4.0 Phase 1: Problem / Opportunity Statement

The Problem or Opportunity step of the Class EA planning and design process requires proponents to document why infrastructure improvements are needed and develop a problem or opportunity statement that clearly identifies what is being investigated.

Based on the need for upgrades to the Cramahe Industrial Park Sanitary System and the background information laid out in the above sections the problem / opportunity statement is as follows:

> The existing sanitary sewer network within the Colborne Industrial Park is at or near capacity. Therefore, a sewage network upgrade is necessary to maintain service to the existing customers within the industrial park, and which also allows for additional development within the designated employment lands.

5.0 Phase 2: Identification of Alternative Solutions

The first step in Phase 2 – Alternative Solutions of the Municipal Class EA planning and design process involves the identification of alternative solutions to potentially address the identified problem or opportunity.

The following alternatives solutions were considered:

Alternative #1 - "Do Nothing": Existing Sanitary Sewer

Alternative #1 includes maintaining the existing SDGP in the Industrial Park. A more detailed discussion and analysis of this alternative will be presented in **Section 6.0**. No capital construction is proposed.

Alternative #2 – Easement from Industrial Park Avenue

Alternative #2 proposes to replace the existing sanitary sewer network in the Colborne Industrial Park with an expanded capacity sanitary network and marginally increase the service to designated employment lands. The proposed Alternative #2 alignment is shown in **Appendix D**. Alternative #2 proposes to install sanitary mains on Purdy Road, and Industrial Park Road, which will converge at a new easement between Industrial Park Road and Percy Street to connect with the existing sanitary system on Percy Street. The proposed easement is required through the private land parcels currently owned by Elona Barth. A more detailed discussion and analysis of this alternative will be presented in **Section 6.0**.

Alternative #3 – Sewage Pumping Station

Alternative #3 proposes to replace the existing sanitary sewer network in the Industrial Park with an expanded capacity sanitary network in terms of pipe size (sanitary capacity) and area serviced. The proposed Alternative #3 alignment is shown in **Appendix D**. The proposed alternative is to install sanitary mains on Purdy Road, Industrial Park Road and Elgin Street North, out letting to a proposed sewage pumping station on Elgin Street North. The proposed pumping station will connect to a proposed forcemain installed along Elgin Street which outlets into the existing gravity system on Park Street East. A more detailed discussion and analysis of this alternative will be presented in **Section 6.0**.

Alternative #4 – Easement from Elgin Street

Alternative #4 proposes to replace the existing sanitary sewer network in the Colborne Industrial Park with an expanded capacity sanitary network in terms of pipe size (sanitary capacity) and area serviced. The proposed Alternative #4 alignment is shown in **Appendix D** and generally included the installation of sanitary mains on Purdy Road, Industrial Park Road and Elgin Street. This alternative is similar in serviced area to Alternative #3; however, a pump station is not required. This alignment will make use of a proposed easement between Elgin Street and Percy Street, which is located on private property currently owned by Linda Hinton. The proposed sanitary main will outlet to the existing Colborne sanitary system, which is located at the west end on the proposed easement at Percy Street. A more detailed discussion and analysis of this alternative will be presented in **Section 6.0**.

6.0 Evaluation of Alternatives

The following sections shall evaluate the four alternatives based on the impacts to the natural, cultural and economic environment as well as future development potential.

6.1 Natural Environment Considerations

6.1.1 Source Water Protection

Alternative #1 will have minimal impacts to the source water of the municipal well due to no construction activities occurring.

The installation of sanitary mains for Alternatives #2, #3 and #4 will not likely affect the source water for the municipal well because Dense Non-aqueous Phase Liquid (DNAPL's) are not released during normal construction activities. The contractor responsible for installing the sanitary infrastructure will be required to have a spill plan in place, and will not be permitted to wash vehicles and equipment or store substances which contain DNAPL's within the WHPA. A DNAPL fact sheet published by the Lower Trent Conservation Authority is located in **Appendix A**.

6.1.2 Existing Conditions Assessment – Natural Environment

The following sections will discuss the potential impacts that each alternative may have on the natural environment. An Existing Conditions Assessment is prepared for the studied alternatives and is included in **Appendix A**. A summary of the results is located below.

Alternative #1

The existing natural environment will not be affected further because no additional construction activities are proposed. The existing natural environment of Alternative #1 was not studied.

Alternative #2

Alternative #2 as defined in Section 5.0 is located within the existing Rights-of-Way's (ROW) of Industrial Park Road and Purdy Road except where the alignment crosses undeveloped land between Industrial Park Road and Percy Street. A study of the undeveloped land showed that the land is covered with vegetation and tree species including white birch, white cedar, black cherry and others. However no endangered or SAR vegetation species were identified.

The Existing Conditions Report noted that there is a natural drainage feature where a small watercourse (channel) drains through the undeveloped area. The channel has a width between 0.2 m and 2.2 m and depths between 0.09 m and 0.17 m. There were watercress plants located in the channel which indicates groundwater is responsible for part of the flows within the channel. The channel did not have any pooling features which could sustain overwintering fish species.

Signs of wildlife were noted, although no wildlife was spotted. A detailed description of the Site investigation and potential impacts is located in **Appendix A**.

Alternative #3

Alternative #3 is located within the existing ROW, however depending on the size of the proposed sanitary pumping station some land acquisition may be required adjacent to the ROW on Elgin Street North.

The Existing Condition Assessment noted that the land is generally cleared throughout the ROW but there is an unevaluated wetland outside of the road allowance in the low area on Elgin Street North. The wetland is noted to contain Sugar Maple, White Birch, cottontails and other species indicative to wetlands. There were no SAR noted during the site investigation.

The alignment crosses two watercourses on Elgin Street North in proximity to the wetland which are associated with a headwater tributary of Colborne Creek. The water courses are conveyed under the ROW by a 400 mm diameter culvert and double 600 m diameter culverts respectively. Should this alignment be selected as the preferred alternative, additional environmental investigation may be required if additional land is

required outside of the ROW to accommodate a sanitary pumping station. Additional information regarding the existing conditions is in **Appendix A**.

Alternative #4

Alternative #4 is located within the existing ROW, similar to Alternative #3; however, the proposed alignment for Alternative #4 crosses undeveloped land between Percy Street and Elgin Street North. Wills biologists studied the undeveloped land associated with this alternative and noted that the area can be divided into two vegetative communities and identified as the western and eastern portions. The western portion is a densely vegetated forest with various plant and tree species such as sugar maple, white pine, etc. The eastern portion is primarily grasses and open fields. A stream traverses the northwest portion of the undeveloped land which was determined to be too small to contain fish habitat. The landowner confirmed that the stream did dry up during the summer and fall months. Although no SAR were detected, Alternative #4 has moderate potential for the presence of Barn Swallow and Bobolink habitat.

6.2 Archaeological Considerations

As detailed in the Stage 1 Archaeological Assessment (located in **Appendix B**), the Colborne area has a well-documented and fairly intensive history of 19th Century Euro-Canadian settlement in addition to the following factors:

- There is an unregistered pre-contact archaeological site roughly 1 km east of the Study Area.
- The Study Area includes features (elevated topography next to wetlands and secondary watercourses) that would have made it suitable for aboriginal use and habitation.
- A 19th Century church and cemetery were built nearby.
- Five 19th century transportation corridors are within the Study Area.
- There are wetland zones and small creeks nearby.

These factors contribute to an assessment that finds the Study Area to have archaeological potential. A Stage 2 Archaeological Assessment is recommended for Alternatives# 2-4 due to the historic corridors and crossing undeveloped land. Alternative #3 also uses historic corridors with the addition of a pumping station that may be built on undeveloped land. No alternative presents a clear advantage over another with regard to archaeological feasibility.

With all alternatives requiring the same level of additional investigation, and presenting equal risk for delay and extra fees, archaeological considerations become equal factors in choosing a preferred alternative.

6.3 Development Potential Considerations

The Township identified potential future expansion of the serviceable area as an important component of the assessments of alternatives. Several areas adjacent to the Study Area have been identified as potential employment areas in the Official Plan and will therefore require municipal services in the future.

An expansion of sanitary servicing capacity will be required to service additional sanitary load in the Industrial Park. Without allowance for additional capacity within the Employment Area designated lands, there will be limited potential growth within and outside of the existing Industrial Park.

The capacity to service adjacent areas was included in the assessment of alternatives. The following provides an assessment of the alternatives potential for future expansion.

Future Expansion A

- Provide full diameter sanitary sewers for 800 m on Orchard Road west of the Percy Street intersection. There is some existing commercial on Orchard Road although the designation beyond the existing commercial is currently rural use. It is possible that in the future the designation will change to permit additional employment uses along Orchard Road.
- Any sanitary development along Orchard Road will require a sanitary lift station approximately 250 m west of the Percy Street intersection, where there is a natural low in the topography.
- Future Expansion A includes 22.1 ha of area.
- **Future Expansion A could be added to Alternative #2, #3 and #4.**

Future Expansion B

- Provide full diameter sanitary sewers for 600 m on Purdy Road east of the Elgin Street intersection. This land is currently designated Employment Area and Rural. There is potential for future additional employment uses.
- Future Expansion B includes 42.8 ha of area.
- **Future Expansion B could be added to Alternative #2, #3 and #4.**

Future Expansion C

- Provide sanitary sewers for 650 m on Kelwood Lane, which connects to the sanitary sewer pipe on Percy Street. Kelwood Lane is designated Estate Residential and Colborne Periphery and currently has approximately 16 homes.
- Future Expansion C includes a total of 19.7 ha of area.
- **Future Expansion C can be added to Alternative #2.**

6.4 Social Considerations

The following details the social considerations which the proposed alternatives will have on Colborne.

6.4.1 Service Disruptions

Proposed construction within existing road ROW will result in temporary traffic disruption to businesses during the construction period. Vehicular traffic will be re-routed around the construction zone, which could cause minor delays. Some short-term traffic detours would be required during the construction period.

Alternative #2 and #4 connect the sanitary system to Percy Street, which will cause some disruption to traffic between the 401 Highway and Colborne downtown during the construction period.

Alternatives #2, #3, and #4 include construction of sanitary infrastructure at the intersection of Percy Road, Purdy Road and Orchard Drive. This is a key intersection for local businesses that are located directly off the 401 Highway. There will be some disruption to traffic during the construction of sanitary infrastructure at this intersection.

The contractor will be responsible for handling and by-pass pumping sewage flows, therefore a disruption in sanitary sewage collection services would be minimal.

6.4.2 Recreation and Tourism

Colborne is a tourism center, with local attractions such as the Big Apple, and adjacent attractions such as Presqu'ile Provincial Park in Brighton which bring people into and through the community.

The traffic disruptions noted above will have a minor impact on local tourism during the construction period.

6.5 Economic Considerations

This section summarizes project capital costs (economic impacts), operation and maintenance costs as well as providing a 20-year Net Present Value (NPV) evaluation of the alternatives.

6.5.1 Capital Costs

One of the major economic impacts considered is the upfront Capital Construction Costs (Capital Cost). Preliminary Capital Cost estimates are included in **Appendix E**.

Costs presented are preliminary estimates only. They provide an order of magnitude cost for the comparison and evaluation of alternative solutions. Actual costs will be subject to confirmation of detailed design requirements, site-specific conditions, and regulatory requirements at the time of design and construction. The following will provide a summary of the proposed capital costs for each alternative.

Alternative #1

Naturally, the "Do Nothing" alternative involves no upfront capital costs. The existing system has required frequent flushing and maintenance, notably the removal of wire from inside the pipes that was causing blockages. Regular flushing will be required due to flat pipe grades and as the existing system approaches the end of its life, it will necessitate replacement of the existing pipe within 10 years, which is expected to cost $1,000,000 by using trenchless technologies.

Alternative #2

The preliminary cost estimate for construction of Alternative #2 is $3,800,000. There may be additional costs to obtain the land use agreement for the easement between Industrial Park Road and Percy Street. This alternative provides moderate potential for growth in the area. This system would involve very little maintenance for the life of the system.

Alternative #3

The preliminary cost estimate for construction of Alternative #3 is $5,230,000. This Alternative provides moderate potential for growth in the area. Most of the system would generally require very little maintenance however, the pumping station would require regular maintenance even under normal operating parameters.

Alternative #4

The preliminary cost estimate for construction of Alternative #4 is $4,458,000. There may be additional costs to obtain the land use agreement for the easement between Elgin Street North and Percy Street. This alternative provides good potential for growth in the area. This system would involve very little maintenance for the life of the system.

6.5.2 Operation and Maintenance Costs

The alternatives being considered use varied solutions to address the problem. Therefore, the operation and maintenance costs will be varied and have been estimated and factored into the evaluation. The following will address the Operation and Maintenance (O & M) costs of each alternative.

Alternative #1

The existing alternative has relatively high O & M costs. From discussions with the Township, the system is currently flushed several times a year amounting to a yearly maintenance cost of $20,000 (2018 dollars).

Alternative #2

The proposed gravity system in Alternative 2 will have relatively low O & M costs. Gravity systems typically have low O & M costs due to the energy required to move the sewage being provided by gravity. Periodic flushing is required for all gravity systems sanitary systems to remove debris that may be too heavy to be flushed during the day to day operation of the system. At the present time, the Township completes flushing on the existing gravity sewer within Colborne on an as needed basis. It is expected that the proposed Alternative #2 sanitary pipe will also be flushed on an as-needed basis so that $5,000 is required every five years will be required for spot flushing.

Alternative #3

Alternative #3 provides a combination of gravity and forced sewage pumping. This alternative will require the same periodic flushing as in Alternative#2, which is $5,000 every five years. Alternative #3 will require additional O & M costs for a pump station, including electricity, maintenance, and equipment replacement costs. Based on similarly sized sanitary pumping stations, a total yearly O & M cost for the pump station is estimated to be $15,000.

Alternative #4

Similar to Alternative #2, Alternative #4 will require periodic flushing of the gravity system with associated O & M cost of $5,000 every five years.

6.5.3 Net Present Value

To compare the four alternatives in terms of capital costs and maintenance costs, the total value of the project is considered over a 20 year period. The Net Present Value (NPV) is calculated as follows:

$$NPV = C_0 + \sum_{i=1}^{T} \frac{C_i}{(1+r)^i}$$

Where:

C_0 = Initial investment (capital cost)

C = Repeating Cost (O & M costs)

r = Discount Rate (inflation rate used at the inflation rate of 2.5% based on the Bank of Canada)

T = Time (where: Year 0 = 2019, Year 1 = 2020, and Year 20 = 2040)

A summary of the total project costs over a 20-year period is provided in **Table 2.**

Table 1 – Net Present Value

Alternative #	Capital Cost	O & M Costs	Net Present Value
1[1]	$ 1,000,000 [2]	$ 20,000 / year	**$ 1,092,981.65**
2	$ 3,8000,000	$ 5,000/ 5 years	**$ 3,814,828.95**
3	$ 5,230,000	$ 15,000/year plus $ 5,000/ 5 years	**$ 5,478,666.38**
4	$ 4,458,000	$ 5,000/ 5 years	**$ 4,472,828.95**

Notes:

1) Alternative #1 does not address the problem statement, but was included in the evaluation to demonstrate the economic impact of maintaining the status quo.
2) The shown Capital Cost is estimated for pipe replacement of the small diameter gravity pipe system within 10 years (approximately in the year 2030). The Capital Cost shown does not include the initial Capital Cost.

Based on the above table, Alternative #1 has the lowest NPV because the initial Capital Costs and past O & M costs have not been included. Alternative #1 also has the highest O & M costs of all the Alternatives.

Although Alternatives #2, #3, and #4 address the problem statement, the alternatives do not all have the same potential benefit. In order to compare not just the cost, but also the value of each alternative it should be noted that this value comparison does not include potential future tax base or employment opportunities within Colborne that would have a net positive financial impact on the community.

The total NPV is compared against the amount of developable land including potential future sanitary expansion areas. Therefore a NPV cost per hectare of serviceable land can be determined as shown in **Table 2.** The NPV per hectare cost is an indicator of the total cost for developing land, and can help determine which is the most cost effective alternative.

Table 2 – NPV Compared to Serviceable Area

Alternative #	NPV	Total Serviceable Area (including Potential Future Expansion)	NPV / ha
1[1]	$ 1,092,981.65	40.8 ha	**$ 26,788.77 / ha**
2	$ 3,814,828.95	180.4 ha	**$ 21,146.50 / ha**
3	$ 5,478,666.38	211.8 ha	**$ 25,867.16 / ha**
4	$ 4,472,828.95	211.8 ha	**$ 21,118.17 / ha**

Notes:

1) Alternative #1 does not address the problem statement, but was included in the evaluation to demonstrate the economic impact of maintaining the status quo.

Based on the results of Table 2, Alternative #4 is the most cost effective alternative for developing the existing industrial park and expanding sanitary service to surrounding areas.

6.6 Public, Stakeholder and Agency Consultation

A vital component of the Municipal Class EA process is public, stakeholder and review agency consultation. This section describes the consultation process with respect to the presentation of the problem and alterative solutions that was carried out as part of this study, prior to selecting the preferred alternative for the project.

6.6.1 Notice of Study Commencement

A Notice of Commencement was sent out by regular mail to a list of stakeholders in the Study Area as well as posted in the Northumberland News newspaper on March 1, 2018. A copy of the Notice of Commencement and the project mailing list is included in **Appendix F**.

6.6.2 Public Information Centre

The Public Information Center (PIC) took place on Wednesday March 21, 2019 from 6:00 P.M. to 9:00 P.M. at the Cramahe Municipal Administrative Building. The PIC provided the opportunity for the public to review the problem statement and alternative solutions and to provide the project team will feedback. The notice of PIC was sent by regular mail to private residents (homeowners) with properties in the Study Area as well as advertised in the Northumberland News. Information presented at the PIC is included in **Appendix G**.

Nine (9) people chose to sign the sign in sheet and four people chose to leave written comments. The following table summarizes the comments received.

Table 3 – Summary of Public Comments

Comment	Response
We do not want to have City water or sewer from Town. We have a dug well and sceptic [*sic*] works good. Water is very good. Toilet flushes great and we will not like to have to pay for upgraded for something that is not broken [sic]. We would like to be informed of any development or discussion on this mater [sic], day or night will be available [sic].	This is outside the scope of the project however, the Township of Cramahe staff will keep the members of the public informed of any decisions that may be made in terms of sewer or water connection.
Option #4 looks like it will be less disruptive and hopefully the lowest cost.	Option 4 is the preferred Alternative.
I prefer Option 4.	Option 4 is the preferred Alternative.
I prefer Option 4.	Option 4 is the preferred Alternative.

6.7 Evaluation Summary

The key features of the four alternatives are summarized in **Table 4.** The main considerations have been ranked for each alternative to help compare their effects within the Study Area. The ranking is as follows:

Most Favourable	Medium	Least Favourable

The above rankings, are relative to each other and do not constitute absolute rankings.

Table 4 – Summary of the Colborne Industrial Park Sanitary Alternatives Key Features and Issues

Requirement	Alternative #1	Alternative #2	Alternative #3	Alternative #4
Does the Alternative provide a solution to the problem?	No	Yes	Yes	Yes
Environmental Consideration	Short term, no environmental impact.	Some environmental impacts.	Some environmental impacts.	Some environmental impacts.
Archeological Consideration	No further archeological potential impacts.	High archeological potential.	High archeological potential.	High archeological potential.
Summary of Public Input	No responses received.	No responses received.	No responses received.	Three members of the public preferred this alternative.
Economic Consideration: Capital Cost	Lowest Capital Cost for future replacement.	Medium Capital Cost.	Highest Capital Cost.	Medium Capital Cost.
Economic Consideration: O & M Costs	Highest O & M Cost.	Lowest O & M Cost.	High O & M Cost.	Lowest O & M Cost.
20 year Net Present Value compared to Hectares of developable land.	Medium NPV per hectare of land developed.	Medium NPV per hectare of land developed.	Highest NPV per hectare of land developed.	Lowest NPV per hectare of land developed.
Development Potential	No Development Potential	Some Development Potential	Most Development Potential	Most Development Potential

7.0 Preferred Solution

Alternative #4 is selected as the preferred solution for the following reasons:

- There are no major environmental disadvantages by selecting one of alternatives #2, #3 or #4;
- There are no archeological disadvantages by selecting one of Alternatives #2, #3 and #4;
- Alternative #2-4 provide a solution to the problem;
- Alternative #4 has the highest public support;
- Alternative #4 offers the most future expansion potential;
- Alternative #4 has a medium Capital Construction Cost compared to Alternatives #2 and #3;
- Alternative #4 provides the lowest O & M cost; and,
- Alternative #4 has the lowest cost relative to the future development potential (NPV/ ha).

Generally alternative #4 offers the best value for servicing future developed lands compared to the other alternatives combined with a low O & M cost.

7.1 Additional Investigations

In conjunction with further design of the preferred solution, the following additional investigations are recommended.

7.1.1 Stage 2 Archaeological Assessment

The Stage 1 Archaeological Investigation recommends a Stage 2 Archeological Assessment be conducted in accordance with the 2011 Ministry of Tourism, Culture and Sport (MTCS) Standards and Guidelines for Consultant Archaeologists. The assessment must be conducted prior to construction activities to confirm archaeological potential. Should further investigation be required it will be noted in the Stage 2 Archaeological Assessment Report.

7.1.2 Geotechnical

A geotechnical investigation should be undertaken as part of the detailed design process. The geotechnical investigation should determine the following:

- Location and depth of bedrock.
- Depth of ground water table.
- Existing soil conditions.
- Compaction requirements.
- Safe trenching requirements.
- Road Structure requirements for disturbed areas.

7.1.3 Approvals

The following approvals are anticipated to be required:

- Environmental Compliance Approval (ECA).
    - Alterations and additions to sewage works require an ECA through the MECP.
- The contractor who is responsible for constructing the works may require a Road Cut permit from the Township.
- Input from the Lower Trent Conservation Authority (LTCA) is required during detailed design to limit the potential impact on adjacent unevaluated wetlands on Elgin Street North. The LTCA may require additional permits for work around wetlands.

7.2 Notice of Study Completion

The Environmental Assessment Report was completed on September 9, 2019, followed by the "Notice of Completion" mailed to all stakeholders on September 12, 2019, and published in the Northumberland News newspaper on September 12, 2019. A copy of this notice is included in **Appendix F**.

8.0 Impacts and Mitigation of Preferred Alternative

8.1 Environmental

Alternative #4, the preferred alternative, would require excavation of a 10 m wide section of land from Elgin Street North to Percy Street. Any clearing of trees or vegetation poses potential impacts on nesting birds and roosting bats. Potential impacts to the natural environment need to be planned for with appropriate mitigation measures.

The following section proposes mitigation measures to address the environmental impacts associated with the construction of the sewer expansion.

8.1.1 Breeding Birds

Impacts to breeding birds or their habitat can come directly from construction equipment or through construction activities such as removal, clearing, or grubbing of trees or riparian vegetation communities.

The following mitigation measures relating to breeding birds should be applied to any vegetation removal:

- Any tree / vegetation removal or destruction from construction activities or equipment must occur outside of the breeding bird timing window (April 1 to August 31).
- If tree / vegetation removal or destruction is necessary during the timing window, a nest sweep must be completed by a trained biologist prior to construction activities. The nest sweep must cover the entire area of excavation, any staging areas where vegetation exists, and any areas where heavy equipment will be passing through.
- If any nests are found subsequent to the nest sweep, construction activities should cease and a 20 m buffer should be applied to the area surrounding the nest. The buffer should remain until all young have fledged.
- In the event that a nest sweep is completed, all vegetation within this area must be cleared within 5 days, otherwise an additional nest sweep is required.

It is necessary that upon completion of the sewer installation, the terrestrial habitat shall be restored to its original state or better. This involves revegetating the impacted area with similar plants species as those that exist now.

8.1.2 Bats

Although no bats were identified by MNRF through correspondence or during field investigations, the potential for bat hibernacula exists in the Study Area. In order to mitigate any potential impacts, the following measures should be addressed:

- Inspection of work areas for bats should occur before construction.
- If found to utilize structures or areas of tree removal, the project should be registered with MNRF. Effective exclusionary methods and / or timing windows for construction should also be applied.

8.1.3 Aquatics

It is assumed that no in-water work will be completed for this project. Additionally, as per the LTCA Regulations Policy document, no development is to be completed within 15 m of a river or stream, regardless of whether or not they contain a watercourse. The valley extends from the stable top of bank, plus 15 m, to a similar point on the opposite side.

In addition, the following mitigation measures should be used during construction to control erosion and prevent sediment from entering the watercourse.

- A Sediment and Erosion Control Plan should be developed and implemented prior to construction.
- All equipment and materials used for the purpose of site preparation and project completion should be operated in a way that prevents the release of deleterious substances into the watercourse.
- Develop a response plan that is to be implemented immediately in the event of a sediment release or spill of a deleterious substance and keep an emergency spill kit on site.
- Plan activities near water such that materials such as paint, primers, blasting abrasives, rust solvents, degreasers, grout, poured concrete or other chemicals do not enter the watercourse.
- If replacement rock reinforcement / armouring is required to stabilize eroding or exposed areas, ensure that appropriately-sized, clean rock is used; and that rock is installed at a similar slope to maintain a uniform bank / shoreline and natural stream / shoreline alignment.

8.2 Economic

Construction activities occurring within the Colborne Industrial Park and commercial areas of Colborne may have an impact on local businesses and tourism. Advanced communication with project stakeholders relating to lane / road closures is recommended.

8.3 Future Considerations of the Colborne Sanitary System

The addition of flows from an expanded sewer network will consume the existing available capacity downstream of the Colborne WWTP and the existing sanitary collection system downstream of the Colborne Industrial Park.

It is recommended that the Township continue to monitor incoming sanitary flows at the WWTP to ensure that the WWTP remains in compliance with its environmental approvals. Prior to the WWTP being at capacity the Township may wish to trigger an expansion of the WWTP so that development of the Colborne Industrial Park will not be hindered by the capacity of the Colborne WWTP.

At this time, there are not concerns with the downstream capacity of the Colborne sanitary collection system, however, the Township should continue to monitor the flows as additional developments are added to the system. Proactively, the Township should complete an analysis of the downstream capacity of the sanitary network between the Colborne Industrial Park and the WWTP. Knowing the capacity of the network and the pinch points where the capacity will be exceeded first through the addition of flows from development will help the Township plan for upgrades to the system.

9.0 Next Steps

9.1 Submission of Project File Report

The Project File Report will be available for public review for a 30-day review period. During this time, public and agency stakeholders are encouraged to review outstanding issues with the study team.

9.2 Part II Order Requests

If concerns arise regarding this project which cannot be resolved in discussion with the proponent, a person or party may request that the MECP 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. The Minister, at the address noted below, must receive requests in writing within 30-calendar days of the Notice of Study Completion.

Minister
Ministry of the Environment, Conservation and Parks
77 Wellesley Street West, 11th Floor
Toronto, Ontario
M7A 2T5
Minister.mecp@ontario.ca
Fax: 416-314-8452

Copies of the request must also be sent to the Director of the Environmental Assessment and Permissions Branch at the MECP and the Township of Cramahe at the addresses below:

Director, Environmental Assessment and Permissions Branch
Ministry of the Environment, Conservation and Parks
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5
Email: enviropermissions@ontario.ca

Township of Cramahe
Attention: Arryn McNichol, H.B.Comm, CPA, CGA, CMMIII, Interim Chief Administrative Officer - Treasurer
P.O. Box 357 1 Toronto Street
Colborne, Ontario
K0K 1S0
Phone: (905) 355-2821 (Ext 223)
Fax: (905) 355-3430
E-mail: AMcNichol@cramahetownship.ca

If there is no Part II Order Request received by October 2019, the Township intends on implementing the recommended alternative described in the Project File Report.

Appendix A

Natural Environment

Colborne Industrial Park
Sanitary System Upgrades

Existing Conditions Assessment

D.M. Wills Project Number 13-2907

D.M. Wills Associates Limited
Partners in Engineering
Peterborough

June 2018

Summary of Revisions

Revision No.	Revision Title	Date of Release	Summary of Revisions

This report / proposal has been formatted considering the requirements of the Accessibility for Ontarians with Disabilities Act (AODA).

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Appendices

1.0 Environmental Conditions

1.1 Proposed Alternatives

Four alternatives for the sanitary sewer connection between the proposed Colborne Industrial Park (Study Area) to the existing system were considered during the Environmental Assessment (EA) process. Assessment of natural features was not conducted for alternative 1 as it was a "Do Nothing" alternative therefore no features existed to be evaluated.

Existing environmental conditions were assessed for the three remaining alternatives. Alternatives 2 and 3 are located within the drainage area of two tributaries to Colborne Creek, a cold-water creek that flows to the west of Colborne and eventually flowing into Lake Ontario, east of Lakeport. Alternative 4 is to the south, located between Elgin Street North and Percy Street (**Figure 1**).

Alternative 2 consists of a proposed sewer link beginning at the southwest corner of Industrial Park Road. The pipe proposes to follow an existing property line between farmland to the west and an industrial lot to the east (**Figure 2**). South of the lot, the sewer would follow an existing watercourse as it flows to the south and then southwest out to Percy Street. Once reaching Percy Street, the sewer line would be installed under the road and connect with the existing sanitary sewer system, approximately 285 m to the south. This alternative would convey sewage by gravity to the existing system.

Alternative 3 would extend the sewer proposed on Elgin Street North and join it with the end of the existing sewer at the south end of Elgin Street North (**Figure 3**). This alternative would also require a sewage pumping station to force sewage up an incline in the topography on Elgin Street to connect with the existing sanitary system located on Percy Street.

Alternative 4 proposes to replace the existing sanitary sewer network in the Industrial Park with an expanded capacity sanitary network in terms of pipe size (sanitary capacity) and area serviced. This alignment will make use of a proposed easement between Elgin Street and Percy Street which is located on private property owned by Linda Hinton. The proposed sanitary main will connect with the existing Colborne sanitary system on the on the west side on the proposed easement on Percy Street (**Figure 4**).

2.0 Study Methodology

D.M. Wills Associates Limited's (Wills) biologists conducted assessments for the three alignments that have potential to cause aquatic and terrestrial impacts. Tasks performed included:

- A search for federal and provincial Species at Risk (SAR) in the Study Area.
- Background information collection on aquatic species present in Colborne Creek from Ministry of Natural Resources and Forestry (MNRF).
- The completion of site assessments of the alignments where the following information was noted:
    - Vegetation species present;
    - Incidental wildlife present; and
    - Watercourses within or crossing the Study Areas.

3.0 Background Information

3.1 Species at Risk

A geographical search for rare species and associated habitat was conducted using the MNRF's Natural Heritage Information Centre (NHIC) database. A search of the NHIC 1 km square for the Study Area was completed for provincial Species at Risk Ontario (SAR) designation. No results were generated for any of alignment alternatives. The MNRF was also contacted for any SAR found in the area. The MNRF provided a list of SAR occurrences in the immediate (1 km) and general (5 km) area of the proposed works (**Appendix A**).

The Fisheries and Oceans Canada (DFO) mapping for the area covered by Lower Trent Conservation was reviewed for any aquatic SAR listed under the Species at Risk Act (SARA). No listed species were noted for this watercourse.

3.2 Fisheries Information

The MNRF was also contacted for any fisheries information for Colborne Creek and its tributaries within the Study Area. The MNRF provided a fish species list for this watercourse and the species are listed in **Table 1**.

Both the North and South headwater tributaries appear to be associated with an unevaluated wetland that drains an area east of Elgin Street North. They join approximately 350 m downstream of Percy Street. This combined tributary flows into the main Colborne Creek just west of the Town of Colborne, approximately 1.4 km further downstream. Since the fish species list is for the entire watercourse, it can be assumed that the majority of species would be found in the lower reaches (downstream of Percy Street) where the Colborne Creek is larger, well defined and provides suitable habitat.

It is possible that the headwater tributaries support some of the Cyprinid (minnow) and stickleback species.

Figure 1 - Location of Alternatives 2, 3 and 4 Crossing Undeveloped Land

Table 1 - Fish Species List for Colbourne Creek

Common Name	Scientific Name
American Brook Lamprey	*Lethenteron appendix*
Sea Lamprey	*Petromyzon marinus*
Rainbow Trout	*Oncorhynchus mykiss*
Brook Trout	*Salvelinus fontinalis*
Rainbow Smelt	*Osmerus mordax*
White Sucker	*Catostomus commersonii*
Northern Redbelly Dace	*Chrosomus eos*
Golden shiner	*Notemigonus crysoleucas*
Bluntnose Minnow	*Pimephales notatus*
Fathead Minnow	*Pimephales promelas*
Eastern Blacknose Dace	*Rhinichthys atratulus*
Longnose Dace	*Rhinichthys cataractae*
Creek Chub	*Semotilus atromaculatus*
Brook Stickleback	*Culaea inconstans*
Rock Bass	*Amblopites rupestris*
Pumpkinseed	*Lepomis gibbosus*
Smallmouth Bass	*Micropterus dolomieu*
Logperch	*Percina caprodes*
Johnny Darter / Tessellated Darter	*Etheostoma sp.*
Mottled Sculpin	*Cottus bairdii*
Slimy Sculpin	*Cottus cognatus*

4.0 Existing Environmental Conditions

Wills staff conducted a field visit on December 2, 2014 for Alternatives 2 and 3. Due to the time of sampling, not all natural components could be assessed. A field visit was completed for Alternative 4 on May 16, 2018. No fish sampling was conducted at any of the locations. A habitat assessment was conducted at all locations and any wildlife observations were restricted to incidental observations.

4.1 Alternative 2 Alignment

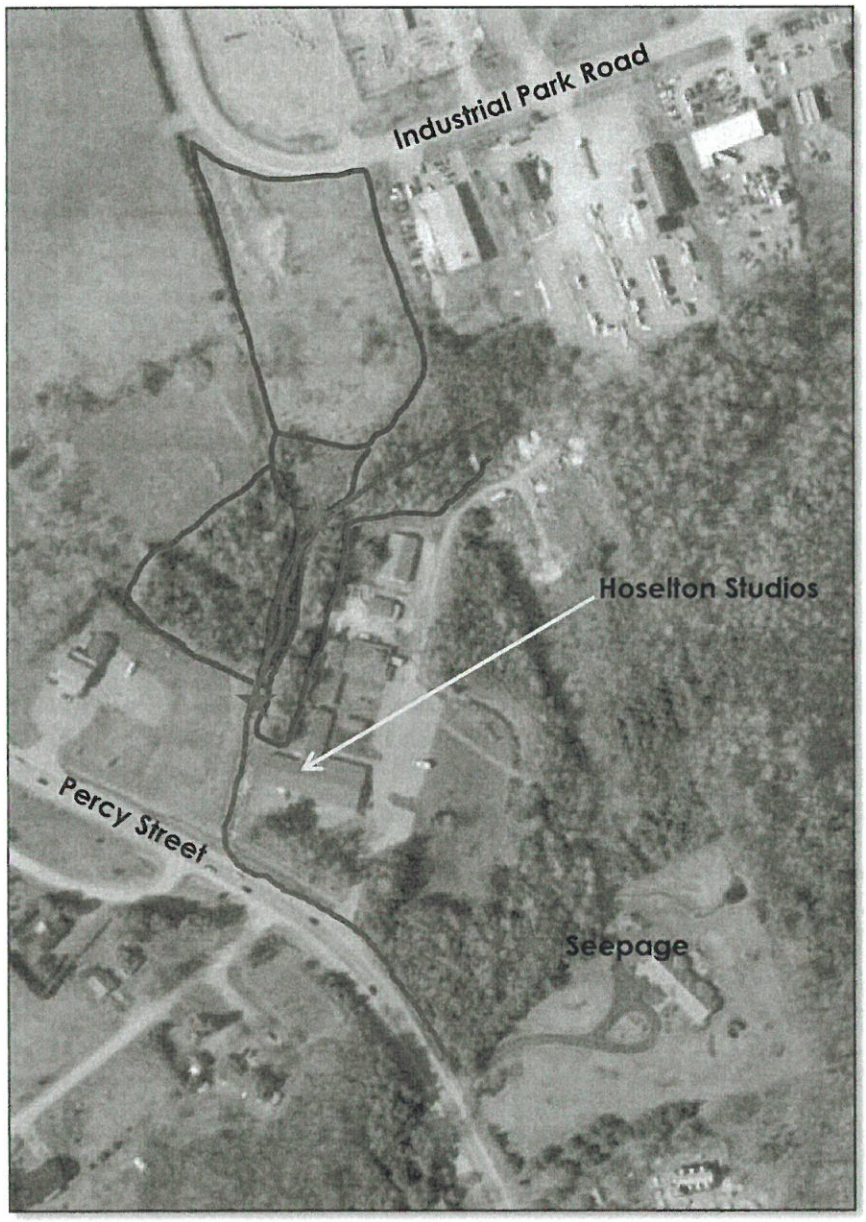
4.1.1 Terrestrial Habitat

Along the alignment for alternative 2, several vegetation communities were noted. Beside the southwest corner lot on Industrial Park Road, a cedar hedgerow separated the industrial development from the farm property to the west (**Figure 2** and **Photo 1**); a small portion of this lot had been recently disturbed by infilling (**Photo 2**). The lot is predominantly an abandoned field with a variety of scattered tree and shrub species including Manitoba Maple (*Acer negundo*), Staghorn Sumac (*Rhus typhina*), Common Buckthorn (*Rhamnus cathartica*) and Eastern Red Cedar (*Juniperus virginiana*). Herbaceous species were dominated by grasses but goldenrod (*Solidago* sp.) and Poison Ivy (*Toxicodendron radicans*) were also present.

At the south end of the lot, the land sloped down into a small wet area. Additional tree species were noted on the slope including Speckled Alder (*Alnus incana*), Red Maple (*Acer rubrum*), Poplar (*Populus* sp.), White Pine (Pinus strobus) and Red Osier Dogwood (*Cornus sericea*).

Associated with the wet area was a small watercourse that drained the area behind the lots to the east. The proposed alignment followed the location of the North Headwater Tributary.

Figure 2 - Natural Features in the Vicinity of Alternative 2 Alignment



South of the wetland area, the alignment would pass through a woodlot (approximately 65 m in length). Through this wooded area, it appeared that a swath of trees was historically removed to provide space to construct the watercourse. Over time, vegetation has grown back in this cut area and Eastern White Cedar and White Birch (*Betula papyrifera*) saplings were noted. In addition, Red Osier Dogwood, Basswood (*Tilia americana*), Large Tooth Aspen (Populus grandidentata), Black Cherry (*Prunus serotina*), Staghorn Sumac, White Ash (Fraxinus americana) and Common Buckthorn were noted along the edge of the woods. Along the banks of the channel,

Purple Loosestrife (*Lythrum salicaria*), Hawkeweed (*Hieracium* sp.), aster (*Symphyotrichum* sp.), Wild Grape vine (*Vitis riparia*), grasses, Enchanter's Night Shade (*Circaea* sp.) and Highbush Cranberry (*Viburnum* sp.) were observed. The invasive Common Reed (*Phragmites* sp.) was also noted scattered throughout this area.

Between the woodlot and Percy Street (approximately 70 m in length), the area was highly disturbed because of infilling on the northwest side. In this area, the vegetation was dominated by herbaceous species including cattails (*Typha* sp.), asters, Coltsfoot (*Tussilago farfara*), goldenrod, Enchanters Nightshade (*Circaea canadensis*), Dog Strangling Vine (*Vincetoxicum rossicum*) and Purple Loosestrife. Scattered woody species were also present including Staghorn Sumac, willows and Speckled Alder.

Beside Percy Street, much of the existing road side ditch was obscured by dense growth of grasses, goldenrod, cattails, Sweet Clover (*Melilotus* sp.) and Canada Thistle (*Cirsium arvense*).

Although no wildlife was noted during the site visit, game trails were noted crossing the channel in several locations.

4.1.2 Aquatic Habitat

A small channel conveyed water from the back edge of the industrial lot to the east. At the bottom of the slope of the empty lot, the channel widened into a cattail wetland pocket where the channel became more diffuse with some braiding. Seepage was noted on the slope.

Once through the wetland pocket, the channel flowed into a small cedar woodlot where the watercourse returned to a single, well defined, meandering channel (**Photo 3**). Within the woodlot, the width of the watercourse ranged from 0.2 m to 0.25 m with depths between 0.09 and 0.17 m. Substrates consisted of sand, gravel and scattered cobble. Undercut banks were also noted.

At the downstream end of the woodlot, the channel widened to a width of 0.80 m (0.11 m deep with a sandy bottom) (**Photo 4**). A second channel, draining farm land behind the commercial property to the west, flowed into the Study Area channel. Downstream of this confluence, a small drop of approximately 0.55 m was noted in the channel and this was associated with a small bridge over the channel. From the edge of the woodlot to confluence with the roadside ditch, a distance of approximately 70 m, the channel form is straight with widths ranging from 1.8 to 2.2 m (**Photo 5**). Depths ranged from 0.06 to 0.14 m. Substrates consisted predominantly of silt and sand with pockets of gravel. Watercress (***Nasturtium officinale***) and scattered smartweed (*Polygonum* sp.) were noted throughout this reach of the watercourse. The presence of watercress suggests groundwater inputs occur in this section of the watercourse. On the west side of the channel, fill material had been placed immediately adjacent to the channel.

Beside Percy Street, the channel entered a roadside ditch which flowed in a southerly direction toward another Headwater Tributary (**Photo 6**). The channel dimensions were 0.42 m wide and 0.05 m deep. Once past the entrance to Hoselton Studios, the ditch conveyed water down a steep, rocky slope (**Photo 7**). At the bottom of the slope, the ditch flowed into another small tributary which drained a portion of the wetland area to the east. Water was then conveyed under Percy Street through a 930 mm Corrugated Steel Pipe (CSP) (**Photo 8**).

Although the watercourse may provide suitable habitat for fish, there was a lack of pool features that would provide overwintering habitat. In addition, the steep, rocky slope on the east side of Percy Street would likely create a barrier to any fish movement upstream. This watercourse, therefore, would be considered to be indirect fish habitat, providing flow and nutrients to habitat downstream.

4.2 Alternative 3 Alignment

4.2.1 Terrestrial Habitat

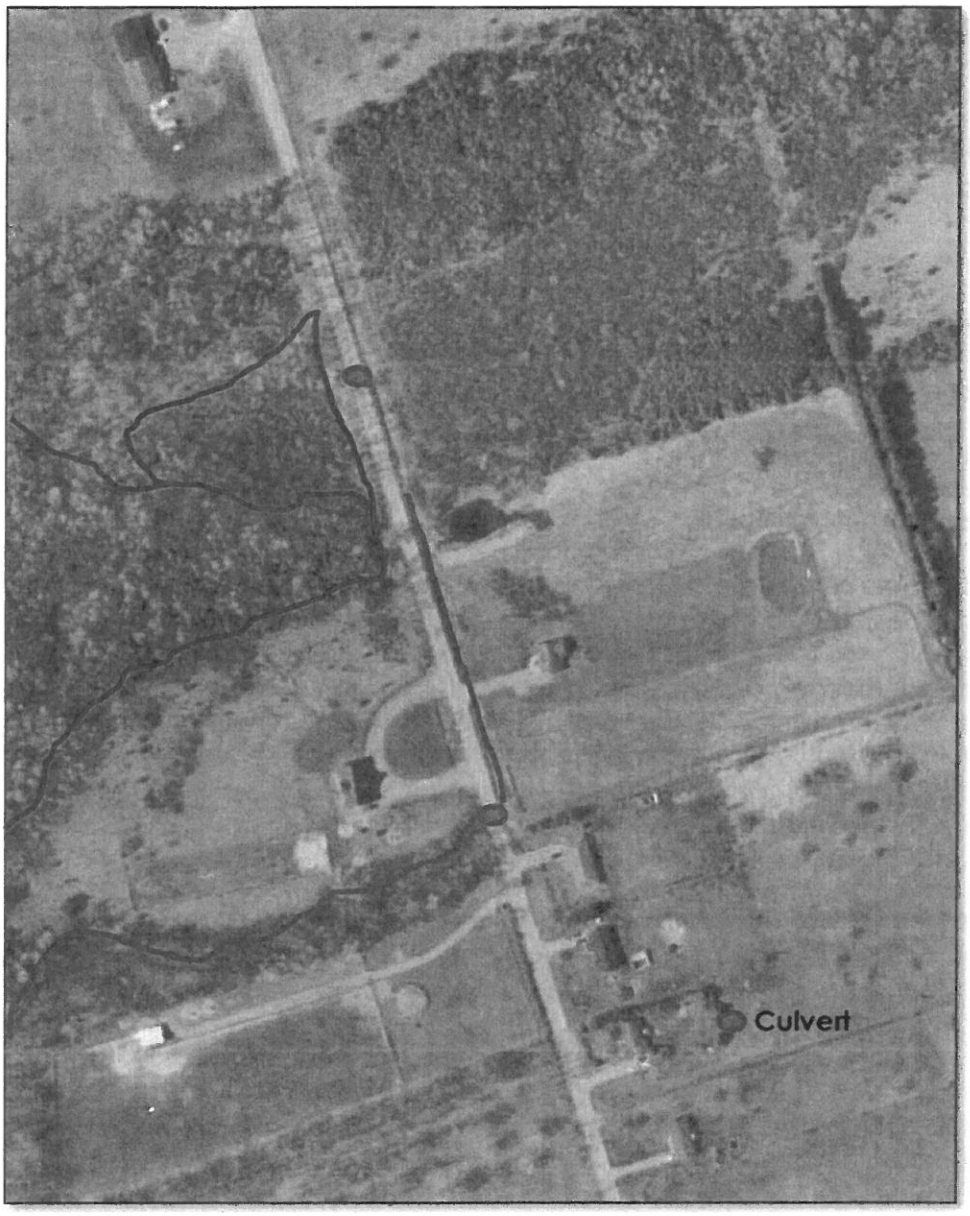
The alignment for Alternative 3 follows the west side of Elgin Street North. The majority of the land along this road within the Study Area has been cleared beyond the ROW.

For the most part, the wetland was densely vegetated beyond the ROW with a variety of species including Balsam Poplar, Black Cherry, Willow sp., Highbush Cranberry, Sugar Maple, Common Buckthorn, Eastern White Cedar, White Ash, aspen, White Birch, White Pine, grasses, cattails, ferns, goldenrod, Common Milkweed. The centre portion of the wetland appeared to be wetter with cattails and numerous dead trees (**Photo 9**).

Within the ROW of Elgin Street North, the vegetation was dominated by grasses that have been regularly mowed (approximately 1 m wide). Beyond the mowed area, goldenrod dominated the ground cover species. At the edge of the ROW, a variety of trees were present including Balsam Poplar, willows, and Black Walnut (*Juglans nigra*) (**Photo 10**). Sugar Maple (*Acer saccharum*), Red Oak (*Quercus rubra*), American Beech and White Birch were noted in the ROW in the southern part of the Study Area where the ground elevation was higher (**Photo 11**). These tree species are considered dry, upland species.

Black Cherry (*Prunus serotina*) and Common Buckthorn were noted in the valley associated with the South Headwater Tributary of Colbourne Creek.

Figure 3 - Natural Features in the Vicinity of Alternative 3 Alignment



4.2.2 Aquatic Habitat

In this part of Elgin Street, the road crossed two aquatic features that were well vegetated beyond the ROW: an unevaluated wetland area associated with a Headwater Tributary to Colborne Creek at the north end of the Study Area and a second tributary of Colborne Creek (South Headwater Tributary) near the middle of the Study Area (**Figure 3**).

In the wetland area, there were some small open water areas beyond the ROW but it was well vegetated for the most part. In the middle of the wetland, a 400 mm CSP was noted under Elgin Street North but the east end of the culvert was plugged (**Photo 12**). As a result, very little water was passing under the road. The west end of the culvert was not visible (**Photo 13**).

Between the two clearings in the southern part of the Study Area, double 600 mm CSP culverts conveyed water for the second headwater channel through a small, well-defined and well vegetated valley (**Figure 3** and **Photo 14**). The north and south culverts were perched by 0.15 m and 0.26 m, respectively (**Photo 15**).

4.3 Alternative 4 Alignment

4.3.1 Terrestrial Habitat

The alignment for alternative 4 follows the west side of Elgin Street North then crosses over largely undeveloped lands to Percy Street to the west (**Figure 4**). This alignment requires an easement.

The Assessment Area can be divided into two separate vegetation communities. The western portion of the Assessment Area is a densely vegetated forest with various plant and tree species found throughout (**Photos 19-22**). Field investigations identified the following species in the canopy and sub-canopy of the forested area: Sugar Maple, White Pine, Eastern Hemlock, American Beech, White Spruce, Alternate-Leaf Dogwood, Staghorn Sumac, Manitoba Maple, Eastern White Cedar, Red Spruce, Red Oak and Speckled Alder. Plant species found throughout the understory were False Solomons Seal, Coltsfoot, Field Horsetail, Bracken Fern, Sheep Laurel, Kidney-leaf Buttercup, Canada Mayflower, White Trillium and Common Periwinkle.

The eastern portion of the Assessment Area is mainly dominated by various grass species with small stands of trees scattered throughout (**Photos 16-18** and **23**). Plant / tree species found were Dandelion, Riverbank Grape, Virginia Creeper, Goldenrod, Manitoba Maple, Black Walnut, Red Cedar, Dog Strangling Vine, Reed Canary Grass, Buckthorn, Crown Vetch, Eastern White Cedar, Wild Raspberry, Buckthorn, Staghorn Sumac, White Pine, Common Milkweed, Common Mullein, White Spruce, Field Horsetail, Bull Thistle, Sugar Maple, Sensitive Fern, Speckled Alder, Queen Anne's Lace and Large-tooth Aspen.

Figure 4 - Assessment Area for Alternative 4 Alignment

4.3.2 Aquatic Habitat

The northwestern portion of the Assessment Area contains a small stream running through in the southwestern direction (**Figure 4** and **Photos 21-22**). Although no fisheries sampling was completed, it did not appear as though the stream was of sufficient habitat to contain fish. The upper portions of the stream had minimal water flow. The length of the stream was briefly observed and no fish were seen during the field visit. After speaking with the property owner, Linda Hinton, she indicated that the stream did in fact dry up during the summer / fall months.

The watercourse does not appear to provide suitable habitat for fish as it lacks overwintering habitat and sufficient pool features. The watercourse, therefore, would be considered indirect fish habitat, providing flow and nutrients to habitat downstream.

4.4 Species at Risk

The MNRF was contacted and provided a list of potential SAR in the area. From this list, a SAR assessment was completed based on the existing terrestrial and aquatic habitat conditions along the three alignments. It was determined that for alternatives 2 and 3 the potential for SAR habitat is low for all species based on their habitat preferences (**Table 2**). Alternative 4 had a moderate potential for the presence of Barn Swallow and Bobolink habitat. Eastern Meadowlark had a high potential for their habitat as multiple individuals were observed during field investigations.

Table 2 - Species at Risk Observations in the Immediate and General Area of the Study Areas

Species	ESA Designation*	Habitat Preferences	Habitat Potential**		
			Alternative 2	Alternative 3	Alternative 4
Bobolink *Dolichonyx oryzivorus*	THR	Inhabits hay or abandoned fields. A ground nester, it requires dense, tall grasses, and thatch, or decaying plant material, for cover.	L	L	M
Barn Swallow *Hirundo rustica*	THR	Barn Swallows live in close association with humans, and build their nests almost exclusively on human-made structures such as open barns, under bridges and in culverts.	L	L	M
Eastern Meadowlark *Sturnella magna*	THR	Inhabits pastures, hayfields, old and abandoned fields and native prairies and savannahs. A ground nester, it requires dense, tall grasses, and thatch, or decaying plant material, for cover.	L	L	H

Milksnake *Lampropeltis triangulum*	SC	Can be found in a variety of habitats but tend to use open habitats such as rocky outcrops, fields and forest edge. In rural areas this snake may be common, especially around barns	L	L	M
Blanding's Turtle Emydoidea blandingii	THR	Inhabits lakes, slow-moving streams and wetlands, preferring shallow wetland areas with abundant aquatic vegetation.	L	L	L
Snapping Turtle Chelydra serpentina	SC	This species prefers large bodies of water to small ponds containing dense vegetation.	L	L	L
Butternut Juglans cinerea	END	Prefers moist, well-drained soil and is often found along streams. It is also found on well-drained gravel sites and rarely on dry rocky soil.	L	L	L

* Designation: THR = Threatened, END = Endangered, SC = Special Concern
** Habitat potential: L = Low, M = Moderate, H = High

Overall, preliminary observations did not reveal any significant natural environment features along any of the alignments. Since Alternatives 2 and 3 would require work adjacent to headwater tributaries of Colborne Creek, a cold water watercourse, protection of the features to maintain their function would be necessary.

5.0 Mitigation Measures

Alternative 4, the preferred alternative, would require excavation of a 10 m wide section of land from Elgin Street North to Percy Street. Any clearing of trees or vegetation poses potential impacts on nesting birds and roosting bats. Potential impacts to the natural environment need to be planned for with appropriate mitigation measures.

The following section proposes mitigation measures to address the environmental impacts associated with the construction of the sewer expansion.

5.1 Breeding Birds

Impacts to breeding birds or their habitat can come directly from construction equipment or through construction activities such as removal, clearing, or grubbing of trees or riparian vegetation communities.

The following mitigation measures relating to breeding birds should be applied to any vegetation removal:

- Any tree / vegetation removal or destruction from construction activities or equipment must occur outside of the breeding bird timing window (April 1 to August 31).
- If tree / vegetation removal or destruction is necessary during the timing window, a nest sweep must be completed by a trained biologist prior to construction activities. The nest sweep must cover the entire area of excavation, any staging areas where vegetation exists, and any areas where heavy equipment will be passing through.
- If any nests are found subsequent to the nest sweep, construction activities should cease and a 20 m buffer should be applied to the area surrounding the nest. The buffer should remain until all young have fledged.
- In the event that a nest sweep is completed, all vegetation within this area must be cleared within 5 days, otherwise an additional nest sweep is required.

Given that two SAR species were observed during the field visit, it is necessary that upon completion of the sewer installation, the terrestrial habitat be restored to its original state or better. This involves revegetating the impacted area with similar plants species as those that exist now.

5.2 Bats

Although no bats were identified by MNRF during correspondence or through field investigations, the potential for bat hibernacula exists in the area. In order to mitigate any potential impacts, the following measures should be addressed:

- Inspection of work areas for bats should occur before construction.
- If found to utilize structures or areas of tree removal, the project should be registered with MNRF. Effective exclusionary methods and / or timing windows for construction should also be applied.

5.3 Aquatics

It is assumed that no in-water work will be completed for this project. Additionally, as per the Lower Trent Conservation Regulations Policy document, no development is to be completed within 15 m of a river or stream, regardless of whether or not they contain a watercourse. The valley extends from the stable top of bank, plus 15 m, to a similar point on the opposite side.

In addition, the following mitigation measures should be used during construction to control erosion and prevent sediment from entering the watercourse.

- A Sediment and Erosion Control Plan should be developed and implemented prior to construction.
- All equipment and materials used for the purpose of site preparation and project completion should be operated in a way that prevents the release of deleterious substances into the watercourse.
- Develop a response plan that is to be implemented immediately in the event of a sediment release or spill of a deleterious substance and keep an emergency spill kit on site.
- Plan activities near water such that materials such as paint, primers, blasting abrasives, rust solvents, degreasers, grout, poured concrete or other chemicals do not enter the watercourse.
- If replacement rock reinforcement / armouring is required to stabilize eroding or exposed areas, ensure that appropriately-sized, clean rock is used; and that rock is installed at a similar slope to maintain a uniform bank/shoreline and natural stream / shoreline alignment.
- Remove all construction materials from the site upon project completion.

6.0 Photographs

Alternative 2 Alignment
Photos taken Dec. 2, 2014

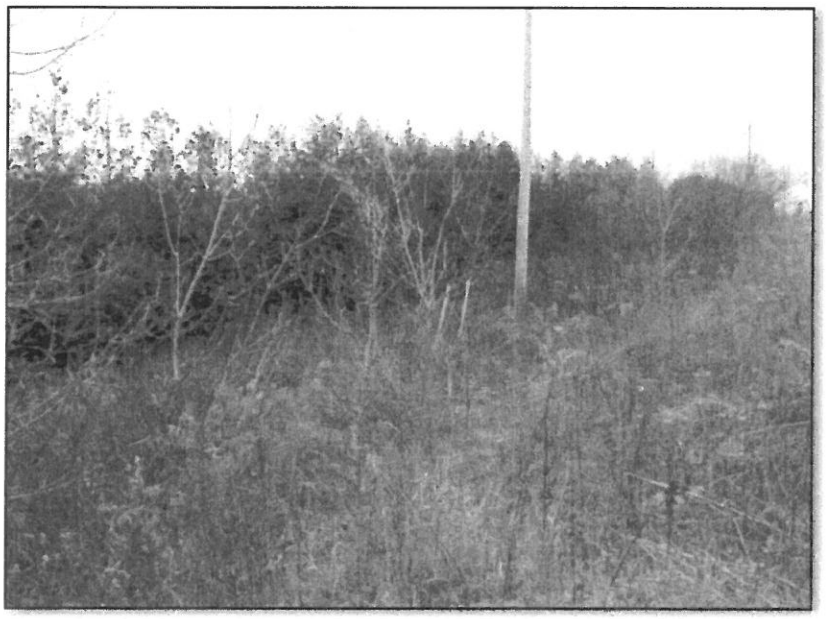


Photo 1
North end of alignment, immediately west of Industrial Park Road (north view).

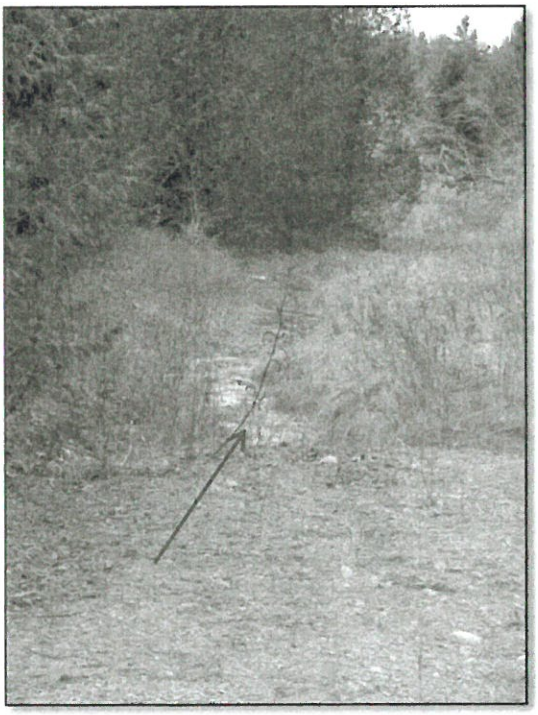


Photo 2
North end of alignment, immediately west of Industrial Park Road (south view) (infilling in foreground).

Photo 3
Upstream view of North Headwater Tributary.

Photo 4
Upstream view of North Headwater Tributary just downstream of the edge of cedar woodlot.

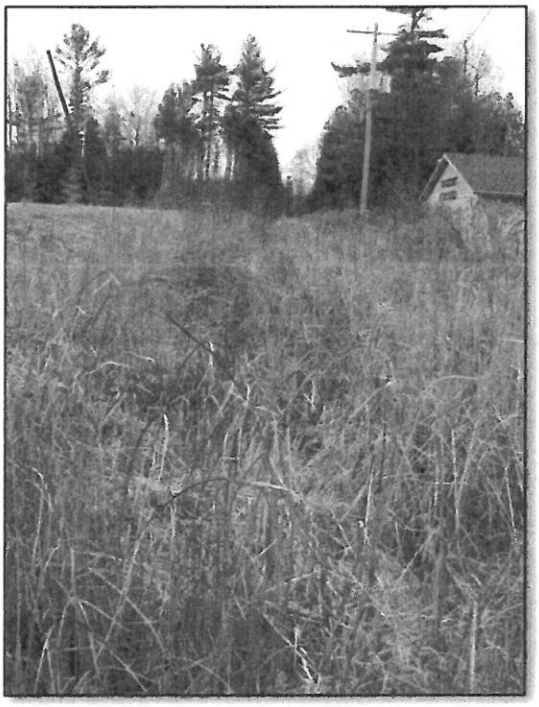


Photo 5
Upstream view of North Headwater Tributary immediately east of Percy Street (historic infilling on north side of channel).

Photo 6
Downstream view of North Headwater Tributary flowing parallel to Percy Street beside Hoselton Sculptures.

Photo 7
North Headwater Tributary downstream of entrance culvert to Hoselton Sculptures.

Photo 8
Inlet of culvert under Percy Street (southwest view).

Alternative 3 Alignment
Photos taken Dec. 2, 2014

Photo 9
Wetland area to the west of Elgin Street North (west view).

Photo 10
West side of Elgin Street North, south of the wetland area.

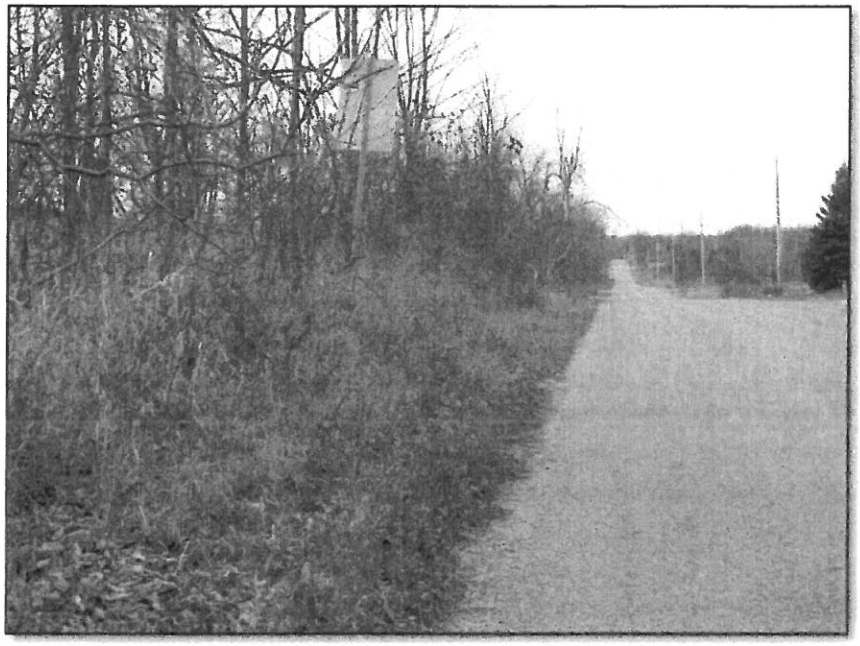


Photo 11
North view of west side of Elgin Street North at south end of Study Area.

Photo 12
East end of blocked culvert under Elgin Street North.

Photo 13
West side of Elgin Street North in the vicinity of the cross culvert noted in Photo 12.

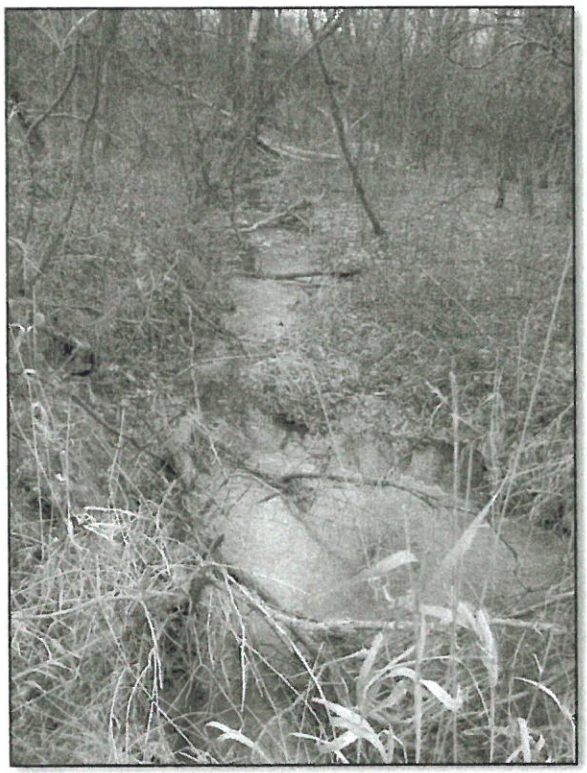


Photo 14
Downstream view of South Headwater Tributary on west side of Elgin Street North.

Photo 15
Upstream view of culvert outlets on west side of Elgin Street North.

Alternative 4 Alignment
Photos taken May 16, 2018

Photo 16
Area of open field, looking west from Elgin Street North.

Photo 17
Area of open field. Photo taken from the southeastern portion of the Study Area, looking north.

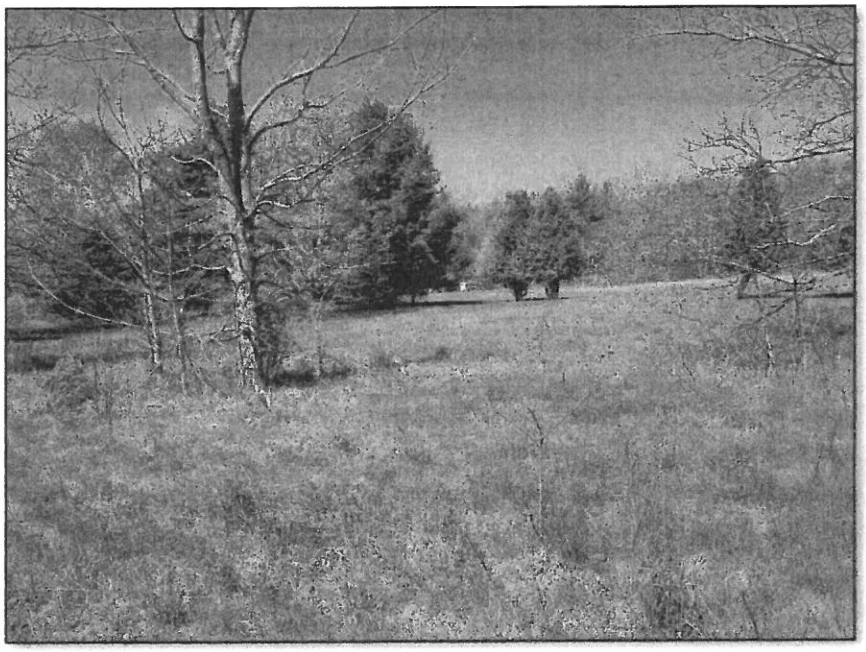


Photo 18
Area of open field. Photo taken from the southern portion of the Study Area, looking northwest.

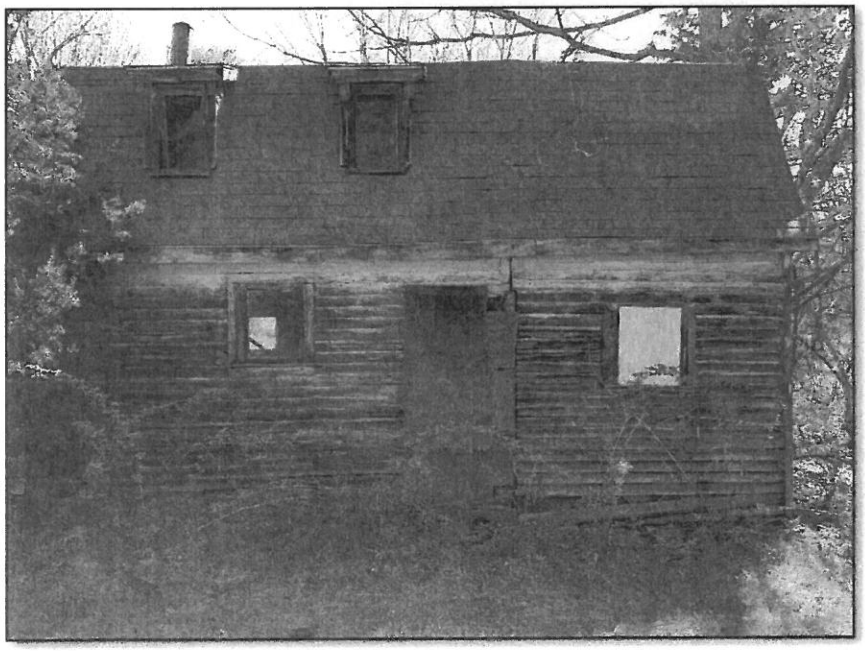


Photo 19
Building with potential bat hibernacula, in the middle of the southern portion of the Study Area.

Photo 20
Forested area on the western portion of the Study Area.

Photo 21
Water flowing between a gully at the northwestern portion of the Study Area. Photo is looking east.

Photo 22
Water flowing between a gully at the northwestern portion of the Study Area. Photo is looking west.

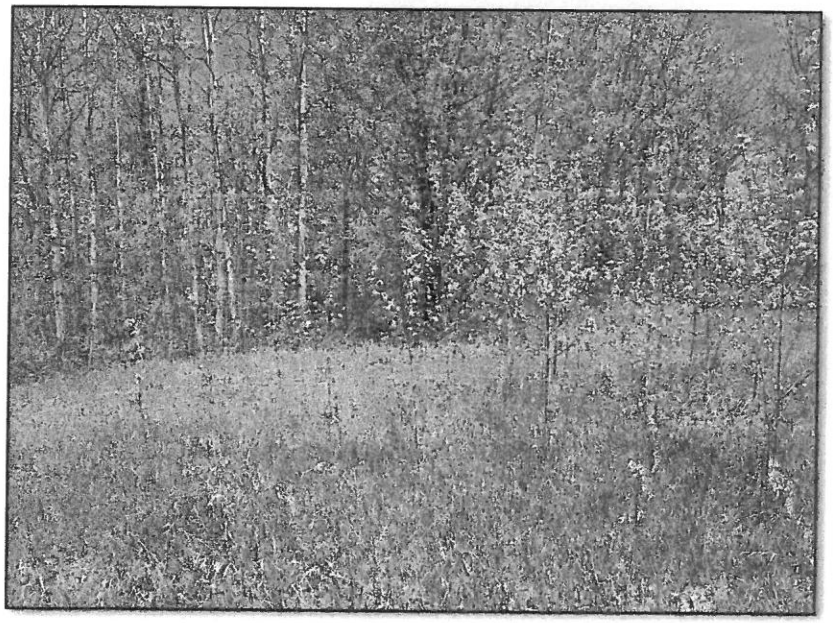


Photo 23
Stand of Large-tooth Aspen found in the middle of the northern portion of the Study Area.

Photo 24
Property adjacent to the Study Area where Eastern Meadowlark calls were heard. Photo was taken looking northeast.

Photo 25
Property adjacent to the Study Area where Eastern Meadowlark calls were heard. Photo was taken looking southeast.

Appendix A

Correspondence with the MNRF

From: Shawn Filteau
To: "Formsma, Julie (MNRF)"
Subject: Information Request
Date: May-18-18 10:34:00 AM
Attachments: image001.jpg
Figure 1 - Regional Plan.pdf
Figure 2 - Site Plan.pdf

Hi Julie,

I'm not sure if you're the correct person to send this to but maybe you could direct me to the right person, if not. I am looking for some additional information for a project that D.M. Wills is working on. We have been contracted by the Township of Cramahe to complete a Municipal Class Environmental Assessment for the replacement/expansion of a portion of the sanitary sewer system in the town of Colborne; please see attached map for location details.

The scope of work for the EA includes a Terrestrial Existing Conditions Report and an Impact Assessment. As such, I am looking for any information regarding Species at Risk (SAR) data records or otherwise natural heritage information you may have on file for this area or for any adjacent areas which may have implications on the Subject Area (e.g. wetland evaluation/delineation works, stream assessment works, OWES data records, etc.).

Following background review, there were no publicly available records (NHIC Make a Map) with respect to species occurrences as there was no grid applicable to the Subject Area.

If you have any questions regarding the above request, please don't hesitate to contact me.

Thanks,

Shawn

Wills_Logo

Shawn Filteau, BSc
Environmental Biologist

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