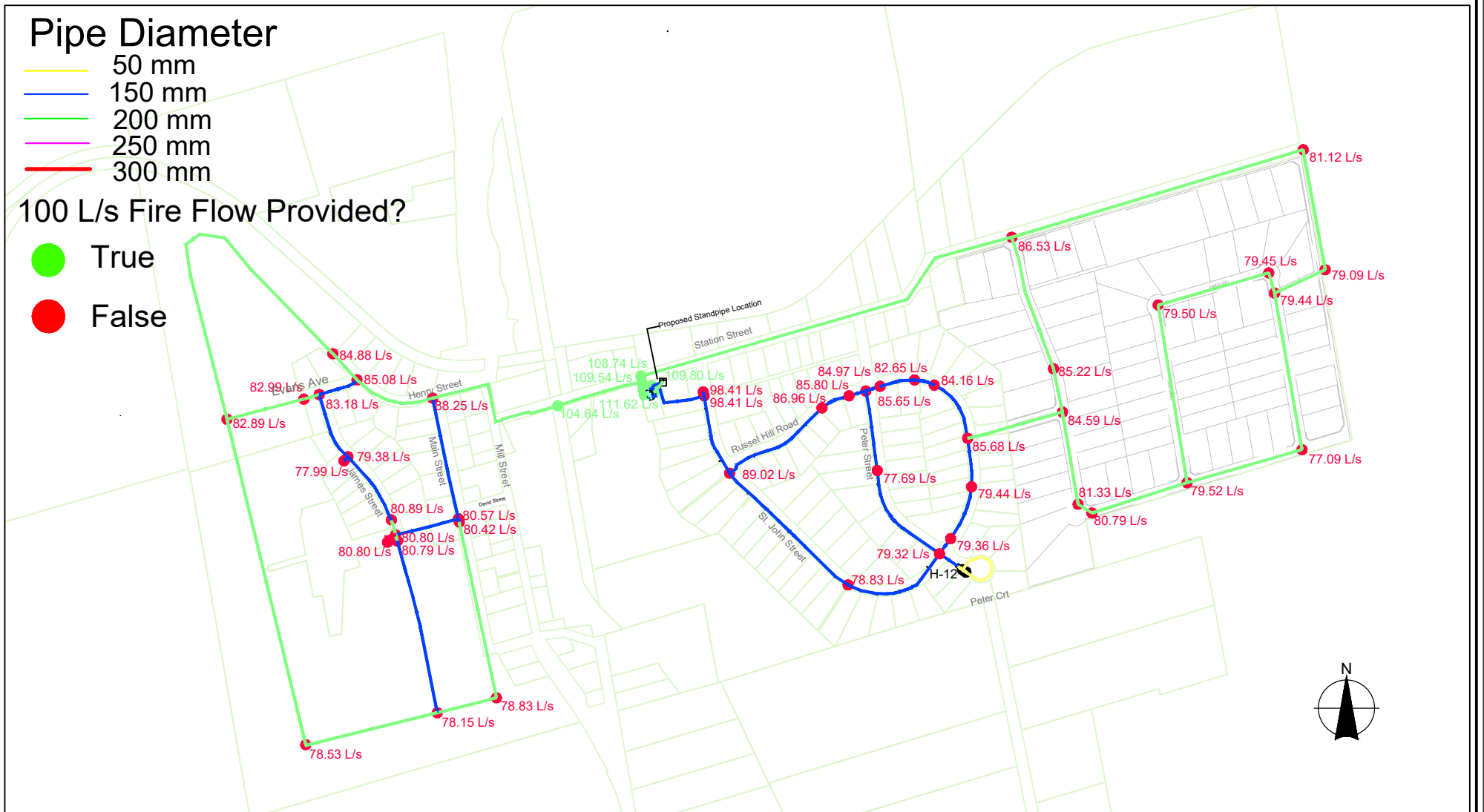


Figure Title
Waldemar Water Distribution System
 Fire Flow Scenario Option AB

Client
Township of Amaranth

Drawn RW	Checked JMG	Date MAY 2019
Scale NTS	Project No. 300041042.0000	

Figure No.
A2

Pipe Diameter

- 50 mm
- 150 mm
- 200 mm
- 250 mm
- 300 mm

100 L/s Fire Flow Provided?

- True
- False

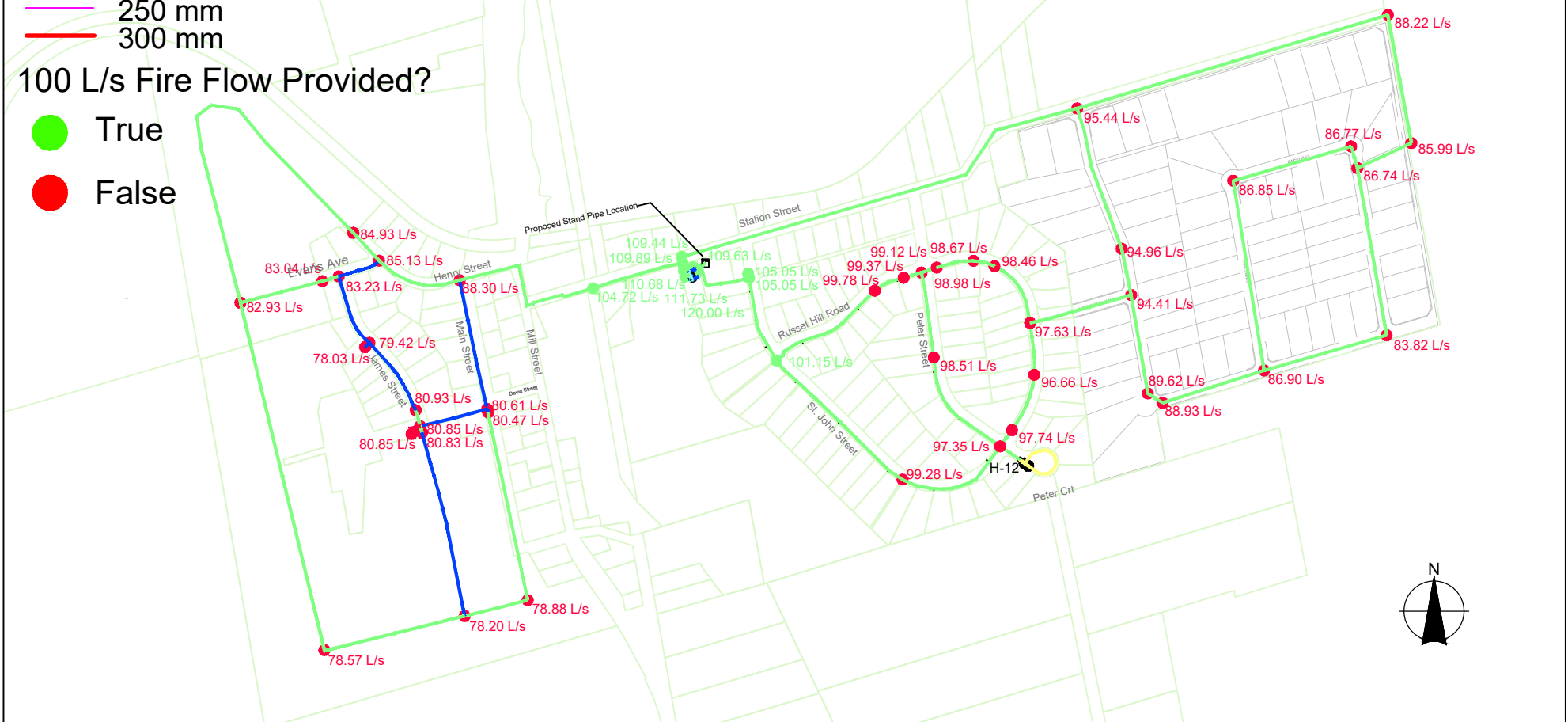


Figure Title

Waldemar Water Distribution System

Fire Flow Scenario Option AB with upsized pipes

Client

Township of Amaranth

Drawn

RW

Scale

NTS

Checked

JMG

Date

MAY 2019

Project No.

300041042.0000

Figure No.

A3

Pipe Diameter

- 50 mm
- 150 mm
- 200 mm
- 250 mm
- 300 mm

100 L/s Fire Flow Provided?

- True
- False

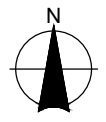
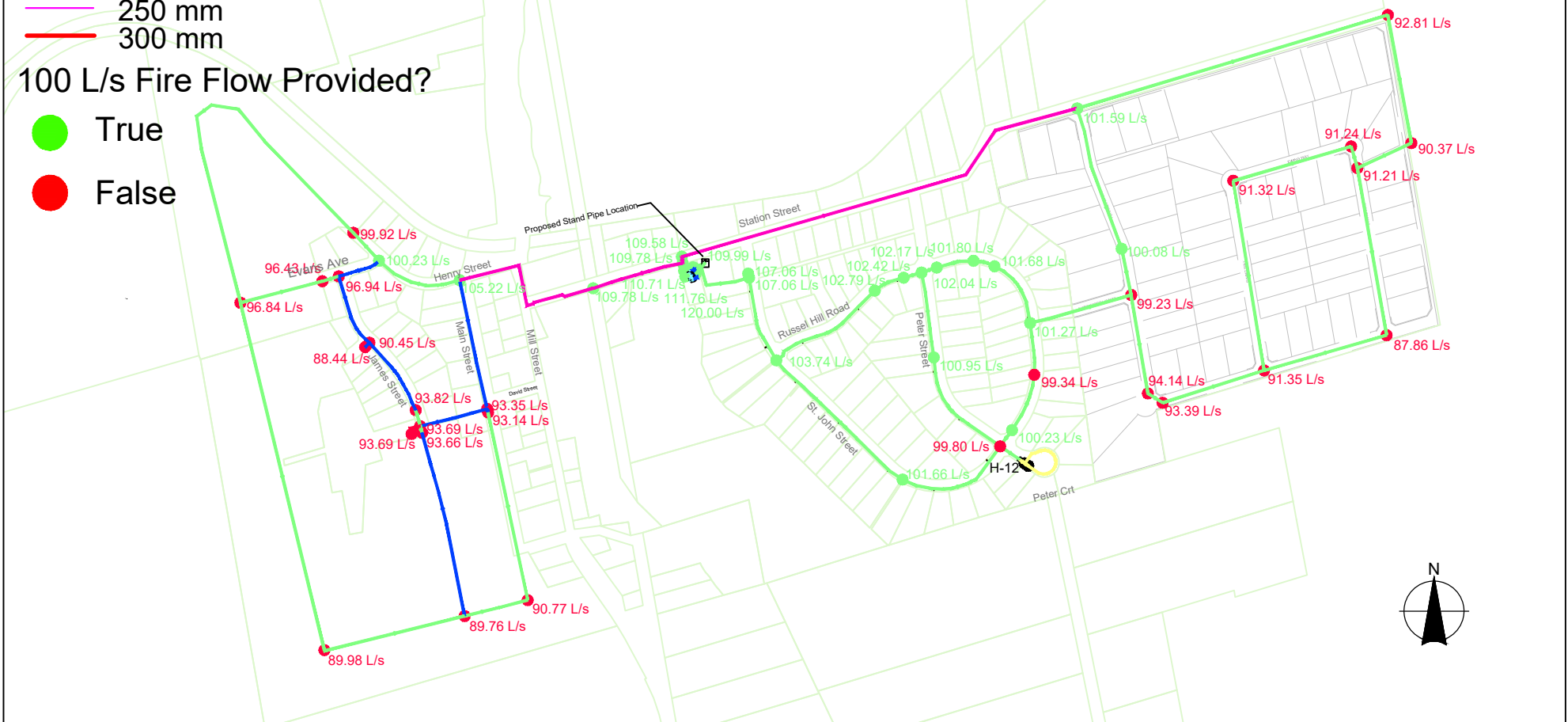


Figure Title

Waldemar Water Distribution System

Fire Flow Scenario Option AB with upsized pipes

Client

Township of Amaranth

Drawn

RW

Scale

NTS

Checked

JMG

Date

MAY 2019

Project No.

300041042.0000

Figure No.

A3

Pipe Diameter

- 50 mm
- 150 mm
- 200 mm
- 250 mm
- 300 mm

100 L/s Fire Flow Provided?

- True
- False

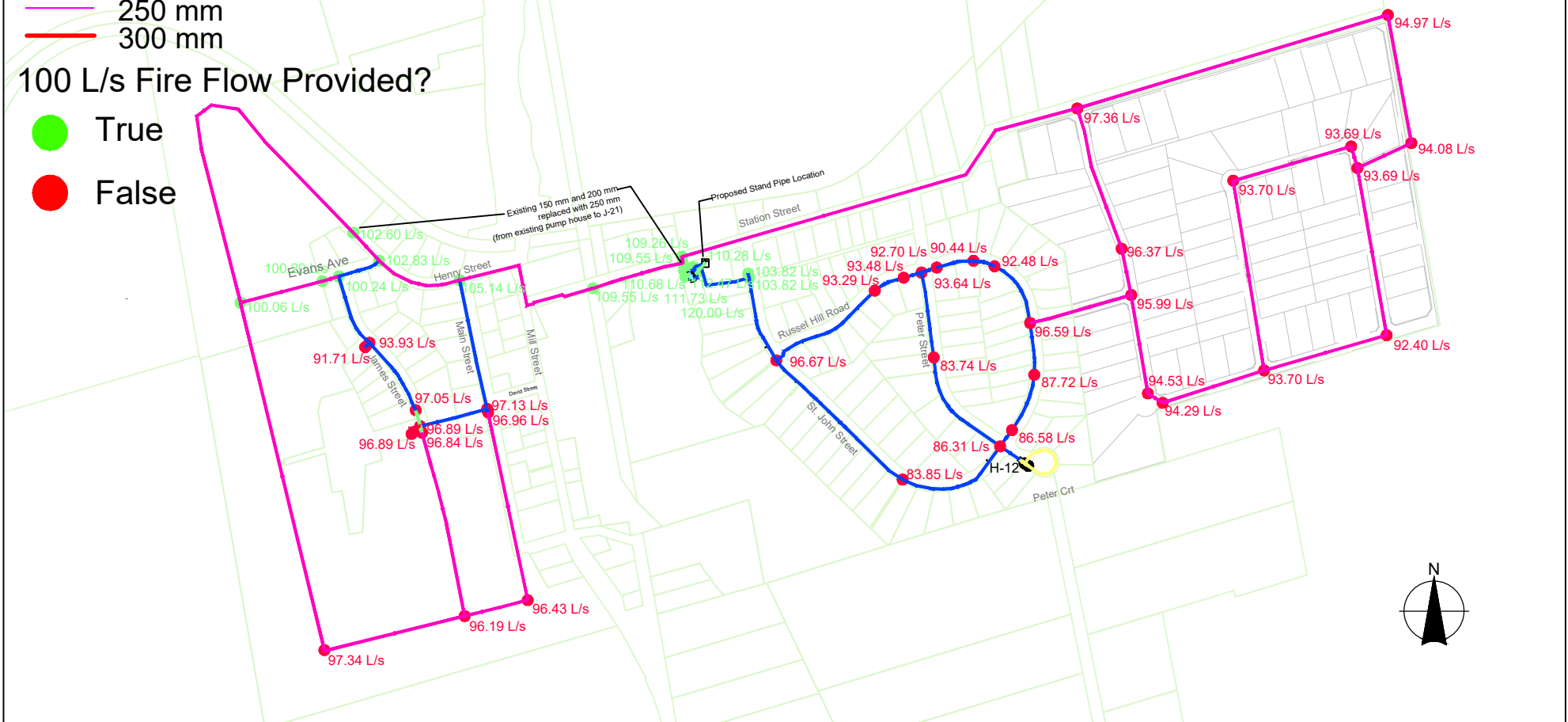


Figure Title

Waldemar Water Distribution System

Fire Flow Scenario Option AB with upsized pipes

Client

Township of Amaranth

Drawn

RW

Scale
NTS

Checked

JMG

Date

MAY 2019

Project No.

300041042.0000

Figure No.

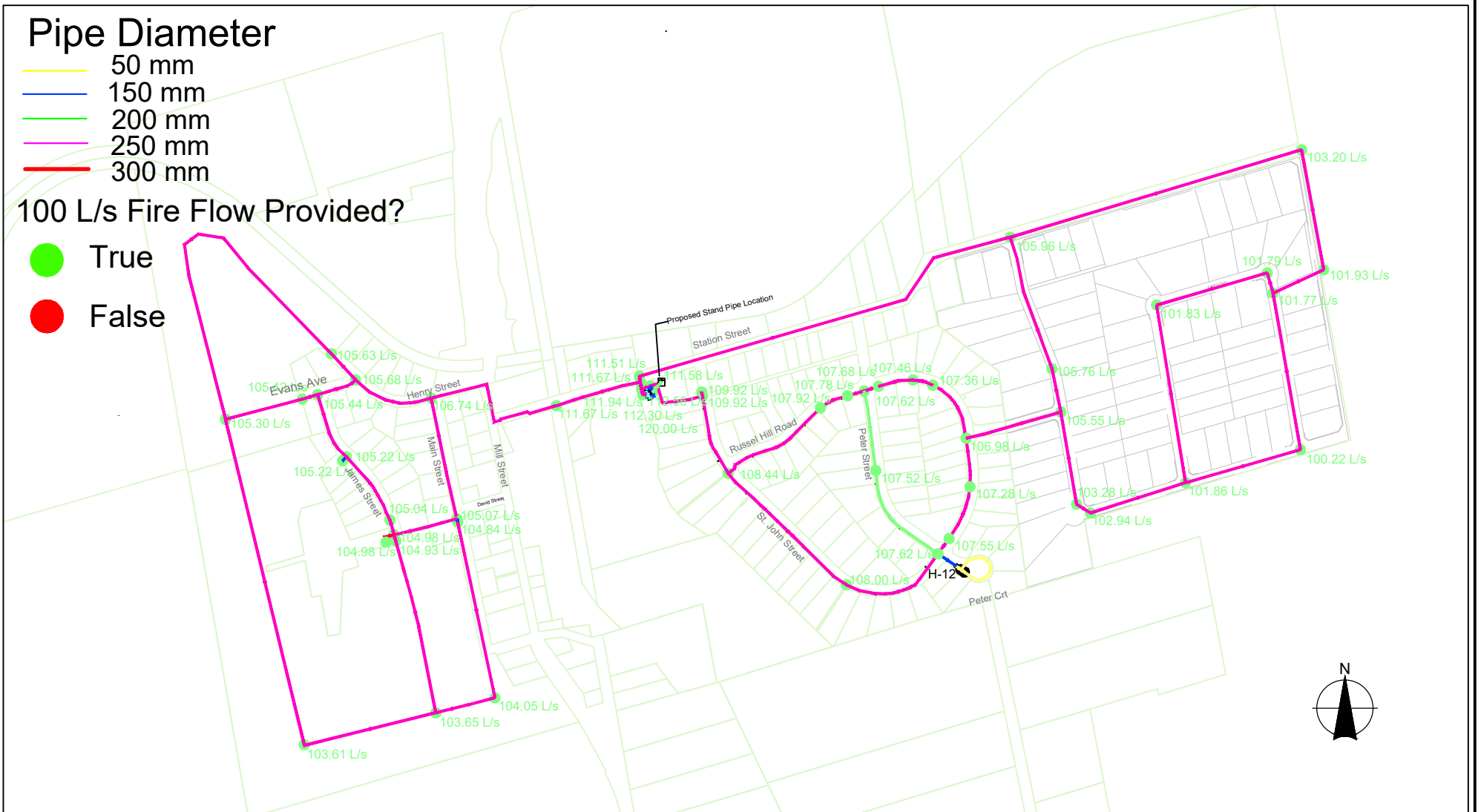
A3


Pipe Diameter

- 50 mm
- 150 mm
- 200 mm
- 250 mm
- 300 mm

100 L/s Fire Flow Provided?

- True
- False





BURNSIDE

Client

Township of Amaranth

Figure Title			
Waldemar Water Distribution System			
Fire Flow Scenario Option AB with upsized pipes			
Drawn	Checked	Date	A3
RW	JMG	MAY 2019	
Scale	Project No.		
NTS	300041042.0000		



BURNSIDE

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Proposed Water Tower Modelling Results

Pipe Diameter

- 50 mm
- 150 mm
- 200 mm
- 250 mm
- 300 mm

Existing 150mm replaced with 200 mm (from J-10 to J-21)

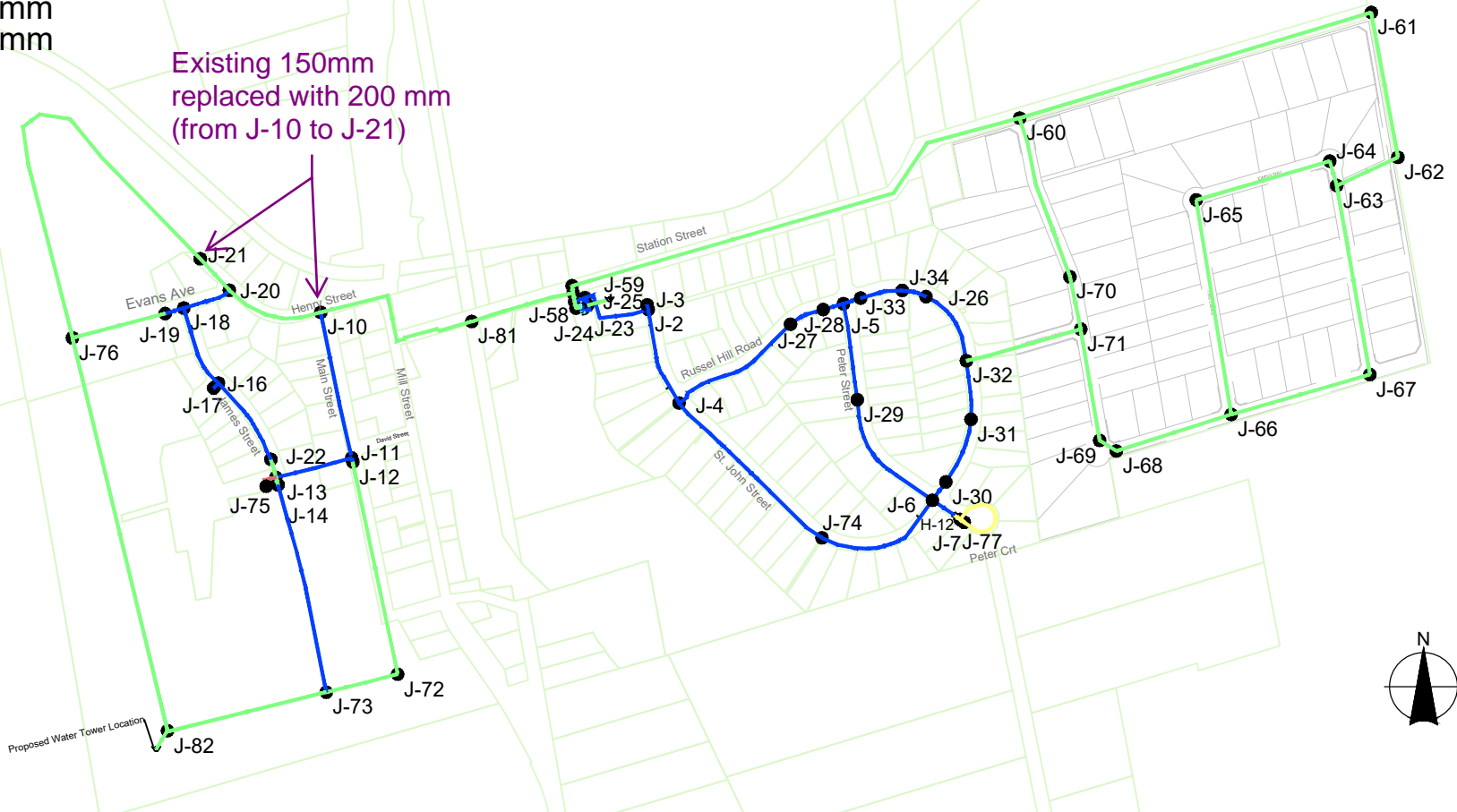


Figure Title Waldemar Water Distribution System

Option C

Client

Township of Amaranth

Drawn

RW

Scale
NTS

Checked

JMG

Date

MAY 2019

Project No.

300041042.0000

Figure No.

A4

Proposed Water Tower - FIGURE A4

Junction	Elevation	Average Day Demand (6.3 L/s pump)			Max. Day Demand (6.3 L/s pump x 2)			Peak Hour Demand (6.3 L/s pump x 2)			Fire Flow Available (6.3 L/s pump x 2) (L/s)
		Demand (L/s)	Pressure (psi)	Pressure (kPa)	Demand (L/s)	Pressure (psi)	Pressure (kPa)	Demand (L/s)	Pressure (psi)	Pressure (kPa)	
J-1	453	0.01	82	565	0.05	83	572	0.07	82	565	76.5
J-2	459.66	0	73	503	0	73	503	0	73	503	68.8
J-3	459.66	0	73	503	0	73	503	0	73	503	68.8
J-4	458.72	0.09	74	510	0.26	74	510	0.38	74	510	61.9
J-5	465.52	0	65	448	0	64	441	0	64	441	60.1
J-6	473.77	0.09	53	365	0.26	53	365	0.38	52	359	54.8
J-7 (off 50 mm dia. watermain on Peter Court)	473.87	0.1	53	365	0.3	52	359	0.45	52	359	(N/A)
J-9	450.3	0	86	593	0	86	593	0	86	593	77.2
J-10	452.09	0	84	579	0	84	579	0	84	579	116.5
J-11	453.94	0.04	81	558	0.13	81	558	0.2	81	558	120.0
J-12	453.97	0	81	558	0	81	558	0	81	558	120.0
J-13	460.6	0	72	496	0	71	490	0	71	490	120.0
J-14	460.6	0.76	72	496	2.25	71	490	3.38	71	490	120.0
J-16	464.13	0.13	67	462	0.38	66	455	0.57	66	455	120.0
J-17	464.3	0	66	455	0	66	455	0	66	455	115.3
J-18	464.31	0.01	66	455	0.05	66	455	0.07	66	455	120.0
J-19	467.11	0.03	62	427	0.08	62	427	0.13	62	427	120.0
J-20	460.59	0.01	72	496	0.05	71	490	0.07	72	496	120.0
J-21	460.91	0.04	71	490	0.13	71	490	0.2	71	490	120.0
J-22	461.37	0.05	70	483	0.17	70	483	0.25	70	483	120.0
J-23	450.3	0	86	593	0	86	593	0	86	593	77.2
J-24	452	0	84	579	0	84	579	0	84	579	77.2
J-26	467.76	0.1	61	421	0.3	61	421	0.45	61	421	59.5
J-27	462.99	0.14	68	469	0.43	68	469	0.64	68	469	60.6
J-28	464.13	0.09	67	462	0.26	66	455	0.38	66	455	60.3
J-29	471.35	0.18	56	386	0.56	56	386	0.83	56	386	55.1
J-30	473.18	0.01	54	372	0.05	53	365	0.07	53	365	55.3
J-31	474.1	0.08	52	359	0.21	52	359	0.32	52	359	54.8
J-32	472.44	0.09	55	379	0.26	54	372	0.38	54	372	58.4
J-33	466	0.04	64	441	0.13	64	441	0.2	63	434	60.2
J-34	469.24	0.04	59	407	0.13	59	407	0.2	59	407	59.7
J-58	452	0	84	579	0	84	579	0	84	579	77.4
J-59	449.99	0	87	600	0	87	600	0	87	600	76.8
J-60	467.43	0.08	62	427	0.21	62	427	0.32	61	421	58.6
J-61	473.16	0.05	54	372	0.17	53	365	0.25	53	365	55.1
J-62	475.19	0	51	352	0	51	352	0	50	345	53.8
J-63	473.56	0.09	53	365	0.26	53	365	0.38	53	365	53.4
J-64	471.46	0.1	56	386	0.3	56	386	0.45	56	386	53.5
J-65	469.4	0.13	59	407	0.38	59	407	0.57	59	407	53.5
J-66	472.54	0.14	55	379	0.43	54	372	0.64	54	372	53.5
J-67	476.1	0.12	50	345	0.34	50	345	0.51	49	338	51.8
J-68	476.02	0.2	50	345	0.59	50	345	0.9	49	338	54.5
J-69	475.7	0.05	50	345	0.17	50	345	0.25	50	345	54.9
J-70	473.2	0.14	54	372	0.43	53	365	0.64	53	365	57.7
J-71	471.88	0.1	56	386	0.3	55	379	0.45	55	379	57.2
J-72	460	0	72	496	0	72	496	0	72	496	120.0
J-73	469	0	60	414	0	60	414	0	60	414	120.0
J-74	467.71	0.27	62	427	0.81	61	421	1.21	61	421	57.7
J-75	461.3	0	71	490	0	71	490	0	70	483	120.0
J-76	464.6	0	66	455	0	66	455	0	66	455	120.0
J-77 (off 50 mm dia. watermain on Peter Court)	473.8	0	53	365	0	52	359	0	52	359	(N/A)
J-81	448.3	0	89	614	0	89	614	0	89	614	86.0
J-82	467.73	0	61	421	0	61	421	0	61	421	120.0
H-12 (hydrant at Peter Court)	473.79										50.3

Minimum Pressure
Maximum Pressure

50	345
89	614

50	345
89	614

49	338
89	614

Minimum Fire Flow available in Distribution System	50
Maximum Fire Flow available in Distribution System	120
Average Fire Flow	80

Based on Ministry of the Environment, Conservation and Parks Guidelines

Scenario	Optimum System Pressure	Max. System Pressure
Average Day Demand	350 – 480 kPa (50 – 70 psi)	700 kPa (100 psi)
Maximum Day Demand	350 – 480 kPa (50 – 70 psi)	700 kPa (100 psi)
Peak Hour Demand	275 – 480 kPa (40 – 70 psi)	700 kPa (100 psi)
Maximum Day plus Fire Flow Demand	140 kPa minimum (20 psi)	700 kPa (100 psi)

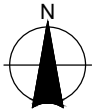
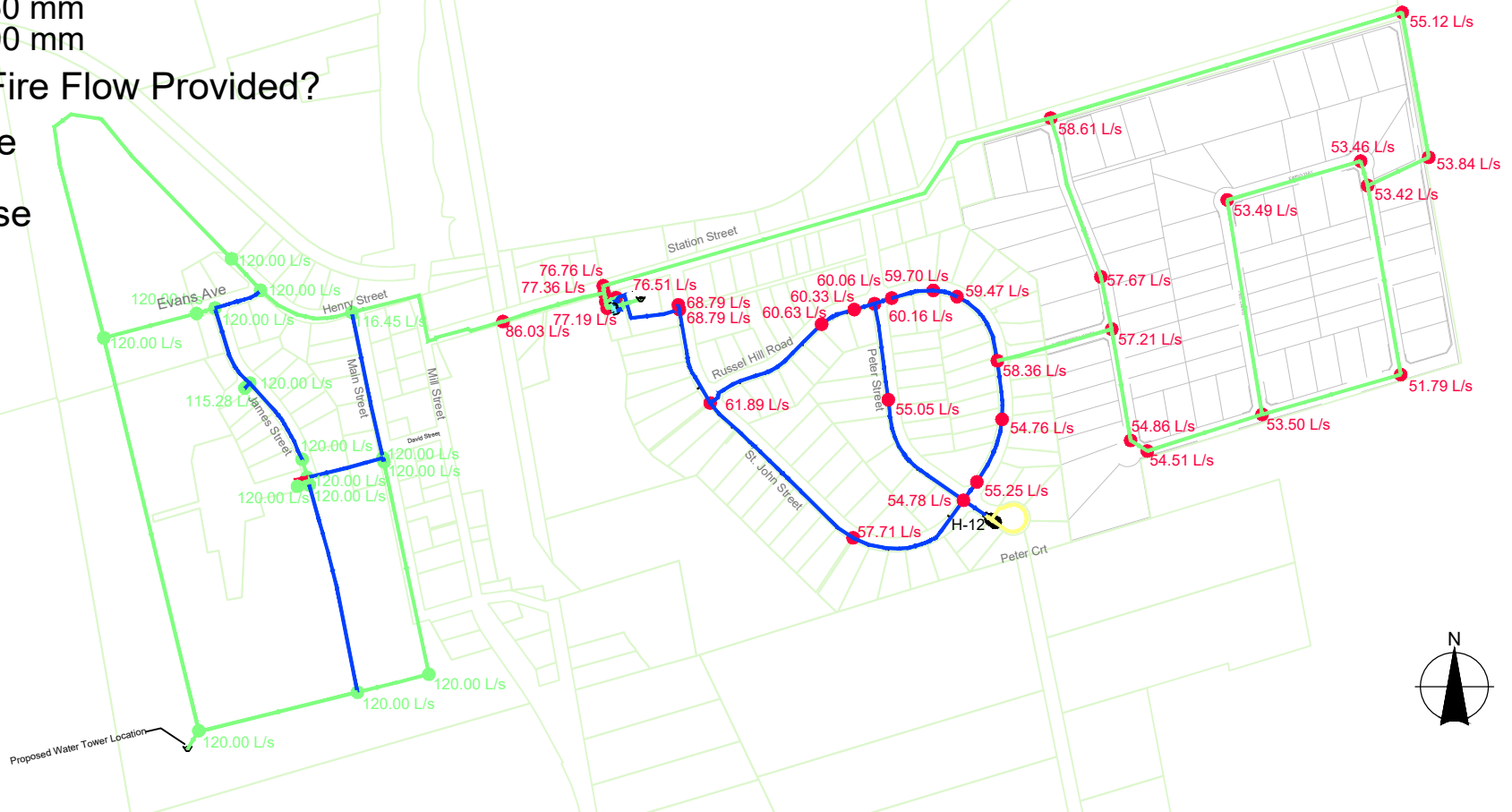
Notes: Figures A5 are scenarios that show what potential impacts watermain upgrades would do to the system


Pipe Diameter

- 50 mm
- 150 mm
- 200 mm
- 250 mm
- 300 mm

100 L/s Fire Flow Provided?

- True
- False



		Figure Title Waldemar Water Distribution System		
		Fire Flow Scenario Option C		
Client Township of Amaranth	Drawn RW	Checked JMG	Date MAY 2019	Figure No. A4
	Scale NTS	Project No. 300041042.0000		

Pipe Diameter

- 50 mm
- 150 mm
- 200 mm
- 250 mm
- 300 mm

100 L/s Fire Flow Provided?

- True
- False

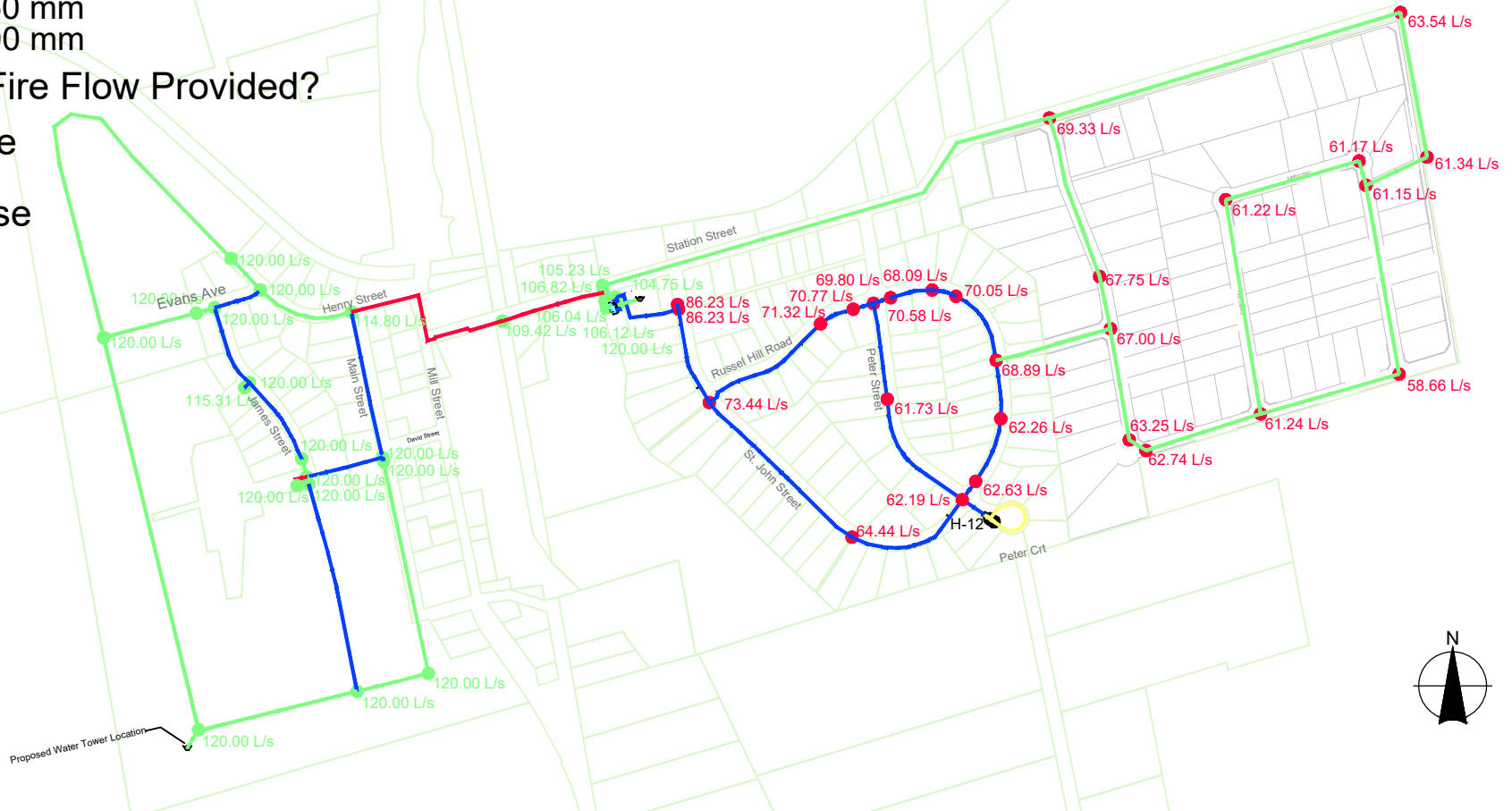


Figure Title

Waldemar Water Distribution System

Fire Flow Scenario Option C with upsized pipes

Client	Township of Amaranth

Drawn	Checked	Date
RW	JMG	MAY 2019
Scale	Project No.	
NTS	300041042.0000	

Figure No.	A5



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Appendix F

Natural Heritage Review Results (OBBA and NHIC)



Square Summary (17NJ56)

#species (1st atlas)				#species (2nd atlas)				#hours	#pc done			
poss	prob	conf	total	poss	prob	conf	total	1st	2nd	road	offrd	
7	47	44	98	17	41	40	98	62	61	24	3	

Region summary (#47: Wellington)

#squares	#sq with data		#species		#pc done	target #pc
	1st	2nd	1st	2nd		
31	31	31	165	167	987	775

Target number of point counts in this square: 22 road side, 3 off road (1 in treed wetlands, 1 in deciduous forest, 1 in pasture/grassland). Please try to ensure that each off-road station is located such that the entire 100m radius circle is within the prescribed habitat.

SPECIES	Code		%		SPECIES	Code		%		SPECIES	Code		%	
	1st	2nd	1st	2nd		1st	2nd	1st	2nd		1st	2nd	1st	2nd
Canada Goose	FY	FY	87	100	Least Bittern †			9	19	Ring-billed Gull †§			0	3
Mute Swan †			0	3	<u>Great Blue Heron</u> §	H		93	87	Herring Gull †§			6	3
Trumpeter Swan †			0	9	Great Egret †			3	3	Black Tern † §			6	6
Wood Duck	V	H	80	96	Green Heron §	V	H	93	93	Mourning Dove	NE	AE	100	100
Gadwall			9	3	Black-crown N.-Heron † §			3	3	Yellow-billed Cuckoo			16	16
<u>American Wigeon</u>	P		12	3	Turkey Vulture	H	H	64	93	Black/Yell-billed Cuckoo			0	45
American Black Duck			25	19	Osprey			16	29	Black-billed Cuckoo	T	H	74	74
Mallard	NE	FY	100	100	Northern Harrier	CF	CF	100	93	Eastern Screech-Owl		S	80	100
Blue-winged Teal	P	P	77	48	Sharp-shinned Hawk	AE	H	58	74	Great Horned Owl	AE	S	93	83
Northern Shoveler †			3	3	Cooper's Hawk		H	12	54	Long-eared Owl †			6	22
Northern Pintail †			6	0	Northern Goshawk			9	29	Short-eared Owl †			3	0
Green-winged Teal			0	19	Red-should Hawk †			22	12	<u>North Saw-whet Owl</u>	T		16	0
Canvasback †			3	0	<u>Broad-winged Hawk</u>	H		16	29	Common Nighthawk			29	12
Redhead †			3	3	Red-tailed Hawk	AE	H	100	100	<u>Whip-poor-will</u>	T		9	12
Ring-necked Duck †			3	3	American Kestrel	CF	AE	100	93	Chimney Swift			58	48
Lesser Scaup †			3	0	Merlin †			3	3	<u>Ruby-thr Hummingbird</u>	S		80	93
Hooded Merganser			32	29	Virginia Rail		T	67	70	Belted Kingfisher	AE	CF	100	100
Common Merganser †			16	6	<u>Sora</u>	S		64	64	<u>Red-headed Woodpecker</u> †	T		77	25
Red-breast Merganser †			3	0	Common Moorhen			12	12	Red-bell Woodpecker †			0	19
Ruddy Duck †			3	12	American Coot			16	6	Yellow-bellied Sapsucker	T	FY	64	58
Ring-necked Pheasant			35	19	Coot/Moorhen			0	3	Downy Woodpecker	CF	D	100	100
Ruffed Grouse	FY	FY	96	93	Sandhill Crane †			0	6	Hairy Woodpecker	T	P	90	96
Wild Turkey		T	0	87	Killdeer	FY	DD	100	100	Northern Flicker	AE	D	100	100
Northern Bobwhite †			9	9	Rock Dove	AE	AE	100	100	Pileated Woodpecker	H	H	74	96
Common Loon			9	9	Spotted Sandpiper	D	P	100	96	Olive-sided Flycatcher †			0	3
<u>Pied-billed Grebe</u>			22	51	Upland Sandpiper	FY	H	51	35	Eastern Wood-Pewee	T	T	100	100
Red-necked Grebe †			3	0	Common Snipe	T	T	87	80	Alder Flycatcher	T	T	74	96
Double-crest Cormorant †§			3	6	American Woodcock	T	S	80	96	Willow Flycatcher	T	T	80	87
American Bittern	T	S	51	58	Wilson's Phalarope †			3	6	Least Flycatcher	T	T	93	96

[next page >>](#)

Ontario Breeding Bird Atlas - Summary Sheet for Square 17NJ56 (page 2 of 3)

SPECIES	Code		%		SPECIES	Code		%		SPECIES	Code		%	
	1st	2nd	1st	2nd		1st	2nd	1st	2nd		1st	2nd	1st	2nd
Eastern Phoebe	AE	AE	96	100	Blue-gr Gnatcatcher			25	12	Canada Warbler			32	32
Gr Crested Flycatcher	T	T	96	100	<u>Eastern Bluebird</u>			16	77	Eastern Towhee	T	T	48	64
Eastern Kingbird	AE	T	100	100	Veery	T	T	96	96	Chipping Sparrow	CF	CF	100	100
Loggerhead Shrike †			9	0	Hermit Thrush		H	0	3	Clay-colored Sparrow			19	41
Yellow-throated Vireo ‡			3	6	Wood Thrush	T	T	83	93	Field Sparrow	A	T	74	90
Blue-headed Vireo			0	22	American Robin	AE	CF	100	100	Vesper Sparrow	T	S	93	83
Warbling Vireo	D	T	93	96	Gray Catbird	NE	FY	96	100	Savannah Sparrow	CF	CF	96	100
Red-eyed Vireo	D	T	90	100	Northern Mockingbird			3	16	Grasshopper Sparrow			45	41
Blue Jay	T	CF	100	100	Brown Thrasher	CF	FY	100	100	<u>Henslow's Sparrow</u> †	CF		16	0
American Crow	CF	AE	100	100	European Starling	AE	FY	100	100	Song Sparrow	CF	DD	100	100
Common Raven ‡			0	19	Cedar Waxwing	H	D	100	100	Lincoln's Sparrow ‡	CF	T	6	12
Horned Lark	T	T	100	100	Blue-winged Warbler			12	19	Swamp Sparrow	NE	CF	100	96
Purple Martin			38	35	<u>Golden-winged Warbler</u>	T		19	9	White-throat Sparrow	A	FY	96	87
Tree Swallow	AE	AE	100	100	Blue/Gold-wing Warbler			0	3	<u>Scarlet Tanager</u>	T		58	61
North Rgh-wing Swallow	AE	AE	93	90	Nashville Warbler	CF	A	74	83	Northern Cardinal	T	T	80	96
Bank Swallow §	AE	H	93	90	Yellow Warbler	CF	CF	100	100	Rose-breast Grosbeak	D	T	100	100
Cliff Swallow §	AE	AE	96	100	Chestn-sided Warbler	T	CF	51	80	Indigo Bunting	T	P	100	100
Barn Swallow	AE	AE	100	100	Magnolia Warbler		CF	12	32	Bobolink	CF	NY	100	100
Black-capped Chickadee	AE	AE	100	100	Black-thr Blue Warbler			3	12	Red-wing Blackbird	NY	CF	100	100
Red-breast Nuthatch		T	51	83	Yellow-rumped Warbler	T	CF	22	74	Eastern Meadowlark	CF	CF	100	100
White-breast Nuthatch	FY	T	80	93	<u>Black-thr Green Warbler</u>			19	54	Western Meadowlark ‡			6	0
Brown Creeper		T	45	77	Blackburnian Warbler			12	9	Common Grackle	CF	AE	100	100
Carolina Wren			0	19	Pine Warbler		A	19	74	Brown-head Cowbird	NE	FY	96	100
House Wren	T	T	100	100	Black-white Warbler	T	T	77	83	Orchard Oriole ‡			6	12
Winter Wren	T	T	90	74	American Redstart	T	T	74	100	Baltimore Oriole	NU	FY	100	100
Sedge Wren		H	32	22	Ovenbird	T	T	100	96	Purple Finch		T	35	70
Marsh Wren			25	45	North Waterthrush	T	T	77	80	House Finch		T	19	96
Golden-crown Kinglet	T	T	32	35	Mourning Warbler	T	T	83	90	Pine Siskin			16	19
Ruby-crown Kinglet ‡			3	0	Common Yellowthroat	D	CF	100	100	American Goldfinch	D	NB	100	100

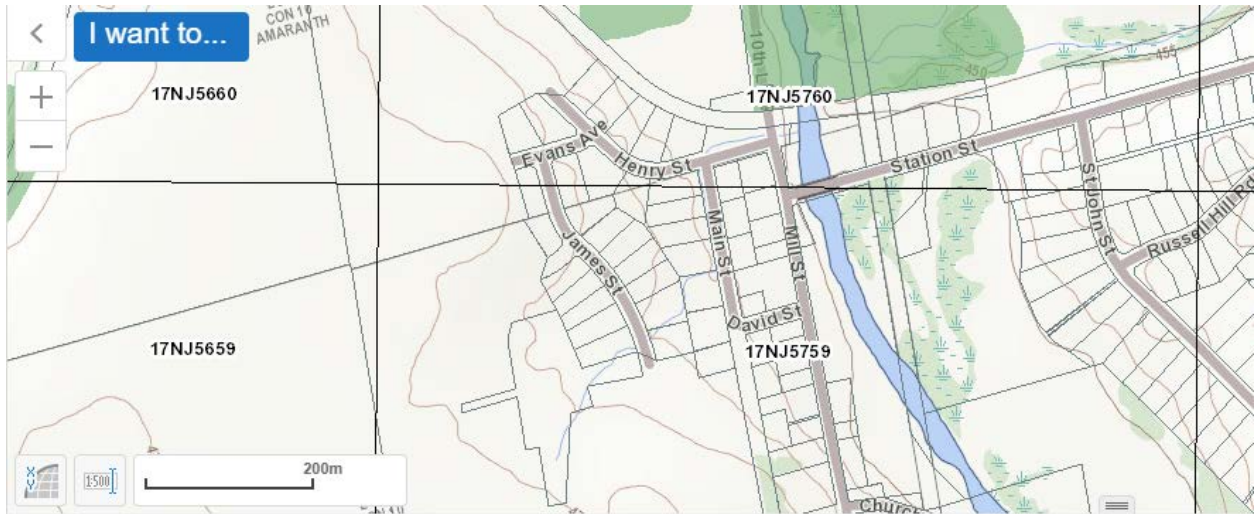
[<< previous page](#)[next page >>](#)

Ontario Breeding Bird Atlas - Summary Sheet for Square 17NJ56 (page 3 of 3)

SPECIES	Code		%	
	1st	2nd	1st	2nd
House Sparrow	AE	FY	100	100

This list includes all species found during the Ontario Breeding Bird Atlas (1st atlas: 1981-1985, 2nd atlas: 2001-2005) in the region #47 (Wellington). Underlined species are those that you should try to add to this square. They have not yet been reported during the 2nd atlas, but were found during the 1st atlas in this square or have been reported in more than 50% of the squares in this region during the 2nd atlas so far. In the species table, "BE 2nd" and "BE 1st" are the codes for the highest breeding evidence for that species in square 17NJ56 during the 2nd and 1st atlas respectively. The % columns give the percentage of squares in that region where that species was reported during the 2nd and 1st atlas (this gives an idea of the expected chance of finding that species in region #47). Rare/Colonial Species Report Forms should be completed for species marked: § (Colonial), ‡ (regionally rare), or † (provincially rare). Current as of 25/01/2019. An up-to-date version of this sheet is available from <http://www.birdsontario.org/atlas/summaryform.jsp?squareID=17NJ56>

[<< previous page](#)



NHIC Data – Grid ID = 957804

Element Type	Common Name	Scientific Name	SRank	SARO Status	COSEWIC Status	Last Obs Date	EO ID
NATURAL AREA	Grand River						18525

NHIC Query – 17NJ5760 & 17NJ5759



BURNSIDE

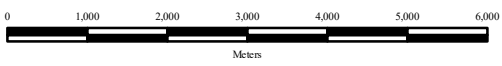
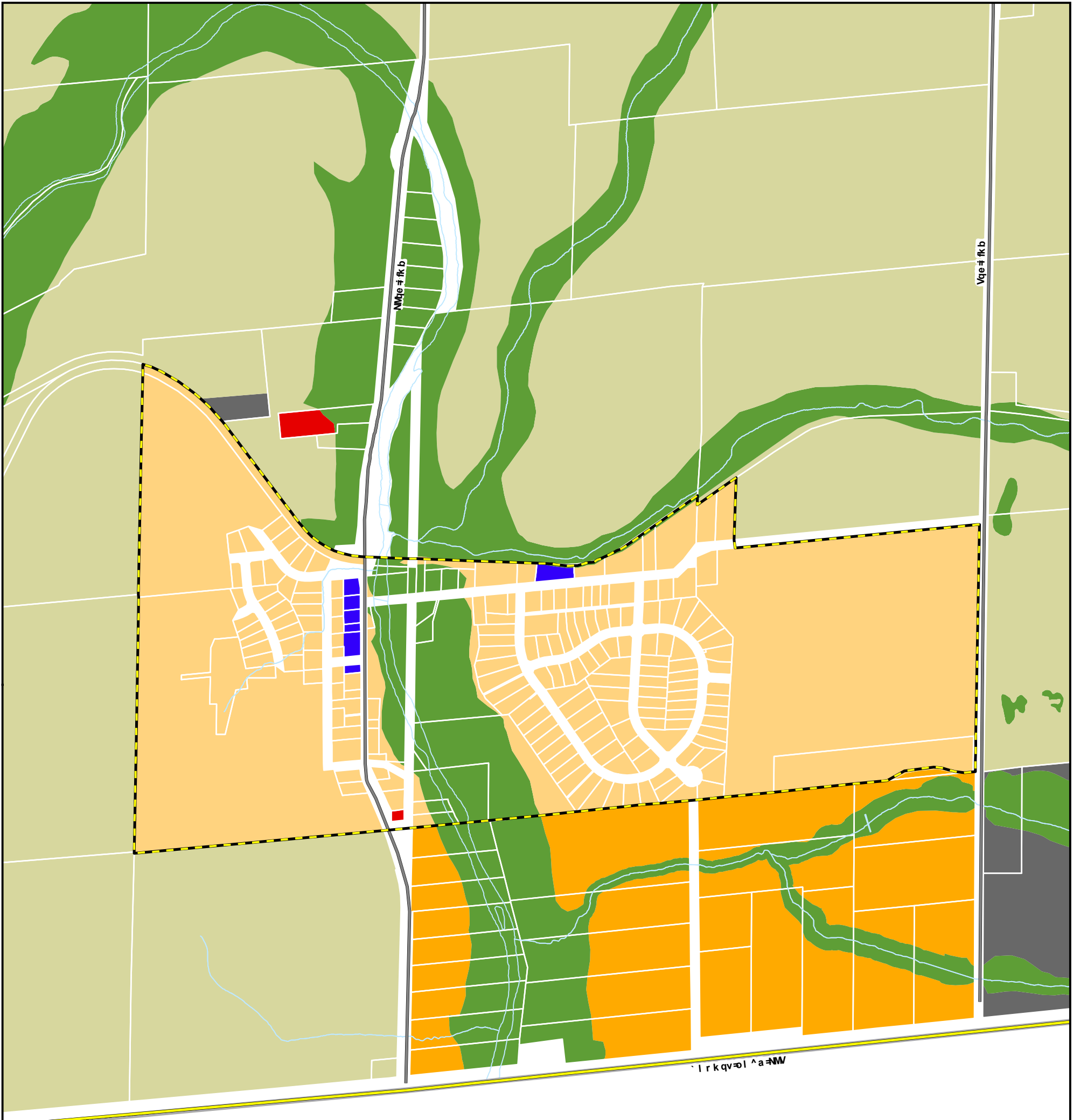
[THE DIFFERENCE IS OUR PEOPLE]

Appendix G

Official Plan Land Use

Appendix G

q l t k p e f m t c = j ^ o ^ k q e t c c f f ^ i t n i ^ k
 a r c c b o f k = l r k q v
 p e b a r i b = j n ? = i ^ k a t p b = c q o ^ k p m l o q ^ q f l k



i É O É a Ç

- | | | |
|--------------------------|-------------------------|----------------------------|
| Agricultural | Extractive Industrial | Provincial Highway |
| Environmental Protection | Open Space / Recreation | County Road |
| Rural | Community Residential | Municipal Road |
| Estate Residential | Community Institutional | Parcel Boundary |
| Employment Area | Community Commercial | Former Waste Disposal Site |
| | | Waste Disposal Site |

q c i a e u e c n a - e - a i u t n n a - a m a a = c a e c a c - i a c a
 p e e i e a A E C M M
 k c i E W A U E C i e = ^ J N - e - e i a e c a i u - e e e e a i
 i c = U E - e e e c i E C - N N A - a m a a = a E a c a E a i e =
 E l m ^ t n P F K
 Map Projection: NAD 83, UTM Zone 17
 This Map is Not A Legal Survey.
 The Township Cannot Be Responsible for Errors,
 Omissions or Other Inaccuracies.
 Lot Fabric Created With Data Provided By Teranet Inc.
 Official Plan Data updated by R.J. Burnside & Associates Ltd.



BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix H

Archeological Study

Ministry of Tourism, Culture and Sport

Archaeology Programs Unit
Programs and Services Branch
Culture Division
401 Bay Street, Suite 1700
Toronto ON M7A 0A7
Archaeology@ontario.ca

Ministère du Tourisme, de la Culture et du Sport

Unité des programmes d'archéologie
Direction des programmes et des services
Division de culture
401, rue Bay, bureau 1700
Toronto ON M7A 0A7
Archaeology@ontario.ca



Nov 23, 2018

Richard Sutton (P013)
Archaeological Assessments Ltd.
2227 Wuthering Heights Oakville ON L6M 0A3

RE: Entry into the Ontario Public Register of Archaeological Reports: Archaeological Assessment Report Entitled, "The Stage 1-2 Archaeological Assessment of the Township of Amaranth Pumphouse, 10 Station Street, Waldemar, Part of Lot 2, Concession 9, Township of Amaranth, Dufferin County", Dated Nov 6, 2018, Filed with MTCS Toronto Office on N/A, MTCS Project Information Form Number P013-1237-2018, MTCS File Number 0009846

Dear Mr. Sutton:

The above-mentioned report, which has been submitted to this ministry as a condition of licensing in accordance with Part VI of the Ontario Heritage Act, R.S.O. 1990, c 0.18, has been entered into the Ontario Public Register of Archaeological Reports without technical review.¹

Please note that the ministry makes no representation or warranty as to the completeness, accuracy or quality of reports in the register.

Should you require further information, please do not hesitate to send your inquiry to Archaeology@Ontario.ca

cc. Archaeology Licensing Officer
Carley Dixon, R.J. Burnside & Associates
Christine Gervais, Township of Amaranth

¹In no way will the ministry be liable for any harm, damages, costs, expenses, losses, claims or actions that may result: (a) if the Report(s) or its recommendations are discovered to be inaccurate, incomplete, misleading or fraudulent; or (b) from the issuance of this letter. Further measures may need to be taken in the event that additional artifacts or archaeological sites are identified or the Report(s) is otherwise found to be inaccurate, incomplete, misleading or fraudulent.

**THE STAGE 1-2 ARCHAEOLOGICAL ASSESSMENT
OF THE TOWNSHIP OF AMARANTH PUMPHOUSE,
10 STATION STREET, WALDEMAR,
PART OF LOT 2, CONCESSION 9,
TOWNSHIP OF AMARANTH,
DUFFERIN COUNTY**

(original)



**THE STAGE 1-2 ARCHAEOLOGICAL ASSESSMENT OF
THE TOWNSHIP OF AMARANTH PUMPHOUSE,
10 STATION STREET, WALDEMAR,
PART OF LOT 2, CONCESSION 9,
TOWNSHIP OF AMARANTH,
DUFFERIN COUNTY**
(original)

Prepared by

Archaeological Assessments Ltd.

2227 Wuthering Heights Way, Oakville, Ontario L6M 0A3
Telephone - 905-469-8690 Facsimile - 905-469-8702

Consulting Archaeologist: Rick Sutton
Archaeological Consulting Licence Number P013
P.I.F. Number P013-1237-2018
November 6, 2018

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PROJECT PERSONNEL

Project Director	Richard Sutton (License P013)
Field Director	Chris Brown (License P361)
Report Preparation	Richard Sutton (License P013)
Field Assistant	Max Goranson

SUMMARY

This report details the rationale, methods and results of the Stage 1-2 Archaeological Assessment of the Township of Amaranth Pumphouse, 10 Station Street, Waldemar, Part of Lot 2, Concession 9, Township of Amaranth, Dufferin County. It consisted of two sequential stages: Stage 1, background research; and Stage 2, archaeological survey. This project was conducted as a component of a Schedule B Municipal Class Environmental Assessment.

The 0.2 hectare parcel of land consists of an active pumphouse and some forested lands. The physical assessment was conducted in October, 2018. The potentially undisturbed sections of the property were shovel test pitted at 5 metre intervals.

No archaeological sites were encountered during the course of the fieldwork portion of this study. Accordingly, there are no other further concerns for impacts to archaeological resources on the subject property. No further archaeological assessment of this 0.2 hectare parcel of land is required.

1.0 PROJECT CONTEXT

1.1 INTRODUCTION AND DEVELOPMENT CONTEXT

This report details the rationale, methods and results of the Stage 1-2 Archaeological Assessment of the Township of Amaranth Pumphouse, 10 Station Street, Waldemar, Part of Lot 2, Concession 9, Township of Amaranth, Dufferin County. It consisted of two sequential stages: Stage 1, background research; and Stage 2, archaeological survey. This project was conducted as a component of a Schedule B Municipal Class Environmental Assessment.

Permission for access to the property and to remove and curate artifacts was granted by the land owner. All fieldwork was conducted under archaeological consulting licence No. P013, issued to Rick Sutton. The assessment was conducted in accordance with the provisions of the Ontario Heritage Act (Government of Ontario 1980), and with the technical guidelines for archaeological assessments formulated by the Ministry of Tourism and Culture (MTC 2010). Archaeological Assessments Ltd. accepts responsibility for the long term curation of any artifacts recovered or documents produced as a result of the assessment.

1.2 PROPERTY DESCRIPTION AND ARCHAEOLOGICAL CONTEXT

The 0.2 hectare subject property is located in the Community of Waldemar on the south side of Station Street, 260 metres east of Mill Street (Figures 1 and 2). The Stage 2 assessment of the property was conducted under the supervision of Chris Brown (License P361), Archaeological Assessments Ltd., on October 23, 2018.

The subject property consists of an active pumphouse and some forested lands. The northern half of the subject property contains the pumphouse, reservoir and a gravel driveway. The two-storey brick pumphouse is built into the west side of a hill. This hill is supported by rock filled gabions located north and south of the building. The eastern section of this complex features an elevated, open lawn area containing a buried reservoir. This area also contains a number of vent pipes and access hatches visible at the surface. The southern half of the property is composed of a forested area. The northeast and eastern forested areas are elevated and overlook a steep break in slope which runs down to the west, towards lower-lying, relatively flat forested areas.

The subject property is located on the northeastern edge of the Stratford Till Plain physiographic region (Chapman and Putnam 1984). This is a broad till plain interrupted by several moraines. The subject property itself consists of gently undulating tablelands which contain well drained clay loam and sandy loam soils. The Grand River is located 220 metres west of the subject property.

In order to provide context for evaluating archaeological planning concerns, a study area was established which included all lands situated within a 1km metre radius of the subject property. Data on previously registered sites located within the study area was obtained from Pastport, which is the Ontario Ministry of Tourism, Culture and Sport's online digital data base. The on line search indicated that there are no previously registered archaeological sites located either on or

immediately adjacent to the subject property. There are only two registered archaeological sites located within a one kilometre radius of this property (Table 1). The closest registered site is AlHb-14, which is located 250 metres east of the subject property. A cultural chronology for Southern Ontario which applies to the subject property is listed in Table 2.

Table 1. Registered Archaeological Sites Located Within One Kilometre of the Study Area

Borden Number	Site Name	Time Period	Affinity	Site Type	Current Development Review Status
AlHb-14	James Tate	Post-Contact	Euro-Canadian	homestead	
AlHb-1	Rothfusz	Archaic, Late	Aboriginal	findspot	

Table 2. Cultural Chronology For Southern Ontario

PERIOD	GROUP	TIME RANGE	COMMENT
PALEO-INDIAN			
Early	Fluted	9000 - 8500 B.C.	Big Game Hunters and Small Nomadic Groups
Late	Non-fluted	8500 - 7500 B.C.	
ARCHAIC			
Early	Nettling	8000 - 7000 B.C.	Nomadic Hunters and Gatherers
	Bifurcate Based	7000 - 6000 B.C.	
Middle	Stemmed, Otter Creek and Brewerton	6000 - 2500 B.C.	Transition to Territorial Settlement
Late	Narrow Point	2500 - 1800 B.C.	More Diverse Resource Base
	Broad Point	1800 - 1500 B.C.	
	Small Point	1500 - 800 B.C.	
WOODLAND			
Early	Meadowood and Middlesex	1000 - 300 B.C.	Introduction of Pottery
Middle	Point Peninsula	300 B.C.- 700 A.D.	Long Distance Trade
Transitional	Princess Point	500 - 900 A.D.	Early Agriculture
Late	Early Iroquoian	900 - 1275 A.D.	Transition to Village Life
	Middle Iroquoian	1275 - 1400 A.D.	Large Villages and Dependence on Agriculture
	Late Iroquoian	1400 - 1650 A.D.	Tribal Development, Warfare, European Contact
HISTORIC			
Early	Odawa, Ojibwa, Mississauga	1700 - 1875 A.D.	Social Displacement
Late	Euro-Canadian	1800 A.D.-present	European Settlement

1.3 HISTORICAL CONTEXT

The subject property is comprised of Part of Lot 2, Concession 9 in Amaranth Township, Dufferin County. The survey of Amaranth Township was not completed until 1832 although the first settlers started to arrive in the 1820's (Sawden 1952). Early settlement was slow, with the population of Amaranth and the adjacent Township Melancthon being only 100 people by 1840. By 1860, the population of Amaranth Township had risen to 1200, with the bulk of settlement occurring from 1845 to 1865 (Sawden 1952). In 1841 Amaranth Township became part of Wellington County. In 1881, Amaranth Township became part of the newly created County of Dufferin, which was formed from parts of Wellington, Grey and Simcoe Counties.

The subject property is located in the Community of Waldemar. Waldemar is located in the southwestern corner of the Township of Amaranth where the Grand River meets Willow Brook, and was founded in 1869. It was described at this time as being merely dense forest, which grew to a prosperous village by 1871. Some early milling work occurred in the area in the 1850s and 1860s, attracted by the abundant river power. In 1871, it featured a church, a schoolhouse, grist mill, two saw mills, a lath factory, a hotel, a general store, a blacksmith shop and a number of buildings under construction (Orangeville Sun, 1871). In 1870, the first postmaster was appointed and the Toronto Grey & Bruce Railway Company constructed a railway through the town along with a station and residence, a telegraph, water tank, grain elevator and stockyards (Sawden 1952). In 1872, Municipal Plan 4 divided up ten acres of land in Lot 2, Concession 10 (south of Henry Street, west of the Grand River) for town lots. A school was constructed in the village in 1879. Following an initial dispute with the railway company which left it without a station, nearby Grand Valley rose in prominence as the centre of business activity in the area. This led to a decline in the broader importance of Waldemar (Sawden 1952).

Information on potential Euro-Canadian archaeological planning concerns was also derived in part from an examination of the 1877-1881 Illustrated Historical Atlas of Waterloo and Wellington Counties (H. Parsell & Company 1877). In 1877 the subject property was already located within the settled area of the Village of Waldemar (Figure 3).

2.0 STAGE 2 FIELD ASSESSMENT

2.1 FIELD METHODS

The Stage 2 assessment of the property was conducted under the field supervision of Chris Brown (License P361), Archaeological Assessments Ltd., on October 23, 2018 under cloudy skies and cool temperatures. Areas of obvious disturbance occupied by the existing pumphouse, gabions and gravel driveway no longer have any archaeological potential and could not be shovel test pitted. The areas of obvious disturbance cover approximately 15% of the total property area (Figure 4).

All of the potentially undisturbed relatively level sections of the property were shovel test pitted at 5 metre intervals and represent approximately 55% of the subject property (Figure 4). Each test pit measured more than 30 cm (one foot) in diameter and was excavated 5cm into the subsoil. The soil from each test pit was screened through 6mm mesh in order to look for artifacts. Each test pit was then backfilled. Test pits were placed to within one metre of all existing structures and hardscaped areas.

Areas of severe slope in the southern section of the property have no archaeological potential and were not shovel test pitted. The areas of severe slope cover approximately 30% of the total property area (Figure 4).

2.2 RECORD OF FINDS

No archaeological material or sites were located during the course of the Stage 2 archaeological assessment of the subject property. The documentary record for this project includes 9 digital photographs, one field map and one page of field notes.

2.3 ANALYSIS AND CONCLUSIONS

No archaeological material or sites were located during the course of the Stage 2 archaeological assessment of the subject property.

3.0 RECOMMENDATIONS & COMPLIANCE ADVICE

3.1 Recommendations

As detailed in this report, the Stage 1-2 archaeological assessment of the subject property determined that there are no significant archaeological resources present on these lands. Accordingly, there are no other further concerns for impacts to archaeological resources on the subject property. No further archaeological assessment of this 0.2 hectare parcel of land is required.

3.2 Compliance Advice

This report is submitted to the Minister of Tourism and Culture as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Tourism and Culture, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.

It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeology Reports referred to in Section 65.1 of the *Ontario Heritage Act*.

Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48 (1) of the *Ontario Heritage Act*.

The *Cemeteries Act*, R.S.O. 1990 c. C.4 and the *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 (when proclaimed in force) require that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Consumer Services.

4.0 MAPS

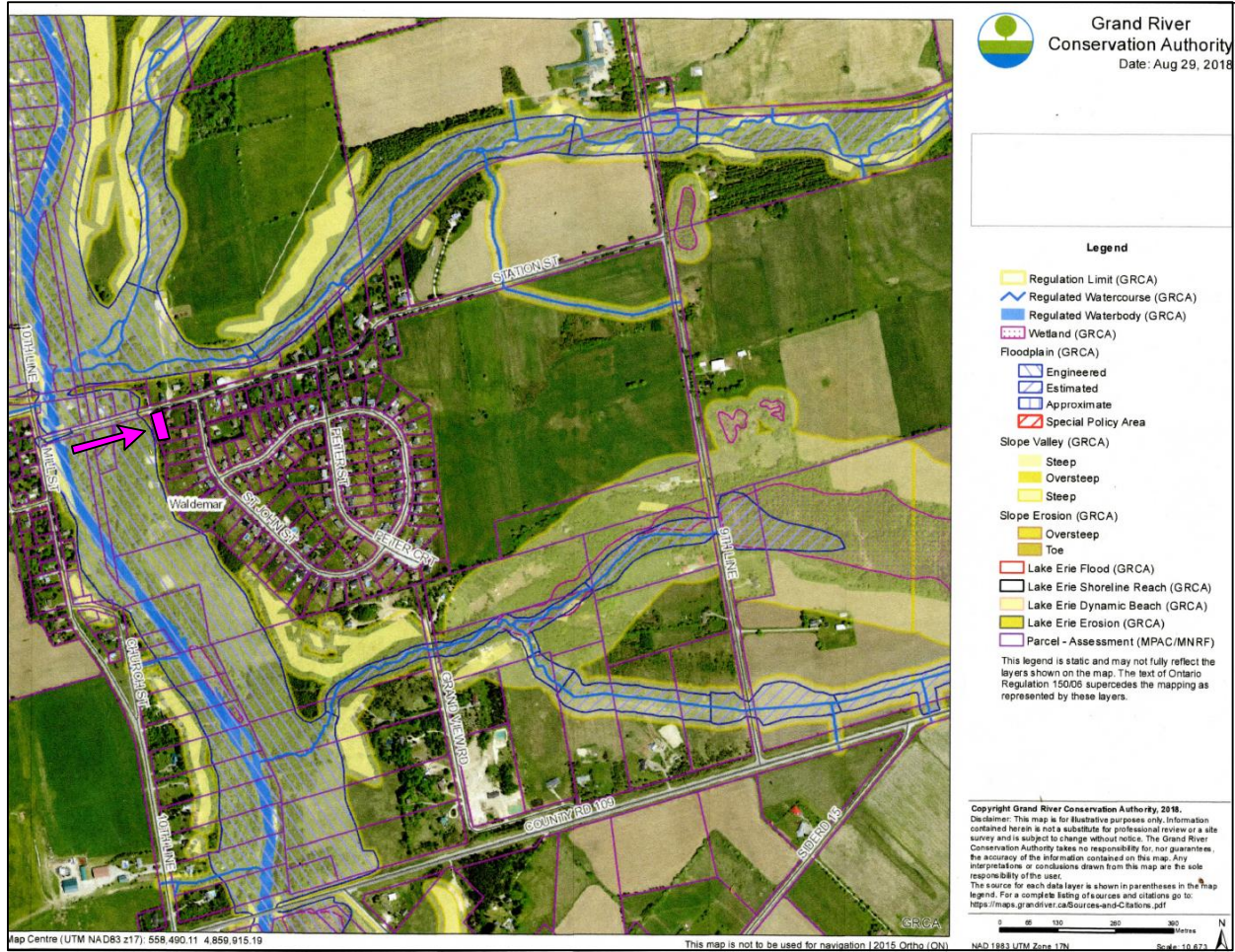


Figure 1. Location of the Subject Property

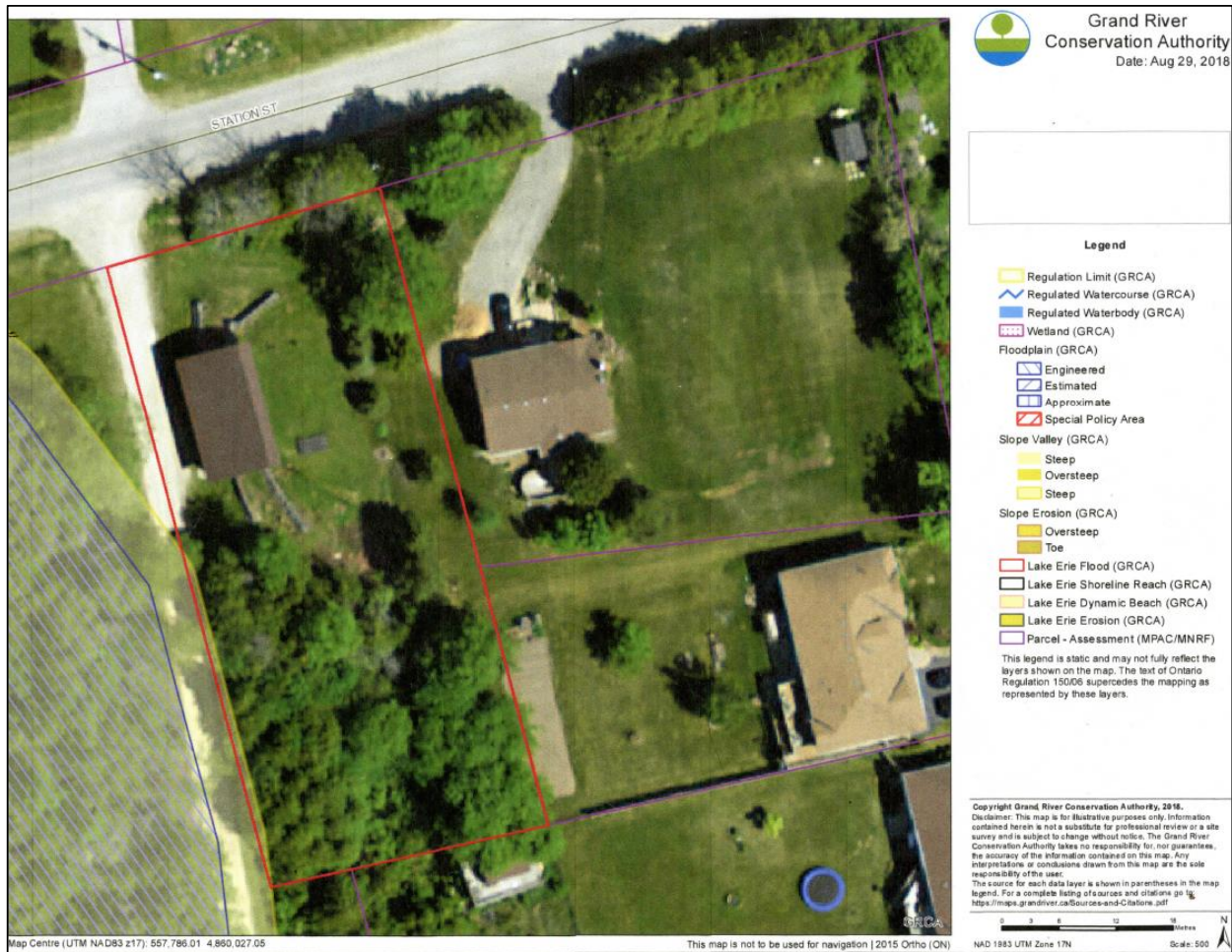


Figure 2. Satellite Image of the Subject Property



Figure 3. 1877 Historical Atlas Map of Amaranth Township Showing Approximate Location of the Subject Property (H. Parsell and Company 1877)

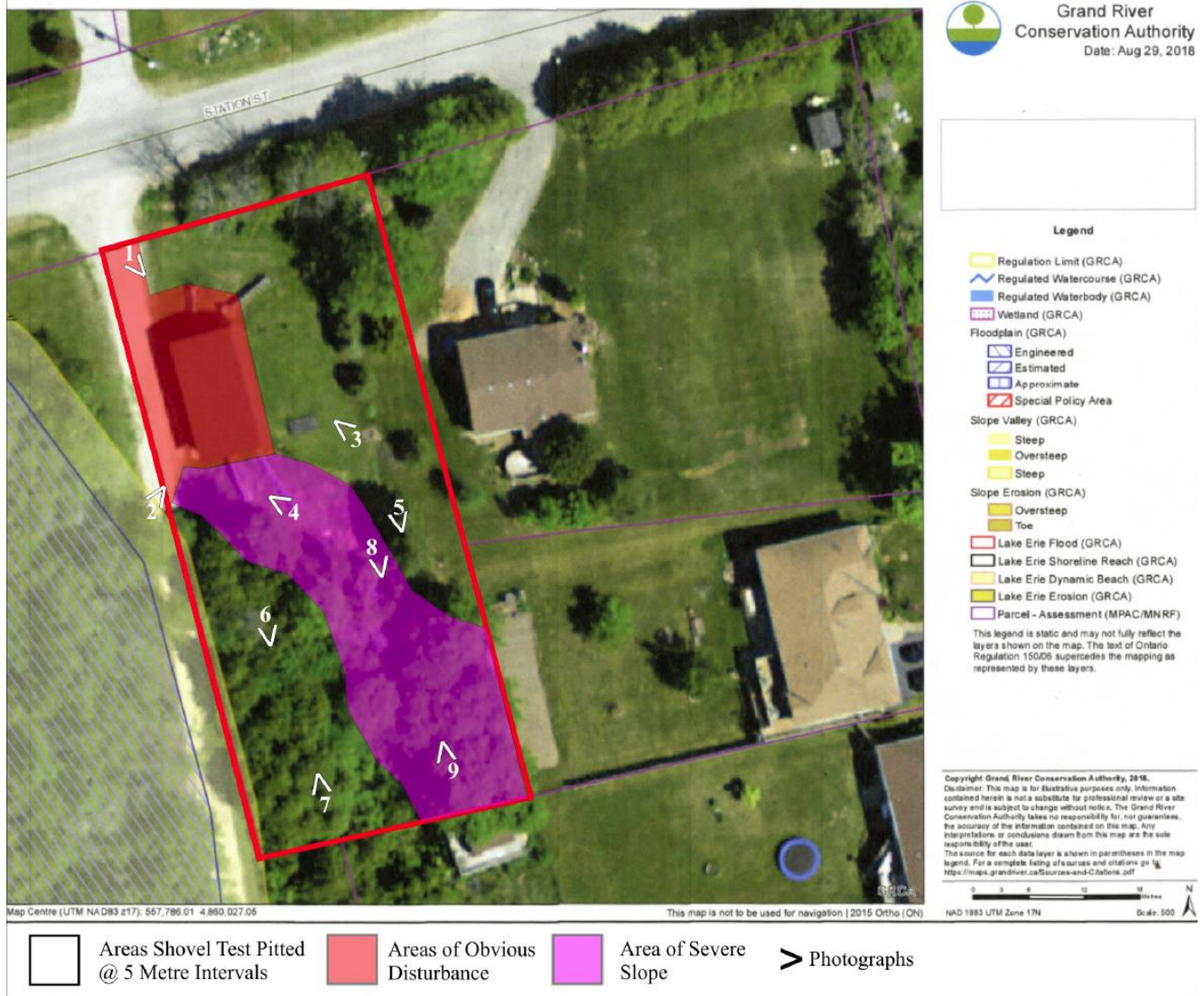


Figure 4. Archaeological Survey Coverage and Techniques

5.0 IMAGES



Plate 1. North Pumphouse & Gabions/Slope
(view southeast)



Plate 2. North Pumphouse & Gabions/Slope
(view northeast)



Plate 3. North Pumphouse & Reservoir Location
(view northwest)



Plate 4. Central Steep Scrubby Slope
(view northwest)



Plate 5. Southeast Top-of-Bank
(view southeast)



Plate 6. Southern Forested Area
(view southeast)



Plate 7. Southern Forested Area
(view northwest)



Plate 8. Southern Steep Forested Slope
(view southeast)



Plate 9. Southern Steep Forested Slope
(view northwest)

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