DILLON CONSULTING

CORPORATION OF THE TOWN OF TECUMSEH

Sylvestre Sanitary Sewer

Class Environmental Assessment

Schedule B Project File Report

June 2019 – 17-6843

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1.0 Introduction

1.1 Background and Purpose of Report

The Corporation of the Town of Tecumseh retained Dillon Consulting Limited to complete the Preliminary Design and Municipal Class Environmental Assessment (EA) for the extension of sanitary sewers to service a portion of the Sylvestre Industrial Park Area that is generally located on Sylvestre Drive, south of Jamsyl Drive, and west of Manning Road (**Figure 1**). The sanitary sewer will also be required to service the five properties with frontage onto Manning Road currently serviced by private on-site sewage disposal systems.

In accordance with provincial policy documents "limited infill development on individual water supply and individual on-site sewage services within a settlement area may be considered only where there is no suitable receiver for effluent discharge from a full municipal or communal sewage facility, there are no existing or potential water quality or quantity problems, and site conditions permit."

A permanent sanitary sewer easement must be established on private property for a portion of the work to connect the proposed sanitary sewers from the Study Area to the existing local sanitary sewer located on Sylvestre Drive.

The project also includes the reconstruction of Sylvestre Drive between Manning Road and Jamsyl Drive and local storm drainage improvements which meet the requirements of a Schedule A activity under the Municipal Class EA. Schedule A activities are considered pre-approved and do not form part of this Class EA. As part of this Class EA, alternative sanitary sewer solutions and locations for the associated sanitary sewer easement were considered and a preferred solution identified. This Project File documents the decision-making process leading to the selection of the preferred alternative.

1.2 Class EA Process

Municipal infrastructure projects must meet the requirements of the Ontario *Environmental Assessment Act*. The Municipal Class EA (October 2000, as amended in 2007, 2011 and 2015) applies to a group or "class" of municipal water, wastewater and roads projects, which occur frequently and have relatively minor and predictable impacts. These projects are approved under the *EA Act*, as long as they are planned, designed and constructed according to the requirements of the Class EA document.

The specific requirements of the Class EA for a particular project depend on the type of project, its complexity and the significance of environmental impacts. Four categories of projects are identified in the document, including Schedule "A+", "A", "B" and "C" projects. The project meets the requirements of the following Schedule B Class EA, "Establish, extend or enlarge a sewage collection system and all works necessary to connect the system to an existing sewage outlet where such facilities are not in an existing road allowance or an existing utility corridor (Page I-14, MCEA).

LEGEND

- STUDY AREA
- EXISTING SANITARY SEWER
- PS EXISTING SANITARY PUMP STATION

DILLON CONSULTING

Town of Tecumseh Ontario Canada

Dillon Project No.: 17-6843

DATE: OCTOBER 2018

SCALE 0 25 50 200m

Sylvestre Sanitary Sewer

Class Environmental Assessment

TOWN OF TECUMSEH

FIGURE 1

STUDY AREA

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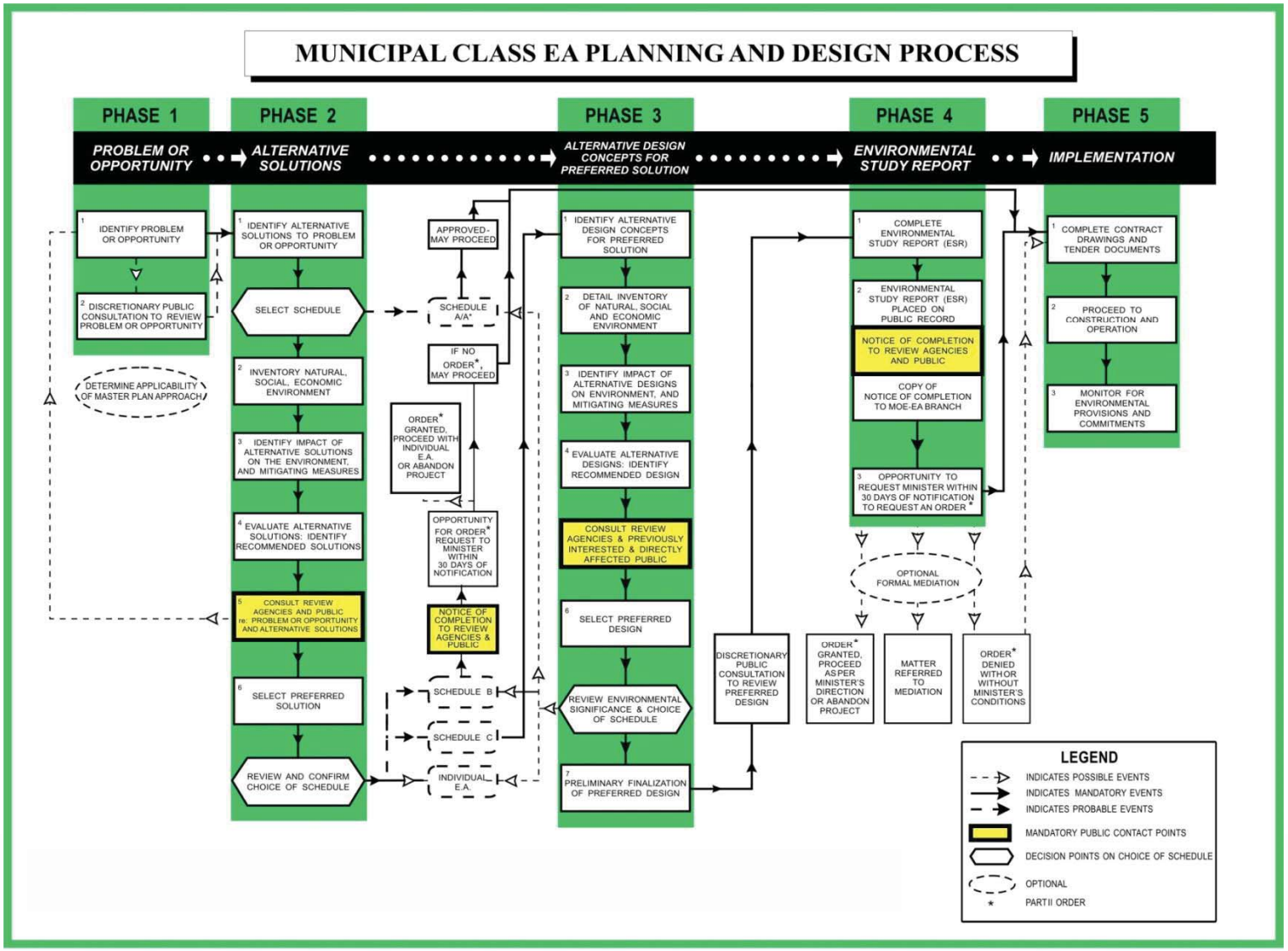
A Schedule "B" project follows Phase 1 and Phase 2 of the Class EA process and is "screened", as shown in **Figure 2** and described below:

- Phase 1 of the Class EA process consists of "Problem/Opportunity Identification".
- Phase 2 consists of the development and evaluation of "Alternative Solutions" and selection of a "Preferred Solution".

Based on the objective of avoiding or minimizing adverse environmental impacts, the Schedule "B" screening process involves:

- The preparation of an inventory of the environment potentially affected by the project.
- Public and agency consultation.
- An impact assessment of the preferred alternative, including measures to avoid/mitigate any adverse impacts.
- Documentation of the Class EA process in a Project File.

Figure 2: Municipal Class EA Planning and Design Process Flow Chart



2.0 Problem Statement

Phase 1 of the Class EA involves developing a Problem/Opportunity Statement for the study. The following statement was developed based on the needs and study objectives outlined in **Section 1.1** of this report:

Through the completion of the Town of Tecumseh Water and Wastewater Master Plan, and the Town of Tecumseh Capital Works Program, it was recognized that properties fronting Manning Road between Jamsyl Drive and Sylvestre Drive were currently serviced by private on-site sewage disposal systems. Understanding that on-site sewage systems have limited life cycles, the Town of Tecumseh has identified this project to provide a long term sustainable solution for sewage disposal for all residents within this catchment area.

3.0 Existing Conditions

The following sections summarize the existing conditions within the Study Area that were considered as part of the identification and evaluation of alternative solutions.

3.1 Sanitary Sewer Infrastructure

The Sylvestre Drive sanitary sewer was constructed in 1995 from the existing Sylvestre pump station to the southerly limit of the north-south portion of Sylvestre Drive. The existing sewer and pump station were designed with sufficient capacity to serve the complete Sylvestre Industrial Park subdivision, which includes a mix of light industrial and residential land uses. The existing 250 mm diameter sanitary sewer is located within the Sylvestre Drive right of way, which is proposed to be extended to service the additional lands currently serviced by on-site septic systems. In addition to the sanitary sewer within this area, a 150 mm watermain is located within the right of way generally on the opposite side of the road to the sanitary sewer. Localized swales, culverts and subdrains exist with respect to stormwater drainage. **Figure 3** illustrates the existing infrastructure in the Study Area, and outlines those properties currently serviced by on-site septic systems.

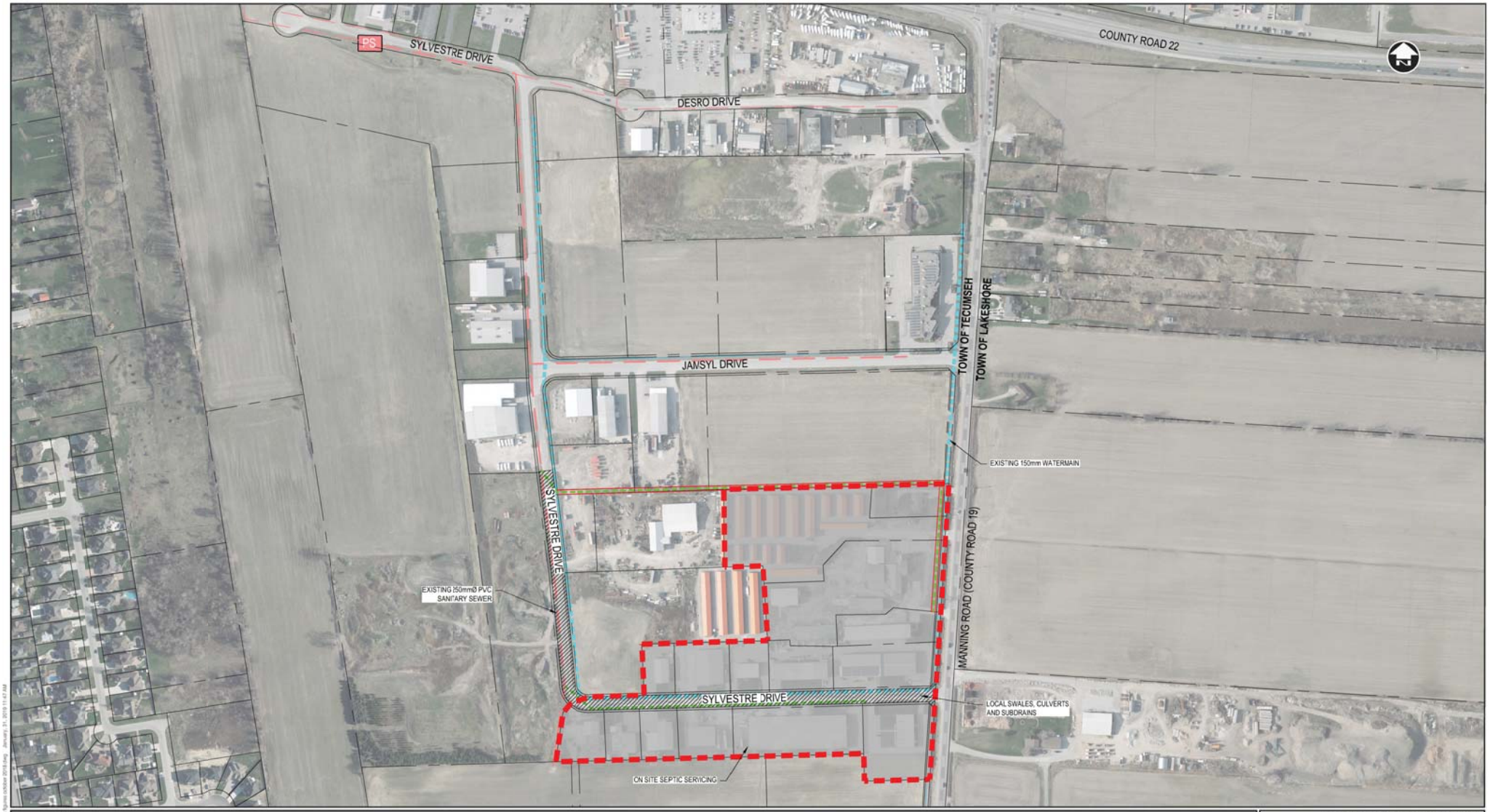
3.2 Land Use

The Sylvestre Industrial Park area, located at the southwest corner of County Road 22 and Manning Road, is partially developed with mixed industrial and business uses.

The Study Area is in the County of Essex in the former Township of Sandwich South, which amalgamated with the Town of Tecumseh and Village of St. Clair Beach in 1999, to become the Town of Tecumseh. Land uses within the Town of Tecumseh are currently governed by three separate Official Plans pertaining to the three former municipalities, as well as the County of Essex Official Plan. A new Town of Tecumseh Official Plan is currently being prepared.

3.2.1 County of Essex Official Plan

Section 3.2.4 and Schedule A2 of the County of Essex Official Plan (2014) designates lands within the study area as a primary settlement area. Primary settlement areas are the “largest and traditional centres of settlement and commerce in the County. Protection of these communities by focusing growth and investment is a priority of the County.” Section 3.2.4.1 identifies primary settlement areas as the “focus of growth and public/private investment” and that development in these areas “shall only occur on full municipal water services and municipal sewage services.” All types of land uses are permitted within the “Primary Settlement Areas” designation, subject to land use policies of local municipal Official Plans.



LEGEND

- STUDY AREA
- EXISTING SANITARY SEWER
- PS EXISTING SANITARY PUMP STATION

DILLON CONSULTING

Town of Tecumseh Ontario Canada

Dillon Project No.: 17-6843

DATE: OCTOBER 2018

SCALE 0 25 50 200m

Sylvestre Sanitary Sewer

Class Environmental Assessment

TOWN OF TECUMSEH

FIGURE 3

EXISTING INFRASTRUCTURE

3.2.2 Township of Sandwich South Official Plan

Lands within the Study Area are designated "Business Park" on Schedule A-1 of the Official Plan. Section 3.7.2 of the plan states business park areas can include a range of light industrial activities, including manufacturing, assembling, processing, fabricating, repairing, warehousing and wholesaling. Other permitted uses include private sports facilities, exhibition halls, transportation depots, offices, financial institutions, retail and wholesale establishments, retail warehousing and discount merchandising outlets and other retails activities that are space extensive.

3.3 Natural Environment

The Study Area is partially developed with mixed industrial, and residential use. No natural heritage features (such as woodland, wetland, or Areas of Natural or Scientific Interest) are located within the Study Area. East Townline Drain is located adjacent to the Study Area, along the west side of Manning Road. The East Townline Drain commences at the north side of County Road 42 and flows northerly along the west side of Manning Road (County Road 19) to its outlet into Lake St. Clair where it is pumped into the lake. The drain is approximately 5,100 metres and has a watershed area of approximately 474.72 ha.

3.3.1 Species at Risk

Appendix A includes a summary of the existing natural environment features in the area, including the potential for Species at Risk (SAR) protected under the Provincial Endangered Species Act (2007). Field investigations for potential SAR and verification of terrestrial natural resources were completed October 9, 2018.

There is limited potential to encounter SAR during construction. East Townline Road Drain (immediately west of Manning Road) and the Mixed Meadow habitats (adjacent to the Study Area to the west) provide potential habitat for Eastern Foxsnake and Butler's Gartersnake. Along the drain, deep concrete foundations associated with numerous drainage culverts could provide potential hibernacula and thermoregulation areas. Section 6 of this report outlines mitigation measures that must be in place address the potential for these species to be encountered during construction.

3.3.2 Source Water Protection

The Study Area is located in the Essex Region Source Protection Area, as described in the Approved Source Protection Plan for the Essex Region Source Protection Region (October, 2015). As outlined in the Clean Water Act, the primary objective of the Source Protection Plan is to protect existing and future drinking water sources.

As shown on the Source Protection Plan, the proposed extension of sanitary sewers on Sylvestre Drive is in a low to moderate threat policy applicability area. The Study Area is within an Intake Protection Zone (IPZ) and an Event Based Area (EBA), which means modelling has indicated that a spill in the area could cause a deterioration in raw water quality at the municipal drinking system.

Identifying potential threats to source water is an important aspect of source water protection. A threat is an existing or potential land use activity that has the potential to impact water quality or the quantity of water that is used as a source for municipal drinking water. It is anticipated that the proposed sanitary sewers reduce the likelihood of spills and will reduce threats to source water.

3.4 Cultural Resources

3.4.1 Archaeology

The Ministry of Tourism Culture and Sport (MTCS) "Criteria for Evaluating Archaeological Potential Lands – A Checklist for the Non-Specialist" was completed (***Appendix B***). Based on the findings of the checklist, the lands within the Study Area have low archaeological potential and an assessment is not required.

3.4.2 Built Heritage

The MTCS "Screening for Impacts to Built Heritage and Cultural Heritage Landscapes" checklist was completed to determine potential impacts to cultural heritage resources (***Appendix B***). Based on the findings of the checklist, the project is unlikely to impact cultural heritage landscapes or built heritage resources, and a Cultural Heritage Evaluation Report is not required.

4.0 Phase 2: Alternative Solutions

Phase 2 of the Class EA process involves the identification and evaluation of "Alternative Solutions" to the problem identified in Phase 1. A preferred solution is chosen at the end of Phase 2.

The 2008 Water and Wastewater Master Plan identifies the need to service the Sylvestre Industrial Area to, in part, address environmental concerns related to septic systems that are reaching the end of their expected service life. Based on the need identified in the Master Plan, the "do nothing" alternative is not considered feasible. As outlined in the County's Official Plan, development in the primary settlement areas "shall only occur on full municipal water services and municipal sewage services."

To complete the sanitary servicing of the Study Area, an extension of the existing sanitary sewer is required along the east-west portion of Sylvestre Drive and along Manning Road to connect to the existing Sylvestre Drive sanitary sewer. A private property easement is required to accommodate the sanitary sewer extension along Manning Road due to constraints in the existing right of way. The proposed easement would be located adjacent to existing easements that are in place for the watermain and gas infrastructure.

4.1 Alternative Solutions Considered for Study Area

Three alternative solutions were considered for the extension of sanitary sewers to service a portion of the Sylvestre Industrial Park Area. Each alternative includes a private property easement along the eastern property line adjacent to the existing gas main easement for the properties facing Manning Road. Details related to each of the alternative solutions are outlined as follows:

- **Alternative A:** This option will require an additional easement along the east/west property line to outlet four properties to Sylvestre Drive's existing sewer. A second sewer would be placed along Sylvestre Drive to service those properties fronting Sylvestre. The total length of sewer required would be 970 m (**Figure 4**).
- **Alternative B**: The five properties facing Manning Road would be serviced by individual grinder pump stations connected to the mainline sewer via a small low pressure header sewer. The properties facing Sylvestre Drive would be serviced via a gravity main. The total length of gravity sewer is 350 m and low pressure sewer header is 280 m (**Figure 5**).
- **Alternative C**: All properties will be serviced by a gravity sewer system. A pre-fabricated pump station will be located at the intersection of Sylvestre Drive and Manning Road to service the properties facing Manning Road. A total of 630 m of gravity sewer main is required in addition to the pump station (**Figure 6**). **Figure 6** identifies the properties which will receive servicing connected to the proposed pump station.

LEGEND

- PROPOSED SANITARY SEWER ALIGNMENT
- EXISTING SANITARY SEWER
- EASEMENT LIMITS (3m WIDTH)

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Town of Tecumseh Ontario Canada

Dillon Project No.: 17-6843

DATE: OCTOBER 2018

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Sylvestre Sanitary Sewer

Class Environmental Assessment

TOWN OF TECUMSEH

FIGURE 4

ALTERNATIVE A

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LEGEND

- PROPOSED SANITARY SEWER ALIGNMENT (GRAVITY)
- PROPOSED SANITARY SEWER ALIGNMENT (LOW PRESSURE)
- EXISTING SANITARY SEWER
- EASEMENT LIMITS (3m WIDTH)

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Town of Tecumseh Ontario Canada

Dillon Project No.: 17-6843

DATE: OCTOBER 2018

SCALE 0 10 25 100m

Sylvestre Sanitary Sewer

Class Environmental Assessment

TOWN OF TECUMSEH

FIGURE 5

ALTERNATIVE B

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LEGEND

- PROPOSED SANITARY SEWER ALIGNMENT
- EXISTING SANITARY SEWER
- EASEMENT LIMITS (3m WIDTH)
- PROSPERITIES TO BE SERVICED BY PROPOSED PUMP STATION

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Town of Tecumseh Ontario Canada

Dillon Project No.: 17-6843

DATE: OCTOBER 2018

SCALE 0 10 25 100m

Sylvestre Sanitary Sewer

Class Environmental Assessment

TOWN OF TECUMSEH

FIGURE 6

ALTERNATIVE C

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4.2 Evaluation Methodology and Criteria

The objective is to identify the preferred solution to provide for sanitary sewer corridors that allow for the required connections from the subject portions of the Sylvestre Industrial Park Area to the existing sanitary sewer on Sylvestre Drive. Evaluation criteria were developed to address engineering considerations, cultural and socio-economic environment, natural environment, and cost. The criteria used for the evaluation of alternative solutions are presented in **Table 1**.

Table 1: Evaluation Criteria

Criteria	Indicator
Engineering Considerations	
Ease of Construction	• Complexity of construction methods
Impacts to existing utilities	• Disruption or relocation of existing utilities
Foundational/Geotechnical Impacts	• Impacts to existing and future buildings and infrastructure
Construction related risks	• Potential to find unknown materials or contamination during construction
Addresses Problem Statement of replacing private sewage disposal systems to service a portion of Sylvestre Industrial Park	• Provides sanitary sewer servicing to the Sylvestre Industrial Park Area to eliminate the dependence on existing private sewage disposal systems
Cultural & Socio-Economic Environment	
Compatible with Future Land Uses	• Compatible with future expansion plans or opportunities for future development potential
Potential for Archaeology, Built Heritage and Cultural Heritage Impacts	• Displacement or disruption of any archaeologically significant findings • Displacement or disruption of cultural heritage features
Property	• Extent of property required • Number of easement agreements required
Natural Environment	
Impacts on Natural Environment Features	• Potential for impact on terrestrial or aquatic habitat, including Species at Risk
Cost	
Capital Cost	• Relative capital cost
Maintenance Costs	• Relative maintenance costs

4.3 Evaluation

Alternative C: Gravity Sewer and Local Pump Station is the preferred alternative based on the detailed evaluation of the alternative solutions, outlined in **Table 2**.

The following summarizes our evaluation:

- With respect to ease of construction, Alternative C will allow for a shorter length of sewer easement and installation of related mains. All three options could be installed by open cut or trenchless methods.
- All alternatives have the potential to impact existing utilities. The presence of underground gas and watermains, as well as local storm sewer culverts and catch basins are in the vicinity of each sewer alignment alternative. All three alternatives required crossing existing infrastructure. The potential location for the Alternative C pump station may require additional crossing of hydro on the south side of Sylvestre Drive.
- Alternative A could impact the potential layout of future development for the properties south of Jamsyl Drive, which would be separated from those serviced through this project by an additional sewer easement.
    - Alternative C is the preferred option from the perspective that it allows for the development of adjacent lands without impacting the location or extents of future building(s). The proposed sanitary sewer will not have any impact on future building foundations, subject to proper trench backfill and compaction efforts, as outlined in the geotechnical recommendations included in ***Appendix C.***
- All alternatives have limited impact on archaeological, built or cultural heritage features and/or impacts on natural environment features.
- All alternatives address the Problem Statement of extending sanitary sewers to service a portion of Sylvestre Industrial Park.
- Alternative C is preferred with respect to ongoing maintenance costs. It is expected that Alternative B will require replacement of the individual grinder pumps on a frequent basis, and Alternative A will require regular flushing and cleaning of the sanitary sewer due to the limited self-cleansing velocities resulting from the low sanitary flows in this sewer. Alternative C may require regular flushing for the sewer along Manning Drive depending on the flow from the five serviced properties.
- Alternatives B and C are preferred with respect to costs.

Table 2: Evaluation of Alternative Solutions

Evaluation Criteria	Alternative A (Gravity Main – Easement East/West)	Alternative B (Individual Grinder Pump Stations and local gravity sewer)	Alternative C (Gravity Sewer and local pump station)	Preferred Alternative
Engineering Considerations				
Ease of Construction	Highest level of complexity, as outlined below: • Requires substantially longer length installation of sanitary sewer main. • Sewer to be installed through easement (east to west and north to south) • Two separate sewer systems will be required to service the properties (one through north easement, one on road allowance).	Highest level of complexity, as outlined below: • Requires connection to four properties with separate grinder pump stations. • Similar construction to Option C for properties fronting Sylvestre Drive.	Least complex to construct, as outlined below: • Installation of prefabricated pump station in open area on Sylvestre Drive • Installation of gravity main on Sylvestre Drive similar to Options A & B.	Alternative C
Minimize Impacts to Existing Utilities	Installation will be parallel to existing gas and watermains with sufficient separation to avoid conflicts and therefore no impacts are expected.	Installation will be parallel to existing gas and watermains with sufficient separation to avoid conflicts and therefore no impacts are expected.	Potentially more complex as proposed pump station may be located south of the existing right-of-way and easements which would require crossing additional utilities compared to Options A & B.	Alternatives A or B
Minimize Foundational/ Geotechnical Impacts	No impacts are expected.	Footprint of work adjacent to existing buildings will be larger than Alternatives A and C to install the individual grinder pump stations.	No impacts are expected.	Alternative A or C
Addresses Problem Statement of extending sanitary sewers to service a portion those currently serviced by on-site sewage systems with Sylvestre Industrial area.	Addresses problem statement. Extending sanitary sewer services provides potential economic and environmental benefits through proper sanitary servicing and support of local industries.	Same as Alternative A.	Same as Alternative A.	All alternatives relatively equal
Preferred Alternative				**Alternative C**
Cultural & Socio-Economic Environment				
Minimize Potential for Archaeology, Built Heritage and Cultural Heritage Impacts	Limited potential for built heritage & archaeological resources within proposed sewer easement area.	Same as Alternative A.	Same as Alternative A	All alternatives relatively equal
Minimize Amount of Work on Private Property	Requires an easement of approximately 340 lineal metres longer than the other alternatives, which will affect four additional properties than Alternatives B and C. Each alternative will include a similar easement along Manning Road for the five properties serviced.	Each alternative will include a similar easement along Manning Road for the five properties serviced.	Each alternative will include a similar easement along Manning Road for the five properties serviced.	Alternative B or C
Preferred Alternative				**Alternative C**

Meets the criteria objective **Somewhat meets the criteria objective** **Does not meet the criteria objective**

Evaluation Criteria	Alternative A (Gravity Main – Easement East/West)	Alternative B (Individual Grinder Pump Stations and local gravity sewer)	Alternative C (Gravity Sewer and local pump station)	Preferred Alternative
Natural Environment				
Minimize Impacts on Natural Environment Features	No significant natural features on site. Some vegetation removal/ disturbance required for construction, however, not considered significant as this has been a previously disturbed area.	Same as Alternative A.	Same as Alternative A.	All alternatives relatively equal
Preferred Alternative				All alternatives relatively equal
Cost				
Lower Capital Cost Is Preferred	Highest Cost Alternative. Estimated Construction Cost* : $523,350	Least cost alternative. Estimated Construction Cost *: $301,650	Median cost alternative. Estimated Cost *: $453,550	Alternative B
Lower Maintenance Cost is Preferred	Additional infrastructure and manholes to maintain. Regular flushing to ensure two sewers are clean and operational will be more expensive than a single sewer with alternatives B or C.	Life span of individual grinder pump systems expected to be 7 years. Therefore over the lifespan of the project this option will have higher maintenance costs than Alternative C.	Least cost as maintenance of a single sanitary sewer and single pump station are expected to be lower than Alternative A, as the flushing will be over a shorter length of sewer.	Alternative C
Preferred Alternative				**Alternative C**
Overall Preferred Alternative				**Alternative C**

Meets the criteria objectiveeasem **Somewhat meets the criteria objective** **Does not meet the criteria objective**

*excluding: road works, storm and provisional items which would be common to all alternatives.

*excludes easement costs.

5.0 Preferred Alternative

Based on the comparative evaluation, Sanitary Alternative C was determined to be the preferred solution. In summary, this solution is preferred for the following reasons:

- Lower capital and maintenance cost considerations.
- Length of required permanent easements to be maintained which could affect future land development, to service the five properties identified fronting Manning Road.
- Ease of construction.

The recommended functional design for the proposed sanitary drainage system servicing the area is detailed in the appended Sylvestre Drive Sanitary Servicing drawings (***Appendix D***).

5.1 Construction Considerations

Anticipated construction considerations that should be incorporated as part of the detailed design and implementation of the preferred sanitary sewer solution include:

- Trench backfill shall consist of granular materials that are properly compacted as outlined in the geotechnical report included in ***Appendix C.***
- Access to the existing properties must be maintained to limit impacts on their operations. Coordination with the property owners will be required to confirm their requirements and any special considerations during construction.
- Maintenance of the existing private sewage disposal systems will be required until the commissioning of the new system is complete.
- Sampling manholes are required to be installed at each property.
- Utility conflicts, including the crossing of the existing hydro lines on Sylvestre Drive, should be confirmed, including coordination of any required relocations.
- All existing storm drainage and watermain servicing is to remain operational throughout the installation of the new sanitary system.
- Existing roadside drainage must be restored upon completion of the installation of the new sanitary sewers.
- Throughout construction erosion and sediment controls must be in place.
- Prior to construction an environmental protection plan will be completed to ensure potential spills would avoid all impacts to the existing watercourses.
- Working easements will be required in order to install the proposed sanitary sewers along Manning Road as well as the construction of the proposed pump station.

5.2 Climate Change

The Ministry of the Environment, Conservation and Park (MECP) guide "Considering Climate Change in the Environmental Assessment Process (available at https://www.ontario.ca/page/considering-climate-change-environmental-assessment-process) was reviewed as part of the preparation of the Class EA.

All alternatives presented have been designed in accordance with Town of Tecumseh design standards. The implementation of the project as designed includes the majority of the infrastructure being installed within the existing road allowance to provide a secure long term solution for sanitary sewage collection and treatment. The project does not propose an increase to the road design width to increase the impermeable area, and areas which were permeable prior to construction will be reinstated as such post construction.

Due to the limited scope of this project, there are no distinguishable differences in the alternatives that would be influenced by changes in climate. As a result, the effects of climate change were not included in the evaluation of alternatives.

5.3 Estimated Construction Costs

Cost estimates for the construction of the sanitary sewers in the easements proposed as part of this EA have been developed and are summarized below in **Table 3.** Detailed construction cost estimates, associated project assumptions, and figures showing proposed easement work have been provided in ***Appendices D and E***.

Table 3: Summary of Estimate Probable Project Costs – Option C (Preferred Alternative)

Summary of Estimate Probable Project Costs	
Construction*	$1,318,805.00
Engineering	$256,000.00
Geotechnical	$10,000.00
TOTAL CONSTRUCTION COST (excluding H.S.T.)**	**$1,584,805.00**

*Construction Costs presented include road reconstruction, including local storm culvert replacements, in addition to the sanitary related works. The construction costs include replacement of the entire road surface throughout the project area between Manning Road and Jamsyl Drive. The sanitary works will be installed to connect to existing infrastructure on Sylvestre Drive (north branch). The common construction cost for road works for all options was estimated to be $717,755, as outlined within the Appendicies.

**Easement Acquisition will be in addition to the costs presented.
Utility coordination costs were included within the estimate; however any utility relocation costs have not been identified for the project.

6.0 Impacts and Mitigation

Mitigation measures as outlined in **Table 4** must be incorporated into the design and construction phases.

Table 4: Mitigation Measures

Environmental Feature	Impacts and Mitigation
Engineering Considerations	
Utility Conflicts	Potential local relocation for installation of infrastructure at the intersection of Manning Road and Sylvestre Drive for incorporation of the proposed sanitary manhole.
Private Property Easements	Easement agreements will be arranged by the Town of Tecumseh prior to construction.
Impacts on Cultural Resources	
Archaeological Resources	Due to previous disturbance in the area from development, the area has been identified as having low potential for the discovery of archaeological artifacts. Should deeply buried artifacts be uncovered during construction, MTCS shall be contacted immediate contact with MTCS is required. The Ontario *Cemeteries Act* applies to discovery of unmarked human remains.
Natural Environment	
Existing Vegetation Along Easement	Open cut installation will be required within the newly created easements to install the sanitary sewer. Existing vegetation primarily consists of mown grass. Tree removals are not anticipated. However, if removal of existing landscape trees is necessary based on refinements to the detail design, the removals should be completed outside of the migratory bird nesting season (no removals completed from April 1 to July 31). Workers must be vigilant and check work areas for the presence of snakes. Fact sheets and detection protocols for Eastern Foxsnake and Butler's Gartersnake shall be provided to the crew before the project begins. If either species is encountered, work must be temporarily suspended until the animal is out of harm's way. If the snake persists in the work area, a person qualified to handle snakes should be contacted to relocate the animal.
Species At Risk Potential - Snakes	There is limited potential to encounter SAR snakes (Eastern Foxsnake and Butler's Gartersnake) within the study area. East Townline Road Drain (immediately west of Manning Road) and the Mixed Meadow habitats (MEM; adjacent to the Study Area to the west) provide potential habitat for Eastern Foxsnake and Butler's Gartersnake. Along the drain, deep concrete foundations associated with numerous drainage culverts could provide potential hibernacula and thermoregulation areas. Based on the current design, no work is planned at the culverts.

Environmental Feature	Impacts and Mitigation
	Prior to conducting work on site, on-site personnel will be provided Information Sheets regarding SAR (included in ***Appendix A*, Attachment 3**). Construction and vegetation-clearing equipment that is left idle for over one hour, or is parked overnight on the project location between April 1 and October 31, must be surveyed for the presence of SAR snakes before re-ignition. This visual examination should include all lower components of the machinery, including operational extensions and running gear. If required, vegetation removal should be limited to the smallest extent possible and should be conducted between August 31 and October 31, outside of the migratory breeding bird window and when SAR snake individuals are active and most able to flee areas of disturbance, or between December 1 and March 30, when SAR snake individuals are over-wintering. If vegetation removal activities must occur within the active breeding bird window, nest sweeps will be conducted by a qualified biologist no more than 48 hours prior to clearing. During the active snake season (March to November), individuals may find and occupy material and equipment stored on site; therefore, a clean, debris-free work site should be maintained (e.g. storage of flat materials like plywood and rubber mats in open areas should be avoided).
Species At Risk Potential – Barn Swallow	Barn swallow nests were not observed within the Study Area. In the event Barn Swallow nest(s) are observed and will be disturbed by construction activities, the regulations specified under Section 23.5 (Barn Swallow) of *Ontario Regulation 242/08* shall be followed to avoid contravention under the *Endangered Species Act*, 2007.
Species At Risk – General	For SAR incidentally encountered on the project location, they must be allowed to leave on their own accord. Activities within 30 m should cease until the individual disperses. Construction machinery/equipment must maintain a minimum operation distance of 30 m from the individual until it disperses the project location on its own accord. Should on-site personnel be unable to allow an incidentally-encountered SAR individual to disperse from the active construction area on its own accord, a qualified person (i.e. biologist) should be contacted immediately for additional guidance. Observations of SAR should be reported to MNRF Aylmer District staff within 48 hours of the observation, or the next working day, whichever comes first
Socio-Economic Impacts	
Construction Measures	Construction of the sanitary sewer will cause localized disruptions in the immediate vicinity of the construction area along Sylvestre Drive, typical of a construction project. Traffic control measures are required to follow Ontario Traffic Manual – Book 7. Standard mitigation measures in the Ontario Provincial Standard Specifications (OPSS) related to noise and dust during construction would apply.

7.0 Consultation

The following summarizes the consultation activities completed throughout the study. Consultation materials referred to in this section are included in ***Appendix F***.

7.1 Contact List

The study contact list was updated throughout the project, including agencies as well as directly impacted property owners. A copy of the contact list is included in ***Appendix F***.

7.2 Notice of Study Commencement

The Notice of Study Commencement was published in the March 16, 2018, and March 23, 2018, editions of the Tecumseh Shoreline and posted on the Town of Tecumseh's web site. The notice was sent to all agencies, including Indigenous Communities on the project contact list on March 13, 2018. Four agency responses were received to the notice. **Table 5** summarizes the comments, as well as how each one was addressed.

Table 5: Notice of Commencement – Agency Comment Summary

Contact	Comment	Response
Ministry of Natural Resources and Forestry	MNRF provided information to guide the identification and assessment of natural features and resources by applicable policies and legislation.	No response required. Natural features and resources will be documented in the Project File Report.
Ministry of the Environment, Conservation and Parks (MECP)	MECP provided information on documentation of source water protection.	Source water protection reviewed as part of the study.
Union Gas	Union Gas provided a plan showing existing gas infrastructure in the Study Area.	No response required.
Essex Region Conservation Authority (ERCA)	No concerns with the study as outlined. East Townline Drain is a regulated watercourse and site alternation is subject to ERCA approvals. Would like to review preliminary design consideration related to stormwater management.	Comments noted. No changes to drainage are being proposed.

Comments were received from one property owner concerned regarding the need and justification for the study. The study team met with the property owner to discuss the project.

7.3 Landowner Consultation

A stakeholder meeting was held with individual landowners where easements were considered to discuss the alternative sanitary sewer easement alignments. The landowner meeting was held on Wednesday April 18, 2018. **Table 6** summarizes the landowner meeting key issues and concerns raised as well as the project team response.

Table 6: Key Issues Raised by Landowners

Issue/Concern	Project Team Response
Concerns related to the Alternative B individual grinder pump stations.	They are not currently used elsewhere within the Town of Tecumseh. Each property would be required to have an individual unit.
Servicing for 1845 Manning Road – property owners preferred that we construct the sanitary sewer to the limit of the property line and that the specific location for a future service connection be discussed with them at the time of the installation. Potential for different land use moving forward etc.	Agreed to design the sanitary sewer to the south property line. The property will be required to connect to the sanitary sewer provided.
Location for potential pump station (Alternative C). Landowner requested the study team consider placing the pump station on the south east corner property instead of the north east property.	Team agreed that this alternative is feasible and could be incorporated.
Property owners requested consideration of trenchless installation with limited receiving pits be considered from a constructability perspective to service the Manning Road fronting properties.	Team has taken this request into consideration for the functional design analysis.
Landowners raised significant concerns with Alternative A. This will potentially limit future land development options. Easement is not preferred from their perspective.	Team agreed to consider this concern for the alternative evaluation.

Prior to finalization of this report, a second stakeholder meeting was held with individual landowners to discuss the alternatives evaluated through the project, and review the recommended alternative. The notice for this meeting was mailed on April 4, 2019. The landowner meeting was held on April 16, 2019. **Table 7** summarizes the landowner meeting key issue and concern raised as well as the project team response.

Table 7: Key Issues Raised By Landowners

Issue/Concern	Project Team Response
The landowners requested the project team to consider the feasibility of a separate alternative which would be a variation of Alternative B and C. The alternative included consideration for servicing the Manning Road properties through an alternative easement location adjacent to an existing watermain easement.	Functional analysis of the alternative was completed, and a design memo was prepared and issued in response to the stakeholder request on May 16, 2019. The memo outlines that the preferred alternative remains Alternative C. A copy of the memo is included within **Appendix F.**

7.4 Consultation with Indigenous Communities

Appendix F includes a summary of communication with Indigenous Communities. A copy of the Notice of Study Commencement was sent to the following Indigenous Communities and associations as part of the study on March 13, 2018:

- Aamjiwnaang First Nation
- Caldwell First Nation
- Chippewas of Kettle and Stony Point First Nation
- Chippewas of the Thames First Nation
- Moravian of the Thames First Nation
- Walpole Island First Nation
- Southern First Nations Secretariat
- Metis Nation of Ontario

Response to the Notice of Study Commencement was received from the Chippewas of the Thames First Nation (COTTFN). COTTFN indicated they were interested in receiving further documentation if there are substantive changes made to the project.

In addition to the mailing the Notice of Commencement, Indigenous communities on the contact list were contacted by telephone on June 12, 2018 and January 29, 2019. The intent of the telephone follow up was to ensure that consultation materials had been received and to provide further information on the project. No comments regarding the project were received as a result of the telephone calls.

8.0 Approvals and Schedule

The following outlines approvals required prior to construction, as well as the anticipated project schedule.

8.1 Class EA Approval

Following the clearance of this Project File Report under the Environmental Assessment Act, the project will be considered approved for construction.

This report will be available for a 30 day public and agency review period. During that period, any individual or agency with significant concerns about the project should contact the project team to discuss their concerns. If concerns cannot be resolved, any individual or agency may write to the Ministry of Environment, Conservation and Parks (MECP) requesting that the Minister issue a Part II Order to elevate the status of the project from a Class EA to an Individual EA. Any Part II Order request must be submitted to MECP using a standard form developed by MECP. The standard Part II Order request form is available on the Ontario government Forms Repository website (http://www.forms.ssb.gov.on.ca/) and is available by searching "Part II Order" on the Repository's main page. A copy of the completed form and any supporting information must also be forwarded to the Town of Tecumseh. All requests are reviewed by the MECP Environmental Assessment and Approvals Branch. Criteria used to evaluate a request include:

- The purpose of the EA.
- Any differences between the proposed undertaking and the other undertakings in the same group, as well as the significance of the differences.
- The nature of the concerns raised by the requester(s).
- The benefits of carrying out an individual EA.

MECP staff also evaluates the applicability and effectiveness of other legislation and decision-making processes to address the concerns of the requester(s).

The Minister of the Environment, Conservation and Parks has four options for a decision on a Part II Order request:

- Deny the request.
- Deny the request with conditions.
- Refer the matter to mediation.
- Grant the request and require the proponent to undergo an individual EA.

If no Part II Order requests are received by MECP during the 30 day period, the project may proceed to Detailed Design, permitting and construction.

8.2 Approvals Required Prior to Construction

Prior to construction of the proposed sanitary sewers, approval is required by MECP through an Environmental Compliance Approval application.

8.3 Schedule

Following the 30 day public and agency review period for this Project File and subject to budget approval, the Town of Tecumseh will consider the staged implementation of this project, beginning with the acquisition of property easements, and application for MECP permit approval. Tendering and construction for the project would occur in future years depending on permit approval timing.

Appendix A

Natural Environment Memo

MEMO

TO: Project File
FROM: Brad McLeod, Dillon Consulting Limited
DATE: October 22, 2018
SUBJECT: Sylvestre Drive Sanitary Sewer Extension Natural Environment Memo
OUR FILE: 17-6843

This memo documents the natural environment review completed as part of the Sylvester Drive Sanitary Sewer Extension Class Environmental Assessment. The undertaking involves extending the existing sanitary sewers to service a portion of the Sylvestre Industrial Park Area that is generally located on Sylvester Drive, south of Jamsyl Drive, and west of Manning Road. The sanitary sewer will also be required to service the five properties with frontage onto Manning Road currently serviced by on-site sewage services.

This memo will be used to evaluate the potential impacts of the undertaking to the natural environment and identify mitigation to be followed during the detailed design and construction activities.

Natural Environment Background Information Review

Background information was collected from the Ontario Ministry of Natural Resources and Forestry (MNRF), Natural Heritage Information Centre (NHIC), local Official Plans, Environment Canada's Species at Risk (SAR) database, MNRF's NHIC Biodiversity Explorer database, and various wildlife atlases.

Land Uses for the areas immediately surrounding the Study Area consists primarily of agriculture, commercial business, and residential lands.

Significant Wildlife Habitat

In accordance with the Ecoregion 7E Criteria Schedules (MNRF 2015), a review of background data suggests limited potential for significant wildlife habitat to exist within and adjacent to the Study Area due to the lack of natural vegetation communities (or lack of sufficient size) and existing disturbances.

Species at Risk

Based on the secondary source background search, 23 species listed as *Endangered* or *Threatened* under ESA 2007 were identified as having the potential to occur within and/or adjacent to the Study Area (***Attachment 1***; information updated after the field investigation). Of these 23 species, based on the habitat present within and/or adjacent to the Study Area (as interpreted from aerial imagery), 5 species, in addition to SAR bats, were identified as having a low potential to occur due to their habitat requirements or the species' current known range distribution.

For example, the Rusty-patched Bumblebee may have potential habitat within the Study Area, but this species has only been found in select locations within Ontario (e.g., Pinery Provincial Park), and is therefore considered to be locally extirpated from this region.

In addition, to supplement the SAR Screening a SAR information request was submitted to the MNRF Aylmer on September 21, 2018, and a response is pending.

Based on the desktop review of habitat within and adjacent to the Study Area, there may be potential for Barn Swallow (*Hirundo rustica*), Eastern Foxsnake (*Pantherophis gloydi*), Butler's Gartersnake (*Thamnophis butleri*), SAR bats, Willowleaf Aster (*Symphyotrichum praealtum*), and Colicroot (*Aletris farinosa*) to occur.

Field Investigations and Findings

Field investigations for potential SAR and verification of terrestrial natural resources were completed October 9, 2018, and included the following:

- Ecological Land Classification (ELC) of vegetation communities, using accepted protocols in Ontario
- A Species at Risk (SAR) investigation for:
  - Barn Swallow
  - Eastern Foxsnake
  - Butler's Gartersnake
  - SAR bat habitat suitability
  - Willowleaf Aster
  - Colicroot
- Incidental wildlife observations.

Refer to ***Attachment 2*** for representative site photos.

Ecological Land Classification

During the field investigation, vegetation was characterized based on the methods outlined under ELC for Southern Ontario – First Approximation and its Application (Lee *et al.* 1998). Vegetation communities for the Study Area were designated down to the vegetation type, where possible. Since the release of the first approximation document, a draft second version was released in 2008 by the former Ministry of Natural Resources, which provided further characterization of vegetation communities, in particular cultural/anthropogenic influenced communities. For the purposes of the ELC for the Study Area, communities were characterized to second approximation.

The following communities were identified within and adjacent to the Study Area (**Figure 1**):

- Commercial and Institutional (CVC)
- Open Agriculture (OAG)
- Residential (CVR)
- Mixed Meadow (MEM) west of Study Area with dumped soil.

Barn Swallow Habitat Investigation

Where possible, existing buildings adjacent to the Study Area were reviewed. No Barn Swallow nests were observed within the Study Area.

Eastern Foxsnake and Butler's Gartersnake Habitat Investigation

The margins of fields and East Townline Drain within the Study Area were assessed for the presence of and potential habitat for Eastern Foxsnake and Butler's Gartersnake.

East Townline Road Drain (immediately west of Manning Road) and the Mixed Meadow habitats (MEM; adjacent to the Study Area to the west) provide potential habitat for Eastern Foxsnake and Butler's Gartersnake. Along the drain, deep concrete foundations associated with numerous drainage culverts could provide potential hibernacula and thermoregulation areas. The Mixed Meadow habitat could provide suitable foraging for certain life processes.

SAR Bat Habitat Investigation

Consistent with the Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E, there were no ELC Ecosites that could provide habitat for bat hibernacula or maternity colonies.

Willowleaf Aster Habitat Investigation

During the field investigation, several locations of New England Aster (Symphyotrichum novae-angliae) and Panicled Aster (Symphyotrichum lanceolatum ssp. lanceolatum) were present, but Willowleaf Aster was not observed.

Colicroot Habitat Investigation

Suitable habitat for Colicroot was not observed with or adjacent to the Study Area.

Incidental Wildlife Observations

A general wildlife assessment was completed through incidental observations (**Table 1**). Incidental observations of wildlife were noted as well as other wildlife evidence such as dens, tracks, and scat. These observations also helped to determine potential ecological functions, linkages, etc. within and adjacent to the Study Area.

Each of the observed species is considered common and apparently secure (S4), widespread and secure (S5), or not applicable as the species is not a suitable target for conservation activities (SE or SNA) in Ontario.

Table 1: Incidental Wildlife Species

Scientific Name	Common Name	SARA[1]	ESA[2]	S-Rank[3]	Observation
Cathartes aura	Turkey Vulture	---	---	S5B	Flying through the area.
Charadrius vociferus	Killdeer	---	---	S5B,S5N	Foraging within Open Agriculture (OAG).
Zenaida macroura	Mourning Dove	---	---	S5	Perching on power transmission lines.
Passer domesticus	House Sparrow	---	---	SNA	Foraging throughout the Study Area.
Colias eurytheme	Orange Sulphur	---	---	S5	Foraging on roadside plants.
Pieris rapae	Cabbage White	---	---	SNA	Foraging on roadside plants.

[1]Federal *Species at Risk Act* (SARA) Registry Status; [2]Ontario *Endangered Species Act* (ESA) List Status; [3]Provincial Conservation Rank (SRank).

Summary

Field investigations were completed October 9, 2018 and included ELC surveys and SAR habitat assessments for species identified in the background review that had potential to be present within the Study Area.

Based on the ELC survey results, the lands adjacent to the Study Area did not contain rare vegetation communities or significant wildlife habitat. No SAR species or evidence of SAR (i.e. Barn Swallow nests) were observed within and/or immediately adjacent to the Study Area.

During construction of the sanitary sewer extension and road reconstruction along Sylvester Drive, it is recommended general mitigation measures be in place throughout the construction period. General construction and SAR mitigation practices will also be required for construction staff such as:

- Prior to conducting work on site, on-site personnel will be provided Information Sheets regarding SAR with potential to occur within the study area (***Attachment 3***). Individuals must be made aware of the potential presence of SAR on site, and the protection afforded to them under the ESA.
- For SAR incidentally encountered on the project location, they must be allowed to leave on their own accord. Activities within 30 m should cease until the individual disperses. Construction machinery/equipment must maintain a minimum operation distance of 30 m from the individual until it disperses the project location on its own accord.
- Should on-site personnel be unable to allow an incidentally-encountered SAR individual to disperse from the active construction area on its own accord, a qualified person (i.e. biologist) should be contacted immediately for additional guidance.
- Observations of SAR should be reported to MNRF Aylmer District staff within 48 hours of the observation, or the next working day, whichever comes first.
- Construction and vegetation-clearing equipment that is left idle for over one hour, or is parked overnight on the project location between April 1 and October 31, must be surveyed for the presence of SAR snakes before re-ignition. This visual examination should include all lower components of the machinery, including operational extensions and running gear.

- Removal of vegetation should be limited to the smallest extent possible and should be conducted between August 31 and October 31, outside of the migratory breeding bird window and when SAR snake individuals are active and most able to flee areas of disturbance, or between December 1 and March 30, when SAR snake individuals are over-wintering.
- If vegetation removal activities must occur within the active breeding bird window, nest sweeps will be conducted by a qualified biologist no more than 48 hours prior to clearing.
- During the active snake season (March to November), individuals may find and occupy material and equipment stored on site; therefore, a clean, debris-free work site should be maintained (e.g. storage of flat materials like plywood and rubber mats in open areas should be avoided).
- In the event Barn Swallow nest(s) are observed and will be disturbed by construction activities, the regulations specified under Section 23.5 (Barn Swallow) of *Ontario Regulation 242/08* shall be followed to avoid contravention under the *Endangered Species Act*, 2007.

References

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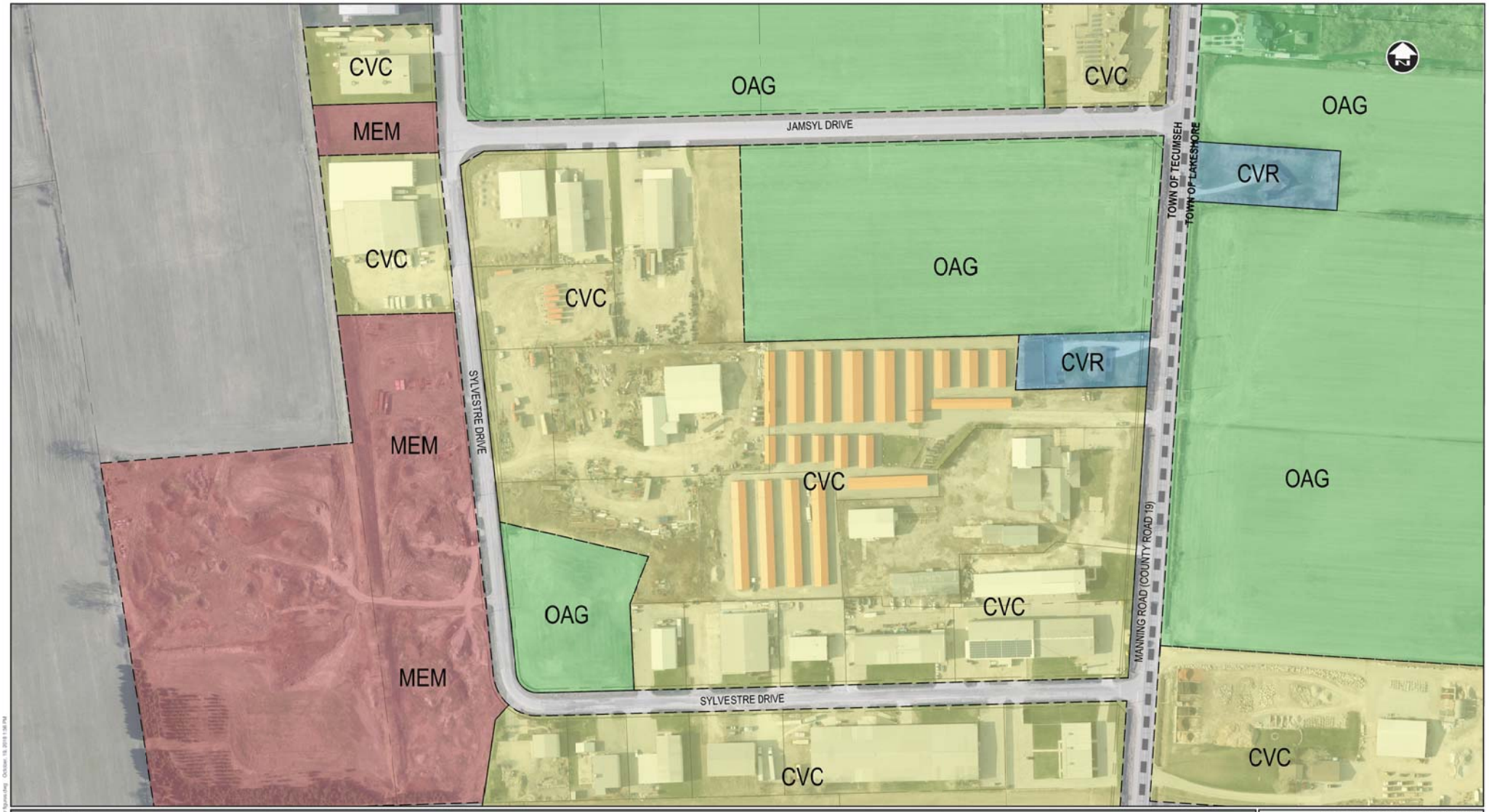

LEGEND

- COMMERCIAL & INSTITUTIONAL (CVC)
- OPEN AGRICULTURE (OAG)
- RESIDENTIAL (CVR)
- MIXED MEADOW (MEM)

DILLON CONSULTING

Town of Tecumseh Ontario Canada

Dillon Project No.: 17-6843

DATE: OCTOBER 2018

Sylvestre Sanitary Sewer

Class Environmental Assessment

TOWN OF TECUMSEH

FIGURE 1

Existing Ecological Land Classification

ATTACHMENT 1

SAR Table

Attachment 1: Potential Impacts and Recommended Mitigation Measures for Species at Risk with the Potential to Occur within the Study Area

Scientific Name	Common Name	SARA Status[1]	ESA Status[2]	SRank[3]	Information Source[4]	Habitat Requirements[2,5]	Potential Impacts to Species and/or Habitat	Recommendations
BIRDS								
Chaetura pelagica	Chimney Swift	THR	THR	S4B,S4N	OBBA, MNRF SAR in Area	Commonly found in urban areas near buildings; nests in hollow trees, crevices of rock cliffs, chimneys; highly gregarious; fees over open water.	No potential. Based on aerial photography the Study Area does not contain buildings with chimneys.	N/A
Hirundo rustica	Barn Swallow	THR	THR	S4B	OBBA, MNRF SAR in Area	Farmlands or rural areas; cliffs, caves, rock niches; buildings or other man-made structures for nesting; open country near body of water.	Low potential. During the field investigation, no nests were observed and no buildings will be removed during construction.	N/A
Riparia riparia	Bank Swallow	THR	THR	S4B	OBBA	Sand, clay or gravel river banks or steep riverbank cliffs; lakeshore bluffs of easily crumbled sand or gravel; gravel pits, road-cuts, grassland or cultivated fields that are close to water; nesting sites are limiting factor for species presence..	No potential. During the field investigation, the only suitable habitat was to the west of the Study Area among the large dumped sand/soil piles. This area will not be disturbed.	N/A
Dolichonyx oryzivorus	Bobolink	THR	THR	S4B	OBBA, MNRF SAR in Area	Large, open expansive grasslands with dense ground cover; hayfields, meadows or fallow fields; marshes; requires tracts of grassland >50 ha.	No potential. Based on aerial photography the Study Area contains does not contain suitable habitat for grassland breeding bird.	N/A
Sturnella magna	Eastern Meadowlark	THR	THR	S4B	OBBA, MNRF SAR in Area	Open, grassy meadows, farmland, pastures, hayfields or grasslands with elevated singing perches; cultivated land and weedy areas with trees; old orchards with adjacent, open grassy areas >10 ha in size.	No potential. Based on aerial photography the Study Area contains does not contain suitable habitat for grassland breeding bird.	N/A
Tyto alba	Barn Owl	END	END	S1	MNRF SAR in Area	Open areas such as fields, agricultural lands with scattered woodlots, buildings and/or orchards; grasslands, sedge meadows, marshes; snow-cover limits ability to catch prey; species has intolerance to severe cold; nests in hollow trees and live trees >46 cm dbh; also nests in barns, abandoned buildings.	No potential. Based on aerial photography the Study Area contains agricultural lands which may provide suitable habitat for Barn Owl. However, However, there are reported to be less than five pairs of Barn Owls remaining in Ontario[2].	N/A
HERPTILES								
Ambystoma texanum	Small-mouthed Salamander	END	END	S1	OHA, MNRF SAR in Area	Moist habitats such as tall grass prairies, deciduous forests, and agricultural lands with suitable breeding ponds. Require soft soil for burrows and ponds without fish for breeding.	No potential. Based on aerial photography and MNRF mapping the Study Area does not contain suitable habitat. In addition, the Small-mouthed salamander is found only on Pelee Island in extreme southwestern Ontario[2].	N/A
Heterodon platirhinos	Eastern Hog-nosed Snake	THR	THR	S3	OHA	Sandy upland fields, pastures, savannahs, sandy beaches; dry open oak-pine-maple forest with sandy soils; prefer forest areas > 5ha.	No potential. OHA does not show it in Study Area, based on recovery strategy not in area.	N/A
Pantherophis gloydi pop. 2	Eastern Foxsnake (Carolinian population)	END	END	S2	OHA, MNRF Reg. Habitat	Old fields, marshes, along hedgerows, drainage canals and shorelines. Eggs are laid in rotting logs, manure or compost piles. Hibernate in cracks in the bedrock and man-made structures	Low potential. During the field investigation, no suitable habitat/potential snake hibernacula were observed. Also, based on the disturbance location of the proposed sanitary sewer alignment, no suitable habitat/potential snake hibernacula will be disturbed.	SAR info sheet should be provided to contractor.
Pantherophis spiloides pop. 2	Gray Ratsnake (Carolinian population)	END	END	S1	OHA	Agricultural land and deciduous forest. Eggs are laid in rotting logs and compost piles.	No potential. During the field investigation, no suitable habitat were observed.	N/A

Scientific Name	Common Name	SARA Status[1]	ESA Status[2]	SRank[3]	Information Source[4]	Habitat Requirements[2,5]	Potential Impacts to Species and/or Habitat	Recommendations
Thamnophis butleri	Butler's Gartersnake	END	END	S2	OHA, MNRF SAR in Area	Open, moist habitats, such as dense grasslands and old fields, with small wetlands. Also known to occur along treed edges, vacant lots, small parks, and abandoned sites in urban areas	Low potential. During the field investigation, no suitable habitat/potential snake hibernacula were observed. Also, based on the disturbance location of the proposed sanitary sewer alignment, no suitable habitat/potential snake hibernacula will be disturbed.	SAR info sheet should be provided to contractor.
Plestiodon fasciatus pop. 1	Common Five-lined Skink (Carolinian population)	END	END	S2	MNRF SAR in Area, MNRF Reg. Habitat	The Carolinian population can be found under woody debris in clearings with sand dunes, open forested areas, and wetlands. They bask on sunny rocks and logs to maintain a preferred body temperature (28-36°C). During the winter, they hibernate in crevices among rocks or buried in the soil.	No potential. Based on aerial photography and MNRF mapping the Study Area does not contain suitable habitat.	N/A
Sistrurus catenatus pop. 2	Massasauga (Carolinian population)	THR	END	S1	OHA, MNRF SAR in Area	Use upland, old field in summer; marsh, shrub swamp or bog; rivers and streams that provide sedge or low vegetative growth; in fall and winter; hibernate underground in mammal burrows, under rotting stumps, in rock crevices.	No potential. In Canada, the Massasauga is found only in Ontario, primarily along the eastern side of Georgian Bay and on the Bruce Peninsula. Two small populations are also found in the Wainfleet Bog on the northeast shore of Lake Erie and near Windsor.	N/A
MAMMALS								
Taxidea taxus jacksoni	American Badger (Southwestern Ontario population)	END	END	---	MWH	In Ontario, badgers are found in a variety of habitats, such as tall grass prairie, sand barrens and farmland. These habitats provide badgers with small prey, including groundhogs, rabbits and small rodents. Since badgers are primarily nocturnal and quite wary of people, not many people are fortunate enough to spot one in the wild.	No potential. Based on the Recovery Strategy, the Study Area is not within the range of this species.	N/A
Myotis leibii	Eastern Small-footed Myotis	---	END	S2S3	MWH	Roosts in caves, mine shafts, crevices or buildings that are in or near woodland; hibernates in cold dry caves or mines; maternity colonies in caves or buildings; hunts in forests.	No potential. During the field investigation, there were no ELC Ecosites that could provide suitable habitat for bat hibernacula/maternity colonies.	N/A
Myotis lucifugus	Little Brown Myotis	END	END	S4	MWH	Uses caves, quarries, tunnels, hollow trees or buildings for roosting; winters in humid caves; maternity sites in dark warm areas such as attics and barns; feeds primarily in wetlands, forest edges.		
Myotis septentrionalis	Northern Myotis	END	END	S3	MWH	Hibernates during winter in mines or caves; during summer males roost alone and females form maternity colonies of up to 60 adults; roosts in houses, manmade structures but prefers hollow trees or under loose bark; hunts within forests, below canopy.		
Pipistrellus subflavus	Tri-colored Bat	END	END	S3?	MWH	Can be found in a variety of forested habitats. They form day roosts and maternity colonies in older forest and occasionally in barns or other structures, and overwinter in caves. They forage over water and along streams in the forest.		
PLANTS								
Liatris spicata	Dense Blazing Star	THR	THR	S2	MNRF SAR in Area	In Ontario, Dense Blazing Star grows in moist prairies, grassland savannahs, wet areas between sand dunes, and abandoned fields. This plant does not do well in the shade and is usually found in areas that are kept open and sunny by fire, floods, drought, or grazing.	No potential. Based on MNRF Recovery Strategy, the Study Area in not in the range of this species.	N/A

Scientific Name	Common Name	SARA Status[1]	ESA Status[2]	SRank[3]	Information Source[4]	Habitat Requirements[2,5]	Potential Impacts to Species and/or Habitat	Recommendations
Symphyotrichum praealtum	Willowleaf Aster	THR	THR	S2	MNRF SAR in Area	In Ontario, the Willowleaf aster is found in openings of oak savannahs, a very rare type of vegetation community containing many tallgrass prairie herbs and oak trees. It has also been found along railways, roadsides and in abandoned farm fields.	No potential. This species was not observed within the Study Area.	N/A
Cornus florida	Eastern Flowering Dogwood	END	END	S2?	MNRF SAR in Area, MNRF Reg. Habitat	Eastern Flowering Dogwood grows under taller trees in mid-age to mature deciduous or mixed forests. It most commonly grows on floodplains, slopes, bluffs and in ravines, and is also sometimes found along roadsides and fencerows.	No potential. Grows under taller trees in mid-age to mature deciduous or mixed forests.	N/A
Aletris farinosa	Colicroot	THR	END	S2	MNRF SAR in Area	In Ontario, Colicroot grows in open, sunny, and moist habitats with sandy or mucky soil, such as prairies and old abandoned fields. It has also been found along roadsides and forest edges. It does not tolerate shade or competition from other plants and appears to do well in areas that are kept open by fire, drought, grazing and other disturbances.	No potential. This species was not observed within the Study Area. Suitable habitat was also not present for this species.	N/A
Liparis liliifolia	Purple Twayblade	THR	THR	S2	MNRF SAR in Area	In Ontario, Purple twayblade is found in a variety of habitats including open oak woodland and savannah, mixed deciduous forest, shrub thicket, shrub alvar, deciduous swamp, and even conifer plantations. It will grow in partial shade, but does not like dense shade and depends on natural disturbances, such as storms and fire, to keep its habitat relatively open and sunny.	No potential. Based on MNRF Recovery Strategy mapping, the Study Area is not within the range of this species.	N/A

1 – Status identified by the Committee on the Status of Endangered Wildlife in Canada under the federal SARA, 2002; 2 – SAR in Ontario List under the provincial ESA, 2007; 3 – Ontario SRank; S5 = secure; S4= apparently secure; S3 = vulnerable; S2 = imperilled; SX = Extirpated; SH = Possibly Extirpated; SNA = non-native or exotic species to Ontario; 4 – NHIC = MNRF Natural Heritage Information Centre, MNRF SAR in Area = MNRF Species at Risk in Ontario List by area of the province; MNRF Reg. Habitat = MNRF Regulated Habitat (O. Reg. 242/08); MNRF Consult. = MNR Consultation, OBBA = Ontario Breeding Bird Atlas, MWH = Digital Distribution Maps of the Mammals of the Western Hemisphere, version 3.0, OHA = Ontario Herpetofaunal Atlas, OOA = Ontario Odonata Atlas; OBA = Ontario Butterfly Atlas; CBC = Christmas Bird Count; 5 – MNRF Significant Wildlife Technical Guide - Appendix G (2000).

ATTACHMENT 2

Site Photos

Attachment 2: Site Photos

Photo Comments	Photo
Photo 1 **October 9, 2018** Looking north from the southeast corner of the Study Area. Note: Commercial and Institutional land (left), East Townline Road Drain (centre), and Manning Road (right).	
Photo 2 **October 9, 2018** Looking west from the southeast corner of the Study Area. Note: Commercial and Institutional land (far left and right) and Sylvestre Drive (left).	

Photo 3
October 9, 2018

Looking east from the southwest corner of the Study Area.

Note: Open Agriculture (left), Sylvestre Drive (right), and Commercial and Institutional land (far right).

Photo 4
October 9, 2018

Looking north from the southwest corner of the Study Area.

Note: Mixed Meadow with dumped soil (far left), Sylvestre Drive (left), and Open Agriculture (right).

Photo 5
October 9, 2018

Looking south from the northwest corner of the Study Area.

Note: Commercial and Institutional land (left and far right) and Sylvestre Drive (right).

Photo 6
October 9, 2018

Looking east from the northwest corner of the Study Area.

Note: Open Agriculture (far left), Jamsyl Drive (left), and Commercial and Institutional land (right).

Photo 7
October 9, 2018

Looking west from the northeast corner of the Study Area.

Note: Open Agriculture (left), Jamsyl Drive (right), and Commercial and Institutional land (far right).

Photo 8
October 9, 2018

Looking south from the northeast corner of the Study Area.

Note: Open Agriculture and Residential land (far left), Manning Road (left), East Townline Road Drain (centre), and Open Agriculture (right).

ATTACHMENT 3

Species Data Sheets

Barn Swallow

Hirundo rustica

National Status: **No Status**

Colour	• Glossly, steel-blue back and upper wings • Rusty –red forehead and throat • Beige coloured belly • Juveniles are more dusky blue-gray and have a pale yellow bill
Distinctive Features	• Pointed wings • Deeply-forked tail
Typical Size	Typically 15 to 18 cm long (6” to 7”)
Other	Diet consists of flying insects

Habitat

- Prefers open habitats such as meadows, pastures and farmland during the breeding season
- Often uses man-made structures (e.g. bridges, culverts, barns) for nesting
- Nests are typically made of mud and grass and attached to the side of a structure or on a flat edge.
- Nests are cup-shaped.

Similar Species

- Cliff Swallow (*Petrochelidon pyrrhonot*) has similar colouration but lacks the forked tail and has a distinctive pale rump patch, collar and forehead patch. Also builds mud nests in similar areas but nests are almost enclosed with a small entry/exit hole.
- Tree Swallow (*Tachycineta bicolor*) are a bright white from below with glossy blue-green upperparts and only a slightly forked tail.

What to do if found

If a Barn Swallow is found within the construction area, the following procedure must be followed:

- If possible take a photo.
- Ensure species is protected from construction activities.
- Report all sightings to your supervisor

Barn Swallow

Barn Swallow at Nest

Barn Swallow Perching

Cliff Swallow – note the lack of a forked tail and distinctive collar, forehead patch and rump patch

Adult Tree Swallow

Photo Credits: Ontario Ministry of Natural Resources and Forestry, Mike Wolosinecky
Date Fact Sheet Was Created/Revised: August 7, 2013 Rev. April 12, 2018
References: Ontario Ministry of Natural Resources and Forestry, Species At Risk Public Registry

DILLON CONSULTING

Similar species: Common gartersnake

Butler's Gartersnake

Thamnophis butleri

Provincial Status: **Endangered**
National Status: **Endangered**

Colour	• Yellow to orange stripes running lengthwise on dark brown-black background. • Chin and belly are yellowish
Distinctive Features	• Yellow to orange stripes on dark brown-black background. • Tiny head.
Typical Size	Measures between 25 to 57 cm in length.
Other	• Moves quickly through long grasses. • Non-venomous snake. • Looks similar to the common gartersnake, red-sided gartersnake and ribbonsnake. • These species have larger heads and more pronounced neck than Butler's. • Feeds on leeches and earthworms.

Habitat

- Prefers open, moist habitats, such as dense grasslands and old fields, with small wetlands.
- Inhabits burrows made by small mammals and crayfish for hibernation, these sites are called hibernacula.
- Also commonly found in rock piles or old stone walls.

What to do if found

If a Butler's Gartersnake is found within the Project Area, the following procedure must be followed:

- If possible take a photo.
- Ensure species is protected from construction activities.
- Report all sightings to the supervisor.

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Photo Credits: Ontario Ministry of Natural Resources and Forestry
Date Fact Sheet Was Created/Revised: Rev. April 12, 2018
References: Ontario Ministry of Natural Resources and Forestry, Species At Risk Public Registry

Eastern Foxsnake

Elaphe gloydi

Carolinian Population

Provincial Status: **Threatened**

Federal Status: **Endangered**

Colour	• Head is brown to reddish in colour with no distinct pattern or markings. • Body is yellowish brown with dark blotches down the back and along each side. • Juveniles have a dark line in front of the eyes and extending from the eye to the angle of the jaw.
Distinctive Features	The yellow background with dark brown blotches is unique among blotched-pattern snakes.
Typical Size	Typically 91-137cm long (36”-54”).
Other	When alarmed it can vibrate its tail, resembling a rattlesnake.

Habitat

- Wide variety of habitats including hedgerows, marshes and woodland areas; usually found near water.
- Basking and shelter sites include brush piles, table rock, tree stumps, etc.
- Nest sites include rotting cavities of downed trees, decaying vegetation piles, rodent burrows and hay piles.
- From late October until April they hibernate in burrows, limestone bedrock fissures, canals, old wells or building foundations.

Other Information

- Other similar blotched-pattern snakes include Massasauga, Milksnake, Eastern Hog-nosed Snake, Northern Watersnake, juvenile Blue Racer and juvenile Gray Ratsnake.

What to do if found

If an Eastern Foxsnake is found within the Project Area, the following procedure must be followed:

- If possible take a photo.
- Ensure species is protected from construction activities.
- Report all sightings to the supervisor.

DILLON CONSULTING

Photo Credits: Ontario Ministry of Natural Resources and Forestry
Date Fact Sheet Was Created/Revised: April 10, 2018
References: Ontario Ministry of Natural Resources and Forestry, Species At Risk Public Registry

Appendix B

Ministry of Tourism Culture and Sport Checklists

Ontario

Ministry of Tourism, Culture and Sport

Programs & Services Branch
401 Bay Street, Suite 1700
Toronto ON M7A 0A7

Criteria for Evaluating Archaeological Potential

A Checklist for the Non-Specialist

The **purpose of the checklist** is to determine:

- if a property(ies) or project area may contain archaeological resources i.e., have archaeological potential
- it includes all areas that may be impacted by project activities, including – but not limited to:
  - the main project area
  - temporary storage
  - staging and working areas
  - temporary roads and detours

Processes covered under this checklist, such as:

- *Planning Act*
- *Environmental Assessment Act*
- *Aggregates Resources Act*
- *Ontario Heritage Act* – Standards and Guidelines for Conservation of Provincial Heritage Properties

Archaeological assessment

If you are not sure how to answer one or more of the questions on the checklist, you may want to hire a licensed consultant archaeologist (see page 4 for definitions) to undertake an archaeological assessment.

The assessment will help you:

- identify, evaluate and protect archaeological resources on your property or project area
- reduce potential delays and risks to your project

Note: By law, archaeological assessments **must** be done by a licensed consultant archaeologist. Only a licensed archaeologist can assess – or alter – an archaeological site.

What to do if you:

- **find an archaeological resource**

  If you find something you think may be of archaeological value during project work, you must – by law – stop all activities immediately and contact a licensed consultant archaeologist

  The archaeologist will carry out the fieldwork in compliance with the *Ontario Heritage Act* [s.48(1)].

- **unearth a burial site**

  If you find a burial site containing human remains, you must immediately notify the appropriate authorities (i.e., police, coroner's office, and/or Registrar of Cemeteries) and comply with the *Funeral, Burial and Cremation Services Act*.

Other checklists

Please use a separate checklist for your project, if:

- you are seeking a Renewable Energy Approval under Ontario Regulation 359/09 – separate checklist
- your Parent Class EA document has an approved screening criteria (as referenced in Question 1)

Please refer to the Instructions pages when completing this form.

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Project or Property Name

Sylvestre Drive Sanitary Sewer Extension

Project or Property Location (upper and lower or single tier municipality)

Town of Tecumseh, Essex County

Proponent Name

Town of Tecumseh

Proponent Contact Information

Phil Bartnik, P.Eng., PMP, Manager of Engineering Services, 519-735-2184 ext 148, pbartnik@tecumseh.ca

Screening Questions

	Yes	No
1. Is there a pre-approved screening checklist, methodology or process in place?	☐	☑

If Yes, please follow the pre-approved screening checklist, methodology or process.

If No, continue to Question 2.

	Yes	No
2. Has an archaeological assessment been prepared for the property (or project area) and been accepted by MTCS?	☐	☑

If Yes, do **not** complete the rest of the checklist. You are expected to follow the recommendations in the archaeological assessment report(s).

The proponent, property owner and/or approval authority will:

- summarize the previous assessment
- add this checklist to the project file, with the appropriate documents that demonstrate an archaeological assessment was undertaken e.g., MTCS letter stating acceptance of archaeological assessment report

The summary and appropriate documentation may be:

- submitted as part of a report requirement e.g., environmental assessment document
- maintained by the property owner, proponent or approval authority

If No, continue to Question 3.

	Yes	No
3. Are there known archaeological sites on or within 300 metres of the property (or the project area)?	☐	☑
4. Is there Aboriginal or local knowledge of archaeological sites on or within 300 metres of the property (or project area)?	☐	☑
5. Is there Aboriginal knowledge or historically documented evidence of past Aboriginal use on or within 300 metres of the property (or project area)?	☐	☑
6. Is there a known burial site or cemetery on the property or adjacent to the property (or project area)?	☐	☑
7. Has the property (or project area) been recognized for its cultural heritage value?	☐	☑

If Yes to any of the above questions (3 to 7), do **not** complete the checklist. Instead, you need to hire a licensed consultant archaeologist to undertake an archaeological assessment of your property or project area.

If No, continue to question 8.

	Yes	No
8. Has the entire property (or project area) been subjected to recent, extensive and intensive disturbance?	☑	☐

If Yes to the preceding question, do **not** complete the checklist. Instead, please keep and maintain a summary of documentation that provides evidence of the recent disturbance.

An archaeological assessment is not required.

If No, continue to question 9.

	Yes	No
9. Are there present or past water sources within 300 metres of the property (or project area)?	☐	☑

If Yes, an archaeological assessment is required.

If No, continue to question 10.

	Yes	No
10. Is there evidence of two or more of the following on the property (or project area)?	☐	☑

- elevated topography
- pockets of well-drained sandy soil
- distinctive land formations
- resource extraction areas
- early historic settlement
- early historic transportation routes

If Yes, an archaeological assessment is required.

If No, there is low potential for archaeological resources at the property (or project area).

The proponent, property owner and/or approval authority will:

- summarize the conclusion
- add this checklist with the appropriate documentation to the project file

The summary and appropriate documentation may be:

- submitted as part of a report requirement e.g., under the *Environmental Assessment Act, Planning Act* processes
- maintained by the property owner, proponent or approval authority

Instructions

Please have the following available, when requesting information related to the screening questions below:

- a clear map showing the location and boundary of the property or project area
  - large scale and small scale showing nearby township names for context purposes
- the municipal addresses of all properties within the project area
- the lot(s), concession(s), and parcel number(s) of all properties within a project area

In this context, the following definitions apply:

- **consultant archaeologist** means, as defined in Ontario regulation as an archaeologist who enters into an agreement with a client to carry out or supervise archaeological fieldwork on behalf of the client, produce reports for or on behalf of the client and provide technical advice to the client. In Ontario, these people also are required to hold a valid professional archaeological licence issued by the Ministry of Tourism, Culture and Sport.
- **proponent** means a person, agency, group or organization that carries out or proposes to carry out an undertaking or is the owner or person having charge, management or control of an undertaking.

1. Is there a pre-approved screening checklist, methodology or process in place?

An existing checklist, methodology or process may be already in place for identifying archaeological potential, including:

- one prepared and adopted by the municipality e.g., archaeological management plan
- an environmental assessment process e.g., screening checklist for municipal bridges
- one that is approved by the Ministry of Tourism, Culture and Sport under the Ontario government's Standards & Guidelines for Conservation of Provincial Heritage Properties [s. B.2.]

2. Has an archaeological assessment been prepared for the property (or project area) and been accepted by MTCS?

Respond 'yes' to this question, if all of the following are true:

- an archaeological assessment report has been prepared and is in compliance with MTCS requirements
  - a letter has been sent by MTCS to the licensed archaeologist confirming that MTCS has added the report to the Ontario Public Register of Archaeological Reports (Register)
- the report states that there are no concerns regarding impacts to archaeological sites

Otherwise, if an assessment has been completed and deemed compliant by the MTCS, and the ministry recommends further archaeological assessment work, this work will need to be completed.

For more information about archaeological assessments, contact:

- approval authority
- proponent
- consultant archaeologist
- Ministry of Tourism, Culture and Sport at archaeology@ontario.ca

3. Are there known archaeological sites on or within 300 metres of the property (or project area)?

MTCS maintains a database of archaeological sites reported to the ministry.

For more information, contact MTCS Archaeological Data Coordinator at archaeology@ontario.ca.

4. Is there Aboriginal or local knowledge of archaeological sites on or within 300 metres of the property?

Check with:

- Aboriginal communities in your area
- local municipal staff

They may have information about archaeological sites that are not included in MTCS' database.

Other sources of local knowledge may include:

- property owner
- local heritage organizations and historical societies
- local museums
- municipal heritage committee
- published local histories

5. Is there Aboriginal knowledge or historically documented evidence of past Aboriginal use on or within 300 metres of the property (or property area)?

Check with:

- Aboriginal communities in your area
- local municipal staff

Other sources of local knowledge may include:

- property owner
- local heritage organizations and historical societies
- local museums
- municipal heritage committee
- published local histories

6. Is there a known burial site or cemetery on the property or adjacent to the property (or project area)?

For more information on known cemeteries and/or burial sites, see:

- Cemeteries Regulation Unit, Ontario Ministry of Consumer Services – for database of registered cemeteries
- Ontario Genealogical Society (OGS) – to locate records of Ontario cemeteries, both currently and no longer in existence; cairns, family plots and burial registers
- Canadian County Atlas Digital Project – to locate early cemeteries

In this context, 'adjacent' means 'contiguous', or as otherwise defined in a municipal official plan.

7. Has the property (or project area) been recognized for its cultural heritage value?

There is a strong chance there may be archaeological resources on your property (or immediate area) if it has been listed, designated or otherwise identified as being of cultural heritage value by:

- your municipality
- Ontario government
- Canadian government

This includes a property that is:

- designated under *Ontario Heritage Act* (the OHA), including:
  - individual designation (Part IV)
  - part of a heritage conservation district (Part V)
  - an archaeological site (Part VI)
- subject to:
  - an agreement, covenant or easement entered into under the OHA (Parts II or IV)
  - a notice of intention to designate (Part IV)
  - a heritage conservation district study area by-law (Part V) of the OHA
- listed on:
  - a municipal register or inventory of heritage properties
  - Ontario government's list of provincial heritage properties
  - Federal government's list of federal heritage buildings
- part of a:
  - National Historic Site
  - UNESCO World Heritage Site
- designated under:
  - *Heritage Railway Station Protection Act*
  - *Heritage Lighthouse Protection Act*
- subject of a municipal, provincial or federal commemorative or interpretive plaque.

To determine if your property or project area is covered by any of the above, see:

- Part A of the MTCS Criteria for Evaluating Potential for Built Heritage and Cultural Heritage Landscapes

Part VI – Archaeological Sites

Includes five sites designated by the Minister under Regulation 875 of the Revised Regulation of Ontario, 1990 (Archaeological Sites) and 3 marine archaeological sites prescribed under Ontario Regulation 11/06.

For more information, check Regulation 875 and Ontario Regulation 11/06.

8. Has the entire property (or project area) been subjected to recent extensive and intensive ground disturbance?

Recent: after-1960

Extensive: over all or most of the area

Intensive: thorough or complete disturbance

Examples of ground disturbance include:

- quarrying
- major landscaping – involving grading below topsoil
- building footprints and associated construction area
  - where the building has deep foundations or a basement
- infrastructure development such as:
  - sewer lines
  - gas lines
  - underground hydro lines
  - roads
  - any associated trenches, ditches, interchanges. **Note**: this applies only to the excavated part of the right-of-way; the remainder of the right-of-way or corridor may not have been impacted.

A ground disturbance does **not** include:

- agricultural cultivation
- gardening
- landscaping

Site visits

You can typically get this information from a site visit. In that case, please document your visit in the process (e.g., report) with:

- photographs
- maps
- detailed descriptions

If a disturbance isn't clear from a site visit or other research, you need to hire a licensed consultant archaeologist to undertake an archaeological assessment.

9. Are there present or past water bodies within 300 metres of the property (or project area)?

Water bodies are associated with past human occupations and use of the land. About 80-90% of archaeological sites are found within 300 metres of water bodies.

Present

- Water bodies:
  - primary - lakes, rivers, streams, creeks
  - secondary - springs, marshes, swamps and intermittent streams and creeks
- accessible or inaccessible shoreline, for example:
  - high bluffs
  - swamps
  - marsh fields by the edge of a lake
  - sandbars stretching into marsh

Water bodies not included:

- man-made water bodies, for example:
  - temporary channels for surface drainage
  - rock chutes and spillways
  - temporarily ponded areas that are normally farmed
  - dugout ponds
- artificial bodies of water intended for storage, treatment or recirculation of:
  - runoff from farm animal yards
  - manure storage facilities
  - sites and outdoor confinement areas

Past

Features indicating past water bodies:

- raised sand or gravel beach ridges – can indicate glacial lake shorelines
- clear dip in the land – can indicate an old river or stream
- shorelines of drained lakes or marshes
- cobble beaches

You can get information about water bodies through:

- a site visit
- aerial photographs
- 1:10,000 scale Ontario Base Maps - or equally detailed and scaled maps.

10. Is there evidence of two or more of the following on the property (or project area)?

- elevated topography
- pockets of well-drained sandy soil
- distinctive land formations
- resource extraction areas
- early historic settlement
- early historic transportation routes

- **Elevated topography**

  Higher ground and elevated positions - surrounded by low or level topography - often indicate past settlement and land use.

  Features such as eskers, drumlins, sizeable knolls, plateaus next to lowlands, or other such features are a strong indication of archaeological potential.

  Find out if your property or project area has elevated topography, through:

  - site inspection
  - aerial photographs
  - topographical maps

- **Pockets of well-drained sandy soil, especially within areas of heavy soil or rocky ground**

  Sandy, well-drained soil - in areas characterized by heavy soil or rocky ground - may indicate archaeological potential

  Find out if your property or project area has sandy soil through:

  - site inspection
  - soil survey reports

- **Distinctive land formations**

  Distinctive land formations include – but are not limited to:

  - waterfalls
  - rock outcrops
  - rock faces
  - caverns
  - mounds, etc.

  They were often important to past inhabitants as special or sacred places. The following sites may be present – or close to – these formations:

  - burials
  - structures
  - offerings
  - rock paintings or carvings

  Find out if your property or project areas has a distinctive land formation through:

  - a site visit
  - aerial photographs
  - 1:10,000 scale Ontario Base Maps - or equally detailed and scaled maps.

- **Resource extraction areas**

  The following resources were collected in these extraction areas:

  - food or medicinal plants e.g., migratory routes, spawning areas, prairie
  - scarce raw materials e.g., quartz, copper, ochre or outcrops of chert
  - resources associated with early historic industry e.g., fur trade, logging, prospecting, mining

  Aboriginal communities may hold traditional knowledge about their past use or resources in the area.

- **Early historic settlement**

  Early Euro-Canadian settlement include – but are not limited to:

  - early military or pioneer settlement e.g., pioneer homesteads, isolated cabins, farmstead complexes
  - early wharf or dock complexes
  - pioneers churches and early cemeteries

  For more information, see below – under the early historic transportation routes.

- **Early historic transportation routes -** such as trails, passes, roads, railways, portage routes, canals.

  For more information, see:

  - historical maps and/or historical atlases
    - for information on early settlement patterns such as trails (including Aboriginal trails), monuments, structures, fences, mills, historic roads, rail corridors, canals, etc.
    - Archives of Ontario holds a large collection of historical maps and historical atlases
    - digital versions of historic atlases are available on the Canadian County Atlas Digital Project
  - commemorative markers or plaques such as local, provincial or federal agencies
  - municipal heritage committee or other local heritage organizations
    - for information on early historic settlements or landscape features (e.g., fences, mill races, etc.)
    - for information on commemorative markers or plaques

Evaluating Archaeological Potential Screening

MTCS Criteria for Evaluating Archaeological Potential		Sources of Information	Comments
(1)	Is there a pre-approved screening checklist, methodology or process in place?	N/A	No. The screening process is being undertaken as a part of a Schedule B Class Environmental Assessment.
(2)	Has an archaeological assessment been prepared for the property (or the project area) and been accepted by the MTCS?	Communication with the Archaeology Program Unit at the Ministry of Tourism, Culture and Sport (MTCS).	Communication with the Archaeology Program Unit at the Ministry of Tourism, Culture and Sport (MTCS) indicated that archaeological assessments have not been prepared for the area within 1km of the Study Area.
(3)	Are there known archaeological sites on or within 300m of the property (or project area)?	Communication with the Archaeology Program Unit at the MTCS.	Communication with the Archaeology Program Unit at the Ministry of Tourism, Culture and Sport (MTCS) indicated that there are no known archaeological sites within 1km of the Study Area.
(4)	Is there Aboriginal knowledge or historically documented evidence of past Aboriginal use on or within 300m of the property (or project area)?	Letters and phone calls were circulated to the following Aboriginal communities to introduce them to the project and asking them to provide input: • Caldwell First Nation • Chippewas of Aamjiwaang First Nation • Chippewas of Kettle& Stoney Point First Nation • Chippewas of the Thames First Nation • Moravian of the Thames First Nation • Walpole Island First Nation • Metis Nation of Ontario • Southern First Nation Secretariat	No input regarding archaeological potential was received.
(5)	Is there known Aboriginal knowledge or historically documented evidence of past Aboriginal use on or within 300m of the property (or project area)?	Letters and phone calls were circulated to the following Aboriginal communities to introduce them to the project and asking them to provide input: • Caldwell First Nation • Chippewas of Aamjiwaang First Nation • Chippewas of Kettle& Stoney Point First Nation • Chippewas of the Thames First Nation • Moravian of the Thames First Nation • Walpole Island First Nation • Metis Nation of Ontario • Southern First Nation Secretariat	No input regarding archaeological potential was received.

MTCS Criteria for Evaluating Archaeological Potential		Sources of Information	Comments
(6)	Is there a known burial site or cemetery on the property or adjacent to the property (or project area)?	Internet search of properties in the vicinity of the project area. Canada Gen Web Cemetery Project: http://cemetery.canadagenweb.org/map	A review of the Canada Gen Web Cemetery Project confirmed that there are no known burial sites or cemeteries within the project area.
(7)	Has the property (or project area) been recognized for its cultural heritage value?	MTCS *Criteria for Evaluating Potential for Built Heritage and Cultural Heritage Landscapes*	The MTCS *Criteria for Evaluating Potential for Built Heritage and Cultural Heritage Landscapes* has been completed. The study area is not recognized for its cultural heritage value.
(8)	Has the property (or project area) been subjected to recent, extensive and intensive disturbance?	Desktop review of aerial mapping and field visits to the study area.	A review of the study area confirmed that most of the project area has been subjected to recent, extensive and intensive disturbance with the exception of an agricultural field in the northeast portion of the study area. The anticipated area of impact has is alongside associated construction areas for buildings or adjacent to ditches within the municipal road right of way. No further screening for archaeological potential is required.

Sunstrum, Mary <msunstrum@dillon.ca>

Request for Archaeology Information - Town of Tecumseh, Sylvestre Drive

von Bitter, Robert (MTCS) <Robert.vonBitter@ontario.ca> Mon, Sep 24, 2018 at 12:21 PM
To: "msunstrum@dillon.ca" <msunstrum@dillon.ca>

Mary,

No reported archaeological sites are showing up within 1 km of this project.

Regards,

Robert von Bitter

Robert von Bitter

Archaeological Data Co-Ordinator

Archaeology Program Unit|Programs and Services Branch

Ministry of Tourism, Culture and Sport

401 Bay Street Suite 1700

Toronto, Ontario M7A 0A7

416-314-7161

Robert.vonBitter@ontario.ca

From: Archaeology (MTCS)
Sent: September-17-18 12:54 PM
To: von Bitter, Robert (MTCS)
Subject: FW: Request for Archaeology Information - Town of Tecumseh, Sylvestre Drive

From: Sunstrum, Mary [mailto:msunstrum@dillon.ca]
Sent: September 17, 2018 12:31 PM
To: Archaeology (MTCS); 176843
Subject: Request for Archaeology Information - Town of Tecumseh, Sylvestre Drive

Good morning!

The Town of Tecumseh is proposing to extend sanitary sewers on Sylvestre Drive to service a portion of the Sylvestre Industrial Park Area that is generally located on Sylvestre Drive, south of Jamsyl Drive and west of Manning Road. Dillon was retained to complete the Schedule B Municipal Class Environmental Assessment.

As a part of the EA, Dillon is conducting a self-screening in Criteria for Evaluating Archaeological Potential for the Ministry of Tourism, Culture and Sport.

We are trying to determine through the self-screening process if further archaeological investigation is required. Would you be able to advise if there are any known archaeological sites within 300 m of the project Study Area? A map of the Study Area is provided below.

Thank you,

Mary

–

Mary Sunstrum
Dillon Consulting Limited
130 Dufferin Avenue Suite 1400
London, Ontario, N6A 5R2

T - 519.438.1288 ext. 1282
F - 519.672.8209
MSunstrum@dillon.ca
www.dillon.ca

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Ontario

Ministry of Tourism, Culture and Sport

Programs & Services Branch
401 Bay Street, Suite 1700
Toronto ON M7A 0A7

Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes

A Checklist for the Non-Specialist

The **purpose of the checklist** is to determine:

- if a property(ies) or project area:
  - is a recognized heritage property
  - may be of cultural heritage value
- it includes all areas that may be impacted by project activities, including – but not limited to:
  - the main project area
  - temporary storage
  - staging and working areas
  - temporary roads and detours

Processes covered under this checklist, such as:

- *Planning Act*
- *Environmental Assessment Act*
- *Aggregates Resources Act*
- *Ontario Heritage Act* – Standards and Guidelines for Conservation of Provincial Heritage Properties

Cultural Heritage Evaluation Report (CHER)

If you are not sure how to answer one or more of the questions on the checklist, you may want to hire a qualified person(s) (see page 5 for definitions) to undertake a cultural heritage evaluation report (CHER).

The CHER will help you:

- identify, evaluate and protect cultural heritage resources on your property or project area
- reduce potential delays and risks to a project

Other checklists

Please use a separate checklist for your project, if:

- you are seeking a Renewable Energy Approval under Ontario Regulation 359/09 – separate checklist
- your Parent Class EA document has an approved screening criteria (as referenced in Question 1)

Please refer to the Instructions pages for more detailed information and when completing this form.

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Project or Property Name

Sylvestre Drive Sanitary Sewer Extension

Project or Property Location (upper and lower or single tier municipality)

Town of Tecumseh, Essex County

Proponent Name

Town of Tecumseh

Proponent Contact Information

Phil Bartnik, P.Eng., PMP, Manager of Engineering Services, 519-735-2184 ext 148, pbartnik@tecumseh.ca

Screening Questions

	Yes	No
1. Is there a pre-approved screening checklist, methodology or process in place?	☐	☑

If Yes, please follow the pre-approved screening checklist, methodology or process.

If No, continue to Question 2.

Part A: Screening for known (or recognized) Cultural Heritage Value

	Yes	No
2. Has the property (or project area) been evaluated before and found **not** to be of cultural heritage value?	☐	☑

If Yes, do **not** complete the rest of the checklist.

The proponent, property owner and/or approval authority will:

- summarize the previous evaluation and
- add this checklist to the project file, with the appropriate documents that demonstrate a cultural heritage evaluation was undertaken

The summary and appropriate documentation may be:

- submitted as part of a report requirement
- maintained by the property owner, proponent or approval authority

If No, continue to Question 3.

	Yes	No
3. Is the property (or project area):		
a. identified, designated or otherwise protected under the *Ontario Heritage Act* as being of cultural heritage value?	☐	☑
b. a National Historic Site (or part of)?	☐	☑
c. designated under the *Heritage Railway Stations Protection Act*?	☐	☑
d. designated under the *Heritage Lighthouse Protection Act*?	☐	☑
e. identified as a Federal Heritage Building by the Federal Heritage Buildings Review Office (FHBRO)?	☐	☑
f. located within a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site?	☐	☑

If Yes to any of the above questions, you need to hire a qualified person(s) to undertake:

- a Cultural Heritage Evaluation Report, if a Statement of Cultural Heritage Value has not previously been prepared or the statement needs to be updated

If a Statement of Cultural Heritage Value has been prepared previously and if alterations or development are proposed, you need to hire a qualified person(s) to undertake:

- a Heritage Impact Assessment (HIA) – the report will assess and avoid, eliminate or mitigate impacts

If No, continue to Question 4.

Part B: Screening for Potential Cultural Heritage Value

	Yes	No
4. Does the property (or project area) contain a parcel of land that:		
a. is the subject of a municipal, provincial or federal commemorative or interpretive plaque?	☐	☑
b. has or is adjacent to a known burial site and/or cemetery?	☐	☑
c. is in a Canadian Heritage River watershed?	☑	☐
d. contains buildings or structures that are 40 or more years old?	☑	☐

Part C: Other Considerations

	Yes	No
5. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area):		
a. is considered a landmark in the local community or contains any structures or sites that are important in defining the character of the area?	☐	☑
b. has a special association with a community, person or historical event?	☐	☑
c. contains or is part of a cultural heritage landscape?	☐	☑

If Yes to one or more of the above questions (Part B and C), there is potential for cultural heritage resources on the property or within the project area.

You need to hire a qualified person(s) to undertake:

- a Cultural Heritage Evaluation Report (CHER)

If the property is determined to be of cultural heritage value and alterations or development is proposed, you need to hire a qualified person(s) to undertake:

- a Heritage Impact Assessment (HIA) – the report will assess and avoid, eliminate or mitigate impacts

If No to all of the above questions, there is low potential for built heritage or cultural heritage landscape on the property.

The proponent, property owner and/or approval authority will:

- summarize the conclusion
- add this checklist with the appropriate documentation to the project file

The summary and appropriate documentation may be:

- submitted as part of a report requirement e.g. under the *Environmental Assessment Act, Planning Act* processes
- maintained by the property owner, proponent or approval authority

Instructions

Please have the following available, when requesting information related to the screening questions below:

- a clear map showing the location and boundary of the property or project area
  - large scale and small scale showing nearby township names for context purposes
- the municipal addresses of all properties within the project area
- the lot(s), concession(s), and parcel number(s) of all properties within a project area

For more information, see the Ministry of Tourism, Culture and Sport's Ontario Heritage Toolkit or Standards and Guidelines for Conservation of Provincial Heritage Properties.

In this context, the following definitions apply:

- **qualified person(s)** means individuals – professional engineers, architects, archaeologists, etc. – having relevant, recent experience in the conservation of cultural heritage resources.
- **proponent** means a person, agency, group or organization that carries out or proposes to carry out an undertaking or is the owner or person having charge, management or control of an undertaking.

1. Is there a pre-approved screening checklist, methodology or process in place?

An existing checklist, methodology or process may already be in place for identifying potential cultural heritage resources, including:

- one endorsed by a municipality
- an environmental assessment process e.g. screening checklist for municipal bridges
- one that is approved by the Ministry of Tourism, Culture and Sport (MTCS) under the Ontario government's Standards & Guidelines for Conservation of Provincial Heritage Properties [s.B.2.]

Part A: Screening for known (or recognized) Cultural Heritage Value

2. Has the property (or project area) been evaluated before and found not to be of cultural heritage value?

Respond 'yes' to this question, if all of the following are true:

A property can be considered not to be of cultural heritage value if:

- a Cultural Heritage Evaluation Report (CHER) - or equivalent - has been prepared for the property with the advice of a qualified person and it has been determined not to be of cultural heritage value and/or
- the municipal heritage committee has evaluated the property for its cultural heritage value or interest and determined that the property is not of cultural heritage value or interest

A property may need to be re-evaluated, if:

- there is evidence that its heritage attributes may have changed
- new information is available
- the existing Statement of Cultural Heritage Value does not provide the information necessary to manage the property
- the evaluation took place after 2005 and did not use the criteria in Regulations 9/06 and 10/06

Note: Ontario government ministries and public bodies [prescribed under Regulation 157/10] may continue to use their existing evaluation processes, until the evaluation process required under section B.2 of the Standards & Guidelines for Conservation of Provincial Heritage Properties has been developed and approved by MTCS.

To determine if your property or project area has been evaluated, contact:

- the approval authority
- the proponent
- the Ministry of Tourism, Culture and Sport

3a. Is the property (or project area) identified, designated or otherwise protected under the *Ontario Heritage Act* as being of cultural heritage value e.g.:

i. designated under the *Ontario Heritage Act*

- individual designation (Part IV)
- part of a heritage conservation district (Part V)

Individual Designation – Part IV

A property that is designated:

- by a municipal by-law as being of cultural heritage value or interest [s.29 of the *Ontario Heritage Act*]
- by order of the Minister of Tourism, Culture and Sport as being of cultural heritage value or interest of provincial significance [s.34.5]. **Note**: To date, no properties have been designated by the Minister.

Heritage Conservation District – Part V

A property or project area that is located within an area designated by a municipal by-law as a heritage conservation district [s. 41 of the *Ontario Heritage Act*].

For more information on Parts IV and V, contact:

- municipal clerk
- Ontario Heritage Trust
- local land registry office (for a title search)

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ii. subject of an agreement, covenant or easement entered into under Parts II or IV of the *Ontario Heritage Act*

An agreement, covenant or easement is usually between the owner of a property and a conservation body or level of government. It is usually registered on title.

The primary purpose of the agreement is to:

- preserve, conserve, and maintain a cultural heritage resource
- prevent its destruction, demolition or loss

For more information, contact:

- Ontario Heritage Trust - for an agreement, covenant or easement [clause 10 (1) (c) of the *Ontario Heritage Act*]
- municipal clerk – for a property that is the subject of an easement or a covenant [s.37 of the *Ontario Heritage Act*]
- local land registry office (for a title search)

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iii. listed on a register of heritage properties maintained by the municipality

Municipal registers are the official lists - or record - of cultural heritage properties identified as being important to the community.

Registers include:

- all properties that are designated under the *Ontario Heritage Act* (Part IV or V)
- properties that have not been formally designated, but have been identified as having cultural heritage value or interest to the community

For more information, contact:

- municipal clerk
- municipal heritage planning staff
- municipal heritage committee

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iv. subject to a notice of:

- intention to designate (under Part IV of the *Ontario Heritage Act*)
- a Heritage Conservation District study area bylaw (under Part V of the *Ontario Heritage Act*)

A property that is subject to a **notice of intention to designate** as a property of cultural heritage value or interest and the notice is in accordance with:

- section 29 of the *Ontario Heritage Act*
- section 34.6 of the *Ontario Heritage Act.* **Note**: To date, the only applicable property is Meldrum Bay Inn, Manitoulin Island. [s.34.6]

An area designated by a municipal by-law made under section 40.1 of the *Ontario Heritage Act* as a **heritage conservation district study area**.

For more information, contact:

- municipal clerk – for a property that is the subject of notice of intention [s. 29 and s. 40.1]
- Ontario Heritage Trust

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v. included in the Ministry of Tourism, Culture and Sport's list of provincial heritage properties

Provincial heritage properties are properties the Government of Ontario owns or controls that have cultural heritage value or interest.

The Ministry of Tourism, Culture and Sport (MTCS) maintains a list of all provincial heritage properties based on information provided by ministries and prescribed public bodies. As they are identified, MTCS adds properties to the list of provincial heritage properties.

For more information, contact the MTCS Registrar at registrar@ontario.ca.

3b. Is the property (or project area) a National Historic Site (or part of)?

National Historic Sites are properties or districts of national historic significance that are designated by the Federal Minister of the Environment, under the *Canada National Parks Act*, based on the advice of the Historic Sites and Monuments Board of Canada.

For more information, see the National Historic Sites website.

3c. Is the property (or project area) designated under the *Heritage Railway Stations Protection Act*?

The *Heritage Railway Stations Protection Act* protects heritage railway stations that are owned by a railway company under federal jurisdiction. Designated railway stations that pass from federal ownership may continue to have cultural heritage value.

For more information, see the Directory of Designated Heritage Railway Stations.

3d. Is the property (or project area) designated under the *Heritage Lighthouse Protection Act*?

The *Heritage Lighthouse Protection Act* helps preserve historically significant Canadian lighthouses. The Act sets up a public nomination process and includes heritage building conservation standards for lighthouses which are officially designated.

For more information, see the Heritage Lighthouses of Canada website.

3e. Is the property (or project area) identified as a Federal Heritage Building by the Federal Heritage Buildings Review Office?

The role of the Federal Heritage Buildings Review Office (FHBRO) is to help the federal government protect the heritage buildings it owns. The policy applies to all federal government departments that administer real property, but not to federal Crown Corporations.

For more information, contact the Federal Heritage Buildings Review Office.

See a directory of all federal heritage designations.

3f. Is the property (or project area) located within a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site?

A UNESCO World Heritage Site is a place listed by UNESCO as having outstanding universal value to humanity under the Convention Concerning the Protection of the World Cultural and Natural Heritage. In order to retain the status of a World Heritage Site, each site must maintain its character defining features.

Currently, the Rideau Canal is the only World Heritage Site in Ontario.

For more information, see Parks Canada – World Heritage Site website.

Part B: Screening for potential Cultural Heritage Value

4a. Does the property (or project area) contain a parcel of land that has a municipal, provincial or federal commemorative or interpretive plaque?

Heritage resources are often recognized with formal plaques or markers.

Plaques are prepared by:

- municipalities
- provincial ministries or agencies
- federal ministries or agencies
- local non-government or non-profit organizations

For more information, contact:

- municipal heritage committees or local heritage organizations – for information on the location of plaques in their community
- Ontario Historical Society's Heritage directory – for a list of historical societies and heritage organizations
- Ontario Heritage Trust – for a list of plaques commemorating Ontario's history
- Historic Sites and Monuments Board of Canada – for a list of plaques commemorating Canada's history

4b. Does the property (or project area) contain a parcel of land that has or is adjacent to a known burial site and/or cemetery?

For more information on known cemeteries and/or burial sites, see:

- Cemeteries Regulations, Ontario Ministry of Consumer Services – for a database of registered cemeteries
- Ontario Genealogical Society (OGS) – to locate records of Ontario cemeteries, both currently and no longer in existence; cairns, family plots and burial registers
- Canadian County Atlas Digital Project – to locate early cemeteries

In this context, adjacent means contiguous or as otherwise defined in a municipal official plan.

4c. Does the property (or project area) contain a parcel of land that is in a Canadian Heritage River watershed?

The Canadian Heritage River System is a national river conservation program that promotes, protects and enhances the best examples of Canada's river heritage.

Canadian Heritage Rivers must have, and maintain, outstanding natural, cultural and/or recreational values, and a high level of public support.

For more information, contact the Canadian Heritage River System.

If you have questions regarding the boundaries of a watershed, please contact:

- your conservation authority
- municipal staff

4d. Does the property (or project area) contain a parcel of land that contains buildings or structures that are 40 or more years old?

A 40 year 'rule of thumb' is typically used to indicate the potential of a site to be of cultural heritage value. The approximate age of buildings and/or structures may be estimated based on:

- history of the development of the area
- fire insurance maps
- architectural style
- building methods

Property owners may have information on the age of any buildings or structures on their property. The municipality, local land registry office or library may also have background information on the property.

Note: 40+ year old buildings or structure do not necessarily hold cultural heritage value or interest; their age simply indicates a higher potential.

A building or structure can include:

- residential structure
- farm building or outbuilding
- industrial, commercial, or institutional building
- remnant or ruin
- engineering work such as a bridge, canal, dams, etc.

For more information on researching the age of buildings or properties, see the Ontario Heritage Tool Kit Guide Heritage Property Evaluation.

Part C: Other Considerations

5a. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) is considered a landmark in the local community or contains any structures or sites that are important to defining the character of the area?

Local or Aboriginal knowledge may reveal that the project location is situated on a parcel of land that has potential landmarks or defining structures and sites, for instance:

- buildings or landscape features accessible to the public or readily noticeable and widely known
- complexes of buildings
- monuments
- ruins

5b. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) has a special association with a community, person or historical event?

Local or Aboriginal knowledge may reveal that the project location is situated on a parcel of land that has a special association with a community, person or event of historic interest, for instance:

- Aboriginal sacred site
- traditional-use area
- battlefield
- birthplace of an individual of importance to the community

5c. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) contains or is part of a cultural heritage landscape?

Landscapes (which may include a combination of archaeological resources, built heritage resources and landscape elements) may be of cultural heritage value or interest to a community.

For example, an Aboriginal trail, historic road or rail corridor may have been established as a key transportation or trade route and may have been important to the early settlement of an area. Parks, designed gardens or unique landforms such as waterfalls, rock faces, caverns, or mounds are areas that may have connections to a particular event, group or belief.

For more information on Questions 5.a., 5.b. and 5.c., contact:

- Elders in Aboriginal Communities or community researchers who may have information on potential cultural heritage resources. Please note that Aboriginal traditional knowledge may be considered sensitive.
- municipal heritage committees or local heritage organizations
- Ontario Historical Society's "Heritage Directory" - for a list of historical societies and heritage organizations in the province

An internet search may find helpful resources, including:

- historical maps
- historical walking tours
- municipal heritage management plans
- cultural heritage landscape studies
- municipal cultural plans

Information specific to trails may be obtained through Ontario Trails.

Cultural Heritage Screening

MTCS Cultural Heritage Requirements		Sources of Information	Comments
(3a.i)	A property (or project area) that is identified, designated or otherwise protected under the *Ontario Heritage Act* as being of cultural heritage value.	Town of Tecumseh Municipal Register of Cultural Heritage Properties (accessed September 17, 2018) Ontario Heritage Trust (September 14, 2018) Town of Tecumseh (September 17, 2018)	A search of the Town's Municipal Register of Cultural Heritage Properties and communication with the Ontario Heritage Trust and the Town of Tecumseh confirmed that the site is not identified, designated or otherwise protected under the *Ontario Heritage Act*.
(3a.i)	A property that is designated by a municipal by-law as being of cultural heritage value or interest.	Town of Tecumseh Municipal Register of Cultural Heritage Properties (accessed September 17, 2018) Town of Tecumseh (September 17, 2018)	A search of the Town's Municipal Register of Cultural Heritage Properties and communication with the Town of Tecumseh confirmed that the site is not designated by a municipal by-law as being of heritage value or interest.
(3a.ii)	A property or project area that is subject of an agreement, covenant or easement entered into under Parts II or IV of the *Ontario Heritage Act*.	Town of Tecumseh Municipal Register of Cultural Heritage Properties (accessed September 17, 2018) Ontario Heritage Trust (September 14, 2018) Town of Tecumseh (September 17, 2018)	A search of the Town's Municipal Register of Cultural Heritage Properties and communication with the Ontario Heritage Trust and the Town of Tecumseh confirmed that the property or project area is not the subject of an agreement, covenant or easement entered into under Parts II or IV of the *Ontario Heritage Act*.
(3a. iii)	A property listed on a register of heritage properties maintained by the municipality.	Town of Tecumseh Municipal Register of Cultural Heritage Properties (accessed September 17, 2018) Town of Tecumseh (September 17, 2018)	A search of the Town's Municipal Register of Cultural Heritage Properties and communication with the Town of Tecumseh confirmed that the property is not listed on the register of heritage properties.
(3a.iv)	A property that is subject to a notice of intention to designate the property as property of cultural heritage value or interest of provincial significance has been given in accordance with section 29 or 34.6 of the *Ontario Heritage Act*.	Town of Tecumseh Municipal Register of Cultural Heritage Properties (accessed September 17, 2018) Ontario Heritage Trust (September 14, 2018) Town of Tecumseh (September 17, 2018)	A search of the Town's Municipal Register of Cultural Heritage Properties and communication with the Ontario Heritage Trust and the Town of Tecumseh confirmed that the property is not subject to a notice of intention to designate the property as property of cultural heritage value or interest of provincial significance has been given in accordance with section 29 or 34.6 of the *Ontario Heritage Act*.
(3a.iv)	A property that is part of an area designated by a municipal by-law made under section 41 of the *Ontario Heritage Act* as a heritage conservation district.	Town of Tecumseh Municipal Register of Cultural Heritage Properties (accessed September 17, 2018) Ontario Heritage Trust (September 14, 2018) Town of Tecumseh (September 17, 2018)	A search of the Town's Municipal Register of Cultural Heritage Properties and communication with the Ontario Heritage Trust and the Town of Tecumseh confirmed that the property is not part of an area designated by a municipal by-law made under section 41 of the *Ontario Heritage Act* as a heritage conservation district.
(3a.v)	A property that is included in the Ministry of Tourism, Culture and Sport's list of provincial heritage properties.	Town of Tecumseh Municipal Register of Cultural Heritage Properties (accessed September 17, 2018) Town of Tecumseh (September 17, 2018)	A search of the Town's Municipal Register of Cultural Heritage Properties and communication with the Town of Tecumseh indicated that the property is not included in the Ministry of Tourism, Culture and Sport's list of provincial heritage properties.

MTCS Cultural Heritage Requirements		Sources of Information	Comments
(3b)	A property (or project area) that is (or is part of) a National Historic Site.	National Historic Sites website (Parks Canada): www.pc.gc.ca/en/lhn-nhs/recherche-search	A search of the National Historic Sites website did not identify any Parks, Historic Sites, or Marine Conservation Areas at or around the project location.
(3c)	A property (or project area) designated under the *Heritage Railway Stations Protection Act*.	Directory of Designated Heritage Railway Stations: https://www.pc.gc.ca/en/culture/clmhc-hsmbc/pat-her/gar-sta	A search of the Directory of Designated Heritage Railway Stations did not identify a property designated under the *Heritage Railway Stations Protection Act*.
(3d)	A property (or project area) designated under the *Heritage Lighthouse Protection Act*.	Heritage Lighthouses of Canada: https://www.pc.gc.ca/en/lhn-nhs/pp-hl	A search of the Designated and Petitioned Lighthouses list did not identify a property designated under the *Heritage Lighthouse Protection Act.*
(3e)	A property (or project area) identified as a Federal Heritage Building by the Federal Heritage Buildings Review Office.	Federal Heritage Buildings Review Office: https://www.pc.gc.ca/en/culture/beefp-fhbro	A search of the Directory of Heritage Designations did not identify any properties identified as Federal Heritage Buildings within or around the project location.
(3f)	A property (or project area) located within a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site.	UNESCO World Heritage List: http://whc.unesco.org/en/list/	A search of the UNESCO World Heritage List did not identify any world heritage sites within or around the project location.
(4a)	A property (or project area) that contains a parcel of land that has a municipal, provincial or federal commemorative plaque.	Ontario Heritage Trust Plaque Database: http://www.heritagetrust.on.ca/en/index.php/online-plaque-guide Ontario Historical Society: https://www.ontariohistoricalsociety.ca/index.php/services/heritage-directory	A search of the Ontario Heritage Trust Database and Ontario Historical Society did not identify any commemorative plaques within the study area.
(4b)	A property (or project area) that contains a parcel of land that has or is adjacent to a known burial site and/or cemetery.	Internet search of properties in the vicinity of the project area. Canada Gen Web Cemetery Project: http://cemetery.canadagenweb.org/map	An internet search indicated that there are no cemeteries or burial sites in the vicinity of the project area.
(4c)	A property (or project area) that contains a parcel of land that is in a Canadian Heritage River watershed.	Canadian Heritage River System: http://chrs.ca/the-rivers/detroit/	A search of the Canadian Heritage River System website indicated that the property is located within a Canadian Heritage River watershed.
(4d)	A property (or project area) that contains a parcel of land that contains buildings or structures more than 40 years old.	N/A	There will be no impacts to buildings or structures that are more than 40 years old.

MTCS Cultural Heritage Requirements		Sources of Information	Comments
(5a)	Local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) is considered a landmark in the local community or contains any structures or sites that are important to defining the character in the area.	Letters and phone calls were circulated to the following Aboriginal communities to introduce them to the project and asking them to provide input: • Caldwell First Nation • Chippewas of Aamjiwaang First Nation • Chippewas of Kettle& Stoney Point First Nation • Chippewas of the Thames First Nation • Moravian of the Thames First Nation • Walpole Island First Nation • Metis Nation of Ontario • Southern First Nation Secretariat	No input regarding cultural heritage was received.
(5b)	Local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) has a special association with a community, person or historical event.	Letters and phone calls were circulated to Aboriginal communities to introduce them to the project and request input.	No input regarding cultural heritage was received.
(5c)	Local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) contains or is part of a cultural heritage landscape.	Letters and phone calls were circulated to Aboriginal communities to introduce them to the project and request input.	No input regarding cultural heritage was received.

Sunstrum, Mary <msunstrum@dillon.ca>

Cultural Heritage Information Request - Sylvestre Drive Sanitary Sewer Extension, Town of Tecumseh

Thomas Wicks <Thomas.Wicks@heritagetrust.on.ca> Fri, Sep 14, 2018 at 12:17 PM
To: "Sunstrum, Mary" <msunstrum@dillon.ca>

Hi Mary,

Thank you for your email regarding the Town of Tecumseh's proposed extension of sanitary sewers on Sylvestre Drive and any heritage properties near the site. This query is related to the EA that Dillon is doing on behalf of the municipality.

I have reviewed the location indicated on the plan provided and I can confirm that the Trust does not have any property interests in, or adjacent to, this subject area. If you would like to confirm if there are any properties designated under the *Ontario Heritage Act* within the project area you may wish to speak directly with the municipality or search by address using the heritage register at this link: https://www.heritagetrust.on.ca/en/oha/basic-search . For inquiries related to any properties included in the Ministry of Tourism, Culture and Sport's list of provincial heritage properties I would encourage you to speak to a heritage advisor at that Ministry.

Thank you for involving the Trust in your review.

Thomas

Thomas Wicks | Heritage Planner

Ontario Heritage Trust

10 Adelaide Street East, Toronto, Ontario, Canada M5C 1J3

Telephone: 416-314-5972

Email: thomas.wicks@heritagetrust.on.ca

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From: Sunstrum, Mary [mailto:msunstrum@dillon.ca]
Sent: September-12-18 3:44 PM
To: Thomas Wicks; 176843; Sabrina Stanlake
Subject: Cultural Heritage Information Request - Sylvestre Drive Sanitary Sewer Extension, Town of Tecumseh

[Quoted text hidden]

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Sunstrum, Mary <msunstrum@dillon.ca>

Cultural Heritage Information Request - Sylvestre Drive Sanitary Sewer Extension

Laura Moy <lmoy@tecumseh.ca> Mon, Sep 17, 2018 at 4:13 PM
To: "msunstrum@dillon.ca" <msunstrum@dillon.ca>
Cc: Chad Jeffery <cjeffery@tecumseh.ca>, Christina Hebert <chebert@tecumseh.ca>

Good afternoon, Mary

Attached is a Listing of Potential Heritage Properties and a Heritage Property Listing. The Heritage Property Listing contains those properties that have been designated and those properties that may warrant some form of heritage conservation, recognition and/or long term protection, such as a designation.

The attached lists have recently been reviewed and updated by the Town's Heritage Committee and will be considered by Tecumseh Council for approval at their next regular meeting schedule for Tuesday, September 25, 2018.

If you have any questions, or need anything further, please feel free to contact me.

Best regards,

Laura Moy

From: Chad Jeffery
Sent: September-17-18 11:08 AM
To: Laura Moy <lmoy@tecumseh.ca>
Subject: FW: Cultural Heritage Information Request - Sylvestre Drive Sanitary Sewer Extension

From: Sunstrum, Mary [mailto:msunstrum@dillon.ca]
Sent: September-12-18 3:52 PM
To: Chad Jeffery; 176843; Sabrina Stanlake
Subject: Cultural Heritage Information Request - Sylvestre Drive Sanitary Sewer Extension

Good morning!

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2 attachments

Heritage Property Listing_Potential Sites.pdf
31K

Heritage Property Listing_Designated_Listing.pdf
11K

Town of Tecumseh - Potential Heritage Sites						
Name of Property	**Street #**	**Street Name**	**Year**	**Architecture/Style**	**Sector**	**Brief Description**
Bell Tower at St. Anne Highschool	12050	Arbour Street			Tecumseh	Original Bell from old St. Antoine School on Lesperance Road Moved to the new St. Anne's High School, Lakeshore
Seguin House	424	Brighton Road	circa 1870s		St. Clair Beach	Believed to be the old Trolley Station (Sandwich Windsor and Amherstburg) Demolished [2017]
St. Mary's Cemetery	12048	County Road 34		Cemetery	Maidstone	One of the oldest cemeteries in Tecumseh
St. Mary's Church	12032	County Road 34		Church	Maidstone	
Victoria Public School	12433	Dillon Dr.	1926	School	Tecumseh	Built on donated Clapp property and named after Ms. Clapp
Sandwich South Council	2725	Highway #3	1893		Oldcastle	Location where first Sandwich South Council Photo was taken
St. Stephen's Church	5280	Howard	1871		Oldcastle	Old Anglican Church
St. Stephen's Cemetery	5280	Howard			Oldcastle	One of the oldest cemeteries in Tecumseh
Lachance Farm	11945	Intersection Road			Sandwich South	One of the last remaining Francophone Farms in Tecumseh
Old Power House - Bonduelle Property	1192	Lacasse Blvd.		Art Deco	Tecumseh	Southwest corner on Tecumseh and Lacasse Blvd, the original canning factory power building
Poisson House	1115	Lacasse Boulevard	early 1920s	Arts and Crafts	Tecumseh	Home of Dr. Poisson, 1st Mayor of Tecumseh
Lacasse Park	590	Lacasse Boulevard	1947		Tecumseh	Clapp property purchased in 1923 by the Town, Baseball Diamond and grand stands (1949) feature
Tecumseh United Church	333	Lacasse Boulevard	1960s	Hilicker Architect	Tecumseh	Vernacular house of worship
Lessard House	1715	Lesperance Road			Sandwich South	Vernacular Farm House
Desjardin House	1722	Lesperance Road			Sandwich South	Greek Revival
Aspect House	1107	Lesperance Road			Tecumseh	Craftsman style old homestead
St. Anne's Cemetery	1521	Lesperance Road	1830s		Tecumseh	Original cemetery in Tecumseh
Lemire House	1061	Lesperance Road			Tecumseh	Original area homestead
Sylvestre House		Manning Road			St. Clair Beach	Original area homestead
Lakewood Golf Course	13451	Riverside Drive			St. Clair Beach	Privately Owned by Bob Oakman & Bert Manning. Later became St. Clair Beach's public Golf Course
Lakewood Club House	13400	Riverside Drive	1919		St. Clair Beach	Privately Owned by Bob Oakman & Bert Manning
Beach Grove Club House	14134	Riverside Drive	1921		St. Clair Beach	First Club House Wooden - Originally built in 1921, burned down in 1927. Rebuilt in 1929 as a private Club.
Original St. Clair Beach Home	13749	Riverside Drive				
Severs Property	13158	Riverside Dr.				Residence used for rum running

Beach Grove Pro Shop	115	Kensington				The Pro Shop was moved from its original location at the corner of Kensington Blvd and Riverside Drive to its current location on Kensington Blvd overlooking Beach Grove
St. Mark's by the Lake Anglican Church	150	St. Marks	1953		St. Clair Beach	First Church in St. Clair Beach Area surrounding property was originally an orchard, owned by Florence and Ethel Wellwood. The property was then donated to the Church.
D.M. Eagle School Site	14194	Tecumseh Road	1928		St. Clair Beach	In 1946 became DM Eagle School, prior to it was a little white building used as a one room school house. Named after David Melville Eagle who taught both English and French in the area.
Old Cada Homestead	14242	Tecumseh Road			St. Clair Beach	Original farmhouse of the Cada Family
Robinet Hardware	12222	Tecumseh Road	1870s		Tecumseh	
Lacasse House	12125	Tecumseh Road			Tecumseh	
Tecumseh Area Historical Society site including log cabin and sheds	12350	Tecumseh Road			Tecumseh	Site of the original railroad yard and current location of Lesperance Log Cabin (circa 1799)
Campeau House	11941	Tecumseh Road			Tecumseh	Blue House on Tecumseh Road Prior to St. Anne's Chapel, the building was used as a place to hold mass
Stone Porch House	11961	Tecumseh Road		Arts and Crafts	Tecumseh	Residence used for rum running
Log Cabin	6455	Walker Road			Sandwich South	
Lachance House		William Street			Tecumseh	Building near track field
Baillargeon House	13028	Tecumseh Road			Tecumseh	
Baillargeon House	13754	Tecumseh Road			Tecumseh	
Grain Elevator					Maidstone	
Mrs. John's General Store					Maidstone	
Old Seven Ponds					Sandwich South	E.C. Row near Shawnee
	5680	Highway #3		Century Farm	Sandwich South	
	1826	South Talbot		Century Farm	Sandwich South	
	6277	Walker Road		Century Farm	Sandwich South	
		Snake Lane		Century Farm	Sandwich South	
				Century Farm	Sandwich South	
				Century Farm	Sandwich South	
	4327	11th Conc		Century Farm	Sandwich South	
	4890	County Rd 8		Century Farm	Sandwich South	
	6519	Malden Rd		Century Farm	Sandwich South	
	4320	11th Conc Rd		Century Farm	Sandwich South	
	5660	S. Talbot		Century Farm	Sandwich South	
	1988	Cty Rd 8		Century Farm	Sandwich South	
	6744	11th Conc		Century Farm	Sandwich South	

Town of Tecumseh Municipal Register of Cultural Heritage Properties							
Designated Property							
Street Name	**Street #**	**Name of Property**	**Year**	**Architecture/Style**	**Sector**	**History**	**By-law**
Banwell Road, Plan 85 South Half of Lot 10		Banwell Cemetery	2013		Sandwich South	Smith Cemetery	May 14, 2013 By-law No. 2013-20

Listing							Council Approval
Properties of Cultural Heritage Value or Interest							Date
Street Name	**Street #**	**Name of Property**	**Year**	**Architecture/Style**	**Sector**	**History**	**Resolution #**
Tecumseh Road	12233	St. Anne's Church			Tecumseh		Aug 28/07 RCM 293/07
Tecumseh Road	12320	Baillargeon House			Tecumseh		Aug 28/07 RCM 293/07
Lacasse Boulevard	590	Lacasse Park	1947		Tecumseh	Clapp property purchased in 1923 by the Town, Baseball Diamond and grand stands (1949) feature	
Lesperance Road	1521	St. Anne's Cemetery	1830s		Tecumseh	Original cemetery in Tecumseh	
Tecumseh Road	12350	Tecumseh Area Historical Society [including Log Cabin & Sheds]			Tecumseh	Site of the original railroad yard and current location of Lesperance Log Cabin (circa 1799)	

Appendix C

Geotechnical Recommendation

wood.

Final Geotechnical Investigation Report

Sylvestre Drive Sanitary Sewer Extension and Road Reconstruction
Tecumseh, Ontario
Project No.: SWW187219

Prepared for:

The Corporation of the Town of Tecumseh
917 Lesperance Road, Tecumseh, Ontario, N8N 1W9

10-Sep-18

Final Geotechnical Investigation Report

Sylvestre Drive Sanitary Sewer Extension and Road Reconstruction
Sylvestre Drive, Tecumseh, Ontario

Project No.: SWW187219

Prepared for:

The Corporation of the Town of Tecumseh
917 Lesperance Road, Tecumseh, Ontario, N8N 1W9
Attention: Mr. Phil Bartnik, Manager Engineering Services

Prepared by:

Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited
11865 County Road 42, Tecumseh, Ontario, N8N 2M1

10-Sep-18

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1.0 Introduction

Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited ("Wood") was retained by The Corporation of the Town of Tecumseh (the "Client") to conduct a geotechnical investigation for the proposed road reconstruction and sanitary sewer extension of Sylvestre Drive from Manning Road to Jamsyl Drive located in the Town of Tecumseh, Ontario.

The geotechnical investigation was carried out based on the Wood's Proposal No.: PSWW187063, dated May 10, 2018 and subsequent authorization to proceed received from the client.

The project area is shown on the Key Plan, Figure 1. The purpose of this investigation was to provide subsurface soil information at the test locations, and based on this information, to provide geotechnical recommendations pertaining to the reconstruction of the pavement structure and installation of sanitary sewers.

The scope of the fieldwork for this geotechnical investigation included advancement of a total of five (5) boreholes within the roadway.

This report contains the findings of Wood's geotechnical investigation, together with recommendations and comments. The recommendations and comments are based on factual information and intended only for use by design engineers. The number of boreholes may not be sufficient to determine all of the factors that may affect construction methods and costs. Subsurface and groundwater conditions between and beyond the boreholes may differ from those encountered at the borehole locations, and conditions may become apparent during construction that could not be detected or anticipated at the time of the site investigation.

The anticipated construction conditions are also discussed, but only to the extent that they may influence the design decisions. The feasible construction methods, however, express our opinion and are not intended to direct contractors on how they carry out construction. Contractors should also be aware that the data and their interpretation presented in this report may not be sufficient to assess all factors that may have effect upon construction and should conduct the necessary investigation to satisfy themselves with the completeness of the site information.

This report has been prepared with the assumption that the design will be in accordance with good engineering practices, applicable regulations of jurisdictional authorities, and applicable standards and regulations. Further, the recommendations and opinions in this report are applicable only to the proposed project. Environmental and hydrogeological considerations were not included in the scope of work for this geotechnical investigation. The limitations of this report, as discussed in detail in Appendix A, constitute an integral part of this report.

There should be an ongoing liaison with Wood during both the design and construction phases of this project to ensure that the recommendations in this report have been interpreted and implemented. Also, any further clarification and/or elaboration are needed concerning the geotechnical aspects of this project, Wood should be contacted immediately.

2.0 Site Description and Geological Background

2.1 Site Description

The site was situated on Sylvestre Drive from Manning Road to Jamsyl Drive in the Town of Tecumseh, Ontario. The roadway runs west from Manning Road and then North towards Jamsyl Drive. Sylvestre Drive is a two-lane rural road. The Site was in a commercial area of Tecumseh, Ontario.

It is understood that the project will include extending of the existing sanitary sewers, along with full road reconstruction. A new sanitary sewer will be installed along Sylvestre Drive from Manning Road westerly to the bend of Sylvestre Drive. From the information provided by the client, the depth of the new sanitary sewer is estimated to be approximately 1.5 m nearest Manning Road and 3.8 m at the far westerly end of the new sewer.

2.2 Geological Background

The physiography of the site is located within a geological formation known as the Essex Clay Plain (Chapman, L.J., and Putnam, D.F., 1984: Physiography of Southern Ontario; Map P.2715) which is an extensive clay plain with little relief and poor natural drainage. The plain is underlain by a relatively thick deposit of glaciolacustrine silty clay to clayey silt till. Occasional embedded pockets and lenses of sand and silt are present within the overburden clay. The clay deposit is underlain by limestone bedrock of the Middle Devonian Dundee Formation (Geological Highway Map South Ontario, Ontario Geological Survey, Map P.2441, 1979) at a depth of 30 m to 40 m, based on available drift thickness mapping (Ontario Geological Survey, Preliminary Map P.3255, 1994).

3.0 Investigation Program

3.1 Field Work

The scope of the fieldwork for this geotechnical investigation included three (3) boreholes to a depth of 1.5 m below existing grade, one (1) borehole to a depth of 3.0 m below existing grade and one (1) borehole to a depth of 6.1 m below existing grade along Sylvestre Drive to assess the existing pavement structure thickness and subsurface conditions. The location and depth of the boreholes were determined by Wood.

The locations of the boreholes from the geotechnical investigation are shown on Figure 2. The coordinates of the boreholes are shown on the Record of Borehole sheets attached in Appendix B. The coordinates at the borehole locations were recorded in the field using a hand-held GPS device with a horizontal accuracy of 3 m.

The borehole drilling program for the investigation was carried out on July 3, 2018. The boreholes were advanced using a self-propelled drill equipped with hollow stem augers and conventional soil sampling tools. Soil samples were taken at frequent intervals of depth following the Standard Penetration Test (ASTM D1586) procedure.

The drilling was conducted under the full-time supervision of Wood's engineering staff who directed the drilling and sampling operation, and logged the boreholes.

After completion of the boreholes, the augers were extracted, the boreholes were inspected for groundwater and caving, then backfilled using bentonite pellets and grout slurry in accordance with Ontario Reg. 903.

All samples were field logged, placed in airtight containers, and transported to Wood's Windsor laboratory for further examination and testing.

3.2 Laboratory Testing

Natural moisture content tests were carried out in accordance with ASTM D2216 on all the recovered soil samples. One selected native soil sample was tested for the grain size distribution and Atterberg limits, in accordance with ASTM D6913, ASTM D7928 and ASTM D4318. The test results are included in Appendix C.

4.0 Subsurface Conditions

4.1 Subsurface Soil Conditions

The boreholes were advanced within the travelled portion of the road, where underground utilities allowed. The following is a brief summary of the subsurface soil conditions encountered in the boreholes. The results of laboratory testing carried out on recovered samples are also shown on the Record of Borehole sheets in Appendix B. The results of the grain size analyses can be found in Appendix C.

Existing Pavement Structure – Tar & Chip, Concrete and Granular Base Fill Materials

Tar & Chip with underlying granular base fill was encountered at the ground surface of each borehole. The thickness of tar & chip in boreholes BH1 through BH5 ranged from 25 mm to 40 mm. Concrete was encountered below the tar & chip in boreholes BH1, BH2, BH4 and BH5 and had a thickness ranging from 180 mm to 380 mm at the test locations. A second layer of granular base was encountered below the concrete in borehole BH1. The thickness of pavement structure is listed in Table 1 below.

Table 1: Thickness of Existing Pavement Structure

Borehole Number	Thickness (mm)			
	Tar and Chip	Granular Base Fill (Layer 1)	Concrete	Granular Base Fill (Layer 2)
BH1	40	90	180	305
BH2	40	90	305	-
BH3	25	480	-	-
BH4	25	130	380	-
BH5	25	100	305	-

Silty Clay

Cohesive silty clay was encountered in all five boreholes. The cohesive materials were generally encountered underneath the concrete or fill at depths greater than 0.4 m below grade. The silty clay was mottled brown and grey to brown to grey in coloration. Boreholes BH1 was terminated in mottled brown and grey silty clay. Boreholes BH2, BH4, and BH5 were terminated in brown silty clay and borehole BH3 was terminated in grey silty clay. The mottled brown and grey silty clay ranged in depth from 0.4 m to 2.0 m below grade where penetrated. The moisture content of the mottled brown and grey silty clay ranged from 14% to 25%. Measured "N" values from Standard Penetration Test in the mottled brown and grey silty clay generally ranged from 4 to 11 blows per 0.3 m penetration, indicating a firm to stiff consistency. The brown silty clay ranged in depth from 1.4 m to 3.7 m where penetrated. The moisture content of the brown silty clay ranged from 12% to 15%. Measured "N" values from Standard Penetration Test in the brown silty clay generally ranged from 13 to 27 blows per 0.3 m penetration, indicating a stiff to very stiff consistency. The grey silty clay ranged in depth from 3.7 m to 6.6 m (termination depth). The moisture content of the grey silty clay ranged from 15% to 19%. Measured "N" values from Standard Penetration Test in the grey silty clay generally ranged from 6 to 10 blows per 0.3 m penetration, indicating a firm to stiff consistency. A single field vane shear testing was carried out

in borehole BH3 within the grey silty clay. The yielded undrained shear strength from the test was 70 kPa.

A grain size distribution analysis and Atterberg limits test were carried out on one grey silty clay sample. The results of these tests are included on the borehole log sheets and attached in Appendix C.

Table 2: Results of Grain Size Analysis and Atterberg Limits Test

Borehole No. / Sample No.	Sample Depth (m)	Grain Size Distribution				Atterberg Limits			USCS Modified Group Symbol
		Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit (W_L)	Plastic Limit (W_P)	Plasticity Index (I_P)	
BH3 / SA5	3.8 – 4.3	0.6	23.2	42.8	33.4	29.4	15.2	14.2	CL

4.2 Groundwater

Groundwater level observations and measurements in the boreholes, and in-situ moisture contents of recovered soil samples are presented on the Record of Borehole sheets.

The boreholes BH1 through BH5 were left open and remained dry for the relatively brief period between withdrawal of the augers and backfilling of the boreholes. Due to the low permeability of the clayey soil at the site, insufficient time had passed to allow stabilization of groundwater levels in the open boreholes.

Typically, the grey colour of the soils noted at a depth of 3.7 m below existing grade, is indicative of a permanent saturated condition, and therefore, fluctuation of the long-term groundwater should be anticipated near this depth level. However, during and after local precipitation events, 'perched' groundwater may accumulate in the fills and weathered clay near the ground surface above the relatively more impervious un-weathered silty clay. In addition, significant amounts of groundwater may be present in any fill materials around existing utilities that may be present. Perched groundwater may rise to the ground surface following precipitation and snowmelt. In the absence of an active, engineered drainage system, the design should assume possible temporary groundwater levels rising to the ground surface.

5.0 Discussion and Recommendations

5.1 General

It is understood that The Corporation of the Town of Tecumseh is planning to extend the existing sanitary sewers and reconstruct the roadway along Sylvestre Drive in Tecumseh, Ontario. The boreholes were all advanced to depths between 1.5 m and 6.6 m below ground surface. From the information provided by the Client, the depth of sanitary sewers is estimated to be approximately 1.5 m to 3.8 m below existing road grade.

5.2 Interpreted Soil Design Parameters

Based on the subsurface conditions encountered in the boreholes and the results of the laboratory testing, the following table summarizes the recommended soil parameters for design. The recommended unfactored properties were derived based on limited testing and semi-empirical correlations.

Table 3: Unfactored Soil Parameter Design Values

Soil	Bulk Unit Weight (kN/m^3)	Buoyant Unit Weight (kN/m^3)	Angle of Internal Friction, Phi (degrees)	Undrained Cohesion, C (kPa)
Undisturbed Firm Silty Clay	20.5	10.5	0	25-50
Undisturbed Stiff to Very Stiff Silty Clay	21.0	11.0	0	50-100

5.3 General Recommendations for Excavations and Sewer Trenching

Above the groundwater table, excavations can be made with conventional equipment and open cut methods where space requirements permit. It should be noted that the groundwater levels in the borehole logs represent only a momentary measurement and the actual levels may vary significantly with the prevalent weather.

Excavations must be carried out in accordance with Ontario Regulation 213/91 of the Occupational Health and Safety Act (OHSA) as amended. These regulations designate four broad classifications of soils to stipulate appropriate measures for excavation safety. The silty clay materials which will be generally encountered within the trenching excavations are classified as Type 3 above the water table and are downgraded to Type 4 soils below the water table. Excavations within Type 3 soils may be carried out with unsupported side-slopes not steeper than 1V:1H.

Alternatively, for the sanitary sewer excavation, a trench liner box could be used for temporary support of vertical excavations providing the natural deposits are properly dewatered where required.

5.4 Earth Pressures

A distinction should be made between short-term earth pressures on temporary excavation support structures, and long-term retaining structures against compacted backfill.

As a preliminary guideline, the temporary shoring structures should be verified for conventional uniform earth pressures of at least 0.35 Pz, (Pz, in kPa, is the overburden pressure corresponding to the depth 'z' of excavation below the ground surface). For the in-situ soils a conservative unit weight of 22 kN/m3 should be used. Surcharges at the ground surface should be added in accordance with applicable soil mechanics methods such as described in the Canadian Foundation Engineering Manual (CFEM).

For permanent structures, unfactored earth pressure coefficients and associated unit weights are presented in Table 4.

Table 4: Soil Parameters for Earth Pressure Calculations

Backfill Type	Coefficient of Earth Pressure at Active Case	Coefficient of Earth Pressure at Passive Case	Coefficient of Earth Pressure at Rest Case	Design Bulk Unit Weight (kN/m^3)	Friction Angle (degrees)
Select Crushed Limestone (Granular 'A') (*)	0.27 to 0.30	3.3 to 3.7	0.43 to 0.46	22	33 to 35
Well Graded Sand (Granular 'B', Type I) (*)	0.31 to 0.35	2.9 to 3.2	0.47 to 0.52	21	29 to 32
Site Generated Clayey Silt (**)	0.36 to 0.45	2.2 to 2.7	0.53 to 0.62	20.5	22 to 28

(*) All granular compacted to at least 98% Standard Proctor Maximum Dry Density (SPMDD)
(**) Compacted to at least 95% SPMDD

The design earth pressures in compacted backfill should be augmented with the dynamic effects of the compaction efforts, which typically are taken as a uniform 12 kPa pressure over the entire depth below grade where the calculated earth pressure based on the above earth pressure factors is less than 12 kPa.

Surcharges at the ground surface should be considered in all cases.

For the calculation of the long-term earth pressures, consideration should be given to using the submerged weight plus the hydrostatic pressures where the soil is below the groundwater table unless a permanent dewatering system is installed.

The above coefficients apply to simple cases of retaining structures (wall not higher than typically 4.5 m, horizontal ground surface of the backfill, non-frost susceptible backfill etc.). In case of more complex conditions, Coulomb based methods should be used as indicated in the Canadian Foundation Engineering Manual (CFEM).

5.5 Groundwater Control

Groundwater inflow into excavations in the clayey soils is expected to be low above the water table; however, significant 'perched' groundwater may be present within the fill and weathered materials. This would especially be true during and after local precipitation events. In this case, the inflow into excavations may become significant.

The soils identified are sensitive to disturbance by water. Groundwater and surface water run-off should be removed from excavations by means of pumping from strategically placed open sumps located within the excavation bottom but outside the zone of influence of any foundations. Based on the proposed depth of the new sanitary sewers, groundwater is not to be expected within the depth of the trench excavations and shafts.

In order to limit the effects of the ground seepage through the fill and surface water run off which may cause sloughing, the trenches should be excavated in short sections (2 to 4 pipe sections in length) and backfilled the same day. The trench length could be adjusted during construction based on soil and groundwater conditions, however, a maximum length of trench of 15 m to be open in advance is recommended on the OPSS 401.07.09.

If the trench base intersects saturated layers of fine sand and silt, basal instability by piping (boiling) can occur. Where encountered, the condition and extent of the wet layers of sand/silt should be assessed by boreholes and/or test pits before the excavation continues to the design trench base elevation.

5.6 Protection of Existing Structures

Adjacent to a vertically sided supported excavation, there are several zones in which movements of the surrounding soil may take place. It is recommended that the alignment and depths of existing utilities be checked relative to the proposed sewer trench(s). In general, if movement of existing utilities and other settlement sensitive elements is to be minimized, it will be necessary to carry out sewer construction in properly sheeted and braced excavations. If, however, some movement of the adjacent utilities can be tolerated, sewer installation within a prefabricated support system (trench liner box) is probably acceptable.

Longitudinal open sections of the trench(s) should be kept to a minimum and backfilling of the trench(s) should be carried out immediately behind the support system. Any utilities along the proposed route of the sewers should be continuously monitored during construction so that corrective action can be taken if significant ground movement is observed.

A number of existing utility lines will probably cross the proposed alignments. Where existing services are exposed during the excavation, suitable temporary or permanent support of these services should be provided consistent with the requirements of the respective utility company.

5.7 Pipe Bedding, Cover and Backfill

5.7.1 Standard Requirements

The bedding and backfill material should meet the manufacturer's specifications as well as the applicable Ontario Provincial Standard Specifications (OPSS) standards.

Applicable OPSS standards may include:

- OPSS 410 "Construction Specification for Sewer Pipe in Open Cuts";
- OPSS 514 "Construction Specification for Trenching, Backfilling, and Compacting";
- OPSS 517 "Construction Specification for Dewatering of Pipeline, Utility, and Associated Structure Excavation"; and

- OPSS 518 "Construction Specification for Control of Water".

5.7.2 Pipe Bedding and Cover

The depth of the pipe bedding should be a minimum of 150 mm; the pipe cover should be completed to at least 300 mm above the pipe crown. All bedding, clearance and cover materials should consist of Granular 'A' (OPSS 1010) compacted to 98% SPMDD in accordance with the OPSS 401 requirements. Granular material meeting the gradation specifications for sewer stone (equivalent to HL4 coarse aggregate per OPSS 1150) may also be used as bedding and cover material, however a non-woven geotextile should be used as a separation fabric between this material and the native soils. It is further recommended that, where used, the geotextile have a minimum overlap of 300 mm and the seams should be stitched to prevent separation of the geotextile at the seams.

Care should be exercised to avoid compaction methods that may damage the pipe. The placement and thickness of the granular bedding should also meet the pipe manufacturer's specifications.

5.7.3 Trench Backfilling

The project area is located within a deposit of silty clay. Therefore, the backfill material from 300 mm above the top of pipe to the pavement subgrade level can consist of compactable native material or imported Granular 'A' or 'B' Type I, and placed in lifts not exceeding 200 mm and compacted to 98% of SPMDD. However, it is understood that the preferred backfill material is imported granular material due to potential inconsistencies with native material for the roadway. Alternatively, the backfill material which forms the subgrade for the roadway can consist of 0-75 mm granular or approved recycled aggregate compacted to 98% SPMDD.

Consideration could be given to the reuse of the site generated soils from the existing pavement structure as general trench backfill. However, if this is to be considered, the excavated materials should be carefully sorted and stockpiled by type and any deleterious materials should be separated. Excavated granular material should meet the requirements of select subgrade material in OPSS 1010. Prior to use of these materials, the geotechnical consultant should inspect the stockpiled soil and take samples for testing. Depending upon the test results, the soils may be suitable for use as backfill material.

If imported granular soils, such as Granular 'B' Type I (OPSS 1010), are used as general trench backfill, the material should be placed in lifts not exceeding 200 mm and compacted to 98% of SPMDD. In the areas where the trench excavation underlies the roadway, it may be a good practice to backfill the trench below the road structure with excavated, compactable native inorganic material, at least within the upper frost zone (1.2 m below grade), to provide compatibility with similar native soils. If this technique is not undertaken, then frequent problems could arise with yearly differential frost heaving movements between the trench backfill and the adjacent native soils. Therefore, where the trench backfill within the depth of frost penetration differs from the native soils within the trench sides, frost tapers of not less than 10H:1V should be implemented to minimize the risk of differential seasonal movements.

5.8 Pavement Design

It is understood that new pavement construction for the entire width and length of the roadway section will be completed. Sylvestre Drive is considered to be an industrial road with a moderate heavy truck traffic on the roadway. The values provided in Table 5 are recommended as a minimum for use on the roadway.

Table 5: Pavement Design

Layer	Material	Recommended Minimum Thickness (mm)
Asphaltic Concrete	OPSS 1150 HL3 Surface Asphalt	40
	OPSS 1150 HL4 Base Asphalt	60
Granular Base	OPSS 1010 Granular 'A'	450

The existing tar and chip, any fill materials should be removed to the design subgrade level. If the road grades remain unchanged, the existing concrete should be removed from the entire width and length of the roadway. Any existing fill materials encountered in the subgrade should be proof rolled using a heavy steel drum roller. If granular materials are encountered, they should be proof rolled using a vibratory steel drum roller. If silty clay materials are encountered, they should be proof rolled using a non-vibratory steel drum roller. Based on the conditions encountered in the boreholes, site conditions may vary greatly and the Geotechnical Consultant should be contacted to inspect and provide recommendations for these conditions. Any soft or loose areas of the subgrade should be excavated and backfilled with approved site generated approved granular or imported granular placed and compacted to 98% SPMDD.

Consideration could be given to the reuse of the granular fill materials from the existing pavement structure as the new pavement base. However, if this is to be considered, the excavated materials should be carefully sorted and stockpiled by type and any deleterious materials should be separated. Excavated granular material should meet the requirements of select subgrade material in OPSS 1010. Prior to use of these materials, the geotechnical consultant should inspect the stockpiled soil and take samples for testing. Depending upon the test results, the granular soils may be suitable for use as backfill material.

The sub-grade material should be sloped so as to promote drainage and prevent the build-up and stagnation of pore water within the granular base. The Contractor should be prepared to conduct proof-rolling of the subgrade soils. For additional recommendation refer to Section 5.12 of this report.

All granular materials should be compacted to 100% SPMDD. The asphalt base course and surface course should be compacted between 92% and 96.5% of their respective Maximum Relative Densities obtained from the mix design.

If the construction is not carried out during dry weather conditions, it may be necessary to increase the recommended thicknesses of the pavement structure. Further, the proposed granular

thickness will not be sufficient to support construction traffic prior to the asphaltic concrete placement, and additional granular material may be required to support this traffic.

Wood note that the minimum pavement section above is not based on a detailed design, which would account for future growth of traffic and performance throughout its life cycle. Pavement performance and the 'life cycle' is dependent on the traffic load, quality of construction, frost protection, moisture of the base, sub-base and subgrade materials, maintenance of the asphalt during the life cycle, quality of materials etc.

5.9 Frost Depth

Wood recommends a depth of 1.2 m for frost protection as per OPSD 3090.101, (November 2010).

5.10 Drainage

To meet the design requirements for the pavement life, the pavement granular base should be well drained at all times. This can be accomplished by installing perforated subdrain pipes along both sides of the road, below the roadbed level, to ensure effective drainage in accordance with OPSD 216.021. The subdrain pipes should be surrounded by a minimum drainage zone of 20 mm size clear stone of minimum 150 mm thickness and wrapped in suitable non-woven geotextile to provide separation from the surrounding soil.

A minimum slope of 3% should be maintained for the subgrade, and a minimum slope of 2% should be maintained across the surface of the paved sections to ensure proper surface drainage.

5.11 Transition Treatments

At the limits of the project, a butt joint with the existing pavement is recommended. The butt joint between successive lifts of hot mix should be staggered a distance not less than 5 m in accordance with OPSS 313. No joint location should correspond with a joint location in any other layer, along the road.

5.12 Pavement Construction Considerations

The pavement structure maybe placed on a stable subgrade as confirmed by proof-roll inspections by a heavy roller in the presence of the Geotechnical Consultant. As indicated, any soft or loose spots revealed by the proof-rolling should be sub-excavated and replaced with approved site generated granular or imported Granular 'B' Type I (OPSS 1010). The sub-grade material should be sloped to promote drainage and prevent the build-up and stagnation of pore water within the granular base.

Where new fill is needed to raise the grade, or replace disturbed portions of the subgrade, imported granular fill conforming to the gradation requirements of OPSS Granular 'B' Type I (OPSS 1010) should be placed in thin lifts (maximum 150 mm thick) and compacted to 98% of SPMDD. The long-term performance of the pavement structure is dependent upon the sub-grade support conditions. Stringent construction control procedures must be maintained to ensure that uniform subgrade moisture and density conditions are achieved as much as practically possible where fill is placed and that the subgrade is not disturbed or weakened after it is exposed.

Control of surface water is a significant factor in achieving good pavement life. Grading adjacent to pavement area must be designed so that water is not allowed to pond adjacent to the outside edges of the pavement or curb.

The subgrade soils identified in this report are sensitive to disturbance from excessive exposure to construction traffic (vehicular and pedestrian). Once the excavations have been completed to design elevations, the Geotechnical Consultant should immediately inspect the subgrade soils. Upon approval, the subgrade soil should be protected from further exposure. Disturbance by construction traffic may compromise the bearing resistances of the soils and necessitate further excavation.

If construction is to be completed during the winter months additional care should be given to protecting any subgrade from freezing. No backfill materials shall be placed on frozen subgrade and all backfill shall be free of frozen materials.

6.0 Closure

The limitations of this report, as discussed in detail in Appendix A, constitute an integral part of this report. We recommend the Geotechnical Consultant be retained to review drawings and the intended methods of construction (if any) prior to implementation in order to assure conformance with the geotechnical restrictions and assumptions.

We trust this report is complete within the terms of our reference. However, should questions arise concerning this report, do not hesitate to contact us.

Sincerely,

Wood Environment & Infrastructure Solutions,
a Division of Wood Canada Limited

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Reviewed By:

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SEPT. 10/2018
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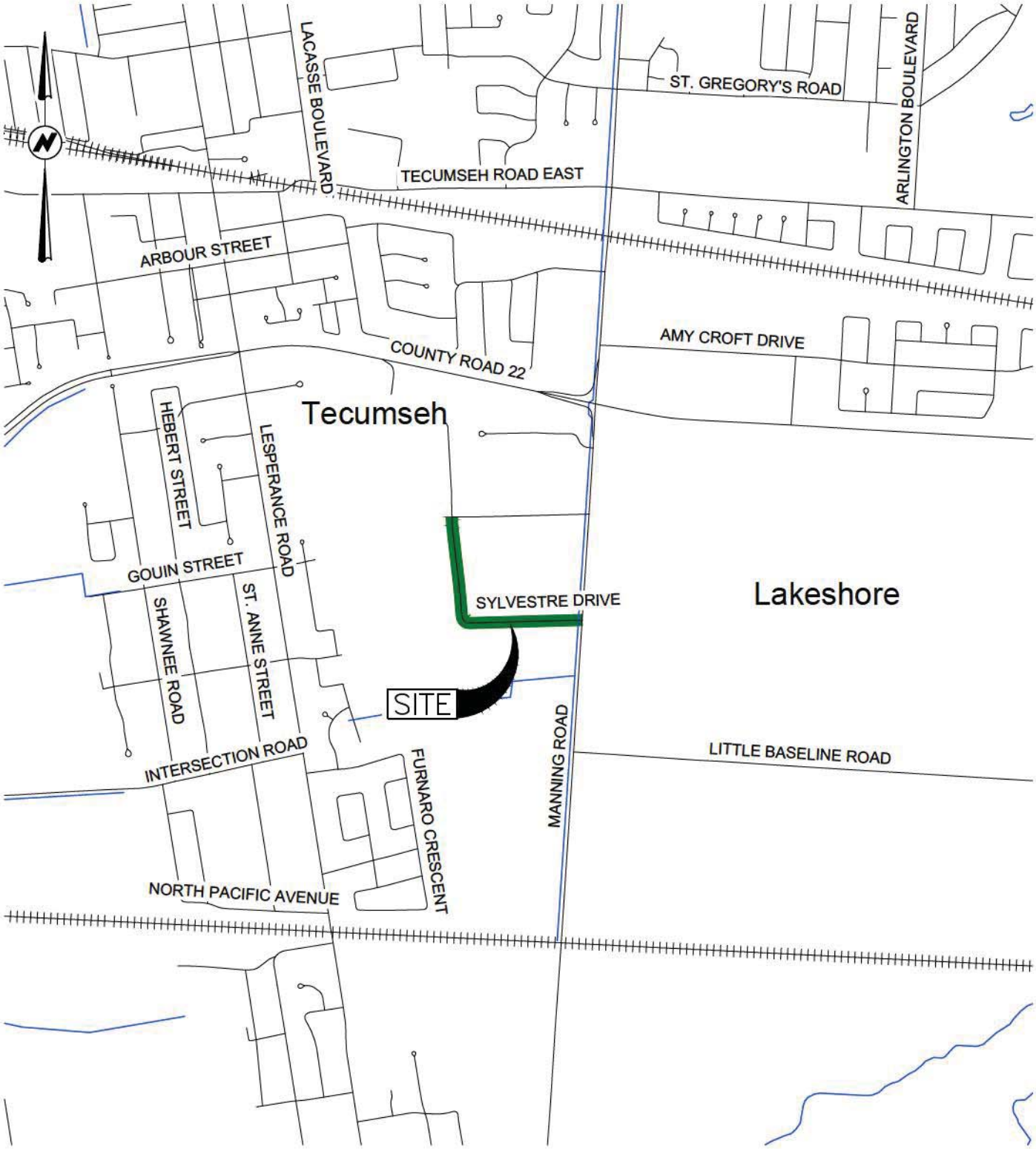
Figures



NOTES:
THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS REPORT No. SWW187219. ALL LOCATIONS ARE APPROXIMATE.

ORIGINAL PAPER SIZE: 8½ x 11.

REFERENCES:
CANMAP STREETFILES V2008.4.

The Corporation of the Town of Tecumseh 917 LESPERANCE ROAD TECUMSEH, ONTARIO, N8N 1W9	Town of Tecumseh Ontario · Canada	DWN BY: SJL CHK'D BY: SM DATUM: NAD83 PROJECTION: UTM Zone 17 SCALE: 1:20000	PROJECT: GEOTECHNICAL INVESTIGATION SANITARY SEWER EXTENSION AND ROAD RECONSTRUCTION SYLVESTRE DRIVE TECUMSEH, ONTARIO	DATE: AUG. 3, 2018 PROJECT No: SWW187219
Wood Environment & Infrastructure Solutions 11865 COUNTY ROAD 42 TECUMSEH, ONTARIO, N8N 2M1 519-735-2499	wood.		TITLE: KEY PLAN	REV No: 0 FIGURE No: 1

DATE PLOTTED: 8/3/2018 4:23:58 PM
FILE LOCATION: P:\2018\Geotechnical\Projects\SWW187219 - Town of Tecumseh - Sylvestre Drive Sanitary Sewer Extension\08_Drafting\AutoCAD files\SWW187219-R01001.dwg

0 10 50 100m

SCALE 1:2500

LEGEND:

BOREHOLE LOCATION

NOTES:
THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS REPORT No. SWW187219.

ALL LOCATIONS ARE APPROXIMATE.

ORIGINAL PAPER SIZE: $8\frac{1}{2}$ x 11.

REFERENCES:
2017 AERIAL PHOTOGRAPHS PROVIDED BY THE COUNTY OF ESSEX; CANMAP STREETFILES V2008.4.

The Corporation of the Town of Tecumseh 917 LESPERANCE ROAD TECUMSEH, ONTARIO, N8N 1W9	Town of Tecumseh Ontario · Canada	DWN BY: SJL CHK'D BY: SM	PROJECT: GEOTECHNICAL INVESTIGATION SANITARY SEWER EXTENSION AND ROAD RECONSTRUCTION SYLVESTRE DRIVE TECUMSEH, ONTARIO	DATE: AUG. 3, 2018 PROJECT No: SWW187219
Wood Environment & Infrastructure Solutions 11865 COUNTY ROAD 42 TECUMSEH, ONTARIO, N8N 2M1 519-735-2499	wood.	DATUM: NAD83 PROJECTION: UTM Zone 17 SCALE: 1:2500	TITLE: BOREHOLE LOCATION PLAN	REV No: 0 FIGURE No: 2

DATE PLOTTED: 8/3/2018 3:56:01 PM
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Appendix A

Report Limitations

REPORT LIMITATIONS

The conclusions and recommendations given in this report are based on information determined at the testhole locations. The information contained herein in no way reflects on the environmental aspects of the Project, unless otherwise stated. Subsurface and groundwater conditions between and beyond the testholes may differ from those encountered at the testhole locations, and conditions may become apparent during construction, which could not be detected or anticipated at the time of the site investigation. It is recommended practice that the Geotechnical Engineer be retained during the construction to confirm that the subsurface conditions across the site do not deviate materially from those encountered in the testholes.

The design recommendations given in this report are applicable only to the project described in the text, and then only if constructed substantially in accordance with the details stated in this report. Since all details of the design may not be known, we recommend that we be retained during the final design stage to verify that the design is consistent with our recommendations, and that assumptions made in our analysis are valid.

The comments made in this report relating to potential construction problems and possible methods of construction are intended only for the guidance of the designer. The number of testholes may not be sufficient to determine all the factors that may affect construction methods and costs. For example, the thickness of surficial topsoil or fill layers may vary markedly and unpredictably. The contractors bidding on this project or undertaking the construction should, therefore, make their own interpretation of the factual information presented and draw their own conclusions as to how the subsurface conditions may affect their work. This work has been undertaken in accordance with normally accepted geotechnical engineering practices. No other warranty is expressed or implied.

The benchmark and elevations mentioned in this report were obtained strictly for use by this office in the geotechnical design of the project, and should not be used by any other party for any other purpose.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Wood Environment & Infrastructure Solutions accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

Appendix B

Explanation of Record of Borehole Sheets and Record of Borehole Sheets BH1 to BH5

GENERAL REPORT NOTES

DEFINITIONS OF PENETRATION RESISTANCE

Standard penetration resistance 'N' – The number of blows required to advance a standard split spoon sampler 30 cm into the subsoil, driven by means of a 63.5 kg hammer falling freely a distance of 76 cm.

Dynamic penetration resistance – The number of blows required to advance a 50 mm, 60 degree cone, fitted to the end of drill rods, 30 cm into the subsoil, the driving energy being 474.5 Joules per blow.

SAMPLE TYPE ABBREVIATIONS USED IN BOREHOLE LOGS

S.S.	Split spoon	T.W.	Thinwall open	R.C.	Rock core
A.U.	Auger sample	T.P.	Thinwall piston	W.S.	Washed sample
P.H.	Sample pushed hydraulically			P.M.	Sample pushed manually

SOIL TEST SYMBOLS USED IN BOREHOLE LOGS

○	Standard penetration resistance	▼	Laboratory Vane	□	Unconfined compression
●	Dynamic penetration resistance	▲	Field Vane	■	Undrained shear strength
		X	Penetrometer	S	Sensitivity

NOTE

The soil conditions, profiles, comments, conclusions and recommendations found in this report are based upon the samples recovered during the fieldwork. Soils are heterogeneous materials and, consequently, variations (possibly extreme) may be encountered at site locations away from boreholes. During construction, competent, qualified inspection personnel should verify that no significant variations exist from the conditions described in this report.

EXPLANATION OF BOREHOLE LOG

This form describes some of the information provided on the borehole logs, which is based primarily on examination of the recovered samples, and the results of the field and laboratory tests. Additional description of the soil/rock encountered is given in the accompanying geotechnical report.

GENERAL INFORMATION

Project details, borehole number, location coordinates and type of drilling equipment used are given at the top of the borehole log.

SOIL LITHOLOGY

Elevation and Depth

This column gives the elevation and depth of inferred geologic layers. The elevation is referred to the datum shown in the Description column.

Lithology Plot

This column presents a graphic depiction of the soil and rock stratigraphy encountered within the borehole.

Description

This column gives a description of the soil stratums, based on visual and tactile examination of the samples augmented with field and laboratory test results. Each stratum is described according to the *Modified Unified Soil Classification System.*

The compactness condition of cohesionless soils (SPT) and the consistency of cohesive soils (undrained shear strength) are defined as follows *(Ref. Canadian Foundation Engineering Manual):*

Compactness of Cohesionless Soils	SPT N-Value
Very loose	0 to 4
Loose	4 to 10
Compact	10 to 30
Dense	30 to 50
Very Dense	> 50

Consistency of Cohesive Soils	Undrained Shear Strength kPa	Undrained Shear Strength psf
Very soft	0 to 12	0 to 250
Soft	12 to 25	250 to 500
Firm	25 to 50	500 to 1000
Stiff	50 to 100	1000 to 2000
Very stiff	100 to 200	2000 to 4000
Hard	Over 200	Over 4000

Soil Sampling

Sample types are abbreviated as follows:

SS	Split Spoon	TW	Thin Wall Open (Pushed)	RC	Rock Core	GS	Grab Sample
AS	Auger Sample	TP	Thin Wall Piston (Pushed)	WS	Washed Sample	AR	Air Return Sample

Additional information provided in this section includes sample numbering, sample recovery and numerical testing results.

Field and Laboratory Testing

Results of field testing (e.g., SPT, pocket penetrometer, and vane testing) and laboratory testing (e.g., natural moisture content, and limits) executed on the recovered samples are plotted in this section.

Instrumentation Installation

Instrumentation installations (monitoring wells, piezometers, inclinometers, etc.) are plotted in this section. Water levels, if measured during fieldwork, are also plotted. These water levels may or may not be representative of the static groundwater level depending on the nature of soil stratum where the piezometer tips are located, the time elapsed from installation to reading and other applicable factors.

Comments

This column is used to describe non-standard situations or notes of interest.

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MODIFIED * UNIFIED CLASSIFICATION SYSTEM FOR SOILS

*The soil of each stratum is described using the Unified Soil Classification System (Technical Memorandum 36-357 prepared by Waterways Experiment Station, Vicksburg, Mississippi, Corps of Engineers, U.S Army. Vol. 1 March 1953.) modified slightly so that an inorganic clay of "medium plasticity" is recognized.

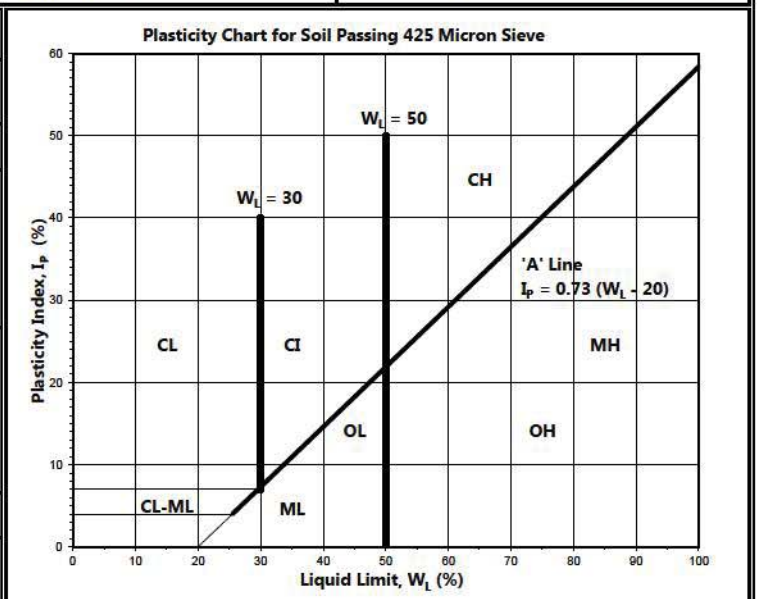
MAJOR DIVISION			GROUP SYMBOL	TYPICAL DESCRIPTION	LABORATORY CLASSIFICATION CRITERIA
COARSE GRAINED SOILS (MORE THAN HALF BY WEIGHT LARGER THAN 75µm)	GRAVELS MORE THAN HALF THE COARSE FRACTION LARGER THAN 4.75mm	CLEAN GRAVELS (TRACE OR NO FINES)	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	$C_u = \frac{D_{60}}{D_{10}} > 4$; $C_C = \frac{(D_{30})^2}{D_{10} X D_{60}} = 1$ to 3
			GP	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	NOT MEETING ABOVE REQUIREMENTS
		DIRTY GRAVELS (WITH SOME OR MORE FINES)	GM	SILTY GRAVELS, GRAVEL-SAND- SILT MIXTURES	ATTERBERG LIMITS BELOW "A" LINE OR P.I MORE THAN 4
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES	ATTERBERG LIMITS BELOW "A" LINE OR P.I MORE THAN 7
	SANDS MORE THAN HALF THE COARSE FRACTION SMALLER THAN 4.75mm	CLEAN SANDS (TRACE OR NO FINES)	SW	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	$C_u = \frac{D_{60}}{D_{10}} > 6$; $C_C = \frac{(D_{30})^2}{D_{10} X D_{60}} = 1$ to 3
			SP	POORLY GRADED GRAVELS, GRAVEL- SAND MIXTURES, LITTLE OR NO FINES	NOT MEETING ABOVE REQUIREMENTS
		DIRTY SANDS (WITH SOME OR MORE FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES	ATTERBERG LIMITS BELOW "A" LINE OR P.I MORE THAN 4
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES	ATTERBERG LIMITS BELOW "A" LINE OR P.I MORE THAN 7
FINE-GRAINED SOILS (MORE THAN HALF BY WEIGHT SMALLER THAN 75µm)	SILTS BELOW "A" LINE NEGLIGIBLE ORGANIC CONTENT	W_L < 50%	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY SANDS OF SLIGHT PLASTICITY	CLASSIFICATION IS BASED UPON PLASTICITY CHART (SEE BELOW)
		W_L < 50%	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS, FINE SANDY OR SILTY SOILS	
	CLAYS ABOVE "A" LINE NEGLIGIBLE ORGANIC CONTENT	W_L < 30%	CL	INORGANIC CLAYS OF LOW PLASTICITY, GRAVELLY, SANDY OR SILTY CLAYS, LEAN CLAYS	
		30% < W_L < 50%	CI	INORGANIC CLAYS OF MEDIUM PLASTICITY, SILTY CLAYS	
		W_L < 50%	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	
	ORGANIC SILTS & CLAYS BELOW "A" LINE	W_L < 50%	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	WHENEVER THE NATURE OF THE FINES CONTENT HAS NOT BEEN DETERMINED, IT IS DESIGNATED BY THE LETTER "F", E.G SF IS A MIXTURE OF SAND WITH SILT OR CLAY
		W_L < 50%	OH	ORGANIC CLAYS OF HIGH PLASTICITY	
HIGH ORGANIC SOILS			Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS	STRONG COLOUR OR ODOUR, AND OFTEN FIBROUS TEXTURE

SOIL COMPONENTS

FRACTION	U.S STANDARD SIEVE SIZE			DEFINING RANGES OF PERCENTAGE BY WEIGHT OF MINOR COMPONENTS	
		PASSING	RETAINED	PERCENT	DESCRIPTOR
GRAVEL	COARSE	76 mm	19 mm	35-50	AND
	FINE	19 mm	4.75 mm	20-35	Y/EY
SAND	COARSE	4.75 mm	2.00 mm	10-20	SOME
	MEDIUM	2.00 mm	425 µm	1-10	TRACE
	FINE	425 µm	75 µm		
FINES (SILT OR CLAY BASED ON PLASTICITY)		75 µm			

OVERSIZED MATERIAL

ROUNDED OR SUBROUNDED: COBBLES 76 mm TO 200 mm BOULDERS > 200 mm	NOT ROUNDED: ROCK FRAGMENTS > 76 mm ROCKS > 0.76 CUBIC METRE IN VOLUME



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Note 1: Soils are classified and described according to their engineering properties and behaviour.

Note 2: The modifying adjectives used to define the actual or estimated percentage range by weight of minor components are consistent with the Canadian Foundation Engineering Manual (4th Edition, Canadian Geotechnical Society, 2006.)

RECORD OF BOREHOLE No. BH1

Project Number:	SWW187219	Drilling Method:	150 mm O.D. Hollow Stem Augers
Project Client:	Town of Tecumseh	Drilling Machine:	CME55
Project Name:	Sylvestre Drive Sewer and Road Reconstruction	Date Started:	03 Jul 2018 — Date Completed: 03 Jul 2018
Project Location:	Tecumseh, Ontario	Logged by:	SS — Compiled by: SS
Drilling Location:	N4684598, E345754	Reviewed by:	SM — Revision No.: 0

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LITHOLOGY PROFILE		SOIL SAMPLING						FIELD TESTING	LAB TESTING		
Lithology Plot	DESCRIPTION Local Ground Surface Elevation:	Sample Type	Sample Number	Recovery (%)	SPT 'N' Value	DEPTH (m)	ELEVATION (m)	PenetrationTesting ○ SPT ● DCPT MTO Vane* △ Intact ▲ Remould Nilcon Vane* ◇ Intact ◆ Remould ■ Undrained Shear Strength (kPa) (from P. Penetrometer tests) 20 40 60 80	Atterberg Limits W_P W W_L Plastic Liquid ✱ Passing 75 um (%) ○ Moisture Content (%) ★ Unit Weight (KN/m3) 20 40 60 80	INSTRUMENTATION INSTALLATION	COMMENTS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	TAR AND CHIP (40 mm thick) 0.0										
	FILL (90 mm thick) 0.1 Granular base										
	CONCRETE (180 mm thick) 0.3										
	FILL (305 mm thick) Granular base										
	SILTY CLAY 0.6 Trace sand, trace gravel Mottled brown and grey Firm	SS	1	16	4	1		○	○ 25		
	Stiff Weathered	SS	2	79	8			○	○ 18		
	END OF BOREHOLE 2.0 (no refusal)					2					
						3					
						4					
						5					
						6					

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▽ No freestanding groundwater observed in open borehole upon completion of drilling.

Borehole details, as presented, do not constitute a thorough understanding of all potential conditions present and requires interpretive assistance from a qualified Geotechnical Engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Borehole Log'.

RECORD OF BOREHOLE No. BH2

Project Number:	SWW187219	Drilling Method:	180 mm O.D. Hollow Stem Augers
Project Client:	Town of Tecumseh	Drilling Machine:	CME55
Project Name:	Sylvestre Drive Sewer and Road Reconstruction	Date Started:	03 Jul 2018 — Date Completed: 07 Jul 2018
Project Location:	Tecumseh, Ontario	Logged by:	SS — Compiled by: SS
Drilling Location:	N4684591, E345540	Reviewed by:	SM — Revision No.: 0

wood.

LITHOLOGY PROFILE

Local Ground Surface Elevation:

Description	Depth (m)
TAR AND CHIP (40 mm thick)	0.0
FILL (90 mm thick) Granular base	0.1
CONCRETE (305 mm thick)	
SILTY CLAY Some sand, trace gravel; Mottled brown and grey; Firm	0.4
Stiff; Weathered; Brown	
Very stiff; Fractured	
END OF BOREHOLE (no refusal)	3.5

SOIL SAMPLING

Sample Type	Sample Number	Recovery (%)	SPT 'N' Value	Depth (m)
SS	1	89	6	1
SS	2	100	13	2
SS	3	100	26	3
SS	4	100	21	

Elevation (m)

FIELD TESTING

Penetration Testing: ○ SPT ● DCPT

MTO Vane*: △ Intact ▲ Remould

Nilcon Vane*: ◇ Intact ◆ Remould

■ Undrained Shear Strength (kPa) (from P. Penetrometer tests) 20 40 60 80

LAB TESTING

Atterberg Limits: W_P W W_L (Plastic – Liquid)

✳ Passing 75 um (%)

○ Moisture Content (%)

★ Unit Weight (KN/m3)

20 40 60 80

14 14 14 14

INSTRUMENTATION INSTALLATION

COMMENTS & GRAIN SIZE DISTRIBUTION (%)

GR SA SI CL

No freestanding groundwater observed in open borehole upon completion of drilling.

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Borehole details, as presented, do not constitute a thorough understanding of all potential conditions present and requires interpretive assistance from a qualified Geotechnical Engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Borehole Log'.

RECORD OF BOREHOLE No. BH3

Project Number:	SWW187219	Drilling Method:	180 mm O.D. Hollow Stem Augers
Project Client:	Town of Tecumseh	Drilling Machine:	CME55
Project Name:	Sylvestre Drive Sewer and Road Reconstruction	Date Started:	03 Jul 2018 — Date Completed: 03 Jul 2018
Project Location:	Tecumseh, Ontario	Logged by:	SS — Compiled by: SS
Drilling Location:	N4684616, E345432	Reviewed by:	SM — Revision No.: 0

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LITHOLOGY PROFILE		SOIL SAMPLING						FIELD TESTING	LAB TESTING		
Lithology Plot	DESCRIPTION Local Ground Surface Elevation:	Sample Type	Sample Number	Recovery (%)	SPT 'N' Value	DEPTH (m)	ELEVATION (m)	PenetrationTesting: ○ SPT ● DCPT; MTO Vane* △ Intact ▲ Remould; Nilcon Vane* ◇ Intact ◆ Remould; ■ Undrained Shear Strength (kPa) (from P. Penetrometer tests) 20 40 60 80	Atterberg Limits: W_P W W_L Plastic Liquid; ✱ Passing 75 um (%); ○ Moisture Content (%); ★ Unit Weight (KN/m3) 20 40 60 80	INSTRUMENTATION INSTALLATION	COMMENTS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	TAR AND CHIP (25 mm thick) 0.0										
	FILL (480 mm thick) Granular base										
	SILTY CLAY 0.5 Some sand, trace gravel, rootlets Mottled brown and grey Stiff	SS	1	100	11	1		○	○ 14		
	Very stiff Brown	SS	2	100	28	2		○	○ 12		
	Oxidized	SS	3	100	25	3		○	○ 13		
		SS	4	100	23			○	○ 15		
	Grey Stiff	SS	5	78	10	4		○	○ 15 ■ 15 ● 29		1 23 43 33
		SS	6	83	6	5		○	○ 15		
		VT						70 △			
		SS	7	100	7	6		○	○ 19		
	END OF BOREHOLE 6.6 (no refusal)					7					

Wood
Environment & Infrastructure Solutions

11865 County Road 42
Tecumseh, Ontario, N8N 2M1
Tel: 519-735-2499
Fax: 519-735-9669
www.woodplc.com

No freestanding groundwater observed in open borehole upon completion of drilling.

Borehole details, as presented, do not constitute a thorough understanding of all potential conditions present and requires interpretive assistance from a qualified Geotechnical Engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Borehole Log'.

RECORD OF BOREHOLE No. BH4

Project Number:	SWW187219	Drilling Method:	150 mm O.D. Hollow Stem Augers
Project Client:	Town of Tecumseh	Drilling Machine:	CME55
Project Name:	Sylvestre Drive Sewer and Road Reconstruction	Date Started:	03 Jul 2018 — Date Completed: 03 Jul 2018
Project Location:	Tecumseh, Ontario	Logged by:	SS — Compiled by: SS
Drilling Location:	N4684757, E345416	Reviewed by:	SM — Revision No.: 0

wood.

LITHOLOGY PROFILE		SOIL SAMPLING						FIELD TESTING	LAB TESTING		
Lithology Plot	DESCRIPTION Local Ground Surface Elevation:	Sample Type	Sample Number	Recovery (%)	SPT 'N' Value	DEPTH (m)	ELEVATION (m)	PenetrationTesting ○ SPT ● DCPT MTO Vane* △ Intact ▲ Remould Nilcon Vane* ◇ Intact ◆ Remould ■ Undrained Shear Strength (kPa) (from P. Penetrometer tests) 20 40 60 80	Atterberg Limits W_P W W_L Plastic Liquid ✳ Passing 75 um (%) ○ Moisture Content (%) ★ Unit Weight (KN/m3) 20 40 60 80	INSTRUMENTATION INSTALLATION	COMMENTS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	TAR AND CHIP (25 mm thick) 0.0										
	FILL (130 mm thick) Granular base 0.2										
	CONCRETE (380 mm thick)										
	SILTY CLAY 0.5 Some sand, trace gravel Mottled brown and grey Stiff	SS	1	84	8	1		○	○ 17		
	Very stiff Oxidized	SS	2	100	27			○	○ 14		
	END OF BOREHOLE 2.0 (no refusal)					2 3 4 5 6					

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Tecumseh, Ontario, N8N 2M1
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Fax: 519-735-9669
www.woodplc.com

No freestanding groundwater observed in open borehole upon completion of drilling.

Borehole details, as presented, do not constitute a thorough understanding of all potential conditions present and requires interpretive assistance from a qualified Geotechnical Engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Borehole Log'.

RECORD OF BOREHOLE No. BH5

Project Number:	SWW187219	Drilling Method:	150 mm O.D. Hollow Stem Augers
Project Client:	Town of Tecumseh	Drilling Machine:	CME55
Project Name:	Sylvestre Drive Sewer and Road Reconstruction	Date Started:	03 Jul 2018 — Date Completed: 03 Jul 2018
Project Location:	Tecumseh, Ontario	Logged by:	SS — Compiled by: SS
Drilling Location:	N4684928, E345397	Reviewed by:	SM — Revision No.: 0

wood.

LITHOLOGY PROFILE		SOIL SAMPLING						FIELD TESTING	LAB TESTING		
Lithology Plot	DESCRIPTION Local Ground Surface Elevation:	Sample Type	Sample Number	Recovery (%)	SPT 'N' Value	DEPTH (m)	ELEVATION (m)	PenetrationTesting ○ SPT ● DCPT MTO Vane* △ Intact ▲ Remould Nilcon Vane* ◇ Intact ◆ Remould ■ Undrained Shear Strength (kPa) (from P. Penetrometer tests) 20 40 60 80	Atterberg Limits W_P W W_L Plastic Liquid ✳ Passing 75 um (%) ○ Moisture Content (%) ★ Unit Weight (KN/m3) 20 40 60 80	INSTRUMENTATION INSTALLATION	COMMENTS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	TAR AND CHIP (25 mm thick) 0.0										
	FILL (100 mm thick) 0.1 Granular base										
	CONCRETE (305 mm thick)										
	SILTY CLAY 0.4 Some sand, trace gravel Mottled brown and grey Firm										
		SS	1	87	6	1		○	○ 19		
	Brown Very stiff	SS	2	100	19			○	○ 15		
	END OF BOREHOLE 2.0 (no refusal)					2					
						3					
						4					
						5					
						6					

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Fax: 519-735-9669
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▽ No freestanding groundwater observed in open borehole upon completion of drilling.

Borehole details, as presented, do not constitute a thorough understanding of all potential conditions present and requires interpretive assistance from a qualified Geotechnical Engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Borehole Log'.

Appendix C

Geotechnical Laboratory Test Results

Wood Environment & Infrastructure Soultions
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Fax +1 (519) 735-9669
www.woodplc.com

wood.

ATTERBERG LIMITS
ASTM D-4318 or LS-703 / 704

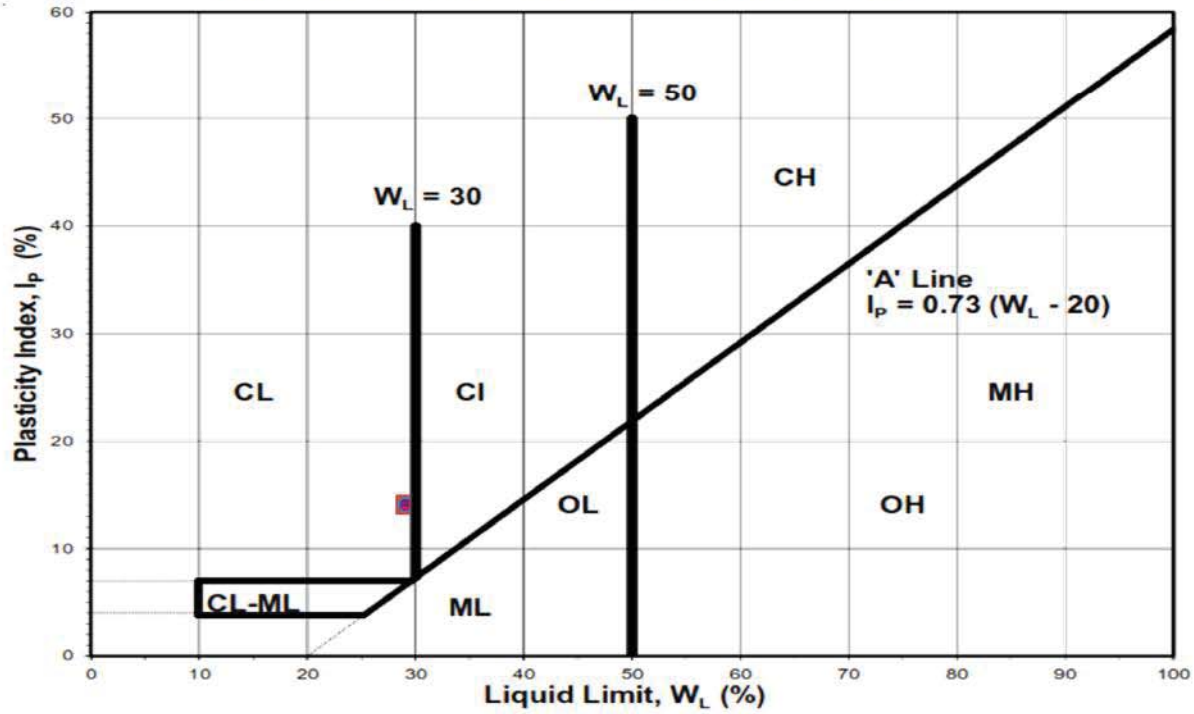
Project Number:	SWW187219	**Sampled by:**	SS	**Sampled on:**	03-Jul-18
Project Client:	Town of Tecumseh	**Tested by:**	JP	**Received on:**	03-Jul-18
Project Name:	Sylvestre Drive Sewer and Road Reconstruction			**Tested on:**	11-Jul-18
Project Location:	Tecumseh				

Test Results

LAB NUMBER	440
BOREHOLE	3
SAMPLE	5
DEPTH (m)	3.8 - 4.3

PLASTIC LIMIT	**15.2**
LIQUID LIMIT	**29.4**
PLASTICITY INDEX	**14.2**

Plasticity Chart for Soil Passing 425 Micron Sieve



Signed by: _____
Justin Palmer, Lab Supervisor, C. Tech.

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Tecumseh, Ontario N8N 2M1

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Fax +1 (519) 735-9669
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wood.

GRAIN SIZE DISTRIBUTION
MTO LS 702 / ASTM D7928 / ASTM D6913

Project Number: SWW187219
Project Client: Town of Tecumseh
Project Name: Sylvestre Drive Sewer and Road Reconstruction
Project Location: Tecumseh

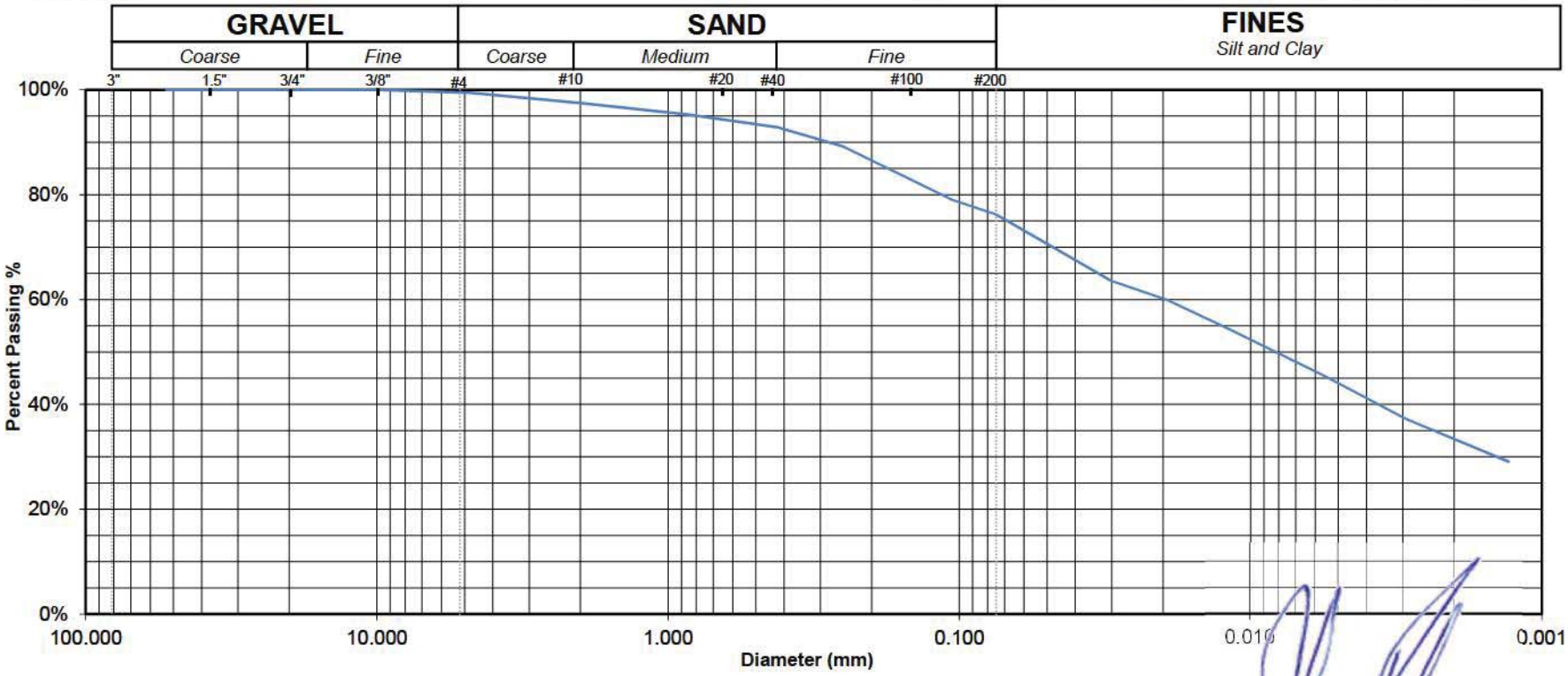
Sampled by: SS
Tested by: JP

Sampled on: 3-Jul-2018
Received on: 3-Jul-2018
Tested on:

Test Results

Sample Location: **BH 3, Sa. 5**
Sample Identification: **441**

Gravel	Sand	Silt	Clay	Soil Classification
0.6%	23.2%	42.8%	33.4%	SILTY CLAY, some sand, trace gravel



Signed by: _____
Justin Palmer, Lab Manager, C. Tech.

Appendix D

Functional Design

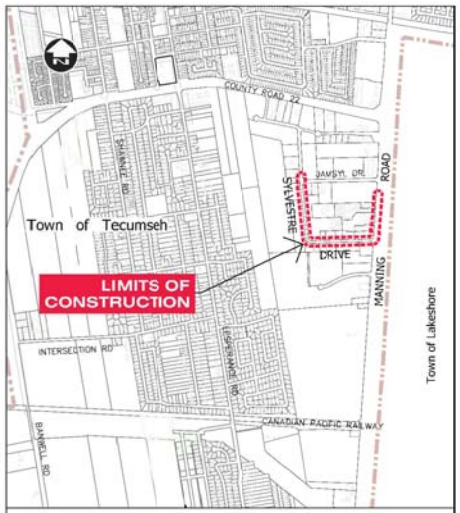
Sylvestre Sanitary Sewer Extension

in the TOWN OF TECUMSEH

LEGEND

DESCRIPTION	EXISTING	ABANDONED	NEW
SEWERS			
SANITARY	200 S	200 S	200 S
STORM	450 ST	450 ST	
COMBINED	300 C	300 C	
MANHOLE	MH		MH
CATCH BASIN	CB		
DITCH INLET CB	DICB		
TWIN INLET CB	TICB		
CULVERT			
SANITARY SERVICE	S		
STORM SERVICE	ST		
CLEANOUT	CO		CO
CURB INLET CB	CICB		
TWIN CURB INLET CB	TCICB		
ROUND CATCH BASIN	CBMH		BCB
WATER			
MAIN	150 W	40 150 W	
MANHOLE	WMH		
VALVE	WV		
TAP SLEEVE & VALVE			
FIRE HYDRANT	FH		
BLOW-OFF	WO		
PRIVATE SERVICE	W		
SERVICE VALVE	WSV		
GAS			
MAIN	100 G	40 100 G	
VALVE	GV		
BELL			
BURIED	B	50 B	
MANHOLE	BMH		
PEDESTAL, OPI	PB PED PGPI		
POLE (GUY)	B		
HYDRO			
BURIED	H	50 H	
MANHOLE	HMH		
POLE (GUY)	H		
LIGHT	H		
CABLE TV			
BURIED	TV	40 TV	
PEDESTAL	TV PED		
POLE	TV		
TRAFFIC			
BURIED	T	40 T	
MANHOLE	TMH		
JUNCTION BOX	JB		
CONTROLLER	TC		
POLE	TPOLE		
PAVEMENT			
CONCRETE	CONC		
ASPHALT	ASPH		
ASPH ON CONC	ASPH/CONC		
PAVING STONE	PAVER		
TAR AND CHIP	TAR & CHIP		
GRAVEL	GRAV		
MISCELLANEOUS			
SIDEWALK (CONC. or ASPH.)	CSW	ASW	
SIGN	S		
TREE(dia) or BUSH	300	300	
HEDGE			
FENCE			
GATE			
BOREHOLE	BH		
AUGERHOLE	AH		
PROPERTY BAR	IB SIB RIB		
NAIL	NAIL		
CONCRETE MONUMENT	MON		
GROUND ELEVATION	176.25		176.28

Town of Tecumseh
Ontario, Canada



KEY PLAN

BENCH MARKS

Origin of Geodetic Elevation:
Station: 0611959X(30)A, CGVD-1928:1978, first Order Vertical Accuracy
Location: St Anne's Roman Catholic Church, At corner of Lesperance Street and Tecumseh Road.
Tablet in East Stone Foundation wall, 5.03mfrom Northeast corner, 43cm above ground level.

Benchmark 4-26206 01: Geodetic Elevation: 180.810m
PKnail in top of Concrete Pump Station located on the South side of Sylvestre Drive opposite municipal number 1806 Sylvestre Drive.The PKnail is located in the Northeast corner 0.8m South from the North face and 0.8m West from the East face of con crete pad.

INDEX

SHEET	DESCRIPTION
	COVER SHEET
G-1	GENERAL ALIGNMENT & BOREHOLE LOCATIONS
	EXISTING CONDITIONS, REMOVALS & NEW CONSTRUCTION
R-1	SYLVESTRE DRIVE - STA. 1+065 TO STA. 1+230
R-2	SYLVESTRE DRIVE - STA. 1+230 TO STA. 1+425
R-3	SYLVESTRE DRIVE - STA. 1+425 TO STA. 1+610
R-4	SYLVESTRE DRIVE - STA. 1+610 TO STA. 1+810
R-5	SYLVESTRE DRIVE - STA. 1+810 TO STA. 1+886 MANNING ROAD - STA. 2+035 TO STA. 2+135
R-6	MANNING ROAD - STA. 2+135 TO STA. 2+325
R-7	TYPICAL ROAD & UTILITY CROSS SECTIONS
	PLAN AND PROFILE
U-1	SYLVESTRE DRIVE - STA. 1+420 TO STA. 1+585
U-2	SYLVESTRE DRIVE - STA. 1+585 TO STA. 1+785
U-3	SYLVESTRE DRIVE - STA. 1+785 TO STA. 1+880 MANNING ROAD - STA. 2+040 TO STA. 2+125
U-4	MANNING ROAD - STA. 2+125 TO STA. 2+320
U-5	MISCELLANEOUS DETAILS
	PUMP STATION
P-1	NEW PUMP STATION PLAN AND SECTION

Note: Original Drawings Provided in Colour.

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Sylvestre Sanitary Sewer Extension
TOWN OF TECUMSEH
17-6843-3000
24 Oct 2018

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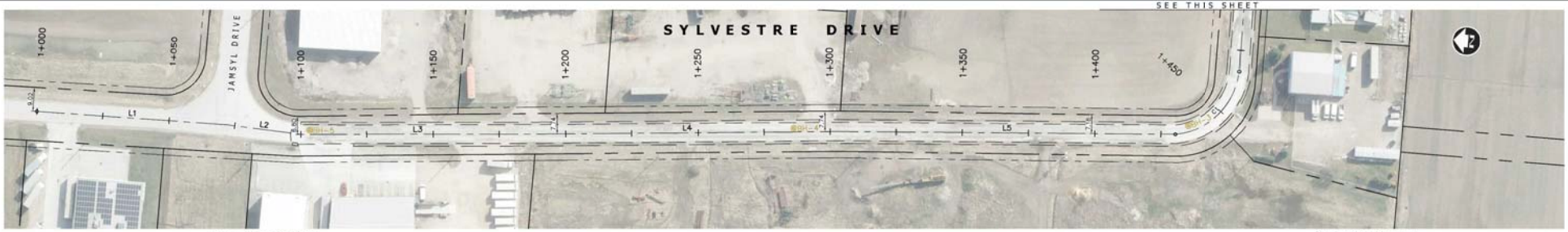

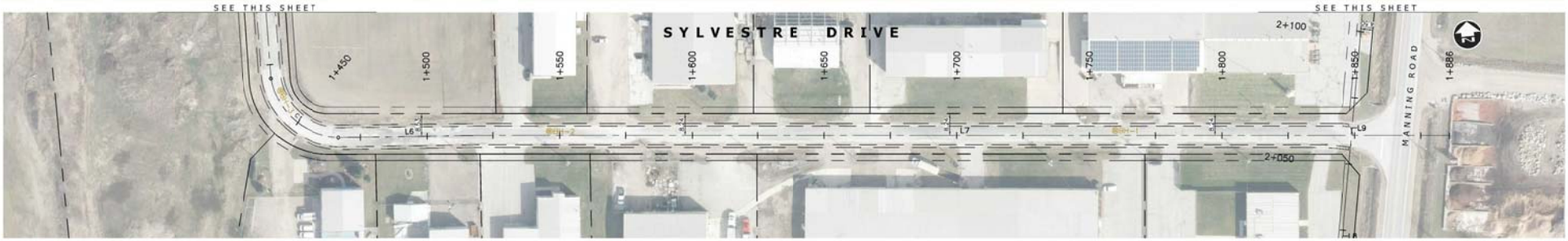

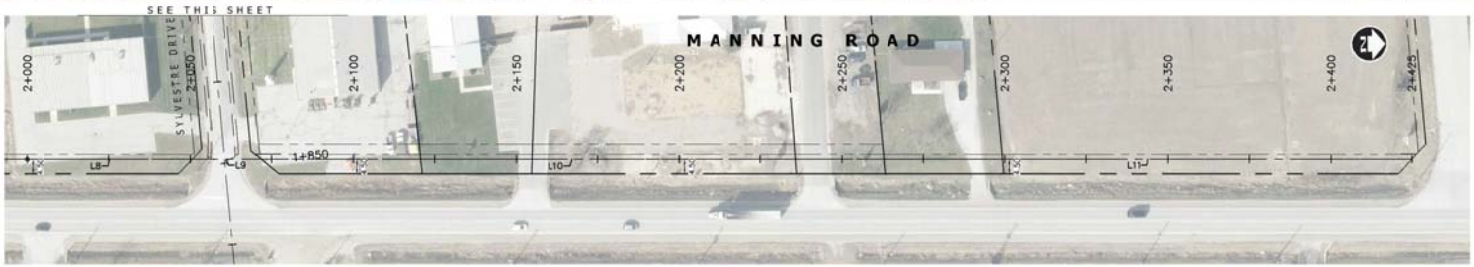

LEGEND

BH-1 BOREHOLE

NOTE:
FOR FURTHER BOREHOLE INFORMATION INCLUDING BOREHOLE LOG SHEETS, PLEASE REFER TO THE GEOTECHNICAL INVESTIGATION REPORT BY WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS PROVIDED IN APPENDIX B OF THE SPECIFICATION DOCUMENTS.

ALIGNMENT TABLES

HORIZONTAL CONTROL (Sylvestre Drive)

SEGMENT	START STATION	END STATION	LENGTH (m)	CHORD LENGTH (m)	ENDING RADIUS (m)	DELTA (dd°mm'ss")	LINE/CHORD DIRECTION (dd°mm'ss")	SPIRAL PARAMETER (A)	START NORTHING (m)	START EASTING (m)	END NORTHING (m)	END EASTING (m)
L1	1+000	1+072.229	72.229				S75°7'37"E		4685536.1080	345393.6917	4684963.9269	345396.3724
L2	1+072.229	1+100	27.771				S1°16'51"W		4684963.9269	345396.3724	4684936.1627	345395.7516
L3	1+100	1+188.540	88.540				S6°13'14"E		4684936.1627	345395.7516	4684848.1441	345405.3454
L4	1+188.540	1+303.725	115.185				S6°39'43"E		4684848.1441	345405.3454	4684733.7369	345418.7063
L5	1+303.725	1+430.219	126.494				S5°41'13"E		4684733.7369	345418.7063	4684607.8651	345431.2428
C1	1+430.219	1+466.898	36.679	33.883	27	78°24'49"	S50°24'58"E		4684607.8651	345431.2428	4684586.2746	345457.3563
L6	1+466.898	1+520.343	53.445				N67°41'37"E		4684586.2746	345457.3563	4684588.4254	345510.7577
L7	1+520.343	1+885.675	365.332				N88°33'00"E		4684588.4254	345510.7577	4684597.6898	345875.9725

HORIZONTAL CONTROL (Manning Road)

SEGMENT	START STATION	END STATION	LENGTH (m)	CHORD LENGTH (m)	ENDING RADIUS (m)	DELTA (dd°mm'ss")	LINE/CHORD DIRECTION (dd°mm'ss")	SPIRAL PARAMETER (A)	START NORTHING (m)	START EASTING (m)	END NORTHING (m)	END EASTING (m)
L8	2+000	2+050.593	50.593				N74°5'53"E		4684536.0808	345835.0600	4684586.5647	345836.3818
L9	2+050.593	2+071.901	21.308				N74°3'40"E		4684586.5647	345836.3818	4684607.8280	345839.7672
L10	2+071.901	2+262.676	190.775				N74°6'27"E		4684607.8280	345839.7672	4684798.1889	345852.3245
L11	2+262.676	1+424.837	162.161				N74°5'59"E		4684798.1889	345852.3245	4684959.9998	345862.9767

Conditions of Use

Verify elevations and/or dimensions on drawing prior to use. Report any discrepancies to Dillon Consulting Limited.

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Town of Tecumseh
Ontario, Canada

DILLON CONSULTING

No.	ISSUED FOR	DATE	BY
1	EA Report	NOV 07/18	ACW

DESIGN: DCR
REVIEWED BY: ACW
DRAWN: DCR
CHECKED BY: RBH
DATE: October 24, 2018
SCALE: Horizontal 1:750

Sylvestre Sanitary Sewer Extension
TOWN OF TECUMSEH

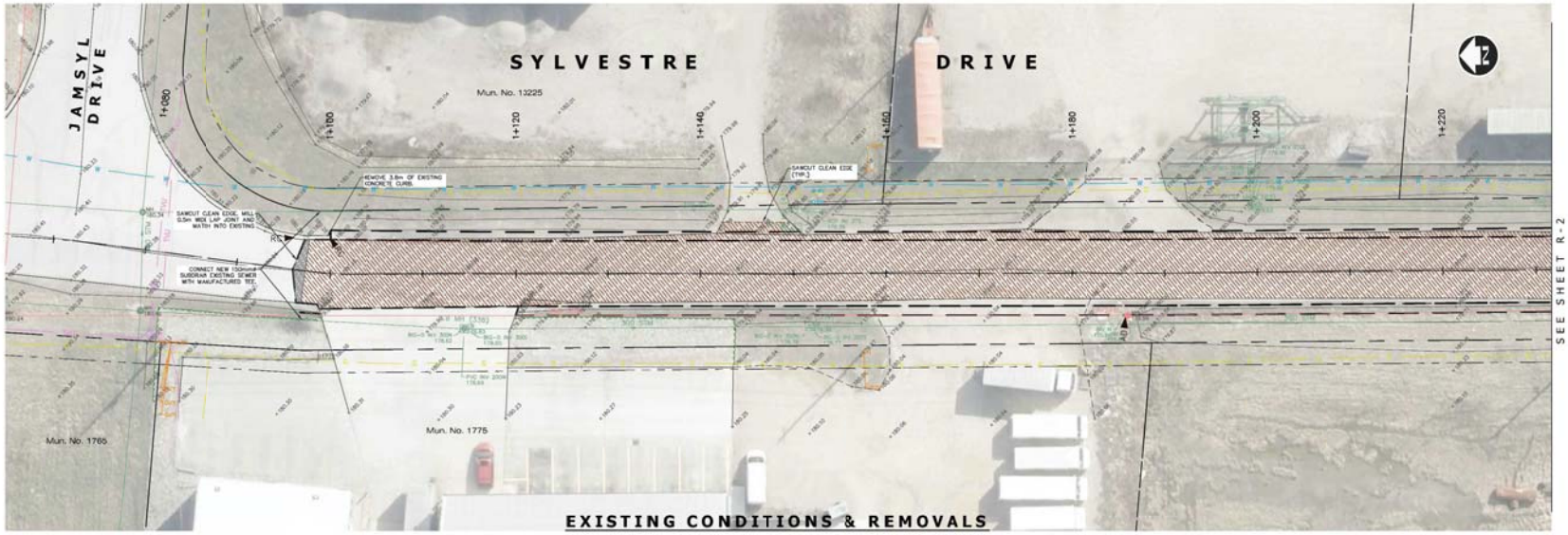
Plan View

GENERAL ALIGNMENT & BOREHOLE LOCATIONS

PROJECT NO. 17-6843-3000

SHEET NO. G-1

DILLON CONSULTING LIMITED 3200 DEZIEL DRIVE, SUITE 608, WINDSOR, ONTARIO, N8W 5K6, PHONE (519) 948-5000, FAX (519) 948-5054



EXISTING CONDITIONS & REMOVALS

NEW CONSTRUCTION

GENERAL NOTES:

1. THE OWNER AND DILLON CONSULTING LIMITED DO NOT GUARANTEE THE ACCURACY OF THE UTILITIES SHOWN ON THE DRAWINGS. OTHER UTILITIES MAY BE PRESENT OR THE UTILITIES SHOWN MAY DIFFER IN SIZE OR LOCATION FROM THOSE SHOWN. THE CONTRACTOR SHALL NOTE THAT SERVICES FROM THE MAIN LINES ARE NOT SHOWN. THE CONTRACTOR ASSUMES FULL RESPONSIBILITY TO CONTACT THE VARIOUS UTILITY COMPANIES AND TO REPAIR ANY DAMAGE IT MAY CAUSE TO THESE UTILITIES OR TO OTHER THIRD PARTIES. THE CONTRACTOR AGREES TO INDEMNIFY THE OWNER AND DILLON CONSULTING LIMITED AGAINST ANY CLAIMS WHICH MAY ARISE FROM THE CONTRACTOR'S ACTIONS.
2. ALL WORKS TO BE CONSTRUCTED TO A TOLERANCE OF 5mm±.
3. ALL DIMENSIONS AND RADII ARE TO CONSTRUCTION BASELINE OR EDGE OF PAVEMENT.
4. CHAINAGES SHOWN REFER TO CONSTRUCTION BASELINE.
5. CONNECTIONS TO EXISTING STORM SEWER: THE CONTRACTOR SHALL BE REQUIRED TO USE ONLY PLANT MANUFACTURED FITTINGS AND TEES WHEN CONNECTING NEW SUBDRAIN TO EXISTING STORM SEWERS.
6. ALL ADJUSTMENT RINGS ARE TO BE IPEX RISER RINGS.
7. CLEAR AND GRUB AREAS WITHIN 3.0m FROM NEW EDGE OF PAVEMENT.
8. A UNION GAS REPRESENTATIVE IS TO BE ON SITE DURING ANY EXCAVATION WITHIN 1.5m ABOVE OR ADJACENT TO ANY UNION GAS FACILITIES.
9. ALL WORK TO MAINTAIN A MINIMUM 0.3m CLEARANCE FROM ALL GAS.

PAVEMENT MARKINGS LEGEND

NAME OF LINE		DIMENSIONS (m)	USE
LONGITUDINAL	Ⓐ	0.10	EDGE LINES (WHITE OR YELLOW), PROVIDES TRAFFIC SEPARATION (YELLOW), LANE LINES (WHITE), PROVIDES LANE CHANGES (WHITE)

REMOVALS LEGEND

- R ► REMOVE
- AD ► ADJUST
- RL ► RELOCATE
- RC ► REMOVE CURB
- RLO ► RELOCATE BY OTHERS
- ADO ► ADJUST BY OTHERS
- ASPHALT/CONCRETE REMOVAL
- MILL AND REPLACEMENT OF ASPHALT PAVEMENT (40mm DEPTH)

NEW CONSTRUCTION LEGEND

- NEW ASPHALT PAVEMENT (ROAD)
- GRANULAR SHOULDER OR ACCESS
- NEW ASPHALT DRIVEWAY
- TOPSOIL AND SEED RESTORATION
- 185.00 FINISHED GRADE AT EDGE OF PAVEMENT, CROWN OR AS SHOWN

ALL EXISTING INVERTS TO BE FIELD CHECKED PRIOR TO CONSTRUCTION

NOTE PROXIMITY OF EXISTING UTILITIES TO PROPOSED UTILITIES/EXCAVATIONS, UNDERTAKE EXPLORATORY DIGS IN ADVANCE OF CONSTRUCTION AND REPORT TO ENGINEER PRIOR TO CONSTRUCTION. COORDINATE WITH EXISTING UTILITIES AS REQUIRED TO FACILITATE CONTRACTOR'S SCOPE OF WORK

Conditions of Use

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Town of Tecumseh
Ontario, Canada

DILLON CONSULTING

No.	ISSUED FOR	DATE	BY
1	EA Report	NOV 07/18	ACW

DESIGN DCR	REVIEWED BY ACW
DRAWN DCR	CHECKED BY RBH
DATE October 25, 2018	
SCALE Horizontal 1:250	

Sylvestre Sanitary Sewer Extension
TOWN OF TECUMSEH

Existing Conditions, Removals & New Construction

SYLVESTRE DRIVE

STA. 1+065 TO STA. 1+230

PROJECT NO. 17-6843-3000

SHEET NO. **R-1**

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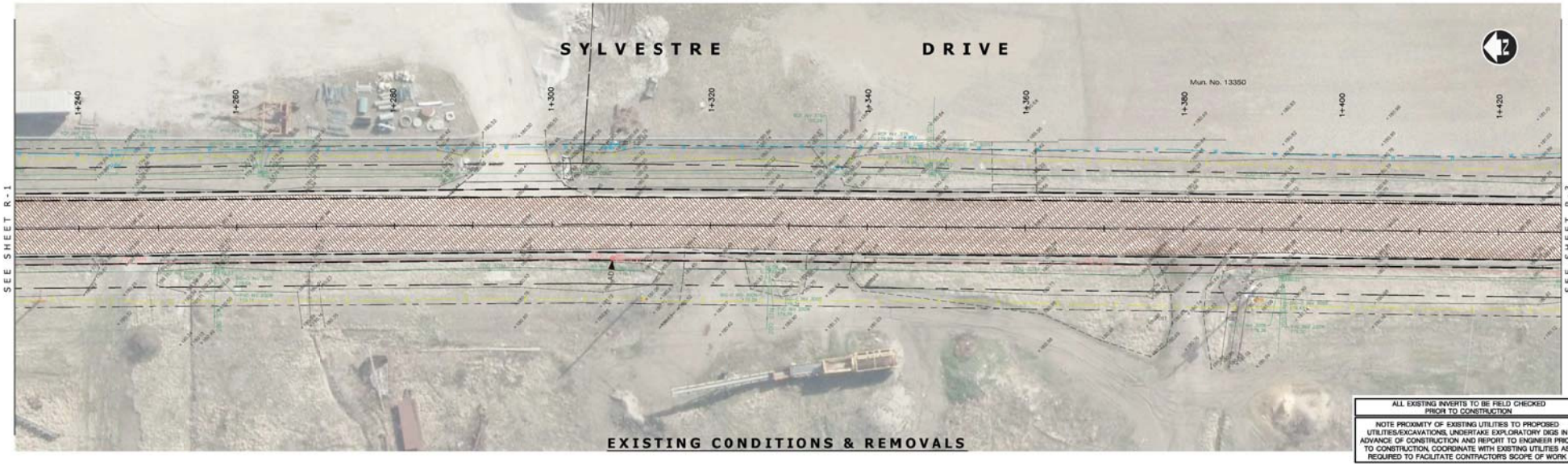
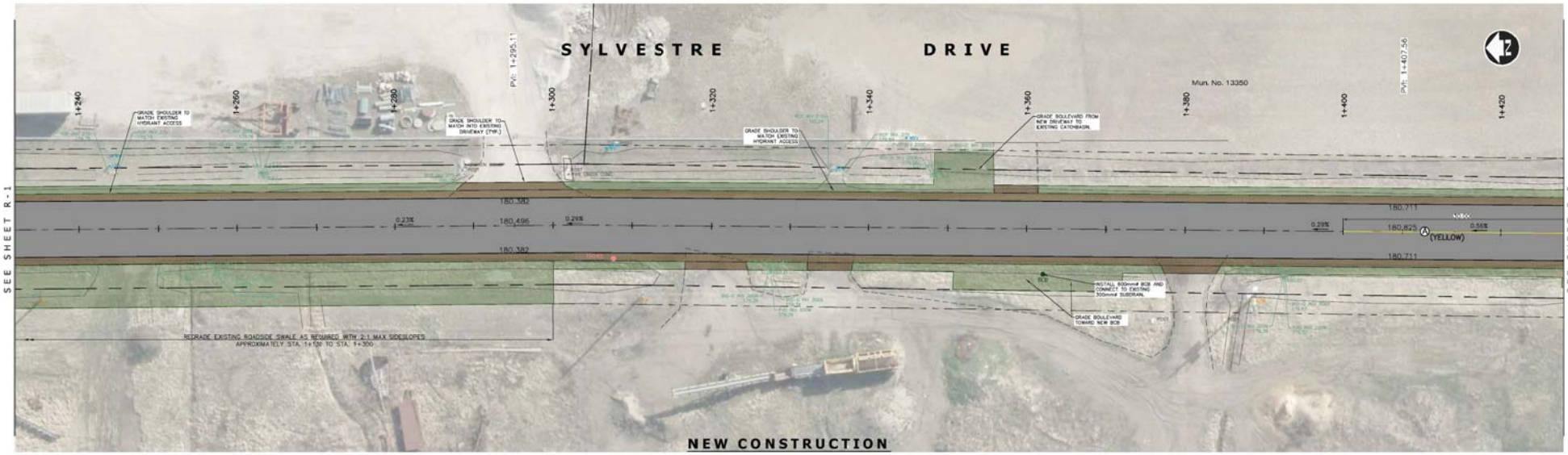


ALL EXISTING INVERTS TO BE FIELD CHECKED PRIOR TO CONSTRUCTION

NOTE PROXIMITY OF EXISTING UTILITIES TO PROPOSED UTILITIES/EXCAVATIONS, UNDERTAKE EXPLORATORY DIGS IN ADVANCE OF CONSTRUCTION AND REPORT TO ENGINEER PRIOR TO CONSTRUCTION, COORDINATE WITH EXISTING UTILITIES AS REQUIRED TO FACILITATE CONTRACTOR'S SCOPE OF WORK.

EXISTING CONDITIONS & REMOVALS



NEW CONSTRUCTION

Conditions of Use

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Town of Tecumseh
Ontario, Canada

DILLON CONSULTING

No.	Issued For	Date	By
1	EA Report	NOV 07/18	ACW

Designed	DCR
Reviewed by	ACW
Drawn	DCR
Checked by	RBH
Date	October 25, 2018
Scale	Horizontal 1:250

Sylvestre Sanitary Sewer Extension
TOWN OF TECUMSEH

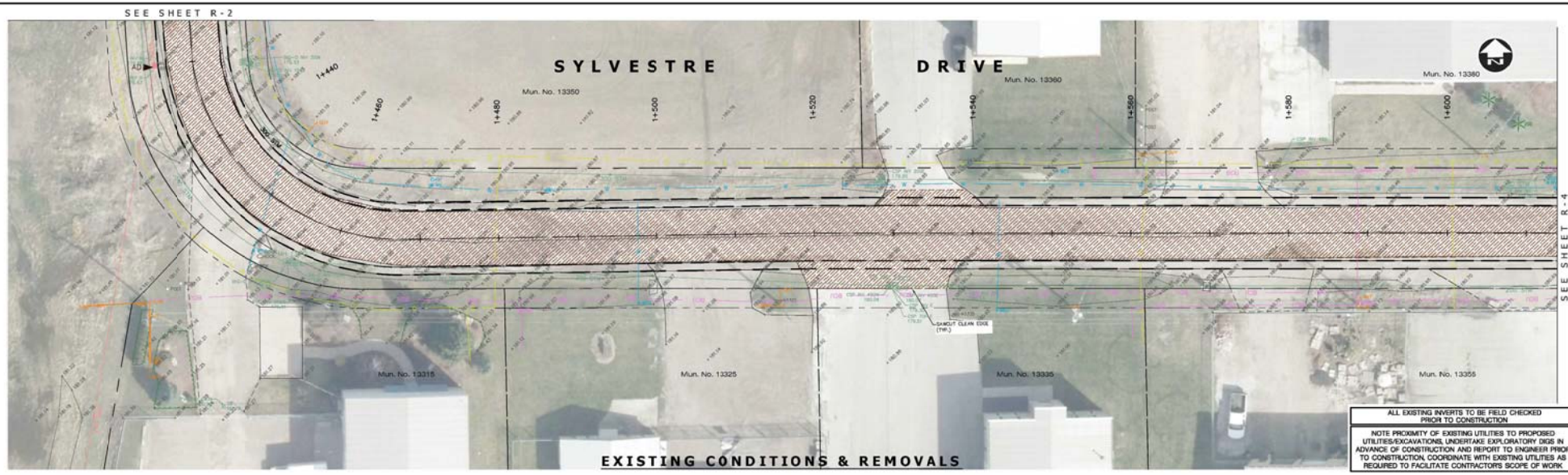
Existing Conditions, Removals & New Construction

SYLVESTRE DRIVE
STA. 1+230 TO STA. 1+425

Project No. 17-6843-3000

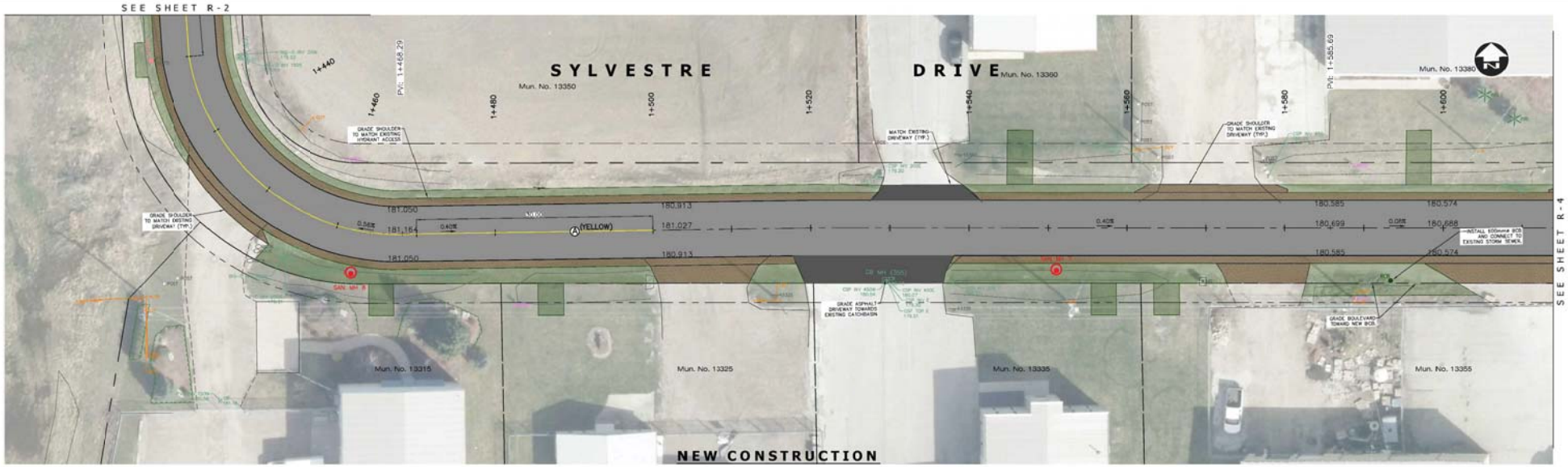
Sheet No. **R-2**

DILLON CONSULTING LIMITED 3200 DEZIEL DRIVE, SUITE 608, WINDSOR, ONTARIO, N8W 5K6, PHONE (519) 948-5000, FAX (519) 948-5054



ALL EXISTING INVERTS TO BE FIELD CHECKED PRIOR TO CONSTRUCTION

NOTE PROXIMITY OF EXISTING UTILITIES TO PROPOSED UTILITIES/EXCAVATIONS, UNDERTAKE EXPLORATORY DIGS IN ADVANCE OF CONSTRUCTION AND REPORT TO ENGINEER PRIOR TO CONSTRUCTION, COORDINATE WITH EXISTING UTILITIES AS REQUIRED TO FACILITATE CONTRACTOR'S SCOPE OF WORK



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Town of Tecumseh
Ontario, Canada

DILLON CONSULTING

No.	ISSUED FOR	DATE	BY
1	EA Report	NOV 07/18	ACW

DESIGN	DCR
REVIEWED BY	ACW
DRAWN	DCR
CHECKED BY	RBH
DATE	October 25, 2018
SCALE	Horizontal 1:250

Sylvestre Sanitary Sewer Extension
TOWN OF TECUMSEH

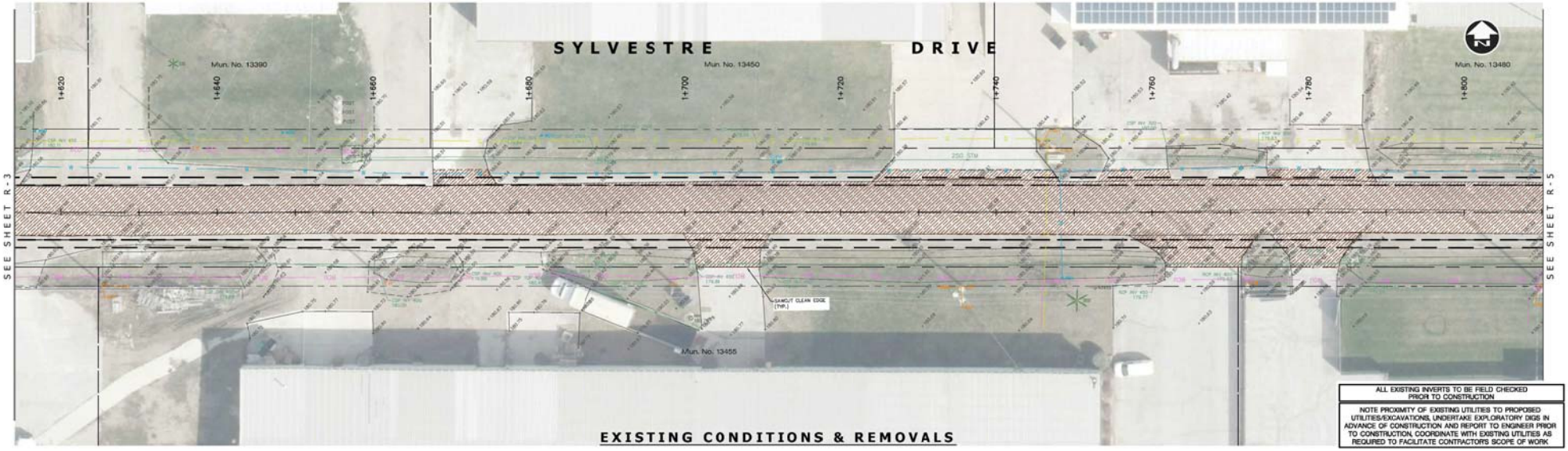
Existing Conditions, Removals & New Construction

SYLVESTRE DRIVE
STA. 1+425 TO STA. 1+610

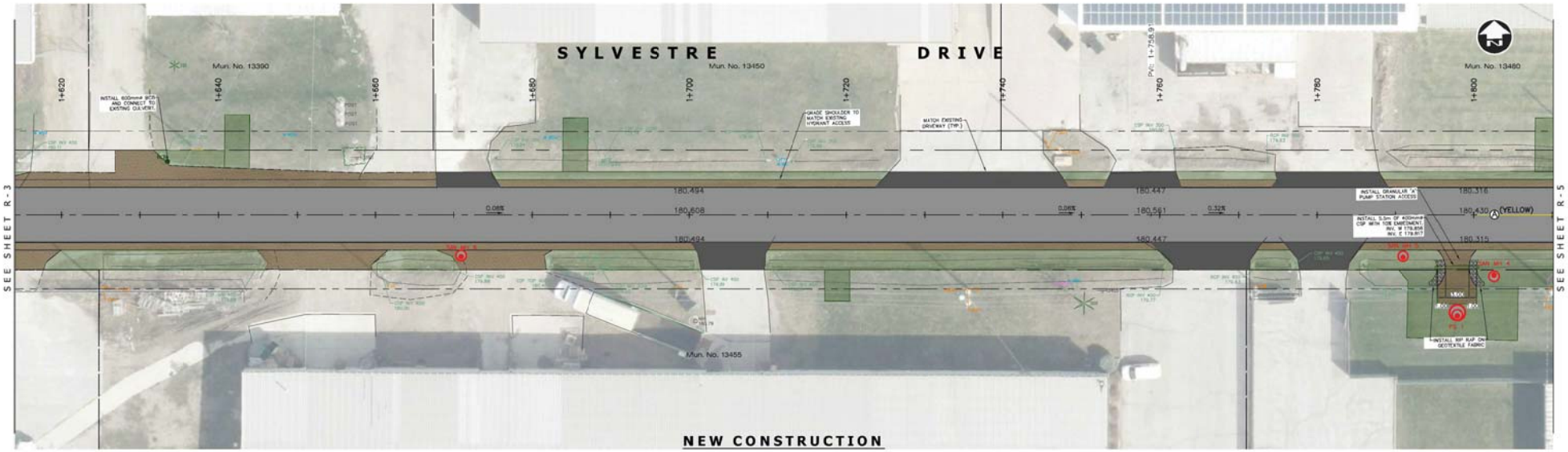
PROJECT NO. 17-6843-3000

SHEET NO. **R-3**

DILLON CONSULTING LIMITED 3200 DEZIEL DRIVE, SUITE 608, WINDSOR, ONTARIO, N8W 5K6, PHONE (519) 948-5000, FAX (519) 948-5054



EXISTING CONDITIONS & REMOVALS



NEW CONSTRUCTION

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Scale	Horizontal 1:250

Sylvestre Sanitary Sewer Extension
TOWN OF TECUMSEH

Existing Conditions, Removals & New Construction

SYLVESTRE DRIVE
STA. 1+610 TO STA. 1+810

Project No. 17-6843-3000

Sheet No. **R-4**

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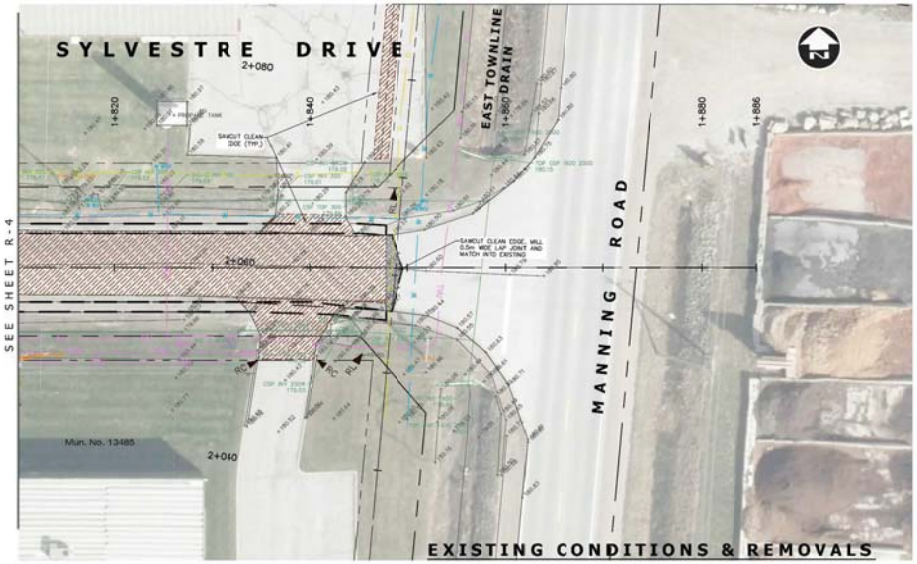

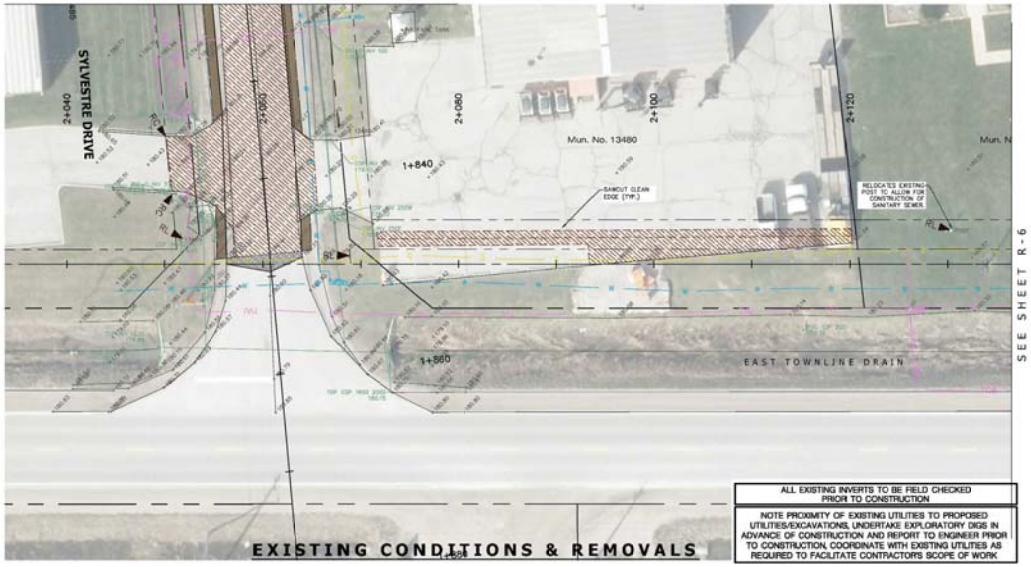

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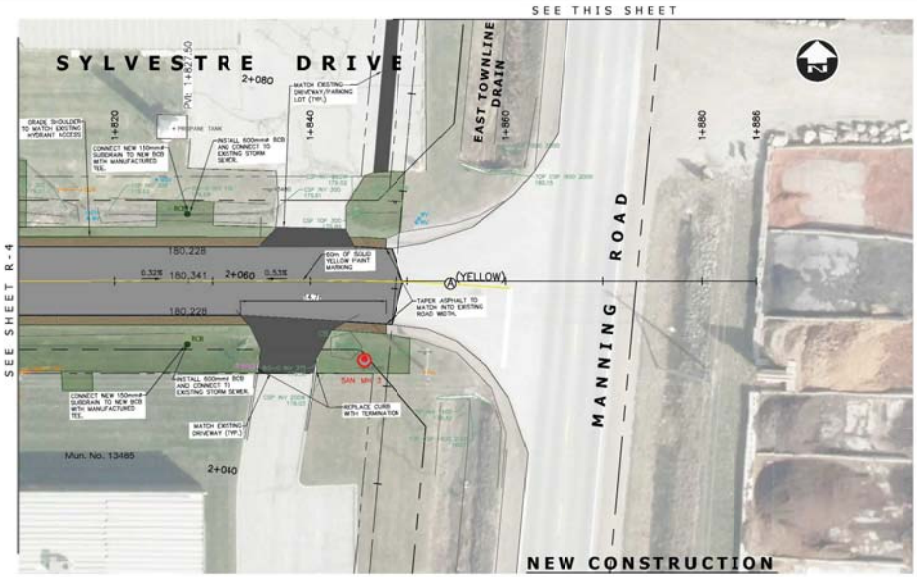

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Sylvestre Sanitary Sewer Extension
TOWN OF TECUMSEH

Existing Conditions, Removals & New Construction

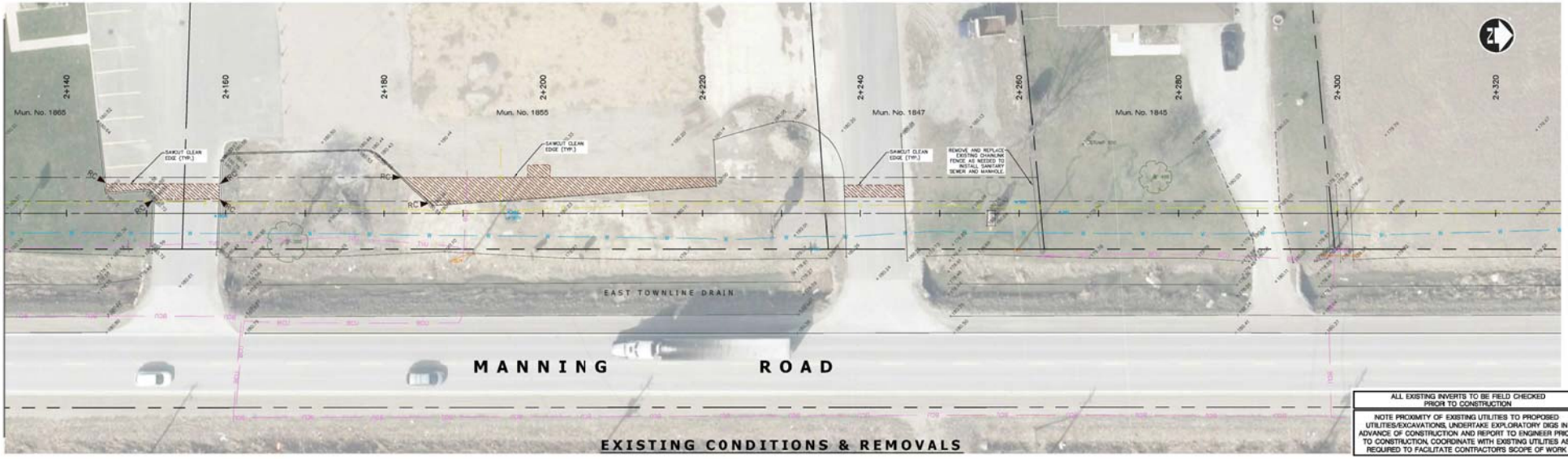
SYLVESTRE DRIVE
STA. 1+810 TO STA. 1+886

MANNING ROAD
STA. 2+035 TO STA. 2+135

PROJECT NO. 17-6843-3000

SHEET NO. **R-5**

DILLON CONSULTING LIMITED 3300 DESOTEL DRIVE, SUITE 688, WINDSOR, ONTARIO, N9W 5K8, PHONE (519) 948-5000, FAX (519) 948-5054



EXISTING CONDITIONS & REMOVALS

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NEW CONSTRUCTION

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SCALE: Horizontal 1:250	

Sylvestre Sanitary Sewer Extension
TOWN OF TECUMSEH

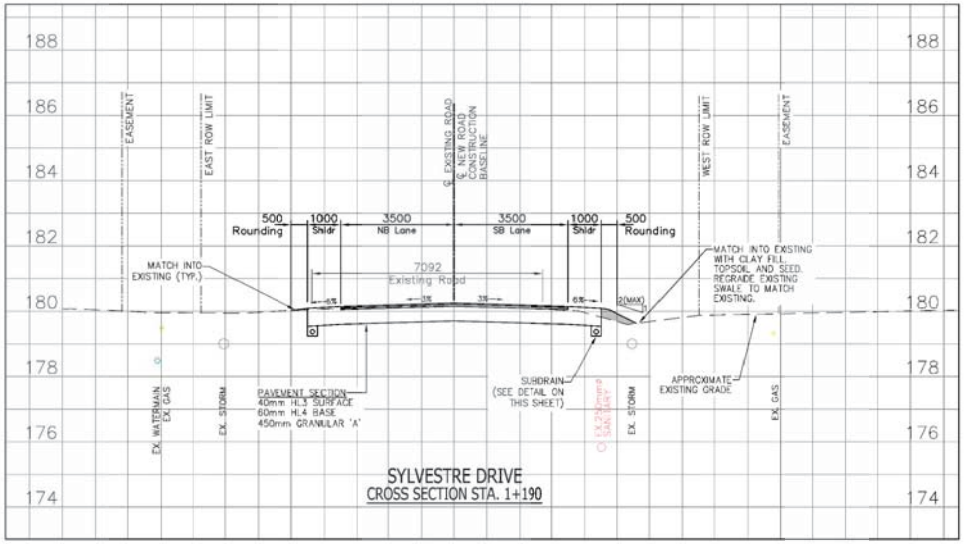
Existing Conditions, Removals & New Construction

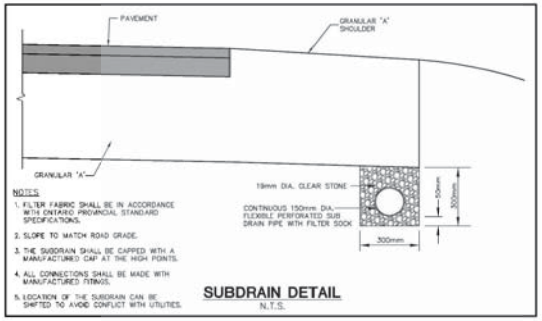
MANNING ROAD
STA. 2+135 TO STA. 2+325

PROJECT NO. 17-6843-3000

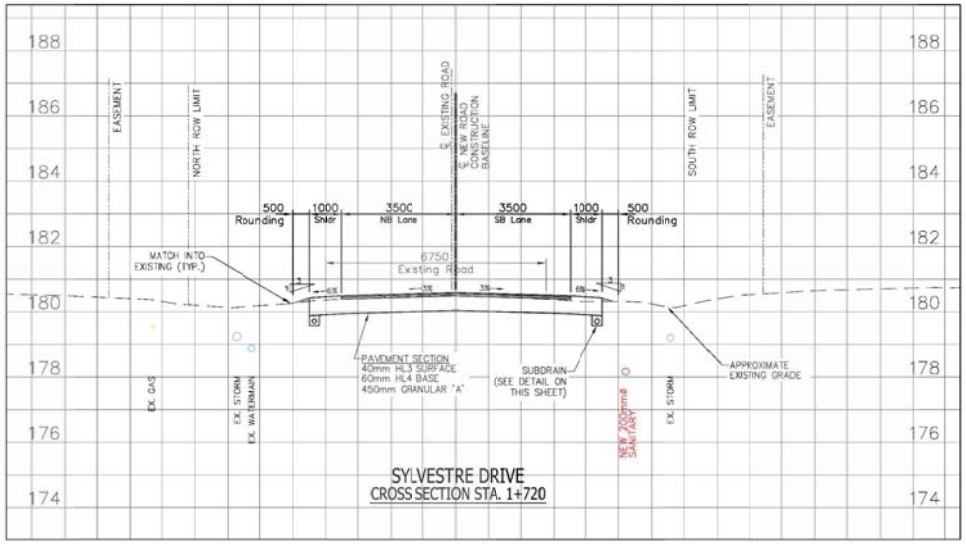
SHEET NO. **R-6**

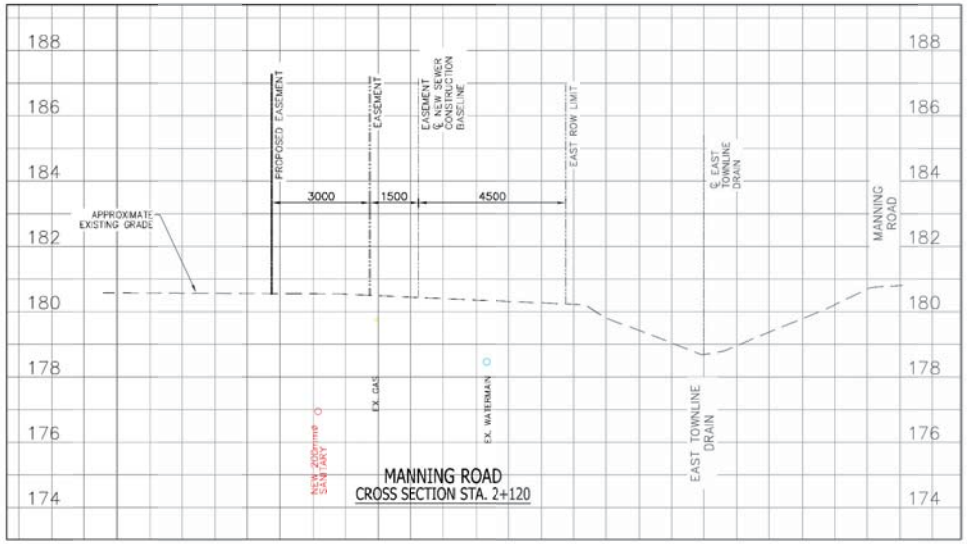
DILLON CONSULTING LIMITED 3200 DEZIEL DRIVE, SUITE 608, WINDSOR, ONTARIO, N8W 5K6, PHONE (519) 948-5000, FAX (519) 948-5054





NOTE:
ELEVATIONS OF EXISTING UTILITIES ARE UNKNOWN AND ONLY SHOWN SCHEMATICALLY





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Sylvestre Sanitary Sewer Extension
TOWN OF TECUMSEH

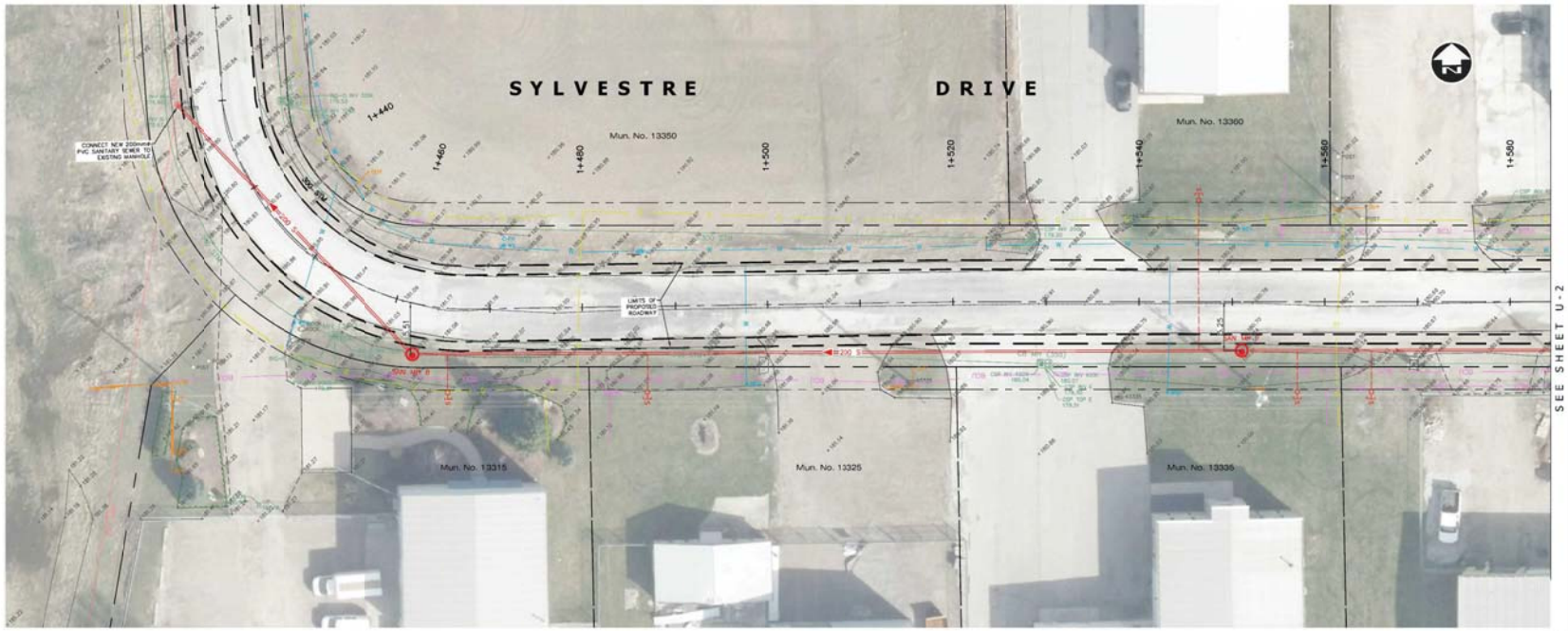
Sections

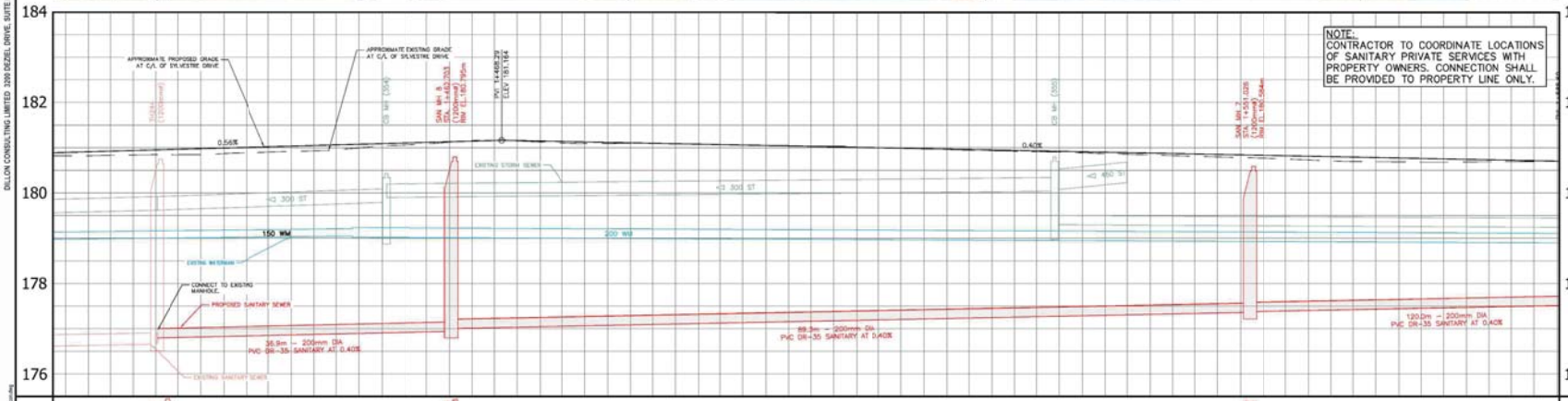
TYPICAL ROAD & UTILITY CROSS SECTIONS

PROJECT NO. 17-6843-3000

SHEET NO. **R-7**

DILLON CONSULTING LIMITED 3200 DEZIEL DRIVE, SUITE 608, WINDSOR, ONTARIO, N8W 5K6, PHONE (519) 948-5000, FAX (519) 948-5054





NOTE:
CONTRACTOR TO COORDINATE LOCATIONS OF SANITARY PRIVATE SERVICES WITH PROPERTY OWNERS. CONNECTION SHALL BE PROVIDED TO PROPERTY LINE ONLY.

GENERAL NOTES:

1. THE OWNER AND DILLON CONSULTING LIMITED DO NOT GUARANTEE THE ACCURACY OF THE UTILITIES SHOWN ON THE DRAWINGS. OTHER UTILITIES MAY BE PRESENT OR THE UTILITIES SHOWN MAY DIFFER IN SIZE OR LOCATION FROM THOSE SHOWN. THE CONTRACTOR SHALL NOTE THAT SERVICES FROM THE MAIN LINES ARE NOT SHOWN. THE CONTRACTOR ASSUMES FULL RESPONSIBILITY TO CONTACT THE VARIOUS UTILITY COMPANIES AND TO REPAIR ANY DAMAGE IT MAY CAUSE TO THESE UTILITIES OR TO OTHER THIRD PARTIES. THE CONTRACTOR AGREES TO INDEMNIFY THE OWNER AND DILLON CONSULTING LIMITED AGAINST ANY CLAIMS WHICH MAY ARISE FROM THE CONTRACTOR'S ACTIONS.
2. ALL WORKS TO BE CONSTRUCTED TO A TOLERANCE OF 5mm±.
3. ALL DIMENSIONS AND RADII ARE TO CONSTRUCTION BASELINE OR EDGE OF PAVEMENT.
4. CHAINAGES SHOWN REFER TO CONSTRUCTION BASELINE.
5. SEWER BEDDING TO BE CLASS 'B' (EXCEPT CLASS 'A' TO FIRST PIPE JOINT OUTSIDE OF MANHOLE FOR RIGID PIPE).
6. BACKFILL OF SEWER AND UTILITY TRENCHES SHALL BE IN ACCORDANCE WITH TRENCH BACKFILL DETAILS ON DETAIL SHEETS AND "SPECIFICATIONS FOR USE OF GRANULAR 'B', TYPE 1 AGGREGATE".
7. ALL PRIVATE DRAIN CONNECTIONS TO EXTEND TO THE PROPERTY LINE OR THROUGH EASEMENT WHERE SHOWN.
8. CONNECTIONS TO P.V.C. PIPE:
   CONSTRUCTION SHALL BE REQUIRED TO USE ONLY PLANT MANUFACTURED TEES WHEN INSTALLING PRIVATE DRAIN CONNECTIONS. THE ANGLE OR RISE OF THE CONNECTIONS SHALL BE BETWEEN 5° AND 85°. IF THE ANGULAR RISE EXCEED 45°, THE CONTRACTOR SHALL PROVIDE AN ADDITIONAL P.V.C. COUPLING WITH STOP IMMEDIATELY BEYONC THE FITTING. A SHORT SECTION OF P.V.C. PIPE IS TO BE USED TO CONNECT THE COUPLING TO THE TEE FITTING. THE COUPLING SHALL REST DIRECTLY UPON THE BELL PORTION OF THE FITTING.
9. CONNECTIONS TO CONCRETE PIPE:
   ALL FIELD MANUFACTURED TEES SHALL BE CORED AND CONNECTED USING AN APPROVED MANUFACTURED TEE INCLUDING A STOPPER TO PREVENT THE PROTRUSION OF THE INCOMING PIPE.
10. CLEANOUTS ARE REQUIRED ON ALL SANITARY SERVICES THAT CONNECT TO EXISTING SERVICES.
11. SANITARY SERVICES ARE TO BE 150mm DIA. UNLESS NOTED OTHERWISE.
12. ALL ADJUSTMENT RINGS ARE TO BE IPEX RISER RINGS.
13. A UNION GAS REPRESENTATIVE IS TO BE ON SITE DURING ANY EXCAVATION WITHIN 1.5m ABOVE OR ADJACENT TO ANY UNION GAS FACILITIES.
14. ALL WORK TO MAINTAIN A MINIMUM 0.3m CLEARANCE FROM ALL GAS.
15. ALL SANITARY MANHOLES SHALL BE EQUIPPED WITH RAIN SHIELDS.
16. ALL SANITARY MANHOLES SHALL BE WRAPPED IN BLUESKIN.

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Town of Tecumseh
Ontario, Canada

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SCALE: Horizontal 1:250 Vertical 1:50

Sylvestre Sanitary Sewer Extension
TOWN OF TECUMSEH

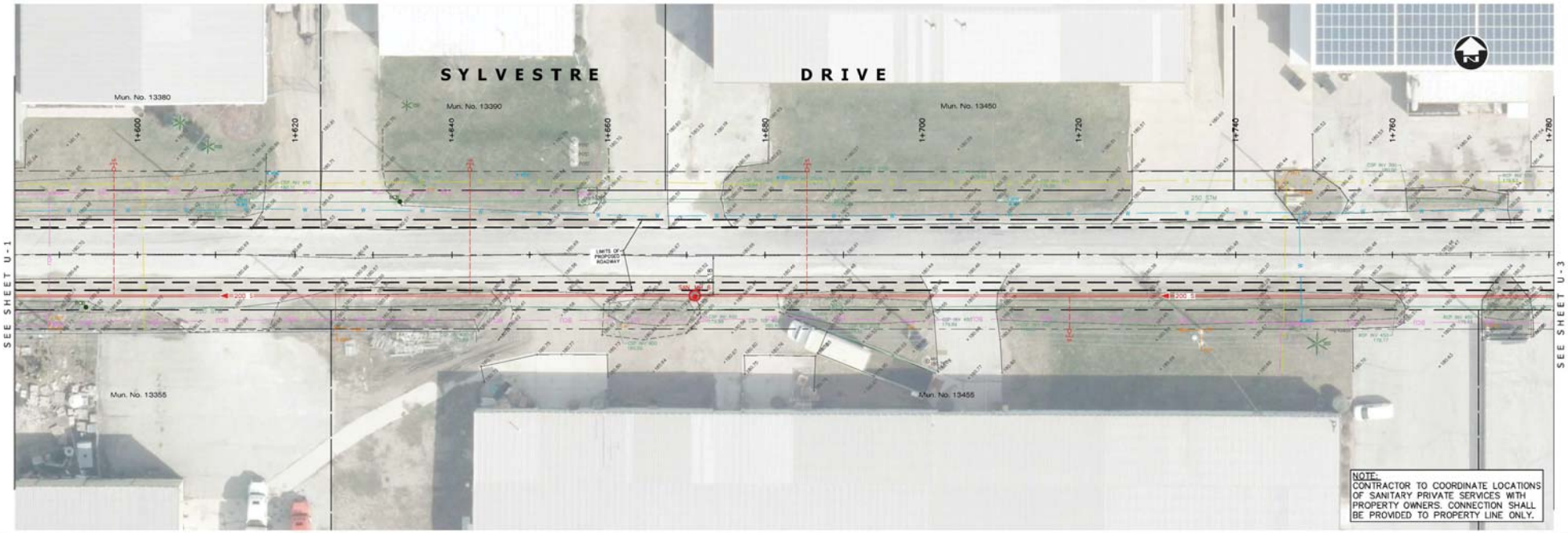
Plan and Profile

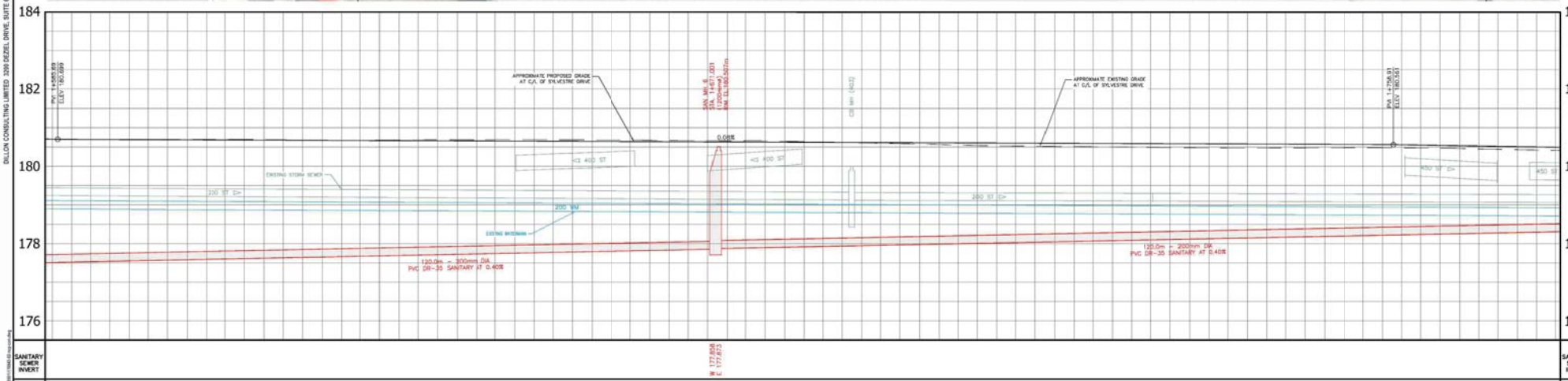
SYLVESTRE DRIVE
STA. 1+420 TO STA. 1+585

PROJECT NO. 17-6843-3000

SHEET NO. **U-1**

DILLON CONSULTING LIMITED 3300 DESOTO DRIVE, SUITE 618, WINDSOR, ONTARIO, N9W 5K8, PHONE (519) 948-5000, FAX (519) 948-5054





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Sylvestre Sanitary Sewer Extension
TOWN OF TECUMSEH

Plan and Profile

SYLVESTRE DRIVE
STA. 1+585 TO STA. 1+785

PROJECT NO. 17-6843-3000

SHEET NO. **U-2**

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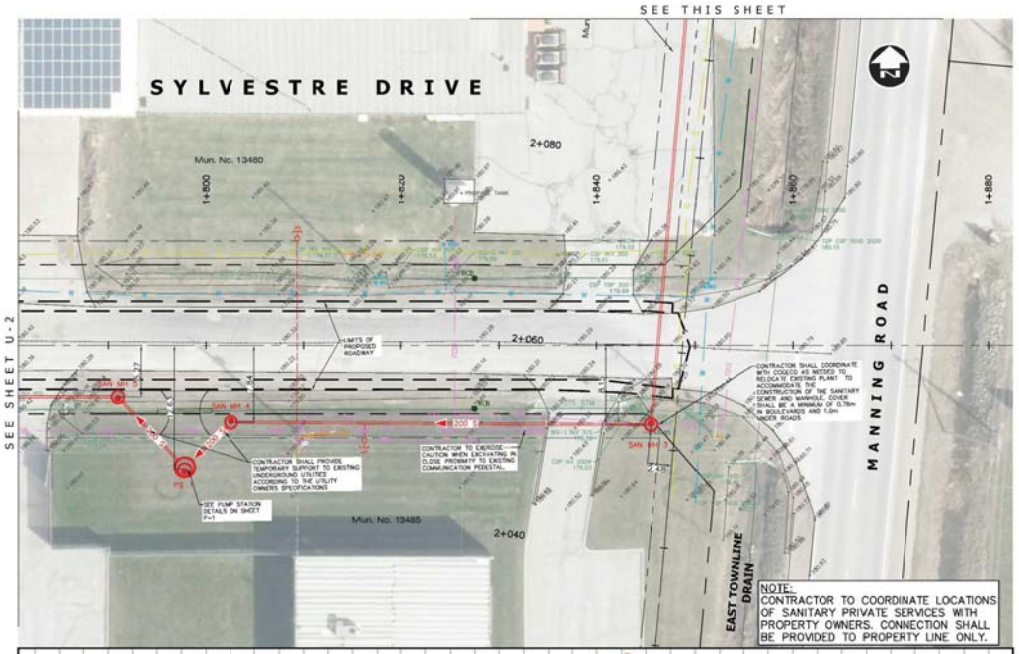

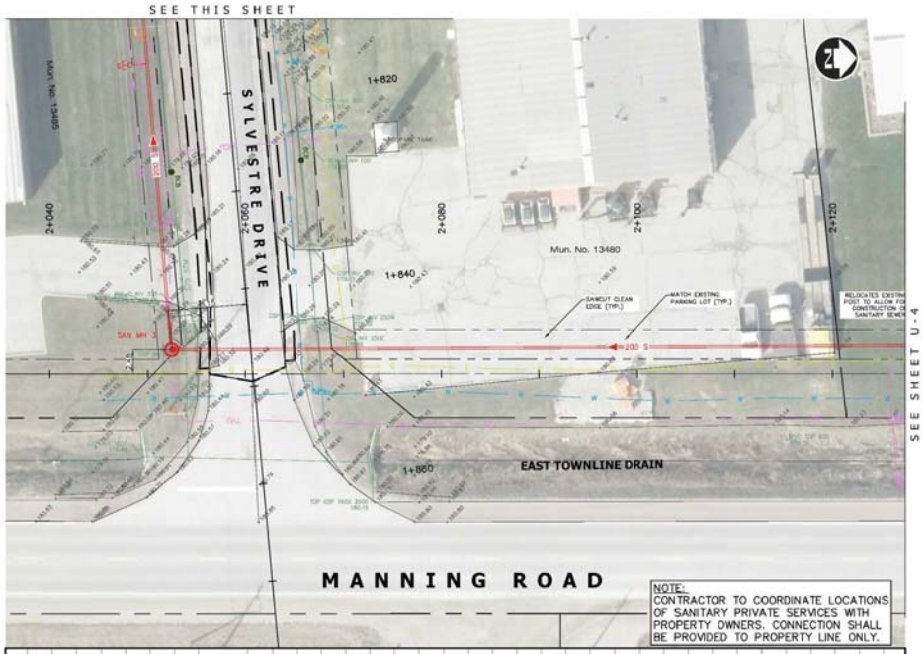

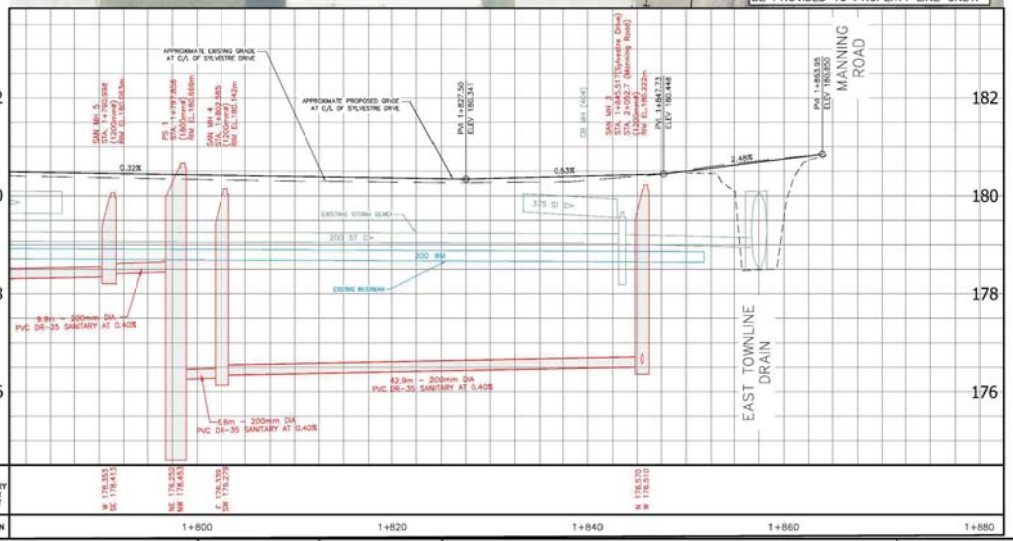

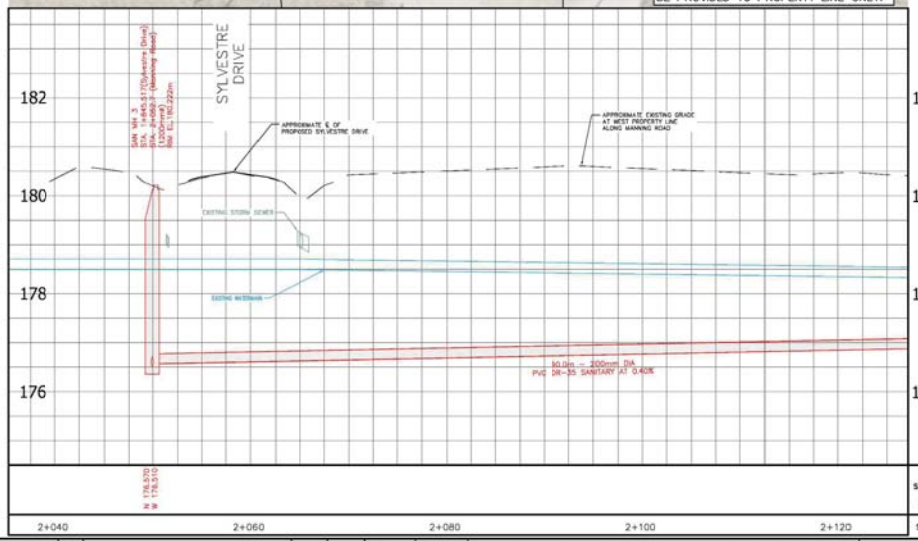

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Sylvestre Sanitary Sewer Extension
TOWN OF TECUMSEH

Project No. 17-6843-3000

Plan and Profile
SYLVESTRE DRIVE
STA. 1+785 TO STA. 1+880

Plan and Profile
MANNING ROAD
STA. 2+040 TO STA. 2+125

Sheet No. **U-3**

DILLON CONSULTING LIMITED 3200 DEZIEL DRIVE, SUITE 608, WINDSOR, ONTARIO, N8W 5K8, PHONE (519) 948-5000, FAX (519) 948-5054

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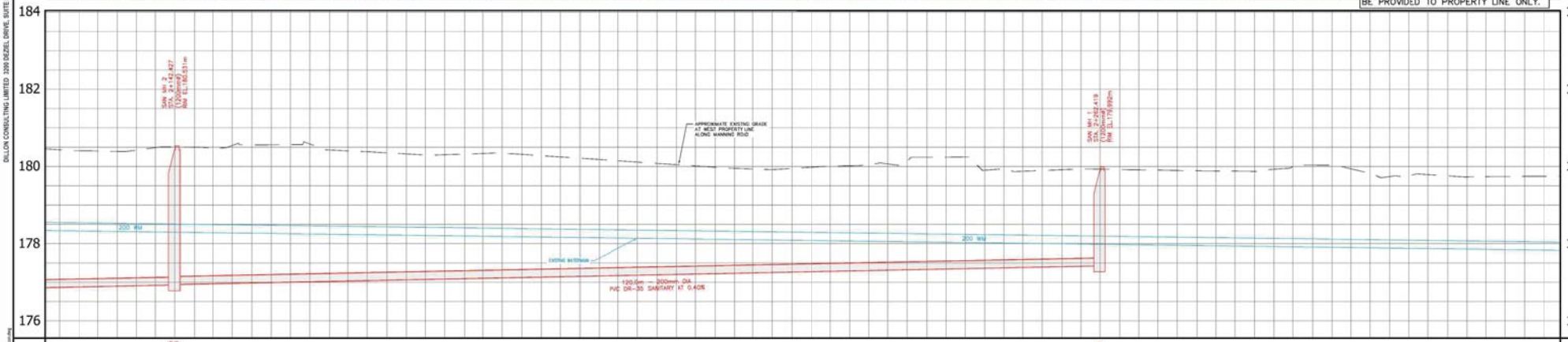

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Sylvestre Sanitary Sewer Extension
TOWN OF TECUMSEH

Plan and Profile

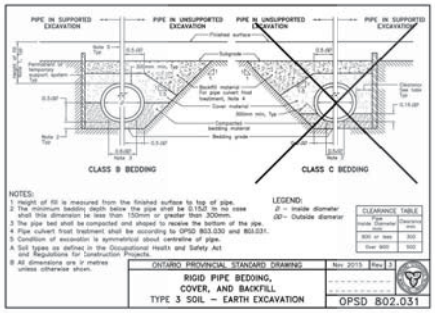
MANNING ROAD
STA. 2+125 TO STA. 2+320

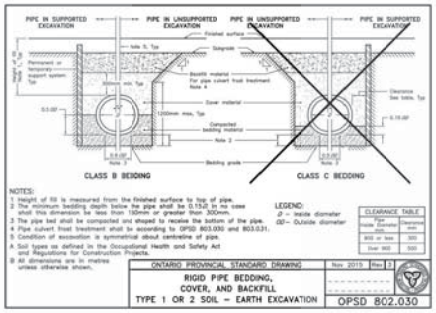
PROJECT NO. 17-6843-3000

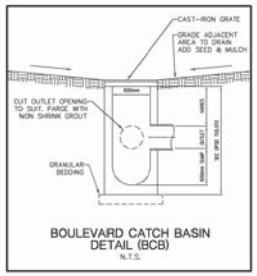
SHEET NO. **U-4**

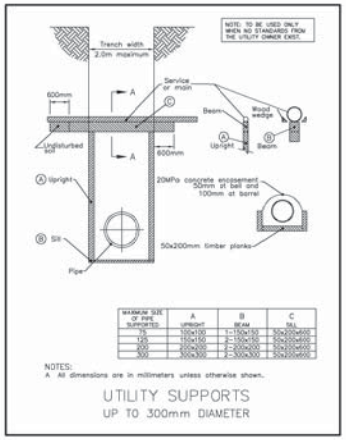
DILLON CONSULTING LIMITED 3200 DEZIEL DRIVE, SUITE 608, WINDSOR, ONTARIO, N8W 5K6, PHONE (519) 948-5000, FAX (519) 948-5054

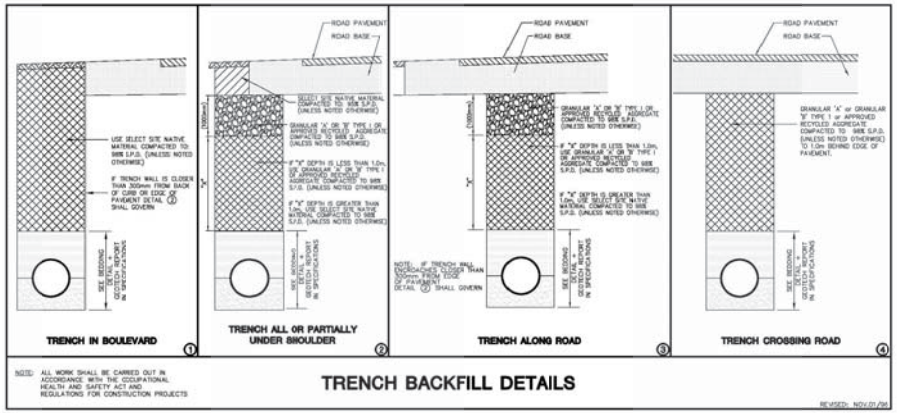
THE FOLLOWING ONTARIO PROVINCIAL STANDARD DRAWINGS SHALL APPLY TO THIS CONTRACT	
219.130	HEAVY-DUTY SILT FENCE BARRIER
401.020	CAST IRON, CIRCULAR FRAME WITH CIRCULAR COVER FOR MAINTENANCE HOLES
405.020	MAINTENANCE HOLE STEPS SOLID
509.010	PAVEMENT REINSTATEMENT FOR UTILITY CUTS
701.010	PRECAST CONCRETE MAINTENANCE HOLE, 1200mm DIAMETER
701.021	MAINTENANCE HOLE BENCHING AND PIPE OPENING DETAILS
701.030	PRECAST CONCRETE MAINTENANCE HOLE COMPONENTS, 1200mm DIAMETER, TAPPERED TOP AND FLAT CAP
708.020	SUPPORT FOR PIPE AT CATCH BASIN OR MAINTENANCE HOLE
802.010	FLEXIBLE PIPE EMBEDMENT AND BACKFILL EARTH EXCAVATION
802.030	RIGID PIPE BEDDING, COVER AND BACKFILL TYPE 1 OR 2 SOIL – EARTH EXCAVATION
802.031	RIGID PIPE BEDDING, COVER AND BACKFILL TYPE 3 SOIL – EARTH EXCAVATION
1006.010	SEWER SERVICE CONNECTIONS FOR RIGID MAIN PIPE SEWER
1006.020	SEWER SERVICE CONNECTIONS FOR FLEXIBLE MAIN PIPE SEWER

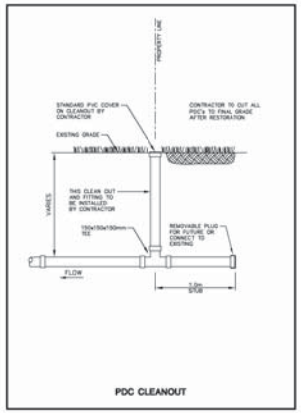


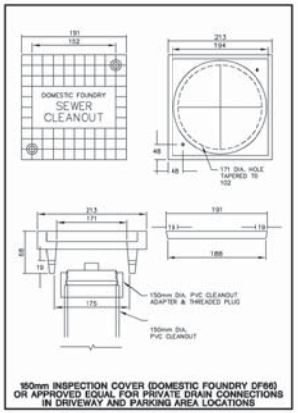












Conditions of Use

Verify elevations and/or dimensions on drawing prior to use. Report any discrepancies to Dillon Consulting Limited.

Do not scale dimensions from drawing.

Do not modify drawing, re-use it, or use it for purposes other than those intended at the time of its preparation without prior written permission fom Dillon Consulting Limite d.

Town of Tecumseh
Ontario, Canada

DILLON CONSULTING

No.	ISSUED FOR	DATE	BY
1	EA Report	NOV 07/18	ACW

DESIGN	DCR
REVIEWED BY	ACW
DRAWN	DCR
CHECKED BY	RBH
DATE	October 25, 2018
SCALE	As Shown

Sylvestre Sanitary Sewer Extension
TOWN OF TECUMSEH

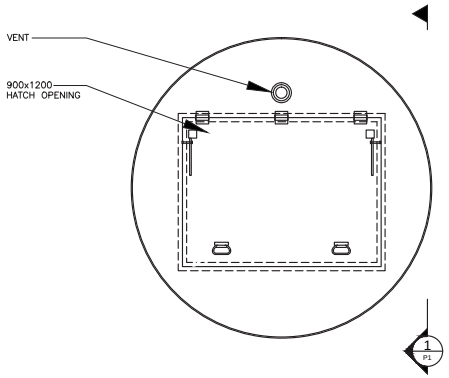
Sections and Details

MISCELLANEOUS DETAILS

PROJECT NO. 17-6843-3000

SHEET NO. U-5

DILLON CONSULTING LIMITED 3200 DEZIEL DRIVE, SUITE 608, WINDSOR, ONTARIO, N8W 5K6, PHONE (519) 948-5000, FAX (519) 948-5054



PLAN ABOVE GRADE
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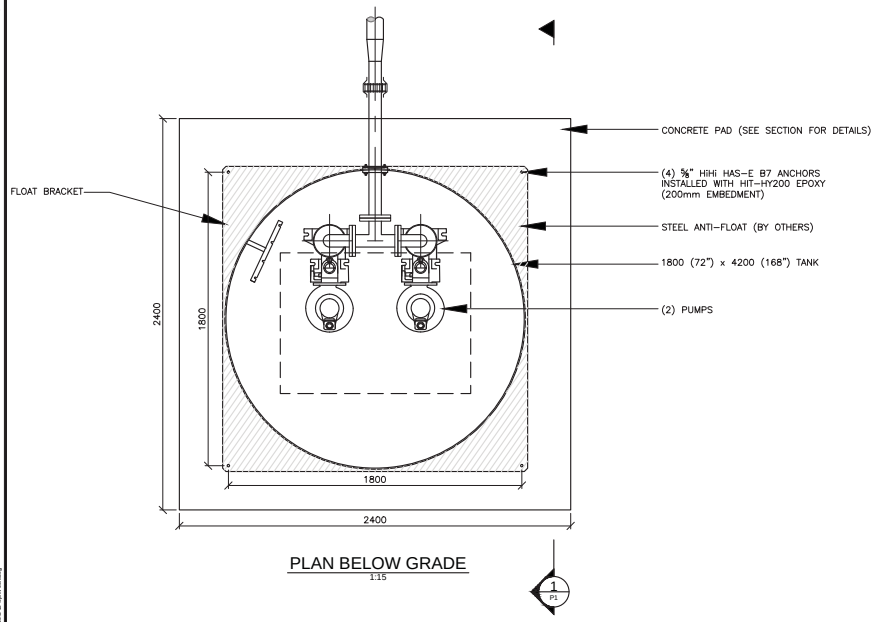

PLAN BELOW GRADE
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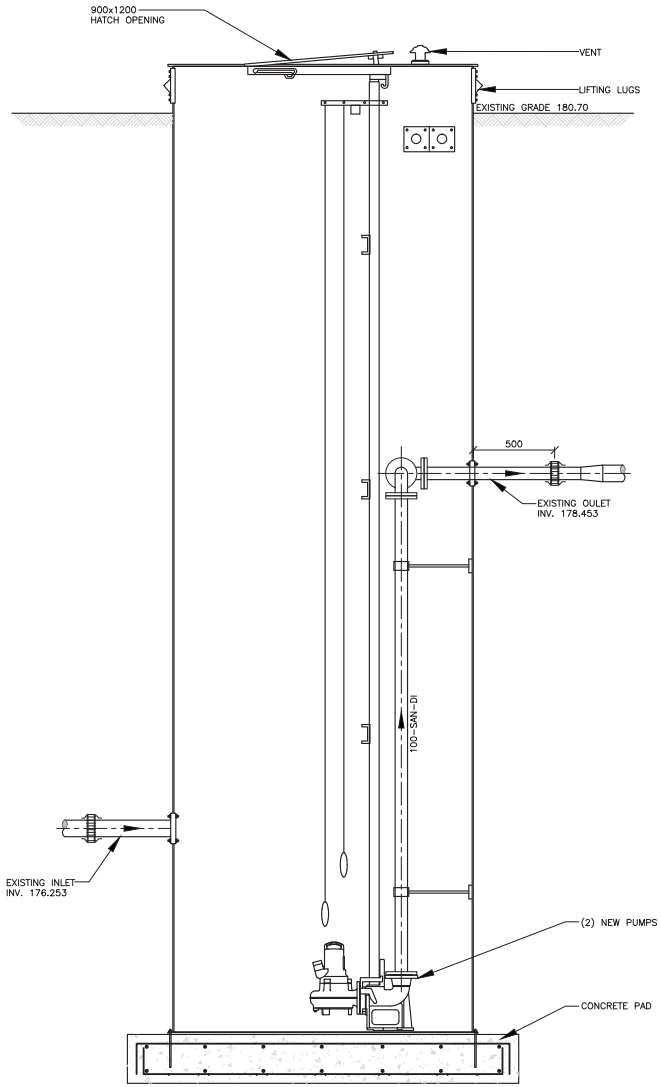

1 P1 SECTION
1:10

FIBERGLASS BASIN PACKAGES INCLUDES:

QTY 2 – SULZER ABS SUBMERSIBLE PIMP MODEL AS0830.D130-S10/4W, 1.3 HP, 1700 RPM, 230/1/60, 10m CABLE, CAST IRON CONSTRUCTION, VORTEX IMPELLER, HEAT AND SEAL PROTECTION, DN80 DISCHARGE.

QTY 1 – FIBERGLASS BASIN: 72" (1800mm) DIAMETER x 168" (4200mm) DEPTH FIBERGLASS BASIN – 3" ANTI-FLOTATION FLANGES & (4) STEEL LIFTING LUGS BOLTED AT EVERY 45 DEGREES. GAS TIGHT .375 STEEL HINGED ACCESS COVER – STEEL-POWDER COATED MUSHROOM VENT & NIPPLE SHIPPED LOOSE, DISCHARGE PIPING, 1-1/4" 304 STAINLESS STEEL, (1) 1-1/4" SS TEE W/ 2" X 1-1/4" REDUCER, (2) 1-1/4" C.I. MODEL 208 BALL CHECK VALVE W/ PVC AIR BLEEDER-ANTI-SYPHON VALVES, (2) 304 STAINLESS STEEL GUIDE RAIL PIPE, (2) 1-1/4" QUARTER TURN BRASS BALL SHUT-OFF VALVES, (2) ⅝" STAINLESS STEEL BALL VALVE EXTENSION ROD/HANDLE & SUPPORT BRACKETS, (2) 1-1/4" STAINLESS STEEL ELBOWS & TRUE UNION DISCONNECTS, (1) NEMA 4X DUPLEX JUNCTION BOX, (2) 20' 316 STAINLESS STEEL LIFTING CHAIN W/ ⅜" SHACKLES, (1) 2" STAINLESS STEEL NPT DISCHARGE COUPLING, (2) 2" NYLON NPT CONDUIT FLANGES, (4) FLOATS WITH 30' LENGTH.

Conditions of Use

Verify elevations and/or dimensions on drawing prior to use. Report any discrepancies to Dillon Consulting Limited.

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Town of Tecumseh
Ontario, Canada

DILLON CONSULTING

No.	ISSUED FOR	DATE	BY
1	EA Report	NOV 07/18	ACW

DESIGN: DCR/RBH	REVIEWED BY: ACW
DRAWN: RBH/DCR	CHECKED BY: DAM
DATE: October 17, 2018	
SCALE: 1:75	

Sylvestre Sanitary Sewer Extension
TOWN OF TECUMSEH

NEW PUMPING STATION
PLAN AND SECTION

PROJECT NO. 17-6843-3000

SHEET NO. P-1

DILLON CONSULTING LIMITED: 3200 DEZIEL DRIVE, SUITE 608, WINDSOR, ONTARIO, N8W 5K8, PHONE (519) 948-5000, FAX (519) 948-5054

FILENAME: C:\PROJECTWISE\WORKING DIRECTORY\ACTIVE_32DCR\DCR00095\K\17-6843-10-HPNW-CONLDWG PLOTTED BY: RICE, DEAN

Appendix E

Cost Estimates

SYLVESTRE SANITARY SEWER EXTENSION OPTION A
TOWN OF TECUMSEH
ESTIMATE OF PROBABLE CONSTRUCTION COSTS

OPTION 'A'

3/12/2019

DETAILED SCHEDULE OF ITEMS AND PRICES:

ITEM NO.	DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	AMOUNT
SECTION 'A' - ROAD WORK					
1	Clearing, Grubbing, Stripping of Topsoil	L.S.	---	---	$10,000.00
2	Full Depth Asphalt/Concrete Pavement Removal and Disposal	m^2	5,950	$15.00	$89,250.00
3	Existing Driveway Removal and Disposal:				
	a) Asphalt Driveway	m^2	520	$8.00	$4,160.00
	b) Concrete Driveway	m^2	90	$10.00	$900.00
4	Earth Excavation and Grading:				
	a) Excavation of Existing Road Base	m^3	3,600	$20.00	$72,000.00
5	Granular "A" for Roadway Base and Shoulder (based on theoretical):				
	a) Road Base (450 mm thick)	Tonnes	6,500	$24.00	$156,000.00
	b) Shouldering (110 mm thick) after placement of surface course	Tonnes	500	$32.00	$16,000.00
*	c) Temporary Granular Access (300 mm thick) **(Provisional)**	Tonnes	200	$28.00	$5,600.00
6	150 mm dia. Big "O" Perforated Subdrains with Filter Cloth	m	1,700	$25.00	$42,500.00
7	Driveway Restoration Including Granular Base:				
	a) Asphalt Driveways (Base and Surface)	m^2	525	$95.00	$49,875.00
	b) Granular Driveways	m^2	740	$20.00	$14,800.00
	c) Concrete Driveways	m^2	90	$80.00	$7,200.00
8	Asphalt Pavement:				
	a) HL4 Surface Course (40 mm)	Tonnes	700	$125.00	$87,500.00
	b) HL8 Base Course (60 mm)	Tonnes	1,000	$125.00	$125,000.00
9	Asphalt Milling:				
	a) Cold Mill Asphalt 40 mm deep, 0.5 m wide for lap joint for base course	m^2	7	$150.00	$1,050.00
	b) Surface Asphalt Headers (40 mm depth), 2 m Wide	m^2	28	$65.00	$1,820.00
10	Asphalt Cement (Liquid Asphalt) Price Adjustment	Allow.	---	---	**$15,000.00**
11	Pavement Markings:				
	a) Permanent - At intersection of Manning Road only.	L.S.	---	---	$2,500.00
12	Dust Control:				
	a) Magnesium Chloride (25 kg bags)	Each	28	$100.00	$2,800.00
	b) Water	m^3	100	$12.00	$1,200.00
13	Traffic Control:				
	a) Construction Staging and Signage - maintain local business access	L.S.	---	---	$10,000.00
*	b) Two Portable Message Boards **(Provisional)**	Weeks	4	$650.00	$2,600.00
TOTAL SECTION 'A' - ROAD WORK					**$717,755.00**
SECTION 'B' - STORM SEWERS					
14	Catchbasins - NEW				
	a) 600mm dia HDPE boulevard Catchbasin	Each	5	$1,250.00	$6,250.00
TOTAL SECTION 'B' - STORM SEWERS					**$6,250.00**

*** PROVISIONAL ITEMS**

SYLVESTRE SANITARY SEWER EXTENSION OPTION A
TOWN OF TECUMSEH
ESTIMATE OF PROBABLE CONSTRUCTION COSTS

OPTION 'A'

3/12/2019

DETAILED SCHEDULE OF ITEMS AND PRICES:

ITEM			EST.	UNIT	
SECTION 'C' - SANITARY SEWERS					
15	Supply and Install Sanitary Sewers, open cut including full granular backfill:				
	a) 200mm dia. PVC DR 35	m	970	$300.00	$291,000.00
16	Supply and Install Sanitary Manholes:				
	a) 1200 mm dia.	Each	11	$9,000.00	$99,000.00
17	Sewer Video Inspection Allowance	m	970	$10.00	$9,700.00
18	Sanitary Private Drain Connections:				
	a) 150 mm dia. Long	Each	5	$2,000.00	$10,000.00
	b) 150 mm dia. Short	Each	10	$1,600.00	$16,000.00
TOTAL SECTION 'C' - SANITARY SEWERS					**$425,700.00**
SECTION 'D' - MISCELLANEOUS & PROVISIONAL					
19	Imported Topsoil (100 mm Thick)	m^2	12,000	$5.00	$60,000.00
20	Hydroseed and Mulch:				
	a) Supply and Place Hydroseed and Mulch	m^2	12,000	$2.00	$24,000.00
	b) Maintenance of Seed	L.S.	---	---	$10,000.00
21	Install Project Signs	Each	2	$700.00	$1,400.00
22	Temporary Support of Existing Utility Poles	Allow.	---	---	$3,000.00
23	Coordination With Utilities	L.S.	---	---	$2,000.00
24	Supply and Install Construction Hoarding	L.S.	---	---	$7,000.00
25	Erosion, and Sediment Control	L.S.	---	---	$2,500.00
26	Maintenance of Flows	L.S.	---	---	$3,000.00
27	Pre-condition Survey	L.S.	---	---	$2,000.00
28	Contingency Allowance	L.S.	---	---	**$120,000.00**
29	Storm sewer outlet to East Townline Drain (**Provisional**)	L.S.	---	---	$2,000.00
30	Big 'O' 300mm (**Provisional**)	m	25	$100.00	$2,000.00
31	Remove and Dispose of Existing Culverts (Various Sizes) (**Provisional)**	L.S.	---	---	$10,000.00
32	Supply and Install Storm Sewers, Including Backfill (**Provisional**):				
	a) 600mm dia. HDPE BOSS 2000	m	22	$400.00	$8,800.00
	b) 200mm dia. PVC DR-35	m	16	$200.00	$3,200.00
	c) 450mm dia. CSP	m	5	$300.00	$1,500.00
TOTAL SECTION 'D' - MISCELLANEOUS					**$238,900.00**

SUMMARY OF TENDER	
SECTION 'A' - ROAD WORK	$717,755.00
SECTION 'B' - STORM SEWERS	$6,250.00
SECTION 'C' - SANITARY SEWERS	$425,700.00
SECTION 'D' - MISCELLANEOUS	$238,900.00
TOTAL TENDER PRICE (Excluding H.S.T.)	**$1,388,605.00**

Construction Cost Excluding Roadwork, storm, provisional items and easements $523,350.00

*** PROVISIONAL ITEMS**

SYLVESTRE SANITARY SEWER EXTENSION OPTION B
TOWN OF TECUMSEH
ESTIMATE OF PROBABLE CONSTRUCTION COSTS

OPTION 'B'

3/12/2019

DETAILED SCHEDULE OF ITEMS AND PRICES:

ITEM NO.	DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	AMOUNT
SECTION 'A' - ROAD WORK					
1	Clearing, Grubbing, Stripping of Topsoil	L.S.	---	---	$10,000.00
2	Full Depth Asphalt/Concrete Pavement Removal and Disposal	m^2	5,950	$15.00	$89,250.00
3	Existing Driveway Removal and Disposal:				
	a) Asphalt Driveway	m^2	520	$8.00	$4,160.00
	b) Concrete Driveway	m^2	90	$10.00	$900.00
4	Earth Excavation and Grading:				
	a) Excavation of Existing Road Base	m^3	3,600	$20.00	$72,000.00
5	Granular "A" for Roadway Base and Shoulder (based on theoretical):				
	a) Road Base (450 mm thick)	Tonnes	6,500	$24.00	$156,000.00
	b) Shouldering (110 mm thick) after placement of surface course	Tonnes	500	$32.00	$16,000.00
*	c) Temporary Granular Access (300 mm thick) **(Provisional)**	Tonnes	200	$28.00	$5,600.00
6	150 mm dia. Big "O" Perforated Subdrains with Filter Cloth	m	1,700	$25.00	$42,500.00
7	Driveway Restoration Including Granular Base:				
	a) Asphalt Driveways (Base and Surface)	m^2	525	$95.00	$49,875.00
	b) Granular Driveways	m^2	740	$20.00	$14,800.00
	c) Concrete Driveways	m^2	90	$80.00	$7,200.00
8	Asphalt Pavement:				
	a) HL4 Surface Course (40 mm)	Tonnes	700	$125.00	$87,500.00
	b) HL8 Base Course (60 mm)	Tonnes	1,000	$125.00	$125,000.00
9	Asphalt Milling:				
	a) Cold Mill Asphalt 40 mm deep, 0.5 m wide for lap joint for base course	m^2	7	$150.00	$1,050.00
	b) Surface Asphalt Headers (40 mm depth), 2 m Wide	m^2	28	$65.00	$1,820.00
10	Asphalt Cement (Liquid Asphalt) Price Adjustment	Allow.	---	---	**$15,000.00**
11	Pavement Markings:				
	a) Permanent - At intersection of Manning Road only.	L.S.	---	---	$2,500.00
12	Dust Control:				
	a) Magnesium Chloride (25 kg bags)	Each	28	$100.00	$2,800.00
	b) Water	m^3	100	$12.00	$1,200.00
13	Traffic Control:				
	a) Construction Staging and Signage - maintain local business access	L.S.	---	---	$10,000.00
*	b) Two Portable Message Boards **(Provisional)**	Weeks	4	$650.00	$2,600.00
TOTAL SECTION 'A' - ROAD WORK					**$717,755.00**
SECTION 'B' - STORM SEWERS					
14	Catchbasins - NEW				
	a) 600mm dia HDPE boulevard Catchbasin	Each	5	$1,250.00	$6,250.00
TOTAL SECTION 'B' - STORM SEWERS					**$6,250.00**

*** PROVISIONAL ITEMS**

SYLVESTRE SANITARY SEWER EXTENSION OPTION B
TOWN OF TECUMSEH
ESTIMATE OF PROBABLE CONSTRUCTION COSTS

OPTION 'B'

3/12/2019

DETAILED SCHEDULE OF ITEMS AND PRICES:

SECTION 'C' - SANITARY SEWERS					
15	Supply and Install Sanitary Sewers, open cut including full granular backfill:				
	a) 200mm dia. PVC DR 35	m	360	$300.00	$108,000.00
	b) 50mm dia. PVC SDR 26 (E/One System) Including all fittings and bends and connection to manhole	m	280	$150.00	$42,000.00
	c) 32mm dia. PVC SDR 26 (E/One System) connection from pump to main; including all neccesary fittings	Each	4	$1,500.00	$6,000.00
16	Supply and Install Sanitary Manholes:				
	a) 1200 mm dia.	Each	4	$9,000.00	$36,000.00
17	E/One DH071 Grinder Pump with Installation and Connection to existing	Each	4	$7,000.00	$28,000.00
18	Sewer Video Inspection Allowance	m	640	$10.00	$6,400.00
19	Sanitary Private Drain Connections:				
	a) 150 mm dia. Long	Each	5	$2,000.00	$10,000.00
	b) 150 mm dia. Short	Each	6	$1,600.00	$9,600.00
TOTAL SECTION 'C' - SANITARY SEWERS					**$246,000.00**
SECTION 'D' - MISCELLANEOUS & PROVISIONAL					
20	Imported Topsoil (100 mm Thick)	m^2	6,000	$5.00	$30,000.00
21	Hydroseed and Mulch:				
	a) Supply and Place Hydroseed and Mulch	m^2	6,000	$2.00	$12,000.00
	b) Maintenance of Seed	L.S.	---	---	$10,000.00
22	Install Project Signs	Each	2	$700.00	$1,400.00
23	Temporary Support of Existing Utility Poles	Allow.	---	---	$3,000.00
24	Coordination With Utilities	L.S.	---	---	$2,000.00
25	Supply and Install Construction Hoarding	L.S.	---	---	$7,000.00
26	Erosion, and Sediment Control	L.S.	---	---	$2,500.00
27	Maintenance of Flows	L.S.	---	---	$3,000.00
28	Pre-condition Survey	L.S.	---	---	$2,000.00
29	Contingency Allowance	L.S.	---	---	**$120,000.00**
30	Storm sewer outlet to East Townline Drain (**Provisional**)	L.S.	---	---	$2,000.00
31	Big 'O' 300mm (**Provisional**)	m	25	$100.00	$2,000.00
32	Remove and Dispose of Existing Culverts (Various Sizes) (**Provisional**)	L.S.	---	---	$10,000.00
33	Supply and Install Storm Sewers, Including Backfill (**Provisional**):				
	a) 600mm dia. HDPE BOSS 2000	m	22	$400.00	$8,800.00
	b) 200mm dia. PVC DR-35	m	16	$200.00	$3,200.00
	c) 450mm dia. CSP	m	5	$300.00	$1,500.00
TOTAL SECTION 'D' - MISCELLANEOUS					**$196,900.00**

SUMMARY OF TENDER	
SECTION 'A' - ROAD WORK	$717,755.00
SECTION 'B' - STORM SEWERS	$6,250.00
SECTION 'C' - SANITARY SEWERS	$246,000.00
SECTION 'D' - MISCELLANEOUS	$196,900.00
TOTAL TENDER PRICE (Excluding H.S.T.)	**$1,166,905.00**

Construction Cost Excluding Roadwork, storm, provisional items and easements $301,650.00

*** PROVISIONAL ITEMS**

SYLVESTRE SANITARY SEWER EXTENSION OPTION C
TOWN OF TECUMSEH
ESTIMATE OF PROBABLE CONSTRUCTION COSTS

OPTION 'C'

3/12/2019

DETAILED SCHEDULE OF ITEMS AND PRICES:

ITEM NO.	DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	AMOUNT
SECTION 'A' - ROAD WORK					
1	Clearing, Grubbing, Stripping of Topsoil	L.S.	---	---	$10,000.00
2	Full Depth Asphalt/Concrete Pavement Removal and Disposal	m^2	5,950	$15.00	$89,250.00
3	Existing Driveway Removal and Disposal:				
	a) Asphalt Driveway	m^2	520	$8.00	$4,160.00
	b) Concrete Driveway	m^2	90	$10.00	$900.00
4	Earth Excavation and Grading:				
	a) Excavation of Existing Road Base	m^3	3,600	$20.00	$72,000.00
5	Granular "A" for Roadway Base and Shoulder (based on theoretical):				
	a) Road Base (450 mm thick)	Tonnes	6,500	$24.00	$156,000.00
	b) Shouldering (110 mm thick) after placement of surface course	Tonnes	500	$32.00	$16,000.00
*	c) Temporary Granular Access (300 mm thick) **(Provisional)**	Tonnes	200	$28.00	$5,600.00
6	150 mm dia. Big "O" Perforated Subdrains with Filter Cloth	m	1,700	$25.00	$42,500.00
7	Driveway Restoration Including Granular Base:				
	a) Asphalt Driveways (Base and Surface)	m^2	525	$95.00	$49,875.00
	b) Granular Driveways	m^2	740	$20.00	$14,800.00
	c) Concrete Driveways	m^2	90	$80.00	$7,200.00
8	Asphalt Pavement:				
	a) HL4 Surface Course (40 mm)	Tonnes	700	$125.00	$87,500.00
	b) HL8 Base Course (60 mm)	Tonnes	1,000	$125.00	$125,000.00
9	Asphalt Milling:				
	a) Cold Mill Asphalt 40 mm deep, 0.5 m wide for lap joint for base course	m^2	7	$150.00	$1,050.00
	b) Surface Asphalt Headers (40 mm depth), 2 m Wide	m^2	28	$65.00	$1,820.00
10	Asphalt Cement (Liquid Asphalt) Price Adjustment	Allow.	---	---	**$15,000.00**
11	Pavement Markings:				
	a) Permanent - At intersection of Manning Road only.	L.S.	---	---	$2,500.00
12	Dust Control:				
	a) Magnesium Chloride (25 kg bags)	Each	28	$100.00	$2,800.00
	b) Water	m^3	100	$12.00	$1,200.00
13	Traffic Control:				
	a) Construction Staging and Signage - maintain local business access	L.S.	---	---	$10,000.00
*	b) Two Portable Message Boards **(Provisional)**	Weeks	4	$650.00	$2,600.00
TOTAL SECTION 'A' - ROAD WORK					**$717,755.00**
SECTION 'B' - STORM SEWERS					
14	Catchbasins - NEW				
	a) 600mm dia HDPE boulevard Catchbasin	Each	5	$1,250.00	$6,250.00
TOTAL SECTION 'B' - STORM SEWERS					**$6,250.00**

*** PROVISIONAL ITEMS**

SYLVESTRE SANITARY SEWER EXTENSION OPTION C
TOWN OF TECUMSEH
ESTIMATE OF PROBABLE CONSTRUCTION COSTS

OPTION 'C'

3/12/2019

DETAILED SCHEDULE OF ITEMS AND PRICES:

SECTION 'C' - SANITARY SEWERS					
15	Supply and Install Sanitary Sewers, open cut including full granular backfill:				
	a) 200mm dia. PVC DR 35	m	430	$300.00	$129,000.00
	Supply and install sanitary sewers, trenchless HDD (Manning Road frontage)				
	a) 200mm dia. PVC DR 35	m	210	$450.00	$94,500.00
16	Supply and Install Sanitary Manholes:				
	a) 1200 mm dia.	Each	8	$9,000.00	$72,000.00
	Sanitary Pump Station	Each	1	$70,000.00	$70,000.00
17	Sewer Video Inspection Allowance	m	640	$10.00	$6,400.00
18	Sanitary Private Drain Connections:				
	a) 150 mm dia. Long	Each	5	$2,000.00	$10,000.00
	b) 150 mm dia. Short	Each	10	$1,600.00	$16,000.00
TOTAL SECTION 'C' - SANITARY SEWERS					**$397,900.00**
SECTION 'D' - MISCELLANEOUS & PROVISIONAL					
19	Imported Topsoil (100 mm Thick)	m^2	6,000	$5.00	$30,000.00
20	Hydroseed and Mulch:				
	a) Supply and Place Hydroseed and Mulch	m^2	6,000	$2.00	$12,000.00
	b) Maintenance of Seed	L.S.	---	---	$10,000.00
21	Install Project Signs	Each	2	$700.00	$1,400.00
22	Temporary Support of Existing Utility Poles	Allow.	---	---	$3,000.00
23	Coordination With Utilities	L.S.	---	---	$2,000.00
24	Supply and Install Construction Hoarding	L.S.	---	---	$7,000.00
25	Erosion, and Sediment Control	L.S.	---	---	$2,500.00
26	Maintenance of Flows	L.S.	---	---	$3,000.00
27	Pre-condition Survey	L.S.	---	---	$2,000.00
28	Contingency Allowance	L.S.	---	---	**$120,000.00**
29	Storm sewer outlet to East Townline Drain (**Provisional**)	L.S.	---	---	$2,000.00
30	Big 'O' 300mm PROVISIONAL	m	25	$100.00	$2,000.00
31	Remove and Dispose of Existing Culverts (Various Sizes)(**Provisional)**	L.S.	---	---	$10,000.00
32	Supply and Install Storm Sewers, Including Backfill (**Provisional)**:				
	a) 600mm dia. HDPE BOSS 2000	m	22	$400.00	$8,800.00
	b) 200mm dia. PVC DR-35	m	16	$200.00	$3,200.00
	c) 450mm dia. CSP	m	5	$300.00	$1,500.00
TOTAL SECTION 'D' - MISCELLANEOUS					**$196,900.00**

SUMMARY OF TENDER	
SECTION 'A' - ROAD WORK	$717,755.00
SECTION 'B' - STORM SEWERS	$6,250.00
SECTION 'C' - SANITARY SEWERS	$397,900.00
SECTION 'D' - MISCELLANEOUS	$196,900.00
TOTAL TENDER PRICE (Excluding H.S.T.)	**$1,318,805.00**

Construction Cost Excluding Roadwork, storm, provisional items and easements $453,550.00

*** PROVISIONAL ITEMS**

Appendix F

Consultation Summary

Town of Tecumseh Contact List

Sylvestre Street EA

Sal.	Surname	First Name	Organization	Department	Title	Address	City	Province	Postal Code	Tel.	E-Mail
Elected Officals											
Mr.	Mcnamara	Gary	Town of Tecumseh		Mayor	917 Lesperance Road	Tecumseh	ON	N8N 1W9	(519) 735-2184	gmcnamara@tecumseh.ca
Mr.	Bachetti	Joe	Town of Tecumseh		Deputy Mayor	917 Lesperance Road	Tecumseh	ON	N8N 1W9	(519) 979-3339	jbachetti@tecumseh.ca
Mr.	Dowie	Andrew	Town of Tecumseh		Ward 1 Councillor	917 Lesperance Road	Tecumseh	ON	N8N 1W9	(226) 773-1910	adowie@tecumseh.ca
Ms.	Ossington	Rita	Town of Tecumseh		Ward 1 Councillor	917 Lesperance Road	Tecumseh	ON	N8N 1W9	(519) 735-8251	rossington@tecumseh.ca
Mr.	Altenhof	Bill	Town of Tecumseh		Ward 2 Councillor	917 Lesperance Road	Tecumseh	ON	N8N 1W9	(519) 818-1067	baltenhof@tecumseh.ca
Mr.	Houston	Brian	Town of Tecumseh		Ward 3 Councillor	917 Lesperance Road	Tecumseh	ON	N8N 1W9	(519) 819-5782	bhouston@tecumseh.ca
Ms.	Jobin	Tania	Town of Tecumseh		Ward 4 Councillor	917 Lesperance Road	Tecumseh	ON	N8N 1W9	(519) 791-4213	tjobin@tecumseh.ca
Town of Tecumseh											
Ms.	Moy	Laura	Town of Tecumseh		Director of Staff Services & Clerk	917 Lesperance Road	Tecumseh	ON	N8N 1W9	519-735-2184 ext 116	lmoy@tecumseh.ca
Mr.	Bartnik	Phil	Town of Tecumseh		Manager Engineering Services	917 Lesperance Road	Tecumseh	ON	N8N 1W9	519-735-2184 ext 148	pbartnik@tecumseh.ca
Mr.	Piescic	Dan	Town of Tecumseh		Director Public Works & Environmental Services	917 Lesperance Road	Tecumseh	ON	N8N 1W9	519-735-2184 ext 140	dpiescic@tecumseh.ca
Mr.	Berthiaume	Denis	Town of Tecumseh		Manager Water & Wastewater	917 Lesperance Road	Tecumseh	ON	N8N 1W9	519-735-2184 ext 148	dberthiaume@tecumseh.ca
Mr.	McArdle	Kirby	Town of Tecumseh		Manager Roads & Fleet	917 Lesperance Road	Tecumseh	ON	N8N 1W9	519-735-2184 ext 144	kmcardle@tecumseh.ca
Ms.	Rorai	Paula	Town of Tecumseh		Tecumseh BIA Coordinator	1189 Lacasse Boulevard	Tecumseh	ON	N8N 2C7	519-735-3795	bia@tecumseh.ca
County of Essex											
Ms.	Brennan	Mary	County of Essex		Director of Council Services / Clerk	360 Fairview Avenue West, Suite 202	Essex	ON	N8M 1Y6	519-776-6441 ext 1335	clerk@countyofessex.on.ca
Mr.	Bateman	Tom	County of Essex	Engineering Department	County Engineer	360 Fairview Avenue West	Essex	ON	N8M 1Y6	519-776-6441 ext 1317	tbateman@countyofessex.on.ca
Provincial Agency Contacts											
Ms.	Hatcher	Laura	Ministry of Tourism, Culture, and Sport	Culture Services Unit, Programs and Services Branch	Team Lead - Heritage Land Use Planning	401 Bay Street, Suite 1700	Toronto	ON	M7A 0A7	(416) 314-3108	laura.e.hatcher@ontario.ca
Ms.	Manson-Smith	Rachel	Indigineous Relations and Reconciliation	Indigenous Relations and Programs Division	(Acting) Manager, Ministry Partnerships Unit	160 Bloor Street East, 9th Floor	Toronto	ON	M7A 2E6	(416)-325-7032	MAA.EA.Review@ontario.ca
Mr.	Newton	Craig	Ministry of the Environment, Climate Change and Parks	Southwestern Region, London Regional Office	Environmental Planner	733 Exeter Road	London	ON	N6E 1L3	(519)-873-5014	craig.newton@ontario.ca
Ms.	Paller	Claire	Ministry of Natural Resources and Forestry	Aylmer District	(Acting) District Planner	615 John Street	Aylmer	ON	N5H 2S8	(519)-773-9241	claire.paller@ontario.ca
First Nations											
Chief	Henry	A. Myeengun	Chippewas of the Thames First Nation			320 Chippewa Road	Muncey	ON	N0L 1Y0	(519)-289-5555	Send Via Mail
Ms.	Burch	Fallon	Chippewas of the Thames First Nation		Consultation Coordinator	320 Chippewa Road	Muncey	ON	N0L 1Y0	(519)-289-2662	Send Via Mail
Chief	Bressette	Thomas	Chippewas of Kettle & Stony Point First Nation			6247 Indian Lane	Lambton Shores	ON	N0N 1J1	(519)-786-2125	Send Via Mail
Ms.	George	Valerie	Chippewas of Kettle & Stony Point First Nation		Consultation Coordinator	6247 Indian Lane	Lambton Shores	ON	N0N 1J1	(519)-786-2125	Send Via Mail
Chief	Rogers	Joanne	Chippewas of Aamjiwnaang			978 Tashmoo Avenue	Sarnia	ON	N7T 7H5	(519) 336-8410	Send Via Mail
Ms.	Johnston	Sharilyn	Chippewas of Aamjiwnaang		Environmental Coordinator	978 Tashmoo Avenue	Sarnia	ON	N7T 7H5	(519) 336-8410	Send Via Mail
Chief	Miskokomon	Daniel	Walpole Island First Nation			RR3	Wallaceburg	ON	N8A 4K9	(519)-627-1481	Send Via Mail
Chief	Hillier	Louise	Caldwell First Nation			P.O Box 388	Leamington	ON	N8H 3W3	(519) 322-1766	Send Via Mail
Chief	Peters	Greg	Moravian of the Thames			14760 School House Line, RR3	Thamesville	ON	N0P 2K0	(519) 692-3936	Send Via Mail
Ms.	Norheim Brookes	Linda	Metis Nation of Ontario		Manager, Lands, Resources and Consultations	75 Sherbourne Street	Toronto	ON	M5A 2P9	(416) 977-9881	Send Via Mail
			Southern First Nations Secretariat			22361 Austin Line	Bothwell	ON	N0P 1C0	(519) 692-5868	
Conservation Authority											
Mr.	Byrne	Tim	Essex Region Conservation Authority		Director, Watershed Management Services	360 Fairview Avenue West, Suite 311	Essex	ON	N8M 1Y6	(519) 776-5209 ext 350	tbyrne@erca.org
Mr.	Henderson	John	Essex Region Conservation Authority		Water Resources Engineer	360 Fairview Avenue West, Suite 311	Essex	ON	N8M 1Y6	(519) 776-5209 ext 246	jhenderson@erca.org
Mr.	Nelson	Mike	Essex Region Conservation Authority		Watershed Planner	360 Fairview Avenue West, Suite 311	Essex	ON	N8M 1Y6	(519) 776-5209	mnelson@erca.org
Emergency Services											
Mr.	Souchuk	Robin	Central Ambulance Communications Centre			4510 Rhodes Drive, Suite 320	Windsor	ON	N8W 5K5	519-256-2373	robin.souchuk@ontario.ca
Sergeant	Gruszka	Mike	Ontario Provincial Police	Essex County North Operations		963 Lesperance Road	Tecumseh	ON	N8N 1W9	519-728-1810	Ricardo.Tonial@opp.ca
Chief	Krauter	Bruce	Essex-Windsor EMS			360 Fairview Avenue West, Suite 115	Essex	ON	N8M 1Y6	519-776-6441 ext 2654	bkrauter@countyofessex.on.ca
Utilites											
Mr.	Cowing	Dave	Bell Canada		Access Network Coordinator	1149 Goyeau Street, Floor 1	Windsor	ON	N9A 1H9	519-973-6702	david.cowing@bell.ca
Mr.	Trepanier	Clifford	Bell Canada		Implementation Specialist	1149 Goyeau Street, Floor 1	Windsor	ON	N9A 1H9	519-973-6761	clifford.trepanier@bell.ca
Mr.	Sorrell	Bill	Cogeco Cable Solutions		Planning Leadhand - West Region	2525 Dougall Ave.	Windsor	ON	N8X 5A7	519-972-4013	bill.sorrell@cogeco.com
Mr.	Hartleib	Dave	MNSI		Network Planner	3363 Tecumseh Road East	Windsor	ON	N8W 1H4	519-985-8435	hartleib@mnsi.net
Ms.	Faflak	Carolyn	Hydro One Networks Inc.			56 Embro Street	Beachville	ON	N0J 1A0	(519) 423-6921	z1planning@hydroone.com
No Contact - Send to General Email			Hydro One	Real Estate Services / Land Use Planning		P.O. Box 4300	Markham	ON	L3R 5Z5		WesternFBCPlanning@hydroone.com
Mr.	Alzner	Mark	Essex Power Lines		Engineering & Asset Manager	2730 Highway 3	Oldcastle	ON	N0R 1L0	519-737-6640	malzner@essexpowerlines.ca
Mr.	Tracey	Ray	Essex Power Services		CEO	2730 Highway 3	Oldcastle	ON	N0R 1L0	519-737-6640	rtracey@essexpowerlines.ca
Ms.	Patrick	Mary Jane	Union Gas	Lands Department		50 Keil Drive North	Chatham	ON	N7M 5M1	519-436-4600	ontugllandsing@uniongas.com
Mr.	Quennville	Neil	Union Gas		Manager, Construction and Growth	3840 Rhodes Drive	Windsor	ON	N9A 6N7	519-251-6812 ext 529812	NQuenneville@uniongas.com
Mr.	Ceccacci	Will	Union Gas		Construction Project Manager	3840 Rhodes Drive	Windsor	ON	N9A 6N7	519-251-6810	wceccacci@uniongas.com
Mr.	MacAulay	Norm	Elk Energy Inc.		Operations Manager	172 Forest Avenue	Essex	ON	N8M 3E4	519-776-5291	nmacaulay@elkenergy.com

Town of Tecumseh Contact List

Sylvestre Street EA

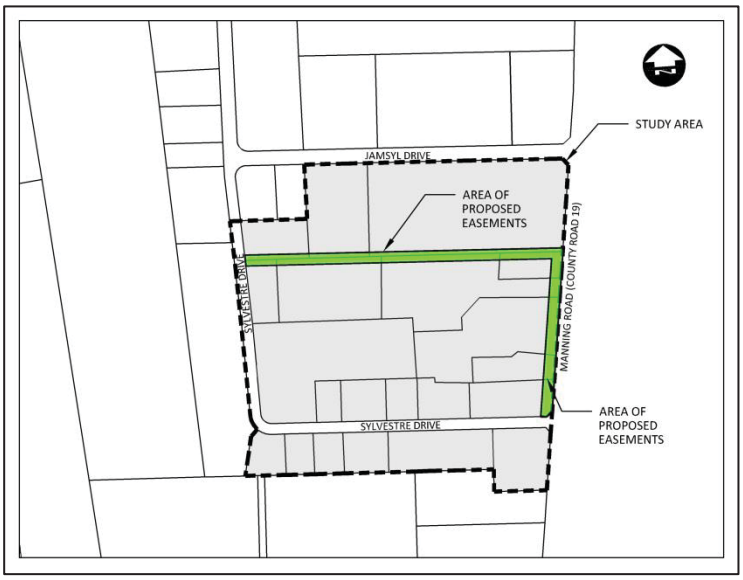
Sal.	Surname	First Name	Organization	Department	Title	Address	City	Province	Postal Code	Tel.	E-Mail
Ms.	Rapin	Susan	Ontario Power Generation Inc.	Law & Development	Director of Environmental Services	700 University Avenue	Toronto	ON	M5G 1X6	416-592-6399	susan.rapin@opg.com
Mr.	Petruk	Robert D.	Gosfield North Communications Co-operative Limited		Chief Executive and Technology Officer	128 County Road 34	Cottam	ON	N0R 1B0	519-839-4734	rob.petruk@gosfieldtel.ca
Mr.	Poggio	Norbert	Windsor Utilities Commission		Director, Water Engineering	787 Ouellette Avenue, P.O. Box 1625, Station A	Windsor	ON	N9A 5T7	519-251-7300	npoggio@enwin.com
Property Owners											
			1560896 ONTARIO INC			13380 SYLVESTRE DR RR 1	WINDSOR	ON	N8N 2L9		
			2211211 ONTARIO LIMITED			735 BRENDA CRES	TECUMSEH	ON	N8N 2L9		
			2402448 ONTARIO INC			13315 SYLVESTRE DR	TECUMSEH	ON	N8N 2L9		
			7264119 CANADA COPORATION			1592 OAKWOOD AVE	BELLE RIVER	ON	N0R 1A0		
			CLK MACHINING LTD			385 SACRED HEART DR	LASALLE	ON	N9J 1T1		
			DC HOLDINGS LTD.			3342 GUNDY PARK	WINDSOR	ON	N9E 4R5		
			DIESEL ROOFING & SIDING INC. ATTN: D. & I BIGRAS			1428 ARGYLE RD	WINDSOR	ON	N8Y 3K7		
			JAMES SYLVESTRE DEVELOPMENTS LTD			1865 MANNING RD RR1	WINDSOR	ON	N8N 2L9		
			JAMSYL GROUP INC			1865 MANNING RD	WINDSOR	ON	N8N 2L9		
			JAMSYL GROUP INC LIMITED PARTNERSHIP			1847 MANNING RD	WINDSOR	ON	N8N 2L9		
			JSNC HOLDINGS INC			1865 MANNING RD RR1	TECUMSEH	ON	N8N 2L9		
			J Y INTERNATIONAL INC			13335 SYLVESTRE DR	TECUMSEH	ON	N8N 2L9		
	[redacted]	[redacted]				1845 MANNING RD RR1, STN TECUMSEH	WINDSOR	ON	N8N 2L9		

Notice of Study Commencement

Corporation of the Town of Tecumseh
Sylvestre Drive Sanitary Sewer Extension
Class Environmental Assessment

The Corporation of the Town of Tecumseh has retained Dillon Consulting Limited to complete the Preliminary Design and Municipal Class Environmental Assessment (EA) for the extension of sanitary sewers to service a portion of the Sylvestre Industrial Park Area that is generally located on Sylvester Drive, south of Jamsyl Drive, and west of Manning Road. Permanent sanitary sewer easements must be established on private property across a portion of the areas highlighted as *"Area of Proposed Easements"* in order to connect the proposed sanitary sewers from the Study Area to the existing local sanitary sewer located on Sylvestre Drive. Preliminary Design will also be completed for the reconstruction of Sylvestre Drive between Manning Road and Jamsyl Drive, including local storm drainage improvements.

This study will follow the process outlined in the Municipal Class Environmental Assessment (2015) for a Schedule B undertaking. The process involves developing and evaluating alternative alignments for permanent sanitary sewer easements and temporary working easements on private property in the *"Area of Proposed Easements"*, assessing potential environmental impacts, and public and agency consultation. Directly affected property owners will be contacted to review these alternatives in further detail.



The results of the study will be documented in a Project File Report that will be available for a 30-day public review period at the conclusion of this study.

Public Comments Invited

At any time during this study, interested persons have an opportunity to provide comments, questions or concerns to the study team. 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 will be included in the final Project File Report.

To provide comments or for further information on this project, please contact:

Flavio Forest, P.Eng.
Project Manager
Dillon Consulting Limited
3200 Deziel Drive, Suite 608
Windsor, Ontario, N8W 5K8
Phone: 519-948-4243, ext. 3233
Email: SylvestreEA@dillon.ca

Phil Bartnik, P.Eng.
Manager, Engineering Services
Town of Tecumseh
917 Lesperance Road
Tecumseh, Ontario, N8N 1W9
Phone: 519-735-2184, ext. 148
Email: pbartnik@tecumseh.ca

Our file: 17-6843

March 13, 2018

Covering letter sent to contact list with
Notice of Study Commencement

DILLON CONSULTING

3200 Deziel Drive
Suite 608
Windsor, Ontario
Canada
N8W 5K8
Telephone
519.948.5000
Fax
519.948.5054

Notice of Study Commencement
Sylvestre Industrial Park Area Sanitary Sewer Extension
Class Environmental Assessment

Dear Stakeholder:

As outlined in the attached notice, the Town of Tecumseh has retained Dillon Consulting Limited to complete the Preliminary Design and Municipal Class Environmental Assessment (EA) for the extension of sanitary sewers to service a portion of the Sylvestre Industrial Park Area. Permanent sanitary sewer easements must be established on private property across a portion of the areas highlighted as *"Area of Proposed Easements"* in order to connect the proposed sanitary sewers from the Study Area to the existing local sanitary sewer located on Sylvestre Drive. Preliminary Design will also be completed for the reconstruction of Sylvestre Drive between Manning Road and Jamsyl Drive, including storm drainage local improvements and any necessary utility improvements that may be required.

The Study will follow the process outlined in the Municipal Class Environmental Assessment (2015) for a Schedule B undertaking. During the study, interested persons are encouraged to provide comments or concerns to the study team, as described in the attached notice.

Yours sincerely,

DILLON CONSULTING LIMITED

Flavio R. Forest, P.Eng.
Project Manager

AMF:ks
Encl.
cc: Mr. Phil Bartnik, P.Eng. - Town of Tecumseh

Notice of Study Commencement

Corporation of the Town of Tecumseh
Sylvestre Drive Sanitary Sewer Extension
Class Environmental Assessment

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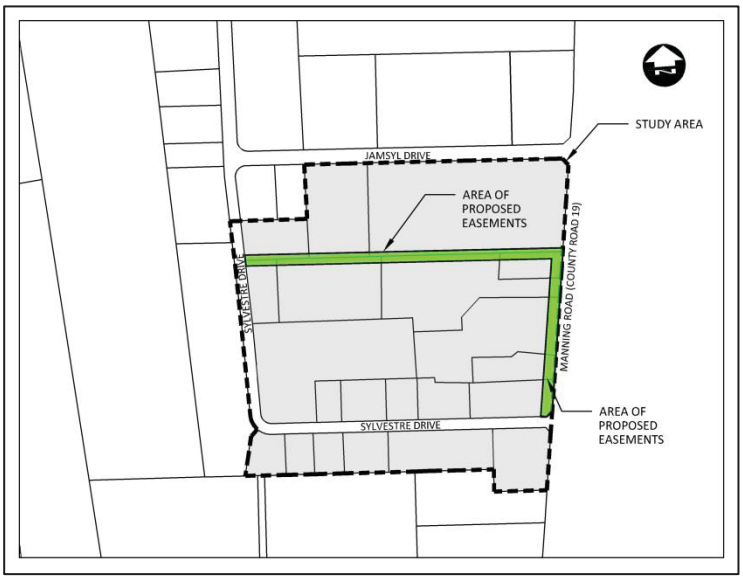

The results of the study will be documented in a Project File Report that will be available for a 30-day public review period at the conclusion of this study.

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To provide comments or for further information on this project, please contact:

Flavio Forest, P.Eng.
Project Manager
Dillon Consulting Limited
3200 Deziel Drive, Suite 608
Windsor, Ontario, N8W 5K8
Phone: 519-948-4243, ext. 3233
Email: SylvestreEA@dillon.ca

Phil Bartnik, P.Eng.
Manager, Engineering Services
Town of Tecumseh
917 Lesperance Road
Tecumseh, Ontario, N8N 1W9
Phone: 519-735-2184, ext. 148
Email: pbartnik@tecumseh.ca

Ministry of the Environment and Climate Change

733 Exeter Road
London ON N6E 1L3
Tel': 519 873-5000
Fax: 519 873-5020

Ministère de l'Environnement et de l'Action en matière de changement climatique

733, rue Exeter
London ON N6E 1L3
Tél.: 519 873-5000
Fax: 519 873-5020

March 23, 2018

Town of Tecumseh
917 Lesperance Road
Tecumseh, ON N8N 1W9

Attention: Phil Bartnik, Manager Engineering Services

Re: Class EA for the Sanitary Sewer Extension at the Sylvestre Industrial Park

Dear Phil Bartnik:

This letter acknowledges this ministry's receipt of the Notice of Commencement for the above noted project.

It is this ministry's understanding that the Town of Tecumseh is initiating a Class EA process to extend the sanitary sewers to service a portion of Sylvestre Industrial Park.

As you know, the Class Environmental Assessment (Class EA) planning process includes consultation with interested stakeholders, evaluation of alternatives, assessment of the effects of the proposed works and identification of measures to mitigate any adverse impacts.

Source Water Protection

As per the recent amendments to the Municipal Engineers Association (MEA) Class Environmental Assessment parent document approved October 2015, proponents undertaking a Municipal Class EA project must identify early in the process whether a project is occurring within a source water protection vulnerable area. This must be clearly documented in a Project File report or ESR. If the project is occurring in a vulnerable area, then there may be policies in the local Source Protection Plan (SPP) that need to be addressed (requirements under the *Clean Water Act*). The proponent should contact and consult with the appropriate Conservation Authority/Source Protection Authority (CA/SPA) to discuss potential considerations and policies in the SPP that apply to the project.

Please include a section in the report on Source Water Protection. Specifically, it should discuss whether or not the project is located in a vulnerable area or changes or creates new vulnerable areas, and provide applicable details about the area. If located in a vulnerable area, proponents should document whether any project activities are a prescribed drinking water threat and thus pose a risk to drinking water (this should be consulted on with the appropriate CA/SPA). Where an activity poses a risk to drinking water, the proponent must document and discuss in the Project File Report/ESR how the project adheres to or has regard to applicable policies in the local SPP. If creating or changing a vulnerable area, proponents should document whether any existing uses or activities may potentially be affected by the implementation of source protection policies. This section should then be used to inform and should be reflected in other sections of the report, such as the identification of net positive/ negative effects of alternatives, mitigation measures, evaluation of alternatives etc. As a note, even if the project activities in a vulnerable

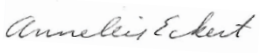
area are deemed not to be a drinking water risk, there may be other policies that apply and so consultation with the local CA/SPA is important.

Conclusion

Thank you for the opportunity to comment on this project. Please keep this office fully informed of the status of this project as it proceeds through the Class EA process.

Please send all future correspondence with respect to this project to my attention, as I am this ministry's one window contact for this project: Anneleis Eckert, Regional Environmental Planner / Regional EA Coordinator at the address below; email address: anneleis.eckert@ontario.ca ; telephone number: 519-873-5115.

Yours truly,



Anneleis Eckert
Regional Environmental Planner / Regional EA Coordinator
Ministry of Environment and Climate Change
733 Exeter Road
London ON, N6E 1L3
519-873-5115

Copy:
Flavio Forest, Dillon Consulting
Mark Smith, MOECC
Marc Bouchard, MOECC

Durocher, Maggie <mdurocher@dillon.ca>

MNRF Comments: Sylvestre Industrial Park Area Sanitary Sewer Extension

1 message

MNRF Ayl Planners (MNRF) <MNRF.Ayl.Planners@ontario.ca> Fri, Mar 23, 2018 at 2:50 PM
To: "SylvestreEA@dillon.ca" <SylvestreEA@dillon.ca>

Ministry of Natural Resources and Forestry

615 John Street North

Aylmer, ON N5H 2S8

Tel: 519-773-9241

Fax: 519-773-9014

Ministère des Richesses naturelles et des Forêts

615, rue John Nord

Aylmer ON N5H 2S8

Tél: 519-773-9241

Téléc: 519-773-9014

March 23, 2018

Flavio Forest, Project Manager

Dillon Consulting Limited

3200 Deziel Drive, Suite 608

Windsor, ON N8W 5K8

Subject: Sylvestre Industrial Park Area Sanitary Sewer Extension – Notice of Study Commencement

Dear Mr. Forest,

Ministry of Natural Resources and Forestry (MNRF) Aylmer District received the Notice of Study Commencement for the Sylvestre Industrial Park Area sanitary sewer extension on March 21, 2018. Thank for you for circulating this notice to our office, however, **please note that we have not completed a screening of natural heritage (including species at risk) or other resource values for the project at this time**. Please also note that it is your responsibility to be aware of and comply with all relevant federal or provincial legislation, municipal by-laws or other agency approvals.

This response provides information to guide you in identifying and assessing natural features and resources as required by applicable policies and legislation, and engaging with MNRF Aylmer District for advice as needed.

Natural Heritage & Endangered Species Act

- Please refer to Aylmer District's *Species at Risk Screening Process Technical Bulletin* (attached) for information about the process for seeking *Endangered Species Act 2007* advice, including the information required and where to submit a request.

Petroleum Wells & Oil, Gas and Salt Resource Act

There may be petroleum wells within the proposed project area. Please consult the Ontario Oil, Gas and Salt Resources Library website (www.ogsrlibrary.com) for the best known data on any wells recorded by MNRF. Please reference the 'Definitions and Terminology Guide' listed in the publications on the Library website in order to better understand the well information available. Any oil and gas wells in your project area are regulated by the *Oil, Gas and Salt Resource Act*, and the supporting regulations and operating standards. If any unanticipated wells are encountered during development of the project, or if the proponent has questions regarding petroleum operations, the proponent should contact the Petroleum Operations Section at 519-873-4634.

Public Lands Act & Lakes and Rivers Improvement Act

Some Municipal projects may be subject to the provisions of the *Public Lands Act* or *Lakes and Rivers Improvement Act*. Please review the information on MNRF's web pages provided below regarding when an approval is required or not. Please note that many of the authorizations issued under the *Lakes and Rivers Improvement Act* are administered by the local Conservation Authority.

- For more information about the *Public Lands Act*: https://www.ontario.ca/page/crown-land-work-permits
- For more information about the *Lakes and Rivers Improvement Act*: https://www.ontario.ca/document/lakes-and-rivers-improvement-act-administrative-guide

After reviewing the information provided, if you have not identified any of MNRF's interests stated above, there is no need to circulate any subsequent notices to our office. If you have any questions or concerns, please feel free to contact me.

Sincerely,

Laura Warner

Planning Intern

Ministry of Natural Resources and Forestry, Aylmer District

615 John St. N. Aylmer, ON, N5H 2S8

E-mail: MNRF.Ayl.Planners@ontario.ca

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2 attachments

image001.jpg
153K

2017-04_SAR Screening Process_Technical Bulletin.pdf
142K

Ministry of Natural Resources and Forestry
615 John Street North
Aylmer ON N5H 2S8
Tel: 519-773-9241
Fax: 519-773-9014

Ministère des Richesses naturelles et des Forêts
615, rue John Nord
Aylmer ON N5H 2S8
Tél: 519-773-9241
Téléc: 519-773-9014

Technical Bulletin: Aylmer District Species at Risk Screening Process

This technical bulletin outlines the process for engaging the Ministry of Natural Resources and Forestry (**MNRF**) Aylmer District Office regarding the *Endangered Species Act, 2007* (**ESA**).

The ESA provides protection for species listed as Endangered or Threatened on the Species at Risk in Ontario List. Individuals receive protection under Section 9 and their habitat is protected under Section 10. The ESA is a law of general application that is binding on everyone in the province of Ontario, and applies to both private and public lands. MNRF Aylmer District provides review of a project's compliance under the ESA by responding to species at risk (**SAR**) information requests (Stage 1) and project screening requests (Stage 2) only when both of the following conditions are met:

1. The request comes directly from the property owner or their delegate (e.g. consultants) on their behalf; and,
2. A specific project/activity is proposed.

MNRF Aylmer District Contact Information

All ESA-related requests must be submitted to MNRF Aylmer District via our ESA inbox at ESA.Aylmer@ontario.ca

> ***NOTE:*** *MNRF response time is between 8 and 10 weeks after receipt of all required information, due to the high volume of requests received.*

Stage 1: Information Request

To ensure due diligence under the ESA, MNRF encourages property owners and/or their delegates proposing to conduct site alteration (such as construction, vegetation/debris removal, site grading, etc.) to request SAR information from Aylmer District prior to beginning site alteration and/or conducting SAR surveys. For MNRF to respond to an information request, the following information is required:

- Proponent information (name, mailing address, and email address);
- Property location and mapping (municipal address and/or lot and concession);
- Digital photos of the property, including the vegetation on-site, if available;
- General description of all proposed activities and extent of development footprint (e.g. residential, driveway, vegetation clearing). Maps / site layout drawings are beneficial;
- Current state of vegetation, property maintenance/management (e.g. frequency of mowing), and recent property landscape history/changes (within the last five years);
- Timing and duration of proposed activities;
- Copies of past correspondence with MNRF about the property, if applicable; and,
- Status of municipal planning or Environmental Assessment process, if any.

Once the above information has been provided, MNRF will review available SAR data to determine if SAR species and/or their habitat(s) are known or likely to occur on or in the general area of the property. MNRF's response will be one of the following:

Ministry of Natural Resources and Forestry
615 John Street North
Aylmer ON N5H 2S8
Tel: 519-773-9241
Fax: 519-773-9014

Ministère des Richesses naturelles et des Forêts
615, rue John Nord
Aylmer ON N5H 2S8
Tél: 519-773-9241
Téléc: 519-773-9014

1. There is a **low** likelihood for SAR species and/or habitat to occur and/or be impacted
   - Further project screening will not be needed unless recommendations to avoid impacts cannot be followed or significant changes to the project are made (e.g. natural vegetation proposed to be removed).

2. SAR species and/or habitat are **known** to occur on or near the property, or there is a **high** likelihood for SAR species and/or habitat to occur
   - MNRF may recommend that field assessments by a qualified biologist are needed to determine whether the proposed project may contravene the ESA.
     - It is expected that the retained qualified biologist will use the information provided by MNRF to scope and design the field assessments, including identifying appropriate species-specific survey methodologies and timing.
     - MNRF can provide guidance on field assessments (i.e. protocols or proposed work plans). Some field assessment methodologies may require MNRF authorizations under the ESA and the *Fish and Wildlife Conservation Act*.
   - After field assessments have been completed, proceed to Stage 2.

   NOTE: *MNRF strongly recommends that no on-site activity (i.e. site alteration, vegetation/debris removal, etc.) occur until Stage 2 is complete, in order for proponents to demonstrate due diligence and remain in compliance with the ESA. Failure to comply with this recommendation could result in a contravention of the ESA and possible compliance / enforcement action.*

Stage 2: Project Screening / IGF Review

Following MNRF's recommendations, a qualified biologist should complete appropriate field assessments and submit the results in an Information Gathering Form (**IGF**) to initiate a project screening request.

Link to IGF:
http://www.forms.ssb.gov.on.ca/mbs/ssb/forms/ssbforms.nsf/MinistryResults?Openform&SRT=T&MAX=5&ENV=WWE&STR=1&TAB=PROFILE&MIN=018&BRN=21&PRG=31

MNRF will review the IGF to determine whether the project is likely to contravene the ESA (Section 9 and/or Section 10). MNRF's response will be one of the following:

1. Contravention under the ESA is **not likely** to occur:
   - A response will be provided, which could include recommendations necessary to avoid impacts to SAR; or,

2. Contravention under the ESA is **likely** to occur:
   - MNRF will recommend options for seeking approval under the ESA, such as applying for a permit or assessing eligibility for alternative regulatory processes. Please be advised that applying for a permit does not guarantee approval and processes can take several months before a permit may be issued.

Stanlake-Wong, Sabrina <sstanlake@dillon.ca>

Sylvestre Dr Sanitary Sewer Ext

Jennifer Nicholls <Jennifer.Nicholls@uniongas.com> Thu, Mar 22, 2018 at 2:11 PM
To: "sylvestreEA@dillon.ca" <sylvestreEA@dillon.ca>, "pbartnik@tecumseh.ca" <pbartnik@tecumseh.ca>
Cc: Mike Cincurak <MJCincurak@uniongas.com>, Will Ceccacci <wceccacci@uniongas.com>

Hi Flavio and Phil,

Thanks for the Notice of Study Commencement for the Sylvestre Industrial Park area. I have copied Union Gas Construction Project Managers Mike Cincurak and Will Ceccacci on this email so that they are aware of potential future work that may need to be completed based on the outcome of your study.

Attached is a PDF showing Union Gas active plant in the area being studied. Please note on the East-West portion of Sylvestre, there are 3 services as well as the main that cross the road. There is a 12” steel main that crosses Sylvestre at Manning. For any proposed work in the area of the 12” steel main, 3rd party observation will be required. Please also note that piping location locations are approximate and for information purposes only, the PDF drawing is not to scale, this PDF drawing does not replace field locates.

Thanks,

Jennifer

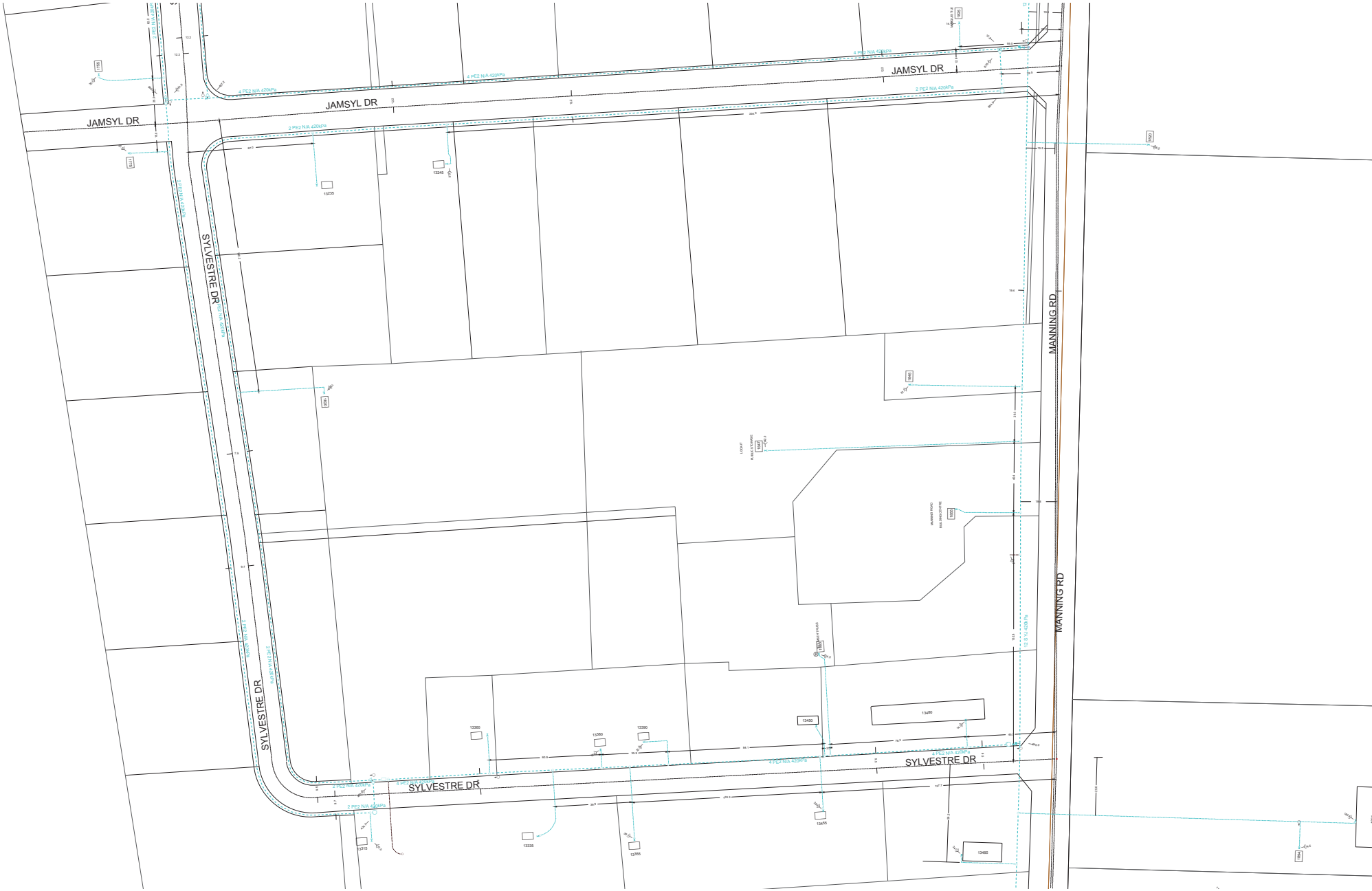
Jennifer Nicholls, Ba.S.C, C.Tech

New Business Project Coordinator

Union Gas Limited | An Enbridge Company

TEL: 519-250-2200 ext 5296773 | Jennifer.Nicholls@uniongas.com

3840 Rhodes Dr Windsor, ON N9A 6N7



Please Note:

1. The shown piping locations are approximate and for information purposes only
2. The drawings are not to scale
3. This drawing does not replace field locates. Please contact Ontario One Call for onsite locates prior to excavating, digging, etc

Phil Bartnik

From: [redacted]
Sent: March-27-18 2:26 PM
To: Phil Bartnik
Cc: COUNCIL; Tony Haddad; Brian Hillman; Daniel Piescic
Subject: RE: Sylvestre Drive Sanitary Sewer Extension - RE: notice of study.RE: notice of study.
Attachments: property areas manning road.JPG; 1820 Sylvestre drive.JPG

Mr. Bartnik,

I appreciate the offer to a meeting regarding this subject and will likely have an opportunity to do so, if this continues. Given the discrepancy in our recollections, this trail will better preserve them until that time.

Thank you for your comments, they are well thought out and assembled in an easy to follow manner. I will try to model your manner when I offer the following observations/comments:

I've attached a pair of screenshots I've made from the County Mapping website. The landlocked piece you are referring to is at 1820 Sylvestre Drive and is separated from Sylvestre Drive by an oddly shaped parcel that at its narrowest point is just over 37m from the road. I'm assuming that the lot lines are actually there. I understand, if that is the case, that legally, that parcel could be sold and effectively landlock that building that is shown to be 1820 Sylvestre Drive. It isn't likely to happen that way, and on our end, an application could be made to clean the lines up to the satisfaction of the Town.

The remaining parcels can be serviced from a sanitary sewer from the east end of the Sylvestre Drive reconstruction with a length of sewer running North along Manning Rd. approximately 150m long. Your study proposes servicing my office at 1865 Manning Rd. from the west end of Sylvestre drive through existing developed properties along with restoring the existing gravel lots, it will run a sewer approximately 650m for the same 4 parcels. The meetings will need to have the level of information I need to make an informed assessment of the requirement of an independent sewer 650m long, when it appears a 150m sewer from the east end of Sylvestre Drive will do the same job.

The frustration I feel is that this work/study was proposed without consultation with us. We are in fact the developers who serviced this subdivision and should have been asked for our opinion for a solution to this 'problem'. This is not a typical situation. I understand how a broad solution is applied to the Town-wide problem of servicing developed property with sanitary sewers. This is similar to what is happening on North Talbot and the 8th Concession in that the industrial land is already developed without municipal sewers. But it is dramatically different in that nearly all of the parcels are owned by one group who is able to participate actively in a solution without the requirements of an expensive study.

The sooner we can meet the sooner we can narrow the scope of the study to save the town time and money on this effort.

[redacted]

From: Phil Bartnik <pbartnik@tecumseh.ca>
Sent: March 21, 2018 3:27 PM
To: [redacted]

Cc: COUNCIL <COUNCIL@tecumseh.ca>; Tony Haddad <thaddad@tecumseh.ca>; Brian Hillman <bhillman@tecumseh.ca>; Daniel Piescic <dpiescic@tecumseh.ca>
Subject: Sylvestre Drive Sanitary Sewer Extension - RE: notice of study.RE: notice of study.

[redacted]

Thank you for your email and your interest in this project.

Firstly with respect to your memory of a discussion surrounding the servicing of 1855 Manning Road, I do not share the same recollection of such a discussion. Having said that, the Town continues to be open to having a dialog regarding the appropriate means of providing long term infrastructure solutions for this area.

With respect to your various comments, I would offer the following:

- The Town's preference is to provide all municipal services within the right-of-way. The exception would be where there are unavoidable circumstances where services have to be provided through easements on private property. For this particular project, the servicing of the properties along County Road 19 (between Sylvestre and Jamsyl) is challenging due to the depths of the existing sanitary sewers, the congested County right-of-way (containing utilities, watermains, the East Townline Drain, etc.), and the property fabric rendering some parcels 'landlocked'. In order to fully appreciate these servicing constraints and the impact they will have on an ultimate servicing solution, it would be most appropriate to meet and discuss these matters in detail.

- Council approved the Public Works & Environmental Services 2018 Capital Works Plan at the December 12, 2017 Regular Meeting of Council. Contained within the works slated for 2018 was the engineering design and related Class Environment Assessment of the sanitary sewer extension on Sylvestre Drive from 13315 Sylvestre Drive to County Road 19, as well as a servicing scheme (via easement) to service those properties located along County Road 19 (north of Sylvestre Drive). Construction of the works is planned for 2019 contingent on Council approval and funding allocations. In addition to the sanitary sewer works, the project also consists of storm sewer improvements and road reconstruction of Sylvestre Drive from Jamsyl Drive to County Road 19. It should also be noted that this project has been contained within our 5-year capital works plan since 2014;

- It is important to note that given the nature and scale of the proposed works, the Town is following the process outlined in the Municipal Class EA for a Schedule B undertaking. This is the means by which the Town can properly evaluate servicing alternatives and to seek input from all stakeholders. The intent of the Notice of Project Commencement was to publicly announce the commencement of this study, to formally engage with the various parties, and fulfill the Town's obligations under the Municipal Class EA.

- Prior to issuing the attached Notice of Study Commencement, preliminary engineering solutions to service the properties along County Road 19 were identified and reviewed. Although the Notice has identified a possible location for the sanitary easement, we welcome and encourage public input throughout the entire Municipal Class EA process and are open to a financially viable and sustainable servicing solution;

- The Town has recently been making great strides at extending sanitary services to those properties located within designated settlement areas of the Town. Examples of such are the North Talbot Road and 8th Concession Road service areas located within Oldcastle Hamlet. The extension of sanitary sewers on Sylvestre Drive at this time was driven by the required road reconstruction, as it is the Town's practice to combine infrastructure projects to achieve efficiencies. As you can appreciate, it is preferable to install the underground infrastructure at the time of road reconstruction, as oppose to cutting into a newly installed road within the next couple of years. It should also be noted that the extension of the sewers are also being installed in accordance with the Town's Water & Wastewater Master Plan, the Provincial Policy Statement, the County Official Plan and the Town's Official Plan to provide water and wastewater servicing to all properties located within designated settlement areas.

As previously stated we would like to meet with you at your convenience to discuss the project and address any other concerns you may have. Please advise as to your availability over the next few weeks so we may schedule a meeting.

Should you have any additional questions or concerns, please do not hesitate to contact me.
Regards,

Phil Bartnik, P.Eng.
Manager Engineering Services
The Corporation of the Town of Tecumseh

From: [redacted]
Sent: March-19-18 4:06 PM
To: Phil Bartnik
Cc: Brian Houston; Bill Altenhof; Andrew Dowie; Tania Jobin
Subject: notice of study.

Hi Phil,

I saw the notice of study in the shoreline for the Sylvestre Drive Sanitary extension. I had spoken to you 18 months ago about installing a sanitary sewer along Manning Road to service the property at 1855 Manning Road. According to my memory of the discussion with you at the time, the Town wouldn't support public infrastructure across private property without easements and generally it is not supported. I spent $50,000 on a new tertiary weeping bed to service an occupancy of up to 50 people on this parcel and am not interested in a sanitary sewer across private land for this purpose.

I also am curious as to why the sanitary sewer isn't brought up Sylvestre drive to service the existing properties along the length that would be wasted along the back of land that is already serviced? And if it MUST be brought across the frontage of the four remaining properties along Manning Road, then bring it across from the South side at a much lower cost? The length of the run would be similar with benefit to a much larger number of rate payers. Sylvestre Drive has been in significant need of repair for years, as well as lacking sanitary service. The original phase of Sylvestre Drive was built in the late 80's with no improvements made to it since then.

In the mid 90's the Second Phase of Sylvestre Drive was constructed and a sanitary sewer was installed to the South West corner of Sylvestre Dr. It was installed deep enough to continue servicing the lands we own to the South. I'm certain it is deep enough to turn East and run to Manning Road and provide services to the existing industrial buildings along that original phase.

I am opposed to this study as it is a waste of time and town's resources. I did not request this service to be made available. The largest portion of land, that this easement will be on, is owned by corporations owned by my family and not one of those corporations made any request for service. The only two other parcels are owned by Riverside Rentals (who resides on Sylvestre Drive) and my aunt and uncle, Mary Edna and Daniel Marion. I've left messages for them to inquire about their interest.

I'm disappointed to see this, we should have been consulted before this study was contracted out. With so many residents and businesses in the Town with real concerns that could be presently met or considered with the funds that are being wasted on this study, I'm surprised that this project would be conjured up out of nothing. The level of interest from myself and the other corporations my parents own is zero.

[redacted]

139.48 m
91.30 m
Area: 2.96 ac
Perimeter: 456.38 m
136.27 m
37.65 m
Total: 37.65 m

172.59 m
87.63 m
36.65 m
Area: 0.78 ac
Perimeter: 247.91 m
87.23 m
86.00 m
1847
111.32 m
36.27 m
Area: 6.22 ac
Perimeter: 931.09 m
42.62 m
17.89 m
1865
1855
67.56 m
Area: 3.83 ac
Perimeter: 618.90 m
55.09 m
11.93 m
53.74 m
53.85 m
Area: 1.00 ac
Perimeter: 301.01 m
34.57 m
95.22 m
25.17 m
53.05 m
113.40 m
13380
13390
13450
13480

regs@erca.org
P.519.776.5209
F.519.776.8688
360 Fairview Avenue West
Suite 311, Essex, ON N8M 1Y6

March 21, 2018

Town of Tecumseh
917 Lesperance Road
Tecumseh, Ontario
N8N 1W9

Dear Mr. Forest:

RE: Sylvestre Drive Sanitary Sewer Extension Municipal Class EA Notice of Study Commencement

This letter is in response to our receipt and review of the following Notice of Study Commencement for the Sylvestre Drive Sanitary Sewer Extension. It is our understanding that this process is following the Municipal Class Environmental Assessment undertaking in accordance with the planning and design process for "Schedule B" projects as outlined in the Municipal Class Environmental Assessment (June 2000, as amended in 2007, 2011 and 2015) under the Ontario Environmental Assessment Act.

ERCA appreciates the opportunity to provide input into this study. It is understood that the intent of this process will be identify and evaluate options for easements for sanitary and other servicing to be located in the subject area. As the Town is aware, the East Townline Drain is a regulated watercourse and and site alteration is subject to future ERCA approvals.

The circulation notes that the Preliminary Design will include storm drainage considerations for the reconstruction of Sylvestre Drive between Manning Road and Jamsyl Drive. We would be interested in reviewing these preliminary design considerations and would have some input towards the storm water management considerations at that time.

Our office has no concerns with the study as outlined. We would appreciate being circulated as the study proceeds. If there are any questions or concerns please contact the undersigned.

Mike Nelson

Michael Nelson
Watershed Planner
/mn

C: Phil Bartnik, Manager, Engineering Services

Our File: 17-6843

April 6, 2018

3200 Deziel Drive
Suite 608
Windsor, Ontario
Canada
N8W 5K8
Telephone
519.948.5000
Fax
519.948.5054

Notice of Property Owner Meeting
Sylvestre Industrial Park Area Sanitary Sewer Extension
Class Environmental Assessment

Dear Stakeholder:

Further to our initial notification of project commencement, we have received feedback from residents fronting Manning Road with respect to sanitary servicing options for your properties. We would like to discuss these options and receive your input towards the various options through a meeting on **Wednesday, April 18, 2018.** The meeting will be held at the Town of Tecumseh office located at 917 Lesperance Road and will begin at 2:00 p.m.

Should you have any further questions with respect to the project in advance of the meeting, please contact us via at one of the following addresses:

Flavio Forest, P.Eng.
Project Manager
Dillon Consulting Limited
3200 Deziel Drive, Suite 608
Windsor, Ontario N8W 5K8
Phone: 519-948-4243, Ext. 3233
Email: SylvestreEA@dillon.ca

Phil Bartnik, P.Eng.,
Manager, Engineering Services
Town of Tecumseh
917 Lesperance Road
Tecumseh, Ontario, N8N 1W9
Phone: 519-735-2184, Ext. 148
Email: pbartnik@tecumseh.ca

Yours sincerely,

DILLON CONSULTING LIMITED

Flavio R. Forest, P.Eng.,
Project Manager

ACW:d
Encl.
cc: Mr. Phil Bartnik, P.Eng. - Town of Tecumseh

Community Name	Contact(s)	Date	Method of Communication	Dillon Consulting Limited Message	Community Comments/Questions
Chippewas of the Thames First Nation	Chief Henry A. Myeengun Fallon Burch	March 13, 2018	Mailed Notice of Study Commencement with covering letter	Public comments invited at any time during the study.	
		March 26, 2018	Written response to Notice of Study Commencement		Expressed minimal concern with the project, but requested to be kept informed of any substantive changes. They require notification of any Archaeological Assessment and opportunity to participate. Requested a copy of Class EA and Environmental Study upon completion.
		June 12, 2018	Telephone	Left voicemail detailing the project and that it was a follow up call to see if they had any questions or comments. Provided phone number to call back.	
Chippewas of Kettle & Stony Point First Nation	Chief Thomas Bressette Valerie George	March 13, 2018	Mailed Notice of Study Commencement with covering letter	Public comments invited at any time during the study.	
	Valerie George	June 12, 2018	Telephone	Explained the project and asked if they had any comments or questions since the Notice of Commencement.	Responded that she would call back.
	Valerie George	January 29, 2019	Telephone	Explained the project and asked if they had any comments or questions.	Cannot comment on this proposal because it is not within their traditional territory. Requested to still be contacted for future projects in the area.
Moravian of the Thames	Chief Greg Peters	March 13, 2018	Mailed Notice of Study Commencement with covering letter	Public comments invited at any time during the study.	
	Colleen (Administration)	June 12, 2018	Telephone	Explained the project and asked if they had any comments or questions since the Notice of Commencement.	Would forward information to appropriate individuals for review.
	Colleen (Administration)	January 29, 2019	Telephone	Explained the project and asked if they had any comments or questions.	Colleen explained that she had previously forwarded our information to the appropriate contacts, and who did not express concerns.
Aamjiwnaang First Nation	Chief Joanne Rogers Sharilyn Johnston	March 13, 2018	Mailed Notice of Study Commencement with covering letter	Public comments invited at any time during the study.	
	Christine James	June 12, 2018	Telephone	Explained the project and asked if they had any comments or questions since the Notice of Commencement.	Will review information and advise of any concerns/comments.
		January 29, 2019	Telephone	Left voicemail explaining the project and asking to call back if they had any comments or questions.	

Community Name	Contact(s)	Date	Method of Communication	Dillon Consulting Limited Message	Community Comments/Questions
Walpole Island First Nation	Chief Daniel Miskokomon	March 13, 2018	Mailed Notice of Study Commencement with covering letter	Public comments invited at any time during the study.	
	Dean Jacobs	June 12, 2018	Telephone	Left voicemail detailing the project and that it was a follow up call to see if they had any questions or comments. Provided phone number to call back.	
		January 29, 2019	Telephone	Left voicemail explaining the project and asking to call back if they had any comments or questions.	
Caldwell First Nation	Chief Louise Hillier	March 13, 2018	Mailed Notice of Study Commencement with covering letter	Public comments invited at any time during the study.	
	Nikki Orosz	June 12, 2018	Telephone	Explained the project and asked if they had any comments or questions since the Notice of Commencement.	Requested that future correspondence be done by email
Metis Nation of Ontario	Linda Norheim Brookes	March 13, 2018	Mailed Notice of Study Commencement with covering letter	Public comments invited at any time during the study.	
Southern First Nations Secretariat		March 13, 2018	Mailed Notice of Study Commencement with covering letter	Public comments invited at any time during the study.	

CHIPPEWAS OF THE THAMES FIRST NATION

March 26, 2018

Phil Bartnik, P.Eng.
Manager, Engineering Services
Town of Tecumseh
917 Lesperance Road
Tecumseh, Ontario, N8N 1W9

RE: Class EA Sylvestre Drive Sanitary Sewer Extension

Mr. Bartnik,

We have received information concerning the abovementioned project, dated March 13, 2018. The proposed work will be conducted within the McKee Treaty (1790) area to which Chippewas of the Thames First Nation (COTTFN) is a signatory. The proposed work is also located within the Big Bear Creek Additions to Reserve (ATR) land selection area, as well as COTTFN Traditional territory.

At this time, with the information that has been provided to us, we have minimal concern with this project. However, if there are any substantive changes to this project, we ask that you keep us informed. As well, if there is an Archaeological Assessment conducted, we require notification and the opportunity to actively participate by sending First Nation monitors on behalf of this First Nation. Upon completion of the Class EA and Environmental Study, we request that a copy be sent to COTTFN.

We look forward to continuing this open line of communication. To implement meaningful consultation, COTTFN has developed its own protocols — a document and a process that will guide positive working relationships. We would be happy to meet with you to review COTTFN's Consultation Protocols.

Please do not hesitate to contact me if you need further clarification of this letter.

Sincerely,

Rochelle Smith
Consultation Coordinator
Chippewa of the Thames First Nation
(519) 289-5555 Ext. 252
rsmith@cottfn.com

Our file: 17-6843

April 4, 2019

Notice was provided to all property owners within the Study Area

Notice of Study Completion
Sylvestre Industrial Park Area Sanitary Sewer Extension
Class Environmental Assessment

Dear Stakeholder:

Further to previous notifications, the Preliminary Design and Municipal Class Environmental Assessment (EA) for the Sylvestre Industrial Park Area Sanitary Sewer Extension has been completed by Dillon Consulting Limited and the Town of Tecumseh. Through the EA process, a recommended alternative has been determined for implementation of the above-noted project.

We would like to discuss the recommended alternative through a meeting on Tuesday, April 16, 2019. The meeting will be held at the Town of Tecumseh office located at 917 Lesperance Road and is scheduled from 9:30 a.m. until 11:00 a.m. Following the meeting, we will prepare a Notice of Study Completion for 30 day public review.

Should you have any further questions with respect to the project in advance of the meeting, please contact us via at one of the following addresses:

Flavio Forest, P.Eng.
Project Manager
Dillon Consulting Limited
3200 Deziel Drive, Suite 608
Windsor, Ontario N8W 5K8
Phone: 519-948-4243, Ext. 3233
Email: SylvestreEA@dillon.ca

Phil Bartnik, P.Eng.,
Manager, Engineering Services
Town of Tecumseh
917 Lesperance Road
Tecumseh, Ontario, N8N 1W9
Phone: 519-735-2184, Ext. 148
Email: pbartnik@tecumseh.ca

Yours sincerely,
DILLON CONSULTING LIMITED

Flavio R. Forest, P.Eng.
Project Manager

ACW:
cc: Mr. Phil Bartnik, P.Eng. - Town of Tecumseh

DILLON CONSULTING

3200 Deziel Drive
Suite 608
Windsor, Ontario
Canada
N8W 5K8
Telephone
519.948.5000
Fax
519.948.5054

Dillon Consulting Limited

MEMO

TO:	Affected Landowners
FROM:	Andrea Winter, P.Eng. Dillon Consulting Limited
cc:	Phil Bartnik, P.Eng. Director Public Works and Environmental Services, Town of Tecumseh John Henderson, P.Eng. Manager Engineering Services, Town of Tecumseh Flavio Forest, P.Eng. Dillon Consulting Limited
DATE:	May 16, 2019
SUBJECT:	Sylvestre Sanitary Sewer Extension|Alternative Sewer Alignment
OUR FILE:	17-6843

During the Sylvestre Sanitary Sewer Extension Environmental Assessment Landowners Meeting held on April 16, 2019, an alternative sewer alignment was proposed by the landowners in place of the presented preferred Option C. This alternative (herein referred to as Option D) would utilize an existing watermain easement along the east-west property line between 1849 and 13350 Sylvestre Drive, similar to the sewer alignment proposed in Option A. It was purported that this option would allow properties fronting Manning Road (1845, 1847, 1855, 1865) to be serviced from the rear, removing the need for a pumping station (see the attached figure for a conceptual layout of Option D). The Town of Tecumseh requested that Dillon Consulting Limited (Dillon) investigate this option to determine feasibility and provide a recommendation on the preferred servicing option.

Through use of available as-constructed drawings and existing LiDAR topographic data, Dillon completed an initial review of Option D.

The initial review of the conceptual Option D sewer layout (see attached) determined the alignment would provide adequate grade (relative to existing servicing options) to service municipal addresses 1845, 1847, 1855, and 1865 Manning Road with a gravity sewer through the existing watermain easement. This option would require sanitary services to 13480 and 13485 Sylvestre Drive to outlet to the upstream end of the proposed gravity sewer along the east-west leg of Sylvestre Drive. There are however, concerns with constructability, maintenance access, and construction costs as listed below:

- Based on as-constructed information, the existing watermain easement terminates at the western property boundary of municipal address 1855. Additional easements through municipal addresses 1847 and 1855 would be required and would result in an additional 32m of easement compared to Option C.
- It is assumed that the existing watermain is centrally located within the 6.1m wide easement; locates were not completed as part of the concept review. At this assumed alignment, the existing easement width would not accommodate the required 2.5m separation from the proposed sanitary sewer. This constraint is exacerbated at proposed manhole locations and between buildings/structures on private property. Additional width would be required along the existing watermain easement to allow for adequate separation and ease of construction and maintenance. Additional easement width is not expected to be feasible between existing buildings/structures.

- Existing structures and existing private utilities located on private property may impede sewer construction.
- An additional 180m of sewer pipe and two additional manholes will be required (compared to Option C) to implement Option D.
- Due to the mostly commercial property usage, flows within the proposed sewer are minimal. This will require additional maintenance to ensure longevity and service level (for all options). Constructing the sewer within private property with limited access may cause access issues in the short and long term and may impact future development.
- Additional restoration within private property would be required compared to Option C.

Taking into consideration the cost for additional sewer pipe, manholes, and easements combined with construction and maintenance concerns, it is recommended that Option C remain the preferred servicing solution.

Based on the findings outlined above, the Town of Tecumseh will be proceeding with Option C as the preferred servicing strategy and will be issuing the Notice of Completion for the Sylvestre Sanitary Sewer Extension, which is subject to a 30-day review period.

LEGEND

- PROPOSED SANITARY SEWER ALIGNMENT
- EXISTING SANITARY SEWER
- EXISTING EASEMENT LIMITS (6.1m WIDTH)
- REQUIRED EASEMENT LIMITS

DILLON CONSULTING

Town of Tecumseh Ontario Canada

Dillon Project No.: 17-6843

DATE: MAY 2019

SCALE 0 10 25 100m

Sylvestre Sanitary Sewer

Class Environmental Assessment

TOWN OF TECUMSEH

ALIGNMENT OPTION D