Engineer's Report
Minto Drain 119 - 2025

Town of Minto
5941 Highway 89
Harriston ON N0G 1Z0

Engineer's Report
February 2025

SUMMARY ASSESSMENTS FOR CONSTRUCTION
MINTO DRAIN 119

Conc. or Plan	Lot or Part	Owner	Roll No.	Affected Area (Ha.)	Main Drain	West Branch	East Branch	Totals	*Less* 1/3 Grant	*Less* Allowances	Net Assessment
		Agricultural Lands									
7	40	Antonio Andrade	1-156	38.87	$ 2,160	$ -	$ -	$ 2,160	$ 720	$ -	$ 1,440
7	41	William and Catherine Wilken	1-157	17.20	$ 5,150	$ -	$ -	$ 5,150	$ 1,717	$ 4,270	$ (837)
7	42	James and Colleen Gibson	1-157-50	0.00	$ -	$ -	$ -	$ -	$ -	$ 5,690	$ (5,690)
8	40	Archibald and Lisa Wilson	1-158-50	4.67	$ 5,850	$ -	$ 2,430	$ 8,280	$ 2,760	$ -	$ 5,520
8	40	Lavolit Limited	1-162	19.43	$ 3,930	$ -	$ 1,100	$ 5,030	$ 1,677	$ -	$ 3,353
8	41	John and Miriam Martin	1-159	29.76	$ 87,580	$ 3,130	$ 15,850	$ 106,560	$ 35,520	$ 6,140	$ 64,900
8	42	Lavolit Limited	1-158	4.34	$ 7,250	$ 22,940	$ -	$ 30,190	$ 10,063	$ -	$ 20,127
		TOTAL ON LANDS		**114.27**	**$ 111,920**	**$ 26,070**	**$ 19,380**	**$ 157,370**	**$ 52,457**	**$ 16,100**	**$ 88,813**
		Roads									
Unopened Road Allowar	*	Town of Minto		2.44	$ 1,860	$ -	$ 770	$ 2,630	$ -	$ -	$ 2,630
		TOTAL ON ROADS		**2.44**	**$ 1,860**	**$ -**	**$ 770**	**$ 2,630**	**$ -**	**$ -**	**$ 2,630**
		ALL LANDS AND ROADS		**116.71**	**$ 113,780**	**$ 26,070**	**$ 20,150**	**$ 160,000**	**$ 52,457**	**$ 16,100**	**$ 91,443**

Notes:
(1) It is presumed that all private lands are Agricultural, within the meaning of the Drainage Act except properties denoted with *
(2) Eigibility for an OMAFA grant will be verified by the Town of Minto at time of billing
(3) It is the responsibility of the landowner to confirm whether their property is eligible for an OMAFA grant, under ADIP policies

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Town of Minto
5941 Highway 89
Harriston ON N0G 1Z0

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February 2025
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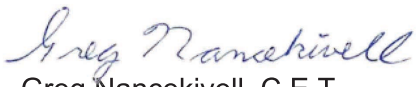
8	Yes	Yes	Town of Minto (for Council, Drainage Superintendent, general municipal use)
6	No	No	Assessed Landowners
1	Yes	Yes	Maitland Valley Conservation Authority (MVCA)
1	Yes	Yes	Ontario Ministry of Agriculture, Food and Agribusiness (OMAFA)

Record of Revisions

Revision	Date	Description
0	October 11, 2024	Draft Submission to the Town of Minto and Maitland Valley Conservation Authority
1	February 3, 2025	Final Submission for Engineers Report

R.J. Burnside & Associates Limited



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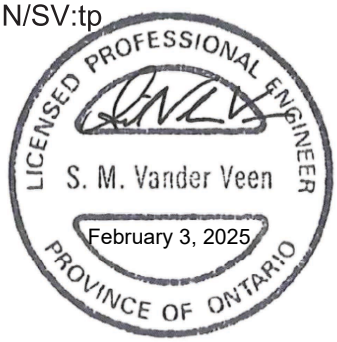

Sid Vander Veen, P.Eng.
Project Engineer

Executive Summary

Authorization

This report is being prepared in response to an appointment by the Town of Minto, dated January 18, 2022 to investigate drainage issues on the property of the petitioning landowners, in accordance with Section 4 of the Drainage Act, R.S.O. 1990.

Objective and Recommendations

The objective of this report is to determine a drainage solution to provide a subsurface drainage outlet for the properties within the watershed.

This report recommends the construction of a new drain beginning in Lot 41, Concession 8, proceeding into Lot 41, Concession 7, in the Town of Minto.

Summary of Assessments

A summary of the assessments for this project are as follows:

Municipal Lands	$	2,630
Privately Owned Agricultural – Grantable	$	157,370
Total Estimated Assessments	**$**	**160,000**

Acknowledgements

R.J. Burnside & Associates Limited (Burnside) would like to acknowledge the assistance and cooperation of the property owners directly involved with this project, as well as Ryan Binkle, Drainage Superintendent for the Town of Minto, and Kirsten Snoek from the Maitland Valley Conservation Authority (MVCA).

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Nomenclature

General

ac – acre (0.4047 ha)
BSWI – buried surface water inlet
CB – catchbasin
CCTV – closed circuit television
CDT – concrete drain tile
CSP – corrugated steel pipe
c/w – complete with
dia. – diameter
DICB – ditch inlet catchbasin
d/s – downstream
ea. – each
FL – fence line
H – horizontal
ha – hectare (2.471 ac)
HDPE – high density polyethylene
BJB – buried junction box
km – kilometre
LS – lump sum
m – metre
mm – millimetre
m^2 – square metre
m^3 – cubic metre
OB – observation box
o/s – offset
PDT – plastic drainage tubing
PL – property line
ROW – right of way
S & I – supply and install
Sta. – station (chainage)
SWI – surface water inlet
SWWSP – smoothwall welded steel pipe
t – tonne (2,205 pounds)
u/s – upstream
V – vertical

Other

CA – Conservation Authority
DFO – Fisheries and Oceans Canada
MECP – Ministry of Environment, Conservation and Parks
MTO – Ministry of Transportation
NRCS – Natural Resources Conservation Service
OMAFA – Ontario Ministry of Agriculture, Food and Agribusiness

1.0 Project Authorization

This report is being prepared in response to an appointment by the Town of Minto, dated January 18, 2022 to investigate drainage issues on the property of the petitioning landowners, in accordance with Section 4 of the Drainage Act, R.S.O. 1990.

The Drainage Act

The "Drainage Act" provides a mechanism for the construction, improvement and maintenance of a drainage works. Procedures under the Drainage Act are designed to enable non-riparian landowners to obtain a legal drainage outlet while safeguarding the rights and property of riparian landowners through which the drainage system may be constructed. The Drainage Act definition of "drainage works" includes a drain constructed by any means, including the improvement of a natural watercourse, and includes works necessary to regulate the water table or water level within or on any lands or to regulate the waters of a drain, reservoir, lake or pond and includes a dam, embankment, wall, protective works or any combination thereof.

Drains constructed under the Drainage Act, which are referred to as Municipal Drains, are user pay systems. This means the landowners within the watershed, including lands and roads, for the proposed drain will contribute a portion of costs towards the design, construction and maintenance of the municipal drain. The most common means of assessing project costs are through a benefit and/or outlet assessment (Sections 22 & 23 of the Drainage Act).

Aside from assessing costs, allowances are awarded to owners whose property is physically affected by the construction and maintenance of the drain. The most common sections under the Drainage Act to award allowances are; Section 29 for right-of-way, which awards costs based on the area of land required to construct, improve and maintain the drain in the future; and Section 30 for damages, which are awarded based on damages to the property during construction or improvements to the drain. In this particular case we have elected to use Section 32 "Allowance for Damage Due to Insufficient Outlet". For more details on allowances, see Appendix A.

1.1 Engineer's Report

The proposed works and costs contained herein are intended to reflect the requirements of the stakeholders and are based on information gathered during field survey, as well as at the property owner meetings and follow up discussions. Details of the proposed work are described in this Report, its appendices and on the plan, profile and detail drawings.

1.2 Petition for Drainage Works by Owners

A petition, dated January 10, 2022, was submitted by John and Miriam Martin (Roll No. 1-159); owners of part lot 41, Concession 8 in the Town of Minto, Wellington County.

1.3 Validity of Petition

The area requiring drainage for Minto Drain 119 was determined as being part of Lot 41, Concession 8 in the Town of Minto, Wellington County.

The petition having been signed by John and Miriam Martin owners of Lot 41, Concession 8 represent all of the landowners in the area requiring drainage as determined by the engineer. The petition has been found to be valid in accordance with Section 4(1)a of the Drainage Act, R.S.O. 1990 having the majority in number of the owners within the area requiring drainage.

This report has been prepared in accordance with Section 4 of the Drainage Act, R.S.O. 1990.

2.0 Background Information

Initially, it was thought that the outlet for the area requiring drainage would have been into Minto Drain 102 in accordance with the watershed under a report by J. R. Spriet, dated April 28, 1987. This report provided for the construction of an open and closed drainage system beginning at Lot 40, Concession 7 just north of the intersection of Bride Line and 7th Line, outletting into the Maitland River in Lot 40, Concession 5.

Upon a thorough review of surrounding drainage reports, landowner input and the use of Southern Western Ontario Ortho Photography (SWOOP) it was found that the area requiring drainage was not naturally within the watershed of Minto Drain 102. A corresponding report by R.J. Burnside dated October 20, 2022, adjusted the watershed boundary of Minto Drain 102 to exclude the area requiring drainage in this report.

2.1 Existing Conditions

Surface water from the watershed generally flows from uplands toward the Howick Minto Wetland Complex.

Figure 1: Pond on Lot 41, Conc. 8 (Roll No. 1-159) John & Miriam Martin property

The existing pond shown above is the location of the proposed upstream end of the Main Drain. Currently this pond drains into a shallow channel which outlets into the woodlot on Lot 41 Concession 8 shown below.

Figure 2: Existing Ditch Lot 41, Conc. 8 (Roll No. 1-159) John & Miriam Martin property

Figure 3: Low-lying area on Lot 41 Conc. 7 (Roll No. 1-157)
William & Catherine Wilken property

The low-lying land on Lot 41 Concession 7 was found wet with no defined channel as shown in the figure above.

Figure 4: Howick Minto Wetland Complex on Lot 42 Conc. 7 (Roll No. 1-157-50)
James & Colleen Gibson property

The land on Lot 42 Concession 7 is part of the Howick Minto Wetland complex and remains wet throughout the spring months, which is illustrated above.

2.2 Watershed Area and Land Use

The watershed of Minto Drain 119 was investigated by Burnside. The boundary was delineated through the examination of topographic contour mapping data (SWOOP) with computer aided drafting (CAD) software, the examination of existing Municipal Drain reports, and on-site observations.

The watershed area for Drain 119 was determined to be approximately 116.7 ha.

Land use within the watershed area is divided as follows:

- 85.6 ha (211.5 ac) agricultural land
- 28.6 ha (70.7 ac) woodlot
- 2.4 ha (5.9 ac) municipal road right-of-way (ROW)

The proposed Minto Drain 119 shares watershed boundaries with the following drainage systems.

- Minto Drain 102 (1987) to the Southeast
- Leonard Drain (1983) to the Southwest
- Minto Drain 72 (1981) to the East
- Minto Drain 121 (2024) to the Northwest (proposed)

2.3 Types of Soils

The soils survey for the Town of Minto taken from Soil Survey of Wellington County 1963 indicates that the predominant soil type within the watershed area is Harriston Loam, with smaller areas of Muck, Listowel Loam, Teeswater Silt Loam.

- **Harriston Loam** – A slightly stony soil with good drainage and rolling topography.
- **Muck** – An organic stone free soil with poor drainage and depressional topography.
- **Listowel Loam** – A slightly stony soil with imperfect drainage and undulating topography.
- **Teeswater Silt Loam** – A slightly stony soil with good drainage and gently sloping topography.

Based on the characteristics of the soils and their potential for future agricultural use, the Canada Land Inventory (CLI) provides Soil Capability Classification of Agriculture for lands across the country. The soils within the new watershed area have an agricultural capability rating of Class 0 and 1, with no limitation in crop use outside the wetland area.

3.0 Preliminary Investigations

3.1 On-Site Meeting

The on-site meeting for this petition drain as well as for improvement works on Minto Drain 102 was held on March 11, 2022 at 83 Arthur Street West, Harriston (Harriston Train Station). The following were present at the meeting:

Name	Position	Roll No.
Dan Templeton	Property Representative	Roll No. 1-116
John Kuipers	Property Owner	Roll No. 1-115-50, 1-117 & 1-120
Ian Marsh	Property Owner	Roll No. 1-119
William Wilken	Property Owner	Roll No. 1-157
James Gibson	Property Owner	Roll No. 1-157-50
John Martin	Property Owner	Roll No. 1-159
Mike McIsaac	Drainage Superintendent, Town of Minto	N/A
Michael Siemon	R.J. Burnside & Associates Limited	N/A
Greg Nancekivell	R.J. Burnside & Associates Limited	N/A
Trevor Kuepfer	R.J. Burnside & Associates Limited	N/A

The existing drainage conditions were discussed amongst those in attendance. John Martin explained that he is not able to install underdrainage on his property since he has no access to a legal drainage outlet.

Some of the owners indicated that the open portion of Minto Drain 102 has not been cleaned out in a very long time and is overgrown. Generally, the property owners that utilize the tile portion of the Minto Drain 102 were satisfied with the drainage that it provides. Some property owners indicated that they felt the watershed boundary from the existing drainage report may be incorrect and should be further investigated.

As a result of the meeting, it was determined that the primary purpose of this report would be to establish a legal drainage for the petitioning property. The deficiencies of the existing Minto Drain 102 would be addressed under a separate report.

4.0 Design Criteria and Engineering Considerations

4.1 Drainage System Design & Sizing

The applicable sections of the "A Guide for Engineers Working Under the Drainage Act in Ontario" (Publication 852), and the applicable sections of the "Drainage Guide for Ontario" (Publication 29), both of which were published by the Ontario Ministry of Agriculture, Food, and Rural Affairs, were used to determine and supplement the design considerations for this drain.

4.2 Open Drain Design

In accordance with OMAFRA Publication 852, dated 2018 the channels have been designed to accommodate the flows resulting from the 2-year return storm event.

4.3 Drainage System Outlet

The outlet of Minto Drain 119 is denoted on the accompanying plan and profile drawings at Sta. 0+000. This point was selected to utilize the natural drop off to convey the water into the wetland and to avoid any unnecessary disturbance. The location at Sta. 0+000 is not considered a sufficient outlet. An allowance for insufficient outlet was provided for lands impacted. Details of the allowance can be found in Appendix A

4.4 Water Quality Considerations

The loss of sediment and nutrients from cropped land is a major concern to water quality in Ontario. Therefore, this design has incorporated the following features to minimize these impacts including:

- Rip-rap erosion protection along banks susceptible to erosion to reduce channel degradation.
- Permanent stilling basins to promote sediment deposition.

4.5 Soils Investigation

A soils investigation was completed in various locations near the proposed drain alignment on April 6, 2022. This investigation was completed to evaluate the construction conditions of various design options. The results of the investigation have been summarized and locations shown on the accompanying plan in Appendix G.

5.0 Environmental and Fisheries Considerations

When a new Engineer's report is prepared that could affect an existing Municipal Drain, natural watercourse, wetland, or other environmental features, a review of the work is required, and subsequent approvals and/or project requirements must be obtained from the applicable agency. These may include the local Conservation Authority (CA), The Ministry of the Environment, Conservation and Parks (MECP) and Fisheries and Oceans Canada (DFO).

5.1 Maitland Valley Conservation Authority (MVCA)

The MVCA has been apprised of the project throughout its progression. A cover letter and permit form noting important considerations is included in Appendix D.

5.2 Ministry of the Environment, Conservation and Parks (MECP)

All of the proposed works occur outside of the Howick Minto Wetland Complex as a result no temporary or permanent impacts on Species at Risk (SAR) are anticipated. There is some tree clearing works proposed which should be avoided during the core bird nesting period (April 1st to September 30th, inclusive), otherwise a MECP Nest Survey is recommended.

The Contractor will be responsible to ensure that during construction no extirpated, endangered, threatened, or special concern species or their habitats are adversely affected.

5.3 Fisheries and Oceans Canada (DFO)

DFO indicates that artificial waterbodies that are not connected to a waterbody that contains fish at any time of the year do not require their review. The proposed municipal drain will outlet the Howick Minto Wetland complex. The drain is not hydraulically connected to the Maitland River or any supporting tributaries which contain fish and as a result a review by DFO is not necessary to be completed.

6.0 Stakeholder Meetings

6.1 Information Meeting No. 1

An information meeting for the Minto Drain 119 was held on January 30, 2024 at the Town of Minto Council Chambers. The following were present at the meeting:

Name	Position	Roll No.
Antonio (Tony) Andrade	Property Owner	Roll No. 1-156
Bradley (Brad) Hall	Howick Resident	N/A
James (Jim) Gibson	Property Owner	Roll No. 1-157-50
Brad Gibson	Property Representative	Roll No. 1-157-50
Ken Connell	Howick Resident	N/A
John Martin	Property Owner	Roll No. 1-159
Hubertus Vonwesterholt	Property Representative	Roll No. 1-158 & 1-162
Mike McIsaac	Drainage Superintendent, Town of Minto	N/A
Greg Nancekivell	R.J. Burnside & Associates Limited	N/A
Edison Peel	R.J. Burnside & Associates Limited	N/A

The watershed boundary, estimated costs, design, allowances and assessments were discussed with all meeting attendees.

7.0 Proposed Design

7.1 Description of Proposed Work on Each Property

West Branch

West Branch includes approximately the brushing of a 10 m working ROW for 100 m in a woodlot area, 100 m of channel deepening complete with spoil spreading, and hand seeding disturbed areas.

East Branch

East Branch includes the brushing of a 10 m working ROW for 57 m in a woodlot area, the installation of one sediment basin, complete with rip-rap erosion protection, 57 m channel deepening complete with spoil spreading, and hand seeding disturbed areas

Main Drain

Main Drain includes the brushing of a 10 m working ROW for 390 m in a woodlot area 390 m of channel deepening complete with spoil spreading and hand seeding disturbed areas.

7.1.1 Description of Proposed Work on Each Property

7.1.1.1 Main Drain

William & Catherine Wilken (Roll No. 1-157)

(Sta. 0+000 to Sta. 0+199)

- Approximately 199 m x 10 m of brushing for a working ROW
- Approximately 199 m of channel construction
- Approximately 2400 m^2 of hand seeding

John & Miriam Martin (Roll No. 1-159)

(Sta. 0+199 to Sta. 0+390)

- Approximately 191 m x 10 m of brushing for a working ROW
- Approximately 191 m of channel deepening
- Approximately 2300 m^2 of hand seeding

7.1.1.2 West Branch

John and Miriam Martin (Roll No. 1-159)

(Sta. 0+000 to Sta. 0+100)

- Approximately 100 m x 10 m of brushing for a working ROW
- Approximately 100 m of channel deepening
- Approximately 5 m^2 of rip-rap erosion protection
- Approximately 1200 m^2 of hand seeding

7.1.1.3 East Branch

William and Catherine Wilken (Roll No. 1-157)

(Sta. 0+000 to Sta. 0+050)

- Approximately 50 m x 10 m of brushing for a working ROW
- Approximately 50 m of channel construction
- Approximately 600 m^2 of hand seeding

John and Miriam Martin (Roll No. 1-159)

(Sta. 0+050 to Sta. 0+057)

- Approximately 7 m x 10 m of brushing for a working ROW
- Approximately 7 m of channel construction
- Installation of stilling basin complete with rip-rap erosion protection
- Approximately 85 m^2 of hand seeding

7.2 Working Space and Access Routes

The working space and access routes being provided to the Contractor are described in Appendix F – Special Provisions. The working space shall also be available for future maintenance of the drain. Access to the working space is to be confirmed by the Contractor with property owners and the Engineer prior to the commencement of construction. Allowances for the working space and access routes have been provided to the affected properties. Access to various parts of the drain shall be as shown in the accompanying drawings in Appendix H.

7.3 Change Orders

If unforeseen circumstances are encountered following the adoption of this report, the Engineer may issue change orders, as required to have the work properly constructed.

8.0 Description of Appendices

8.1 Appendix A – Allowances

In accordance with Section 8(1)(d) of the Act, this Appendix provides a breakdown of the allowances provided under Sections 29, 30, and 32 of the Act. These sections are:

- Section 29 – Right-of-Way
- Section 30 – Damages
- Section 32 – Insufficient Outlet

8.2 Appendix B – Project Cost Estimate

In accordance with Section 8(1)(b) of the Act, this Appendix provides a breakdown of the total estimated cost of the proposed work, including all labour, materials, construction, engineering, administration and allowances.

8.3 Appendix C – Construction and Maintenance Assessment Schedules and Assessment Background Information

This Appendix provides an explanation of the methodology used in determining the assessments for this project and also a summary of the proposed assessments that shall be assessed on a pro rata fashion to each property impacted by the proposed works **prior to any grant or allowances being provided.**

Furthermore, this Appendix provides maintenance assessment schedules that shall be used by the Drainage Superintendent following the construction of the proposed drain to determine how to distribute future maintenance costs.

8.4 Appendix D – Agency Correspondence

Project recommendations and requirements from the MVCA are listed in this Appendix.

8.5 Appendix E – Standard Drain Specifications

The Standard Drain Specifications have been provided in Appendix E and govern the work described herein.

8.6 Appendix F – Special Provisions

Special Provisions are specific directions for this project. The Special Provisions detail requirements not encompassed by Appendix E – Standard Drain Specifications. Special Provisions shall take precedence over Standard Drain Specifications where a conflict between the two documents may exist.

8.7 Appendix G – Soils Investigation

A soils investigation was completed in various locations near the proposed drain alignment on April 6, 2022. This investigation was completed to evaluate the construction conditions of various design options. The results of the investigation have been summarized and locations shown on the accompanying plan.

8.8 Appendix H – Drawings

Three (3) drawings are included with this report, consisting of a plan, profiles and construction plan pertinent to the construction of the proposed drain.

9.0 Maintenance and Future Considerations

9.1 General

While the Town of Minto will be responsible for the maintenance of the drain after construction is complete, the sections with the Act dealing with obstruction of, damage, and injury to a Municipal Drain, namely Sections 80 and 82, are brought to the attention of the property owners. Under these sections, both the property owners and the Town of Minto have responsibilities to ensure that a Municipal Drain is properly maintained and kept in good working condition.

The maintenance of this drain should include regular inspections by the Drainage Superintendent, and appropriate action should be taken by the Drainage Superintendent to ensure the proper function of the drain.

9.2 Maintenance Eligibility

Regarding future maintenance works, the Town of Minto shall be responsible to maintain the Minto Drain 119 as per the profiles and details on the accompanying drawing set, and notes in the special provisions.

9.3 Future Maintenance

Any areas of washout, settlement, erosion, or other disrepair within the proposed drain shall be maintained as needed by the Drainage Superintendent. The rip-rap erosion protection, stilling basin, etc., shall be inspected on a periodic basis by the Drainage Superintendent and cleaned out as required to maintain the efficiency of the structures and to prevent sedimentation or erosion of the channel.

9.4 Maintenance Costs

The Minto Drain 119 shall be maintained by the Town of Minto at the expense of the upstream lands and roads, as determined by the Drainage Superintendent in accordance with Section 74 of the Drainage Act.

Costs shall be distributed among the upstream property owners using Appendix C5 to Appendix C7 in the same relative portions until such a time as they are varied in accordance with the Drainage Act.

9.5 Future Connections

Connections by the property owners or their Contractor not approved by the Town of Minto or its Drainage Superintendent may be removed at the expense of the Owner responsible for the connection.

After construction, new private tile drains may be installed and outlet directly into the proposed drain, provided that each one is installed with a corrugated steel or dual-wall HDPE outlet pipe complete with a rodent grate, sufficient rip-rap erosion protection, and identified along the ditch bank of the drain with a proper outlet marker or sign to the satisfaction of the Drainage Superintendent.

Any outlets not installed as described above and causing damage or erosion to the drain may be upgraded as described above or removed at the expense of the Owner responsible for the connection.

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Appendix A

Allowances – Sections 29, 30 & 32

Appendix A – Allowances

Allowances will be deducted from total assessments in accordance with Section 62(3) of the Act. The land and crop values used for these calculations were determined based on a general understanding of the values within this geographic area and are described in the following sections. A summary of the allowances provided under each section of the Act is included in this Appendix. Details regarding working space can be found in the Special Provisions.

- A 5 m access was provided as detailed in the Special Provisions, and as shown on the drawings.
- A 5 m drain corridor was provided through the entire length of the proposed ditch to allow for the construction of the new channel.
- A 10 m working corridor was provided along the length of the proposed ditch to allow for construction vehicles and placement of spoil.

Section 29 – Right-of-Way

Section 29 the Act states:

"*The engineer in the report shall estimate and allow in money to the owner of any land that it is necessary to use,*

a) for the construction or improvement of a drainage works;

b) for the disposal of material removed from drainage works;

c) as a site for a pumping station to be used in connection with a drainage works;

d) or as a means of access to any such pumping station, if, in the opinion of the engineer, such right of way is sufficient for the purposes of the drainage works,

the value of any such land or the damages, if any, thereto, and shall include such sums in the estimates of the cost of the construction, improvement, repair or maintenance of the drainage works. R.S.O. 1990, c. D.17, s.29."

The right-of-way is defined as the footprint of the drain, the working space for the Contractor during construction, and also the working space for the Town of Minto for future maintenance.

Right-of-Way has also been provided for access to the drains for construction and future maintenance. A nominal allowance for access right-of-way of **$500** was provided to lands where an access route is noted on the drawings and special provisions.

In this report, ROW allowances have been provided as follows:

Land Use	Land Value	Factor for Right-of-Way	Adjusted Land Value for Right-of-Way
Woodlot (Drain Corridor)	$16,250/ha ($6,575/ac)	100%	**$16,250/ha ($6,575/ac)**
Woodlot (Working Corridor)	$16,250/ha ($6,575/ac)	33%	**$5,363/ha ($13,250/ac)**

Section 30 – Damages

Section 30 of the Act states:

"*The engineer shall determine the amount to be paid to persons entitled thereto for damage, if any, to ornamental trees, lawns, fences, lands and crops occasioned by the disposal of material removed from a drainage works and shall include such sums in the estimates of the cost of construction, improvement, repair or maintenance of the drainage works. R.S.O. 1990, c. D.17, s.30.*"

The following was assumed for crop losses for the specified width of the working area.

- Landowners should expect to lose a crop during the construction of this drain.
- Landowners are encouraged to not to plant specialty crops such as vegetables or ginseng as the allowances provided have not calculated to reflect specialty crops.

It should be noted that the allowances provided in this report are not adjustable/negotiable after the by-law has been given third and final reading.

In this report, damage allowances have been provided as follows:

Land Use	Damage Value
Agricultural Land (Access)	**$4,000/ha ($1,620/ac)**
Woodlot (Drain Corridor & Working Corridor)	**$1,000/ha ($405/ac)**

Section 32 – Insufficient Outlet

Section 32 of the Act states:

"Where, in the opinion of the engineer, the cost of continuing a drainage works to a sufficient outlet or the cost of constructing or improving a drainage works with sufficient capacity to carry off the water will exceed the amount of injury likely to be caused to low-lying lands along the course of or below the termination of the drainage works, instead of continuing the works to such an outlet, or making it of such capacity, the engineer may include in the estimate of cost a sufficient sum to compensate the owners of such low-lying lands for any injuries they may

sustain from the drainage works, and in the report the engineer shall determine the amount to be paid to the owners of such low-lying lands in respect of such injuries. R.S.O. 1990, c. D.17, s. 32."

The decision to use Section 32 – Insufficient Outlet was made based on the following considerations:

- The natural watershed based on topography for this project has been established by means previously mentioned in this report and there will be no change to the area contributing either surface or subsurface water after the construction of this drainage system.
- It is the opinion of the engineer that the cost of continuing this drainage works to a sufficient outlet would exceed the amount of injury likely to be caused to the downstream lands.
- The construction of the drain as proposed in this report would concentrate flows and artificially cause to flow onto low-lying lands.
- The outlet for the proposed drainage system is into a portion of the Howick Minto Wetland Complex.

Given the above noted considerations and that the proposed drainage system will outlet onto private property and not into a natural watercourse or municipal drain we have elected to provide allowances for insufficient outlet in accordance with Section 32 of the Drainage Act R.S.O. 1990.

In this report, insufficient outlet allowances have been provided as follows:

Land Use	Land Value	Factor for Right-of-Way	Adjusted Land Value for Right-of-Way
Wetland (Insufficient Outlet Corridor)	$16,250/ha ($6,575/ac)	33%	**$5,363/ha ($13,250/ac)**

- On the Willam & Catherine Wilken property (1-157) a 15 m width has been assumed along the approximate flow path from the end of the proposed open ditch to the lot line between Lots 41 & 42, Concession 7 (Sta. 0+000 to Sta. -0+062)
- On the James & Colleen Gibson property (1-157-50) a 15 m width has been assumed along the approximate flow path from the property line between Lots 41 & 42, Concession 7 to the property line between Lot 42 and the unopened road allowance between the Town of Minto & the Township of Howick (approximately 700 metres).
- This represents the approximate right-of-way allowances which would be paid to the landowners if the open drain were continued to the unopened municipal road allowance, should it have been viable to construct.

APPENDIX A - ALLOWANCES

Conc.	Lot	Owner	Roll No.	Right of Way (Sect.29)	Damages (Sect.30)	Insufficient Outlet (Sect.32)	Totals
		Main Drain					
7	41	William and Catherine Wilken	1-157	$ 2,700	$ 310	$ 500	$ 3,510
7	42	James and Colleen Gibson	1-157-50			$ 5,690	$ 5,690
8	41	John and Miriam Martin	1-159	$ 3,080	$ 1,450		$ 4,530
		Total - Main Drain		**$ 5,780**	**$ 1,760**	**$ 6,190**	**$ 13,730**
		West Branch					
7	41	William and Catherine Wilken	1-157				
7	42	James and Colleen Gibson	1-157-50				
8	41	John and Miriam Martin	1-159	$ 1,350	$ 150		$ 1,500
8	42	Lavolit Limited	1-158				
		Total - West Branch		**$ 1,350**	**$ 150**	**$ -**	**$ 1,500**
		East Branch					
7	41	William and Catherine Wilken	1-157	$ 680	$ 80		$ 760
7	42	James and Colleen Gibson	1-157-50				
8	41	John and Miriam Martin	1-159	$ 100	$ 10		$ 110
		Total - East Branch		**$ 780**	**$ 90**	**$ -**	**$ 870**
		TOTAL ALLOWANCES		**$ 7,910**	**$ 2,000**	**$ 6,190**	**$ 16,100**

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Appendix B

Project Cost Estimate

Appendix B - Project Cost Estimate

The estimate of the cost of all labour, equipment and material required to construct this project is as follows:

Note **SP** refers to the **Special Provisions** (in Appendix F) to reference for additional details of work.

Item	Description	Approx. Quantity	Unit	Unit $	Cost Estimate
M.	**Main Drain**				
M0	Mobilization **(SP 0)**		LS		**$ 2,800**
Work on Private Property					
M1	Clearing and grubbing a 15 m width along the proposed channel for approx. 390 m. **(SP 1)** *(Sta. M0+000 to Sta. M0+390)*	390	m	$50	$ 19,500
M2	Deepening and widening of existing channel c/w topsoil stripping, levelling of spoil, and topsoil restoration (approx. 390 m of >0.6 m excavation). **(SP 2)** *(Sta. M0+000 to Sta. M0+390)*	390	m	$50	$ 19,500
M3	Handseeding of disturbed channel banks, levelled spoil, and disturbed areas. **(SP 3)** *(Sta. M0+000 to Sta. M0+390)*		LS		$ 600
Total Estimated Cost of Construction - Main Drain					**$ 39,600**
W.	**WEST BRANCH**				
Work on Private Property					
W1	Clearing and grubbing a 15 m width along the proposed channel for approx. 100 m. **(SP 1)** *(Sta. W0+000 to Sta. W0+100)*	100	m	$50	$ 5,000
W2	Deepening and widening of existing channel c/w topsoil stripping, levelling of spoil, and topsoil restoration (approx. 100 m of >0.6 m excavation). **(SP 2)** *(Sta. W0+000 to Sta. W0+100)*	100	m	$50	$ 5,000
W3	Handseeding of disturbed channel banks, levelled spoil, and disturbed areas. **(SP 3)** *(Sta. W0+000 to Sta. W0+100)*		LS		$ 250
W4	Supply and install a 500 mm thickness of OPSS R50 quarry stone rip-rap with geotextile underlay around existing tile outlet (approx. 5 m^2) **(SP 5)**	5	m2	$70	$ 350
Total Estimated Cost of Construction - West Branch					**$ 10,600**

E. EAST BRANCH

Work on Private Property

E1	Clearing and grubbing a 15 m width along the proposed channel for approx. 57 m. **(SP 1)** *(Sta. E0+000 to Sta. E0+057)*	57 m	$50.00	$ 2,850
E2	Deepening and widening of existing channel c/w topsoil stripping, levelling of spoil, and topsoil restoration (approx. 57 m of >0.6 m excavation). **(SP 2)** *(Sta. E0+000 to Sta. E0+057)*	57 m	$50.00	$ 2,850
E3	Handseeding of disturbed channel banks, levelled spoil, and disturbed areas. **(SP 3)** *(Sta. E0+000 to Sta. E0+057)*	LS		$ 100
E4	Construction of one (1) stilling basin **(SP 4)**			
	a) Excavation of a 3 m long x 0.6 m deep stilling basin	LS		$ 270
	b) Supply and install a 500 mm thickness of OPSS R50 quarry stone rip-rap with geotextile underlay (approx. 30 m^2) *(Sta. E0+000 to Sta. E0+057)*	30 m2	$70.00	$ 2,100
Total Estimated Cost of Construction - East Branch				**$ 8,170**

C. CONTINGENCIES

C1	Supply and install a 450 mm thickness of OPSS R50 quarry stone rip-rap with geotextile underlay. **(SP 5)**	60 m2	$70.00	$ 4,200
C2	Supply & install new outlet pipes for existing tile drainage systems, outletting into the drain (as approved by the Contract Administrator) c/w erosion protection **(SP 6)**			
	a) Supply & install 100 mm dia. HDPE outlet pipe	1 ea.		$ 300
	b) Supply & install150 mm dia. HDPE outlet pipe	1 ea.		$ 400
	c) Supply & install 200 mm dia. HDPE outlet pipe	1 ea.		$ 500
Total Estimated Cost of Construction - Contingencies				**$ 5,400**
Total Estimated Cost of Construction - Minto Drain 119 - 2024				**$ 66,570**

SUMMARY OF COSTS

Total Estimated Cost of Construction - Minto 119 - 2024		**$ 66,570**
Allowances to Owners (Sections 29, 30 & 32)		**$ 16,100**
Preparation of Report	$ 40,000	
On-site meeting, soils investigations, field survey, information meetings, drawing set and system design, report preparation, determining allowances, construction and maintenance assessment schedules		
Printing and Consideration of the Report	$ 2,500	
Preparation of report copies for distribution, preparation and attendance at the consideration of the report		
Tendering	$ 3,500	
Preparation and distribution of tender, review of Contractor bid documents, preparation of letter of recommendation for Council		
Contract Administration	$ 14,000	
Preparation and attendance for pre-construction meeting, site reviews during construction (assumed 15 days for drain construction), payment certificates and related appurtenances (progress payment, substantial performance, statutory holdback, and warranty holdback certificates)		
Total Estimated Engineering		**$ 60,000**
Soils Investigation		**$ 500**
Maitland Valley Conservation Authority Permit Fee		**$ 500**
Contingencies, Interest and Net H.S.T.		**$ 16,330**
Total Estimated Cost - Minto Drain 119 - 2024		**$ 160,000**

Note:
The above summary contains cost estimates only. It is emphasized that these estimates do NOT include costs to defend the Drainage Report and procedures if appeals are filed with the Court of Revision, the Tribunal and/or the Ontario Drainage Referee. Unless otherwise directed, additional costs to defend the report are typically distributed in a pro rata fashion over the assessments contained in the Construction Assessment Schedule, excluding any Special Assessments.

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Appendix C

Construction and Maintenance Schedules

Appendix C – Construction and Maintenance Assessment Schedules and Assessment Background Information

Appendices C1 through C4 – Schedules of Assessment for Construction

In accordance with Section 8(1)(c) of the Act, this Appendix shows the distribution of the total estimated cost over the lands and roads involved and are in accordance with Sections 21, 22, 23, 24, and 26 of the Act. Affected private lands that are deemed to have an agricultural tax class may be eligible for any grants which may be available through the Ontario Ministry of Agriculture and Food Agribusiness (OMAFA). The engineering and administration costs have been assessed out over the entire drain.

The assessments have been calculated using the Modified Todgham Method to distribute the project costs throughout the watershed in a fair and equitable manner. Detailed calculations of these assessments are **available to affected property owners upon request**. More information on assessment and the Drainage Act can be found on the OMAFA website.

Sections 22 and 23 – Benefit and Outlet Assessment

Section 21 of the Act states:

"The engineer in the report shall assess for benefit, outlet liability and injuring liability, and shall insert in an assessment schedule, in separate columns, the sums assessed for each opposite each parcel of land and road liable therefor. R.S.O. 1990, c. D.17, s. 21."

Section 22 of the Act states:

"Lands, roads, buildings, utilities or other structures that are increased in value or are more easily maintained as a result of the construction, improvement, maintenance or repair of a drainage works may be assessed for benefit. R.S.O. 1990, c. D.17, s.22"

Section 23 of the Act states:

"(1) Lands and roads that use a drainage works as an outlet, or for which, when the drainage works is constructed or improved, an improved outlet is provided either directly or indirectly through the medium of any other drainage works or of a swale, ravine, creek, or watercourse, may be assessed for outlet liability.

(2) If, from any land or road, water is artificially caused by any means to flow upon and injure any other land or road, the land or road from which the water is caused to flow may be assessed for injuring liability with respect to a drainage works to relieve the injury so caused to such other land or road.

(3) The assessment for outlet liability and injuring liability provided for in subsections (1) and (2) shall be based upon the volume and rate of flow of the water artificially caused to flow upon the injured land or road or into the drainage works from the lands and roads liable for such assessments.

(4) The owners of the lands and roads made liable to assessment only under subsection (1) or (2) shall neither count for nor against the petition required by section 4 unless within the area therein described. R.S.O. 1990, c. D.17, s.23."

Throughout the course of the drain, specific costs were assigned to various property owners. Parts of the costs of items such as catchbasins, junction boxes, berms, etc. were assessed to the lands directly upstream and downstream of the item and/or the entire upstream watershed.

Appendices C5 through C7 – Schedules of Assessment for Maintenance

In accordance with Section 38 of the Act, assessment schedules for future maintenance of the proposed drain have been completed. Affected lands located upstream of the maintenance shall be determined by the Drainage Superintendent and assessed according to these schedules.

APPENDIX C1 - ASSESSMENTS FOR CONSTRUCTION
MINTO DRAIN 119 - MAIN DRAIN

Conc. or Plan	Lot or Part	Owner	Roll No.	Affected Area (Ha.)	Benefit Assess't (Sect.22)	Outlet Assess't (Sect.23)	Totals
		Agricultural Lands					
7	40	Antonio Andrade	1-156	38.87	$ -	$ 2,160	$ 2,160
7	41	William and Catherine Wilken	1-157	17.20	$ 5,150	$ -	$ 5,150
7	42	James and Colleen Gibson	1-157-50	0.00	$ -	$ -	$ -
8	40	Archibald and Lisa Wilson	1-158-50	4.67	$ -	$ 5,850	$ 5,850
8	40	Lavolit Limited	1-162	19.43	$ -	$ 3,930	$ 3,930
8	41	John and Miriam Martin	1-159	29.76	$ 21,650	$ 65,930	$ 87,580
8	42	Lavolit Limited	1-158	4.34	$ -	$ 7,250	$ 7,250
		TOTAL ON LANDS		**114.27**	**$ 26,800**	**$ 85,120**	**$ 111,920**
		Roads					
Unopened Road Allowance		* Town of Minto		2.44	$ -	$ 1,850	$ 1,850
		TOTAL ON ROADS		**2.44**	**$ -**	**$ 1,850**	**$ 1,850**
		ALL LANDS AND ROADS		**116.71**	**$ 26,800**	**$ 86,970**	**$ 113,770**

Notes:
(1) It is presumed that all private lands are Agricultural, within the meaning of the Drainage Act except properties denoted with *
(2) Eligibility for an OMAFA grant will be verified by the Town of Minto at time of billing
(3) It is the responsibility of the landowner to confirm whether their property is eligible for an OMAFA grant, under ADIP policies

APPENDIX C2 - ASSESSMENTS FOR CONSTRUCTION
MINTO DRAIN 119 - WEST BRANCH

Conc. or Plan	Lot or Part	Owner	Roll No.	Affected Area (Ha.)	Benefit Assess't (Sect.22)	Outlet Assess't (Sect.23)	Totals
		Agricultural Lands					
7	41	William and Catherine Wilken	1-157	0.00	$ -	$ -	$ -
7	42	James and Colleen Gibson	1-157-50	0.00	$ -	$ -	$ -
8	42	Lavolit Limited	1-158	1.73	$ 12,510	$ 10,430	$ 22,940
8	41	John and Miriam Martin	1-159	0.00	$ 3,130	$ -	$ 3,130
			TOTAL ON LANDS	**1.73**	**$ 15,640**	**$ 10,430**	**$ 26,070**

Notes:
(1) It is presumed that all private lands are Agricultural, within the meaning of the Drainage Act except properties denoted with *
(2) Eigibility for an OMAFA grant will be verified by the Town of Minto at time of billing
(3) It is the responsibility of the landowner to confirm whether their property is eligible for an OMAFA grant, under ADIP policies

APPENDIX C3 - ASSESSMENTS FOR CONSTRUCTION
MINTO DRAIN 119 - EAST BRANCH

Conc. or Plan	Lot or Part	Owner	Roll No.	Affected Area (Ha.)	Benefit Assess't (Sect.22)	Outlet Assess't (Sect.23)	Totals
		Agricultural Lands					
7	41	William and Catherine Wilken	1-157	0.00	$ -	$ -	$ -
7	42	James and Colleen Gibson	1-157-50	0.00	$ -	$ -	$ -
8	40	Archibald and Lisa Wilson	1-158-50	4.67	$ -	$ 2,430	$ 2,430
8	40	Lavolit Limited	1-162	2.12	$ -	$ 1,100	$ 1,100
8	41	John and Miriam Martin	1-159	7.23	$ 12,090	$ 3,760	$ 15,850
		TOTAL ON LANDS		**14.02**	**$ 12,090**	**$ 7,290**	**$ 19,380**
		Roads					
Unopened Road Allowance		* Town of Minto		1.46	$ -	$ 770	$ 770
		TOTAL ON ROADS		**1.46**	**$ -**	**$ 770**	**$ 770**
		ALL LANDS AND ROADS		**15.48**	**$ 12,090**	**$ 8,060**	**$ 20,150**

Notes:
(1) It is presumed that all private lands are Agricultural, within the meaning of the Drainage Act except properties denoted with *
(2) Eigibility for an OMAFA grant will be verified by the Town of Minto at time of billing
(3) It is the responsibility of the landowner to confirm whether their property is eligible for an OMAFA grant, under ADIP policies

APPENDIX C4 - SUMMARY OF ASSESSMENTS FOR CONSTRUCTION
MINTO DRAIN 119 - 2025

Conc. or Plan	Lot or Part	Owner	Roll No.	Affected Area (Ha.)	Main Drain	West Branch	East Branch	Totals
		Agricultural Lands						
7	40	Antonio Andrade	1-156	38.87	$ 2,160	$ -	$ -	$ 2,160
7	41	William and Catherine Wilken	1-157	17.20	$ 5,150	$ -	$ -	$ 5,150
7	42	James and Colleen Gibson	1-157-50	0.00	$ -	$ -	$ -	$ -
8	40	Archibald and Lisa Wilson	1-158-50	4.67	$ 5,850	$ -	$ 2,430	$ 8,280
8	40	Lavolit Limited	1-162	19.43	$ 3,930	$ -	$ 1,100	$ 5,030
8	41	John and Miriam Martin	1-159	29.76	$ 87,580	$ 3,130	$ 15,850	$ 106,560
8	42	Lavolit Limited	1-158	4.34	$ 7,250	$ 22,940	$ -	$ 30,190
		TOTAL ON LANDS		**114.27**	**$ 111,920**	**$ 26,070**	**$ 19,380**	**$ 157,370**
		Roads						
Unopened Road Allowance		* Town of Minto		2.44	$ 1,860	$ -	$ 770	$ 2,630
		TOTAL ON ROADS		**2.44**	**$ 1,860**	**$ -**	**$ 770**	**$ 2,630**
		ALL LANDS AND ROADS		**116.71**	**$ 113,780**	**$ 26,070**	**$ 20,150**	**$ 160,000**

Notes:
(1) It is presumed that all private lands are Agricultural, within the meaning of the Drainage Act except properties denoted with *
(2) Eigibility for an OMAFA grant will be verified by the Town of Minto at time of billing
(3) It is the responsibility of the landowner to confirm whether their property is eligible for an OMAFA grant, under ADIP policies

APPENDIX C5 - ASSESSMENTS FOR MAINTENANCE
MINTO DRAIN 119 - MAIN DRAIN

Conc. or Plan	Lot or Part	Owner	Roll No.	Affected Area (Ha.)	Equivalent Area (Ha.)	Totals
		Agricultural Lands				
7	40	Antonio Andrade	1-156	0.00	0.00	0.0%
7	41	William and Catherine Wilken	1-157	0.00	0.00	0.0%
7	42	James and Colleen Gibson	1-157-50	0.00	0.00	0.0%
8	40	Archibald and Lisa Wilson	1-158-50	4.67	4.67	11.9%
8	40	Lavolit Limited	1-162	2.12	2.12	5.4%
8	41	John and Miriam Martin	1-159	29.76	27.93	71.2%
8	42	Lavolit Limited	1-158	4.34	3.04	7.7%
			TOTAL ON LANDS	**40.89**	**37.76**	**96.3%**
		Roads				
Unopened Road Allowance		* Town of Minto		2.44	1.46	3.7%
			TOTAL ON ROADS	**2.44**	**1.46**	**3.7%**
			ALL LANDS AND ROADS	**43.33**	**39.22**	**100.0%**

Notes: (1) It is presumed that all private lands are Agricultural, within the meaning of the Drainage Act except properties denoted with *

APPENDIX C6 - ASSESSMENTS FOR MAINTENANCE
MINTO DRAIN 119 - WEST BRANCH

Conc. or Plan	Lot or Part	Owner	Roll No.	Affected Area (Ha.)	Equivalent Area (Ha.)	Totals
		Agricultural Lands				
7	41	William and Catherine Wilken	1-157	0.00	0.00	0.0%
7	42	James and Colleen Gibson	1-157-50	0.00	0.00	0.0%
8	40	Archibald and Lisa Wilson	1-158-50	0.00	0.00	0.0%
8	40	Lavolit Limited	1-162	0.00	0.00	0.0%
8	41	John and Miriam Martin	1-159	0.00	0.00	0.0%
8	42	Lavolit Limited	1-158	1.73	1.73	100.0%
		TOTAL ON LANDS		**1.73**	**1.73**	**100.00%**
		Roads				
Unopened Road Allowance		* Town of Minto		0.00	0.00	0.0%
		TOTAL ON ROADS		**0.00**	**0.00**	**0.00%**
		ALL LANDS AND ROADS		**1.73**	**1.73**	**100.00%**

Notes: (1) It is presumed that all private lands are Agricultural, within the meaning of the Drainage Act except properties denoted with *

Engineer's Report
February 2025

APPENDIX C7 - ASSESSMENTS FOR MAINTENANCE
MINTO DRAIN 119 - EAST BRANCH

Conc. or Plan	Lot or Part	Owner	Roll No.	Affected Area (Ha.)	Equivalent Area (Ha.)	Totals
		Agricultural Lands				
7	41	William and Catherine Wilken	1-157	0.00	0.00	0.0%
7	42	James and Colleen Gibson	1-157-50	0.00	0.00	0.0%
8	40	Archibald and Lisa Wilson	1-158-50	4.67	4.67	30.2%
8	40	Lavolit Limited	1-162	2.12	2.12	13.7%
8	41	John and Miriam Martin	1-159	7.23	7.23	46.7%
8	42	Lavolit Limited	1-158	0.00	0.00	0.0%
		TOTAL ON LANDS		**14.02**	**14.02**	**90.6%**
		Roads				
Unopened Road Allowance		* Town of Minto		1.46	1.46	9.4%
		TOTAL ON ROADS		**1.46**	**1.46**	**9.4%**
		ALL LANDS AND ROADS		**15.48**	**15.48**	**100.0%**

Notes: (1) It is presumed that all private lands are Agricultural, within the meaning of the Drainage Act except properties denoted with *

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Appendix D

Agency Correspondence

R.J. Burnside & Associates Limited 449 Josephine Street P.O. Box 10 Wingham ON N0G 2W0 CANADA
telephone (519) 357-1521 **fax** (519) 941-8120 **web** www.rjburnside.com

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Technical Memorandum

Date: November 20, 2024 **Project No.:** 300054764.2000

Project Name: Minto Drain 119

Client Name: Town of Minto

Submitted To: Maitland Valley Conservation Authority

Submitted By: Caitlin Fergusson, P.Eng.

Reviewed By: Kim Hawkes, P.Eng.

This Memorandum addresses concerns raised by the Maitland Valley Conservation Authority (MVCA) in an email dated October 15, 2024, regarding downstream effects of the proposed Minto Drain 119. The proposed open drain will provide a subsurface drainage outlet for the properties within the identified watershed boundary via a Main Drain and two Branch drains (see Drawing Set in Appendix H of the Engineer's Report). An approximately 390 m long channel is proposed for the Main Drain, 100 m long channel for the West Branch and 57 m long channel for the East Branch.

The test pit logs from the Soils Investigation completed on April 6, 2022 (Appendix G of the Engineer's Report) were reviewed, along with the surficial geology mapping of Southern Ontario (OGS, 2010) and Soil Survey of Wellington County (Report No. 35 of the Ontario Soil Survey). The test pit locations and surficial geology mapping for the area is shown on Figure 1. TP10 was completed at the upstream end of the proposed Main Drain and TP12 at the upstream end of the East Branch. No test pits were completed within the treed area or at the upstream end of the West Branch.

TP10 reported clay underlying the topsoil until it was terminated at 2.3 m below ground. No groundwater was encountered in TP10 during excavation. The reported soils were consistent with the surficial geology mapping which identified a pocket of till near TP10 and TP11. TP12 reported sand and gravel underlying the topsoil until it was terminated at 1.5 m below ground surface. Significant groundwater flow into TP12 was reported below 0.3 m, as well as unstable soils. The surficial geology maps this area as coarse-textured glaciolacustrine deposits of sand, gravel, and minor silt and clay. The Soil Map of Wellington County also indicates the proposed drain is primarily within an area mapped as muck with Listowel loam mapped at the upstream end of the Main Drain.

Based on the test pits and soils mapping, unstable and saturated soils are likely to be encountered on the East Branch and the southern half of the Main Drain (near the mapped wetland). These conditions are expected to be most prevalent during periods of high water table (i.e., spring). Provisions for encountering unstable soil conditions have been included in the Engineer's Report, such as flattening the proposed 2H:1V side slopes to 4H:1V. Additionally, as the Main Drain approaches its outlet near the wetland, the flow will be fanned out and dissipated over a wider area (up to a 10 m width).

The watershed boundary is based on the surface topography of the area and shallow groundwater flow typically imitates the surface topography. The proposed drain is not expected to change the amount of water flowing to the downstream wetland because the contributing drainage area and groundwater flow will not be altered. Therefore, the existing surface water and groundwater flow to the wetland will be maintained. The addition of underdrainage tiling within the watershed will provide additional benefit by reducing peak flows and surface water runoff to the wetland during storm events.

Please contact the undersigned if you have any questions or concerns.

R.J. Burnside & Associates Limited

Caitlin Fergusson

Caitlin Fergusson, P.Eng.
Project Engineer

CF/KH:tp

Enclosure(s) Figure 1 – Surficial Geology

cc: Edison Peel, EIT, Engineering Assistant, R.J. Burnside & Associates Limited

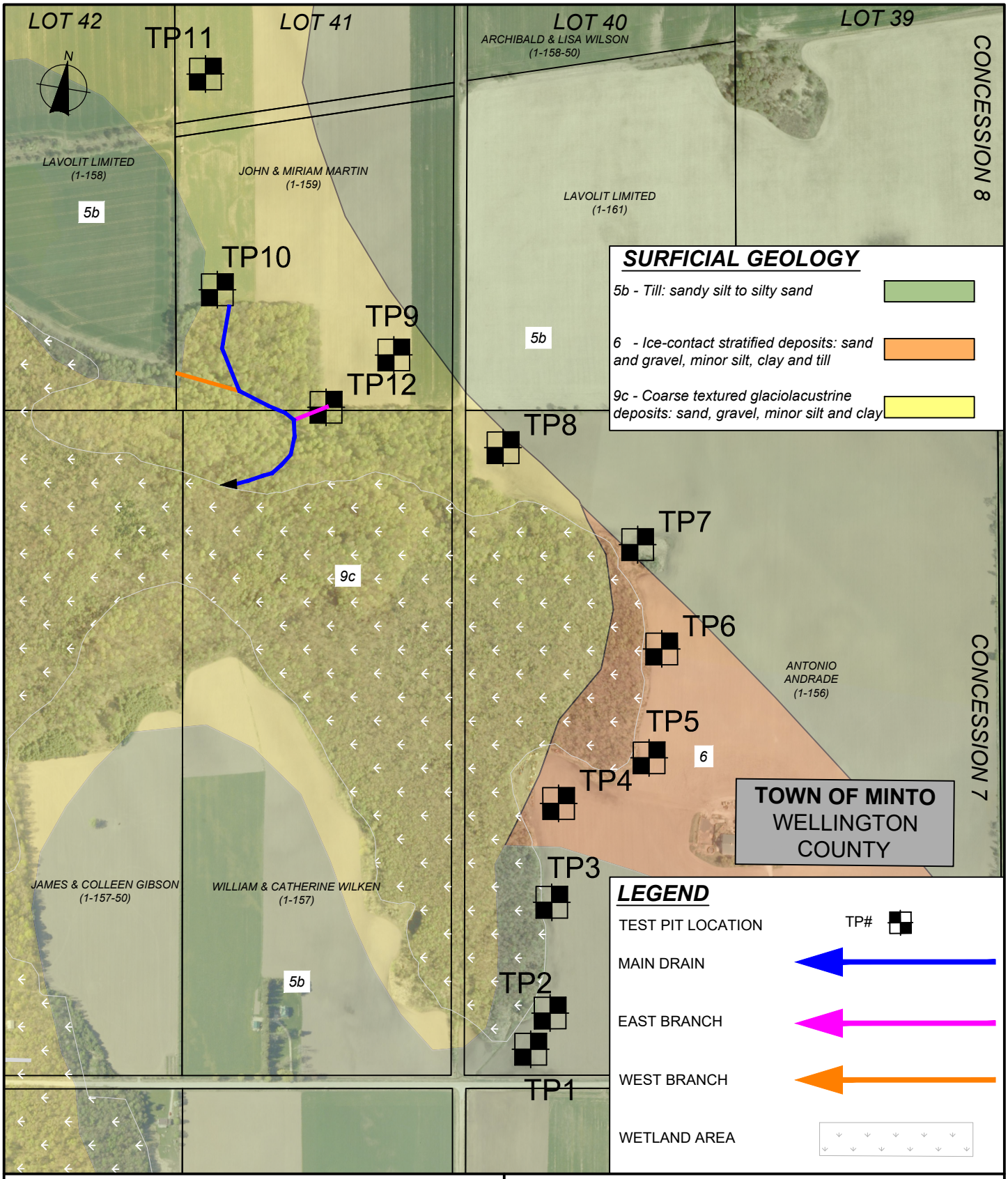

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Figure Title

MINTO DRAIN 119 INVESTIGATION

SURFICIAL GEOLOGY

Client		Drawn	Checked	Date	Figure No.
TOWN OF MINTO		EP	CF	2024/11/20	**FIG. 1**
		Scale		Project No.	
		1:8000		300054764.2000	

File: \\winny\Shared Work Areas\054764.2000 MD 119\07_Figures\054764 MD 119 TEST PIT FIGURE.dwg Date Plotted: November 19, 2024 - 3:03 PM

December 3, 2024

R.J. Burnside & Associates Limited
Agent for Town of Minto
449 Josephine Street
Wingham, ON
N0G 2W0

MVCA File No. 12300

Attention: Edison Peel

Re: Permit ALT62/2024
Concession 7, Lot 41, Concession 8, Part Lot 41, and Part Lot 42, Wellington Ward, Town of Minto, County of Wellington; Minto Drain No. 119

The Maitland Valley Conservation Authority (MVCA) has approved your application signed 10/14/2024, to perform upgrades to Minto Drain No. 119.

Part of the work is to be undertaken within a watercourse and wetland. Watercourses plus a 15-metre buffer, and wetlands, plus a 30 metre buffer, are regulated pursuant to *Ontario Regulation 41/24 Prohibited Activities, Exemptions and Permits* made under Section 28 of the *Conservation Authorities Act (R.S.O. 1990, Chapter C.27)*. Your application was reviewed with regard for *O. Regulation 41/24* and in accordance with MVCA Board approved policies made under the Regulation.

Please be advised that Permit No. ALT62/2024 is subject to conditions outlined on the attached Permit.

MVCA has the legal authority to revoke your Permit should the specific and/or general conditions of the Permit not be met. Every person who contravenes the regulation or the terms and conditions of a Permit is liable to fines and prosecution under Section 28 of the *Conservation Authorities Act (R.S.O 1990, as amended).*

MVCA permission does not exempt you (the applicant) from complying with any or all other approvals, laws, statues, ordinances, directives, regulations, by-laws etc. that may affect the property. Specifically this Permit does not exempt you from approvals from Fisheries and Oceans Canada (DFO).

Thank you for your cooperation. **Please sign the Permit and return a copy to this office**. You may fax or email the signed copy.

Feel free to contact this office should you have any questions or concerns.

Regards,

Kirsten Snoek
Resource Technician - Regulations Officer
MAITLAND VALLEY CONSERVATION AUTHORITY

Enc.: *Permit No. ALT 62/2024*
Cc: Ryan Binkle, Town of Minto

No. **ALT62/2024**
Wroxeter, Ontario, December 3, 2024

PERMIT TO: DEVELOP IN A REGULATED AREA
X **ALTER A WATERCOURSE**

In accordance with Ontario Regulation 41/24 and amendments there to, permission has been granted to:

	R.J. Burnside & Associates Ltd. (*Agent for Town of Minto)*
Address:	449 Josephine St., Wingham ON, N0G 2W0
Location of works:	Concession 7, Lot 41, Concession 8, Part Lot 41, and Part Lot 42, Wellington Ward, Town of Minto, County of Wellington; Minto Drain No. 119
Existing land use:	Infrastructure
For the following works:	Construct drain upgrades from December 3, 2024, to December 3, 2026, subject to the following conditions:

SPECIFIC CONDITIONS:

1. **All work must be carried out in conformance with the application, signed by Edison Peel (R.J. Burnside 7 Associates Ltd.) on 10/14/2024, along with the Landowner Authorization form, signed by Ryan Binkle (Town of Minto) on November 20, 2024, and in accordance with the following:**
    a. **Engineer's Report, titled "*Minto Drain 119 – 2024"*, for the Town of Minto, dated October 2024, prepared by R.J. Burnside & Associates Ltd., under the names of Edison Peel, EIT, Engineering Assistant, and reviewed by Sid Vander Veen, P.Eng., Project Engineer, including:**
        i. **Drawings, titled "*Municipal Drain",* prepared by R.J. Burnside & Associates Ltd., dated 2024/01/30, Project No. 300054764.2000, Drawn by EP, Checked by GN, and including:**
            1. **Drawing 1: Minto Drain 119 – 2024 Watershed Plan**
            2. **Drawing 2: Minto Drain 119- 2024 Profiles**
            3. **Drawing 3: Minto Drain 119 – 2024 Construction Plan**
    b. **Technical Memorandum, titled "*Minto Drain 119",* dated November 20, 2024, prepared by R.J. Burnside & Associates Ltd., Project No.: 300054764.2000, submitted by Caitlin Fergusson, P.Eng., Reviewed by Kim Hawkes, P.Eng.**
2. **MVCA requires site to be secured in a manner to ensure water events above base flow will pass unobstructed through site in a manner that prevents flooding upstream or erosion and sediment release downstream.**
3. **Works shall have regard for weather conditions and for potential rapid changes in those conditions.**
4. **Stock piles of overburden material shall not be kept beside or within the floodplain of the watercourse. MVCA prefers material to be removed from site as soon as possible unless needed to backfill.**
5. **Placed rip rap or field stone shall be sufficient to prevent erosion.**
6. **Equipment and materials should not be stored in the floodplain of the watercourse.**

GENERAL CONDITIONS:

The applicant, by acceptance of and in consideration of the issuance of this Permit, agrees to the following conditions:

1. This Permit does not preclude compliance from any other legislation, federal or provincial, or necessary approvals from the local municipality.
2. Authorized representatives of the Maitland Valley Conservation Authority (MVCA) may, at any time, enter onto the lands which are described herein in order to make any surveys, examinations, investigations, or inspections which are required for the purposes of ensuring the work(s) authorized by this Permit are being carried out according to the terms of the Permit.
3. The applicant agrees:
    a) To indemnify and save harmless on a solicitor and client basis, the Maitland Valley Conservation Authority and its officers, employees, or agents, from any act or omission of the owner and/or applicant or any of his agents, employees or contractors relating to any of the particulars, terms of conditions of the Permit.

b) That this Permit shall not release the applicant from any legal liability or obligation and remains in force subject to all limitations, requirements and liabilities imposed by law;

c) That all complaints arising from the execution of the works authorized under this Permit shall be reported prior to the expiration of this Permit by the applicant to the Maitland Valley Conservation Authority.

d) That the Permit issued herein is based upon the plan(s) submitted to the Authority and the accuracy of the matters contained in the Application to the Authority.

4. This Permit is not assignable.
5. The applicant agrees that should the works be carried out contrary to the terms of this Permit, the Maitland Valley Conservation Authority may enter onto the property and cause the terms to be satisfied, at the expense of the applicant.

I agree to carry out or cause to be carried out the work(s) indicated above in compliance with the conditions set out herein and in accordance with the information contained in the application and any accompanying sketches. I realize should I carry out the work(s) contrary to the terms of this Permit, this Permit may be revoked. I also realize this Permit is valid only for the time period noted, and I agree to re-apply to the Authority prior to the expiration of this period should an extension be required.

Original Signed by (Applicants signature): _____Date:_____

Signature of Authority Official

Kirsten Snoek
Resource Technician - Regulations Officer
MAITLAND VALLEY CONSERVATION AUTHORITY ***Date:*** *December 3, 2024*

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Appendix E

Standard Drain Specifications

E.2.1 GENERAL DRAIN SPECIFICATIONS

E.2.1.1 SCOPE OF SPECIFICATIONS

This specification covers the general conditions governing the construction of a Municipal Drain under the most recent revision of The Drainage Act and amendments. All work shall be done in accordance with current and applicable Ontario Provincial Standard Specifications and Drawings (OPSS and OPSD).

E.2.1.2 BENCHMARKS

Benchmarks shall be set at intervals along the course of the work at locations shown on the accompanying plan and/or profile. The Contractor or landowner shall be held liable for the cost of re-establishing benchmarks destroyed. Attention is drawn to Section 13 of The Drainage Act.

E.2.1.3 STAKES/FLAGS/MARKERS

Stakes, flags or markers are typically set at intervals throughout the course of the work, at all fences and property lines. The Contractor or landowner shall be held liable for the cost of replacing any stakes removed or destroyed.

E.2.1.4 PROFILE

The drain is to be excavated or installed to regular gradient lines as shown on the profile(s). These gradients show the bottom of the finished drain (open or closed) and are governed entirely by the benchmarks. In the case of closed drains, the gradient is that of the invert of the tile. The profile(s) shows the approximate depth from the surface of the ground to the invert of the tile or drain bottom at the point where the stations are set and from the average bottom of the open drain as taken at the time of survey. Open drains shall be brought to an even gradient in the bottom to prevent standing water. For closed drains, a variation of 25 mm (unless specified otherwise) from the gradient may be deemed sufficient reason for the work to be rejected and required to be rebuilt.

E.2.1.5 CLEARING

Clearing means the cutting of all standing trees, brush, bushes and other vegetation to a maximum height of 300 mm above original ground level as well as the removal of felled materials and windfalls. Trees measuring 150 mm or more in diameter shall be felled, delimbed, cut into lengths no longer than 4 m and stacked to the designated side of the working space. The work shall not damage or disturb the area outside the areas specified in the Contract Documents.

The work shall consist of clearing all areas of earth excavation, earth surfaces to be covered by embankments up to and including 1.2 m in height, and any other areas specified in the Contract Documents.

No trees, brush or bushes are to be left inside the slopes of the drain, whether they are located within the limits of the excavation or not. Brush cleared in accordance with the above shall be piled in a location and in a manner satisfactory to the Engineer for burning by the Owner. Unless otherwise specified or directed, these piles shall be a minimum of 100 m apart and shall contain only cleared material. All work shall be done in accordance with OPSS 201.

E.2.1.6 CLOSE CUT CLEARING

Close Cut Clearing means the cutting of all standing trees, stumps, brush, bushes and other vegetation at original ground level and the removal of felled materials and windfalls. Grubbing means the removal of all stumps, roots, embedded logs, debris and secondary growth. Trees measuring 150 mm or more in diameter shall be felled, delimbed, cut into lengths no longer than 4 m and stacked to the designated side of the working space. The work shall not damage or disturb the area outside the areas specified in the Contract Documents.

The work shall consist of close cut clearing all earth surfaces to be covered by embankments greater than 1.2 m in height, and any other areas specified in the Contract Documents.

No trees, stumps, brush or bushes are to be left inside the slopes of the drain whether they are located within the limits of the excavation or not. Brush cleared in accordance with the above shall be piled in a location and in a manner satisfactory to the Engineer for burning by the Owner. Unless otherwise specified or directed, these piles shall be a minimum of 100 m apart and shall contain only cleared material. All work shall be done in accordance with OPSS 201.

E.2.1.7 BRUSHING

Brushing means the grinding or chipping to ground level of vegetation in the working space under 150 mm in diameter by means of a hydraulic brushing attachment used with an excavator or approved equivalent. This includes grinding or chipping all standing trees, stumps, brush, bushes and other vegetation to original ground level.

Trees measuring 150 mm or more in diameter shall be felled, delimbed, cut into lengths no longer than 4 m and stacked to the designated side of the working space. The work shall not damage or disturb the area outside the areas specified in the Contract Documents. All work shall be done in accordance with OPSS 201.

E.2.1.8 GRUBBING

Grubbing means the removal of all stumps, roots, embedded logs, debris and secondary growth.

The work shall consist of grubbing all areas of earth excavation, earth surfaces to be covered by embankments up to and including 1.2 m in height and any other areas specified in the Contract Documents.

Grubbing is not required in swamps. Mechanical stump cutters are permitted, provided the entire root structure is removed. Depressions remaining after grubbing shall be backfilled with suitable earth material and compacted to avoid settlement. When clearing has been previously completed by others, all secondary growth, brush and debris shall be removed.

Piled boulders and surface boulders that are not specified in the Contract Documents for removal and lie within areas to be grubbed shall be removed. The work shall not damage or disturb the area outside the areas specified in the Contract Documents. All work shall be done in accordance with OPSS 201.

E.2.1.9 REMOVAL OF SURFACE BOULDERS & REMOVAL OF PILED BOULDERS

Piled Boulders means any cobbles, boulders or rock fragments that have been placed in fence rows or piles.

Rock means rock as defined in OPSS 206.

Surface Boulder means any boulder or rock fragment that measures 200 mm or greater in any one dimension, extends a minimum of 200 mm above original ground and can be removed without excavation.

The work shall consist of the removal of surface boulders and removal of piled boulders within the areas specified in the Contract Documents. Depressions remaining after removal shall be backfilled with suitable earth material and compacted to avoid settlement. The work shall not damage or disturb the area outside the areas specified in the Contract Documents. All work shall be done in accordance with OPSS 201.

E.2.1.10 FENCES

The Contractor will be permitted to remove fences to the extent necessary to allow the construction of the drain and to dispose of any excess material according to the specifications. Any such fences shall be carefully handled so as to cause no unnecessary damage. Unless allowance has been provided, such fences shall be replaced by the Contractor in as good a condition as found. The Contractor shall supply all material necessary to properly reconstruct any fences. The Contractor shall not leave any fence open when he is not at work in the immediate area and shall replace the fence in a timely manner, all to the satisfaction of the Engineer.

E.2.1.11 STANDING CROPS AND LIVESTOCK

Should a property owner wish to harvest any crop along an access route or within the construction working space as set out in the Engineer's Report, then it shall be the responsibility of the property owner to do so prior to construction. Provisions for the loss of, or damage to, crops along the access route or in the construction area ("Working Space") have been made in the Report and such loss or damage shall not be the liability of the Contractor.

The Contractor shall contain construction operations to the working space and width specified. As long as the construction operations are contained within the specified working space, the Contractor shall not be responsible for damages to crops along the course of the drain.

It shall be the responsibility of the property owners to keep their livestock clear of the construction area upon receiving 24 hours advance notice by the Contractor. After receiving proper notice, the Owner of the property upon which a drain is being constructed shall be liable for any loss or damage to livestock, the drain, drain materials or the Contractor's equipment caused by their livestock.

E.2.1.12 NOTIFICATION OF AGENCIES

The Contractor shall notify the appropriate agency before performing any work affecting the land or property of the MTO, railway, telephone, pipeline or public utility or regulatory agency. The Contractor shall further agree to perform the work affecting such lands or property in accordance with the specifications and approval/permit of the applicable agency.

E.2.1.13 FINAL INSPECTIONS

After substantial completion of the work, but prior to demobilization and final removal of all equipment and materials from the site, the Contractor MUST arrange an on-site FINAL Inspection of the work with the engineer to ensure all aspects of the work have been satisfactorily completed and/or that arrangements have been made to expedite the completion of any outstanding "minor" items or deficiencies. All the work included in the contract, at the time of the Final Inspection, must have the full dimensions and cross-sections called for in the plans and specifications. Notification to the Engineer of this Final Inspection shall be provided at least five days prior and it shall be completed as soon as possible or as soon thereafter as weather conditions permit.

E.2.2 SPECIFICATIONS FOR OPEN DRAINS

E.2.2.1 GEOMETRY

The drain shall have the full bottom width, at the gradient, specified or shown on the accompanying plan(s), profile(s) and detail sheet(s).

E.2.2.2 ALIGNMENT

The drain shall run in straight lines throughout each course except at intersections, where it shall run on a minimum curve of 15 m radius unless otherwise specified. If the work consists of the improvement of an existing open drain, then the centre line of the existing drain may be the centre line of the finished work unless otherwise specified.

E.2.2.3 EXCAVATED MATERIAL

A clear buffer of at least 3 m shall be left between the top edge of the open drain and the excavated material. Excavated material shall be placed on the side specified or, if not specified, on the lower side of the drain or on the side opposite trees or fences. No excavated material is to be left in any low runs intended to conduct water into the open drain. It shall be deposited, spread and leveled to a maximum depth of 150 mm, unless specified otherwise and left in a manner such that the lands on which it is spread may be cultivated with adjacent lands by use of ordinary farm machinery. Material excavated in land that is timbered, may be spread to the depth specified or to a maximum depth of 300 mm, which ever is greater. In cultivated areas, the Contractor shall remove stones and boulders on the surface greater than 100 mm diameter from the excavated material and dispose of in an approved location. Treatment of excavated material shall be to the satisfaction of the Engineer. After the excavated material has been spread and leveled, it shall be seeded as specified.

E.2.2.4 SURFACE WATER INLETS

Surface water inlets to the drain shall be provided through the leveled spoil on each property at obvious natural low runs or at other locations as specified by the Engineer on site at the time of construction. No excavated material shall be left in, or any damage done to a ditch, furrow, pipe, tile or depression that is intended to conduct water into an open drain. The drain bank at all such inlets shall be riprapped as directed by the Engineer and reimbursed under the appropriate contract item.

E.2.2.5 OUTLETS

During the construction of an open drain, the Contractor shall guard against damaging the outlet of any tributary drain or pipes encountered. The Contactor will be reimbursed for damage to unmarked outlet pipes under the appropriate contract item.

E.2.2.6 ACCESS CULVERTS

All culverts shall be installed with the invert a minimum of 10% of its diameter or as specified below the gradient and the firm bottom of the drain.

All pipes installed under these specifications shall be carefully bedded so as to ensure uniform bearing throughout its entire length.

Except where requiring concrete cradle or encasement, all pipes shall be bedded on granular fill as specified or as shown on the contract drawings. Bedding shall be hand placed, tamped and consolidated throughout. Granular fill and bedding shall be gravel or crushed stone having no particles over 20 mm in size, except where otherwise specified.

Concrete cradle and concrete encasement shall be placed as shown on the drawings, and the concrete shall be minimum 25 MPa.

From the top of the bedding material to a point 150 mm below the existing grade of the laneway, backfill material shall be clean pit run gravel meeting O.P.S.S. Granular "B" or approved equivalent. The material shall be placed in lifts not to exceed 300 mm in depth and all granular materials shall be compacted to 100% SPMDD and all subsoil or previously excavated material to 95% SPMDD.

The final 150 mm of the excavation shall be filled with clean crushed gravel conforming to O.P.S.S. Granular "A" specifications. The material shall be placed in lifts not exceeding 150 mm in depth and shall be thoroughly compacted to 100% SPMDD.

E.2.2.7 EXCAVATION AT BRIDGE SITES

The excavation at bridge sites shall be to the full depth of the drain and as nearly as possible the full width of the drain as specified for the bridge location. The excavation at a bridge site shall be made in a manner to protect the structural integrity of any permanent bridge. A temporary bridge may be carefully removed to allow excavation. The removal of a bridge is to be done in such a manner so as to cause no damage to the bridge components. Temporary bridges removed to allow excavation shall be replaced in as good a condition as found, so far as material allows. Replacing of such bridges shall be to the satisfaction of the Engineer. The Contractor shall immediately notify the Engineer if it becomes apparent that excavating to a specified gradient will endanger or underpin any culvert or bridge. The Contractor shall cease excavation at the bridge or culvert site until the Engineer instructs the Contractor to proceed.

E.2.2.8 SEEDING

Unless indicated otherwise in the Special Provisions, the Contractor shall seed all disturbed areas which includes newly excavated drain banks and leveled spoil (where specified) with the OPSS (MTO) Standard Roadside Seed Mix, consisting of 55%

Creeping Red Fescue, 27% Kentucky Bluegrass, 15% Perennial Ryegrass and 3% White Clover, at an application rate of 100 kg/10,000 m^2, plus a nurse crop of Fall Rye Grain or Winter Wheat Grain at an application rate of 60 kg/10,000 m^2, at the end of each working day.

E.2.2.9 TEMPORARY SEDIMENT CONTROLS

Unless indicated otherwise in the Special Provisions, the Contractor shall install an approved sediment control measure at the downstream end of the open drain excavation and at any other locations specified. The Contractor shall remove any accumulated sediment at regular intervals or as directed by the Engineer. The Contractor shall then remove these temporary measures, and any accumulated sediment therein, after the new open drain has stabilized and only after authorized by the Engineer or the Drainage Superintendent.

E.2.2.10 PERMANENT SEDIMENT/STILLING BASINS

The Contractor shall construct and maintain sediment control or stilling basins as specified in the Special Provisions.

E.2.2.11 RIP RAP & NON-WOVEN GEOTEXTILE

Rip Rap – The Contractor shall supply and install a 450 mm thickness of 150 mm to 300 mm (R-50) diameter quarry stone rip rap with filter cloth underlayment for culvert and pipe outlets. This will include areas of the existing bank where erosion or bank slumping has occurred, as directed on-site by the Engineer. For the area surrounding catchbasins, unless noted otherwise, the contractor shall supply and install a 300 mm thickness of 100 to 150 mm (R-10) diameter quarry stone rip rap with filter cloth underlayment.

Non-Woven Geotextile - All geotextile used for tile wrapping under these specifications shall be non-woven Terrafix 200R (or equivalent). All geotextile used under these specifications for heavy duty applications such as under rip-rap surrounding catchbasins, and at tile outlets into drains shall be non-woven Terrafix 270R (or equivalent).

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Appendix F

Special Provisions

Appendix F – Special Provisions

Minto 119

These ***Special Provisions*** are specific directions for this project and detail requirements not encompassed by the ***Standard Drain Specifications***.

Special Provisions shall take precedence over the ***Standard Drain Specifications*** where a conflict between them may exist.

1.0 Standard Drain Specifications

All work for this project shall also be governed by **Appendix E - Standard Drain Specifications**. The Contractor is fully responsible for a reasonable and prudent review of these Standards to have a complete and clear understanding of the scope and character of the work.

2.0 Description and Location

The proposed drain is located on Lot 40, Concessions 7-8, Town of Minto, Wellington County.

The Minto Drain 119 includes approximately 547 m of channel construction. The location of the work is shown in the enclosed plan.

3.0 Instruction and Process

3.1 Pre-Construction Meeting

The Contractor **MUST** arrange an on-site Pre-Construction Meeting with the Engineer, Drainage Superintendent and affected landowners before any equipment or materials are moved onto the site and before any work is commenced on this project.

Furthermore, the Contractor shall also provide notification of the commencement of in-water work (if required) Maitland Valley Conservation Authority (MVCA) or any other applicable agency(s) at least ten (10) working days prior to the initiation of the work.

3.2 Working Space

The area being provided to the Contractor to undertake the work is described herein and the maximum widths are specified on the table entitled *'Working Space'*.

Working Space		
Station	Max. Width (m)	Comments
Main Drain		
Sta. 0+000 to Sta. 0+390	10 m working space (East Bank)	Access to this portion of the **Main Drain** will be from Wellington County Road 87 to: • **AR#1** on John & Miriam Martin property (Roll No. 1-159) And subsequently following the proposed drain alignment as shown on the plan.
West Branch		
Sta. 0+000 to Sta. 0+100	10 m working space (North Bank)	Access to this portion of the **West Branch** will be from Wellington County Road 87 to: • **AR#1** on John & Miriam Martin property (Roll No. 1-159) And subsequently following the proposed drain alignment as shown on the plan.
East Branch		
Sta. 0+000 to Sta. 0+057	10 m working space (South Bank)	Access to this portion of the **East Branch** will be from Wellington County Road 87 to: • **AR#1** on John & Miriam Martin property (Roll No. 1-159) And subsequently following the proposed drain alignment as shown on the plan.

NOTES:

(1) The Contractor shall contain their construction operations to as narrow a width as possible, so as to prevent damage to lands, crops, bush, etcetera and shall not exceed the widths indicated.

(2) The Contractor shall be entirely responsible for any damage to lands, crops, etcetera, beyond the widths and locations of both the access routes and the working spaces specified, caused by the Contractor, their Subcontractors or their employees while undertaking the work.

(3)The Engineer's approval MUST BE OBTAINED BEFORE exceeding the maximum widths indicated.

(4) Access to the working space shall be public roads or as specified. All routes must be approved by the Engineer and Drainage Superintendent prior to construction.

3.3 Access Routes

The access routes for construction shall be from specified locations on Wellington County Road 87 to the drain, as specified in the table 'Working Space' and on the enclosed plan. The Contractor shall confirm these access routes with the Engineer, Drainage Superintendent and affected landowners prior to commencing any work.

The width of the access route on each property shall be a maximum 5 m. Any increase of this width shall be at the discretion of the Engineer.

3.4 Utilities Investigation

The Contractor shall locate all utilities prior to construction. No utility investigation has been completed in this location.

3.5 Staging of Construction

The Contractor shall stage the construction to ensure that the site is left each day with appropriate controls to avoid erosion. Any excavated spoil areas shall be protected with silt fence or other measures to avoid erosion during construction, as directed by the Contract Administrator. All channel works shall be completed during periods of low or no flow. Additional erosion measures shall be paid for as extra items on an as directed basis.

3.6 Construction Document Errors

Any issues during construction with respect to errors or omissions with the design drawings or documents, the constructability of the system, etc. must be brought to the attention of the Contract Administrator immediately. It is expected that a clear communication channel will exist between the Contractor and the Contract Administrator and that any discrepancies relating to construction of the work will be remedied immediately. Work resulting from failure to seek clarification with the Contract Administrator by the Contractor will be the responsibility of the Contractor to remedy at no extra charge to the project and must be completed to the satisfaction of the Engineer prior to demobilization.

3.7 Final Inspection

After substantial completion of the work and prior to demobilization and removal of equipment and materials from the site, the Contractor MUST arrange an on-site FINAL inspection of the work with the Engineer. This is to ensure all aspects of the work have been satisfactorily completed and/or that arrangements have been made to expedite the completion of any outstanding minor items or deficiencies. Notification to the Engineer of this Final Inspection shall be provided at least two (2) days prior.

3.8 Deficiencies

Deficient items such as catchbasin markers, grate tabs, rodent grates, additional rip-rap, etc., shall be remedied by the Contractor during the warranty period and paid at the Contract price.

If the Contractor fails to complete the work within a reasonable timeframe in the opinion of the Engineer and/or the Municipality, the work shall be completed by a Contractor of the Engineer's choosing and the cost of the work deducted from the Contract holdback.

3.9 Liquidated Damages

In addition to GC 8.02.09.01 and the supplemental general specifications any breach of the Contract terms by the Contractor may be subject to **daily liquidated damages of $500** at the discretion of the Contract Administrator. Pertinent examples may include but are not limited to:

- Work outside the timing windows stated in the Contract.
- Failure to install applicable erosion and sediment controls prior to completing other construction activities.
- Failure to meet Substantial Performance of the Contract by the date specified in the Contract Documents.

4.0 Agency Project Requirements

4.1 Maitland Valley Conservation Authority (MVCA)

Attention is drawn to the MVCA permit. All work is to be in accordance with the terms of this permit and the mitigation practices described in the Engineer's Report.

4.2 Ministry of Environment, Conservation, and Parks (MECP)

The Contractor will be responsible to ensure that during construction activities no extirpated, endangered, threatened, or special concern species or their habitats are adversely affected.

5.0 Description of Work

This section includes specific instructions pertaining to the drain construction and shall be in addition to any specifications noted in the Standard Drain Specifications. The numbering of each item references the corresponding item in the schedule of unit prices.

SP 0 Mobilization

This item covers the Contractors costs associated with the transportation and/or accommodation (meals and lodging) of labour, equipment, offices, conveniences, temporary facilities, construction plant and other items not required to form part of the permanent works and not covered by other items in the Schedule of Unit Prices. This line item shall only apply to the first/ primary mobilization/demobilization required to fulfill the Contract. Additional mobilization costs will not be paid if the Contractor chooses to leave the site on their own accord following the initial mobilization. However, if at the discretion of the Contract Administrator a situation warrants the Contractor to demobilize from site to complete the remainder of the work at a later date, the costs associated with this may be negotiated with the Contract Administrator and paid as an extra item.

Payment at the Lump Sum price set out in the schedule of unit prices for mobilization and demobilization will be made as follows:

- 50% payable on first Payment Certificate
- 50% payable on Substantial performance Payment Certificate.

SP 1 Clearing and Grubbing (OPSS.MUNI.201)

Location: Any trees within the provided working space ROW shall be cleared and grubbed to allow for the construction of the proposed drain. The work shall not damage or disturb the area outside the working corridor specified in the Contract Documents.

Timing Windows: Clearing and grubbing shall take place outside of the nesting birds' restricted timing window from **April 1 to September 30 (inclusive).** If the work cannot be performed outside these dates, an MECP Nest Survey must be performed as described and this must take place for any construction, including clearing and grubbing.

Specification: All work shall be in accordance with Sections E.2.1.5. to E.2.1.9. of the general specifications and OPSS.MUNI.201.

Clearing/Brushing: This item includes cutting, grinding, and/or chipping all standing trees, stumps, brush, bushes, and other vegetation to the existing ground level.

Trees measuring 150 mm dia. or more shall be felled, delimbed, cut into lengths no longer than 4 m, and stacked within the working space ROW to the satisfaction of the Contract Administrator.

Vegetation under 150 mm dia. shall be finished by the Contractor using one of the following three methods:

- Chipped in place by an excavator equipped with a hydraulic brushing attachment.
- Chipped using a woodchipper and piled or spread within the bush ROW.
- Piled and burned in accordance with the Municipality's burning regulations and by-law(s).

The method preferred by the Contractor shall be discussed at the pre-construction meeting and shall be at the discretion of and completed to the satisfaction of the Owner and Contract Administrator.

Grubbing: Tree stumps, boulders, and other vegetative debris shall be grubbed and removed from the site to the satisfaction of the Contract Administrator. Burying of grubbed materials shall not be permitted unless specific permission is given to the Contract Administrator by the landowner (email is acceptable).

SP 2 Channel Construction

All required work for the channel construction shall take place within the specified working space where a 15 m ROW has been provided. Approximately 5 m for the finished top width of the newly excavated ditch and 10 m for working corridor and levelling of spoil. Spreading and levelling of spoil shall be completed within the working ROW to a maximum depth of 300 mm, however the spoil shall not be spread within 2 m from the top of the ditch bank..

The channel side slopes shall be excavated at approximately 2H:1V. Channel shall have a minimum 0.6m bottom width. Channel deepening shall commence at the toe of the slope of the far channel bank where the bank slope is carried to the channel bottom elevation. Excavation will be completed in the channel bottom and on the near channel bank, where required. Vegetation on the far channel bank shall remain in place.

Should unstable soils be encountered during channel construction the Contractor shall transition to 4H:1V side slopes at the direction of the Contract Administrator and shall be paid at an additional cost.

If during construction there is excavated subsoil material deemed unsuitable by the Contract Administrator for spreading in the ROW, it shall be loaded and trucked off-site by the Contractor for disposal and paid for at an additional cost.

The main drain outlet shall terminate outside of the wetland boundary as shown on the accompanying drawings. The Contractor shall configure the outlet to spread the flow by widening the channel to a 10m top width from Sta. 0+000 to 0+005

SP 3 Handseeding

Seeding is required on the exposed, newly excavated channel banks as well as on all locations where spoil has been placed or native vegetation has been disturbed.

The Contractor shall apply OPSS (MTO) Standard Roadside Seed Mix, consisting of 55% Creeping Red Fescue, 27% Kentucky Bluegrass, 15% Perennial Ryegrass and 3% White Clover, at an application rate of 100 kg/ 10,000 m^2, plus a nurse crop of Fall Rye Grain or Winter Wheat Grain at an application rate of 60 kg / 10,000 m^2.

SP 4 Stilling Basin Excavation

A permanent stilling basin shall be installed immediately downstream of the future outlet pipe at Sta. E0+057 to the satisfaction of the Contract Administrator. The basin shall be excavated 0.6m beyond the channel elevation for a length of 3 m.

Additionally, approximately 30 m^2 of rip-rap (450 mm thickness of 150 to 300 mm (OPSS R50) diameter quarry stone with geotextile underlay) shall be installed on the side banks and channel bottom from Sta. E0+051 to E0+057 as erosion protection to the top of bank.

SP 5 Supply and Install OPSS R50 Rip-Rap Erosion Protection

For the unit price bid per square meter, the Contractor shall supply and install a 500 mm thickness of 150 to 300 mm (OPSS R50) diameter quarry stone rip-rap with geotextile underlay. These unit prices shall be used for payment for any rip-rap installed in addition to those quantities already specified in other items and for credit for any quantities of rip-rap deleted from other items. Additionally, this will include areas of existing channel bank where erosion or bank slumping has occurred, as directed on-site by the Contract Administrator.

SP 6 Existing Tile Outlet Pipe Replacement

For the unit price bid the Contractor shall replace the existing outlet pipe for private tile drains encountered during construction. Included in this price shall be all labour equipment and material required to support the replacement, consisting of compacted backfill or clear stone bedding and connection of the tile using a solid 4 meter length of HDPE dual-wall (320 kPa) pipe (or approved equal) and including a rodent grate, as per the detail in the accompanying drawings.

The unit price bid for this item shall also include erosion protection on the banks and floor of the channel, with rip-rap as erosion protection (500 mm thickness of 150 mm to 300 mm (OPSS R50) diameter quarry stone with geotextile underlay).

The construction and installation of the outlet and erosion protection shall be to the satisfaction of the Contract Administrator.

Missed outlet pipes during construction shall be completed by the Contractor during the warranty period and paid at the Contract price. If the Contractor fails to complete the replacement within a reasonable timeframe in the opinion of the Engineer and/or the Town of Minto, the work shall be completed by a Contractor of the Engineer's choosing and the cost of the work deducted from the Contract holdback.

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Appendix G

Soils Investigations

Appendix G – Soils Investigation

A soils investigation was completed in various locations near the proposed drain alignment on April 6, 2022. This investigation was completed to evaluate the construction conditions of various design options. The results of the investigation have been summarized below and locations shown on the accompanying plan.

Test Pit No. 1

The test pit (TP1) was dug on roll no. 1-156. The test pit was to a total depth of 2.0 m and revealed the following soil structure:

- 0.0 m to 0.15 m Topsoil
- 0.15 m to 0.45 m Clay
- 0.45 m to 2.0 m Sand

Groundwater was encountered in the pit at the time of excavation at a depth of approximately 1.5 m.

Test Pit No. 2

The test pit (TP2) was dug on roll no. 1-156. The test pit was to a total depth of 2.3 m and revealed the following soil structure:

- 0.0 m to 0.2 m Topsoil
- 0.2 m to 0.5 m Clay
- 0.5 m to 1.4 m Silt Loam
- 1.4 m to 2.0 m Wet Clay
- 2.0 m to 2.3 m Firm Clay

Groundwater was encountered in the pit at the time of excavation at a depth of approximately 1.3 m.

Test Pit No. 3

The test pit (TP3) was dug on roll no. 1-156. The test pit was to a total depth of 2.3 m and revealed the following soil structure:

- 0.0 m to 0.2 m Topsoil
- 0.2 m to 0.6 m Clay
- 0.6 m to 1.2 m Silt Loam
- 1.2 m to 1.8 m Gravel
- 1.8 m to 2.3 m Firm Clay

Groundwater was encountered in the pit at the time of excavation at a depth of approximately 1.0 m.

Test Pit No. 4

The test pit (TP4) was dug on roll no. 1-156. The test pit was to a total depth of 2.5 m and revealed the following soil structure:

- 0.0 m to 0.2 m Topsoil
- 0.2 m to 1.1 m Sand
- 1.1 m to 2.5 m Gravel

Groundwater was not encountered in the pit at the time of excavation.

Test Pit No. 5

The test pit (TP5) was dug on roll no. 1-156. The test pit was to a total depth of 2.5 m and revealed the following soil structure:

- 0.0 m to 0.3 m Topsoil
- 0.3 m to 2.5 m Sand

Groundwater was encountered in the pit at the time of excavation at a depth of approximately 2.3 m.

Test Pit No. 6

The test pit (TP6) was dug on roll no. 1-156. The test pit was to a total depth of 2.2 m and revealed the following soil structure:

- 0.0 m to 0.3 m Topsoil
- 0.3 m to 1.5 m Sand
- 1.5 m to 2.2 m Gravel

Groundwater was encountered in the pit at the time of excavation at a depth of approximately 1.6 m.

Test Pit No. 7

The test pit (TP7) was dug on roll no. 1-156. The test pit was to a total depth of 1.5 m and revealed the following soil structure:

- 0.0 m to 0.2 m Topsoil
- 0.2 m to 1.5 m Water Sand

Groundwater was encountered in the pit at the time of excavation at a depth of approximately 0.6 m. The soils were extremely unstable in this test pit. The trench collapsed immediately.

Test Pit No. 8

The test pit (TP8) was dug on roll no. 1-156. The test pit was to a total depth of 2.2 m and revealed the following soil structure:

- 0.0 m to 0.2 m Topsoil
- 0.2 m to 1.0 m Sand
- 1.0 m to 2.2 m Gravel

Groundwater was encountered in the pit at the time of excavation at a depth of approximately 1.0 m. The soils were extremely unstable in this test pit. The trench collapsed immediately.

Test Pit No. 9

The test pit (TP9) was dug on roll no. 1-159. The test pit was to a total depth of 2.2 m and revealed the following soil structure:

- 0.0 m to 0.2 m Topsoil
- 0.2 m to 0.4 m Clay
- 0.4 m to 2.2 m Gravel

Groundwater was encountered in the pit at the time of excavation at a depth of approximately 2.0 m.

Test Pit No. 10

The test pit (TP10) was dug on roll no. 1-159. The test pit was to a total depth of 2.3 m and revealed the following soil structure:

- 0.0 m to 0.2 m Topsoil
- 0.2 m to 2.3 m Clay

Groundwater was not encountered in the pit at the time of excavation

Test Pit No. 11

The test pit (TP11) was dug on roll no. 1-159. The test pit was to a total depth of 2.3 m and revealed the following soil structure:

- 0.0 m to 0.2 m Topsoil
- 0.2 m to 2.3 m Clay

Groundwater was not encountered in the pit at the time of excavation

Test Pit No. 12

The test pit (TP12) was dug on roll no. 1-159. The test pit was to a total depth of 1.5 m and revealed the following soil structure:

- 0.0 m to 0.2 m Topsoil
- 0.2 m to 1.5 m Gravel/Sand

Groundwater was encountered in the pit at the time of excavation at a depth of approximately 0.3 m. The soils were extremely unstable in this test pit. Significate upwelling into the test pit was observed once the 1.5 m depth was reached.

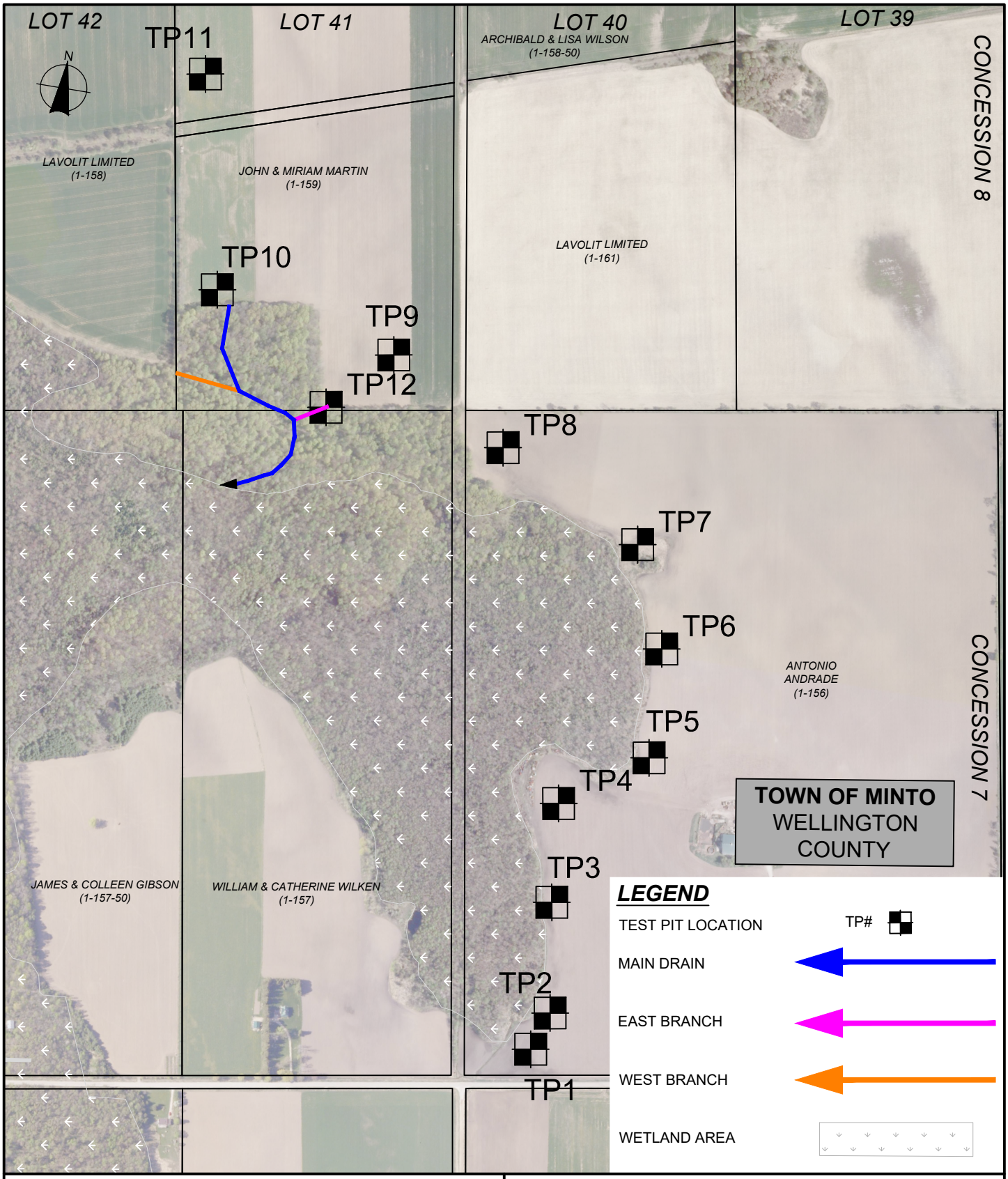

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Figure Title

MINTO DRAIN 119 INVESTIGATION

SOIL TEST PIT LOCATIONS

Client		Drawn	Checked	Date	Figure No.
TOWN OF MINTO		EP	GN	2024/10/11	**FIG. 1**
		Scale		Project No.	
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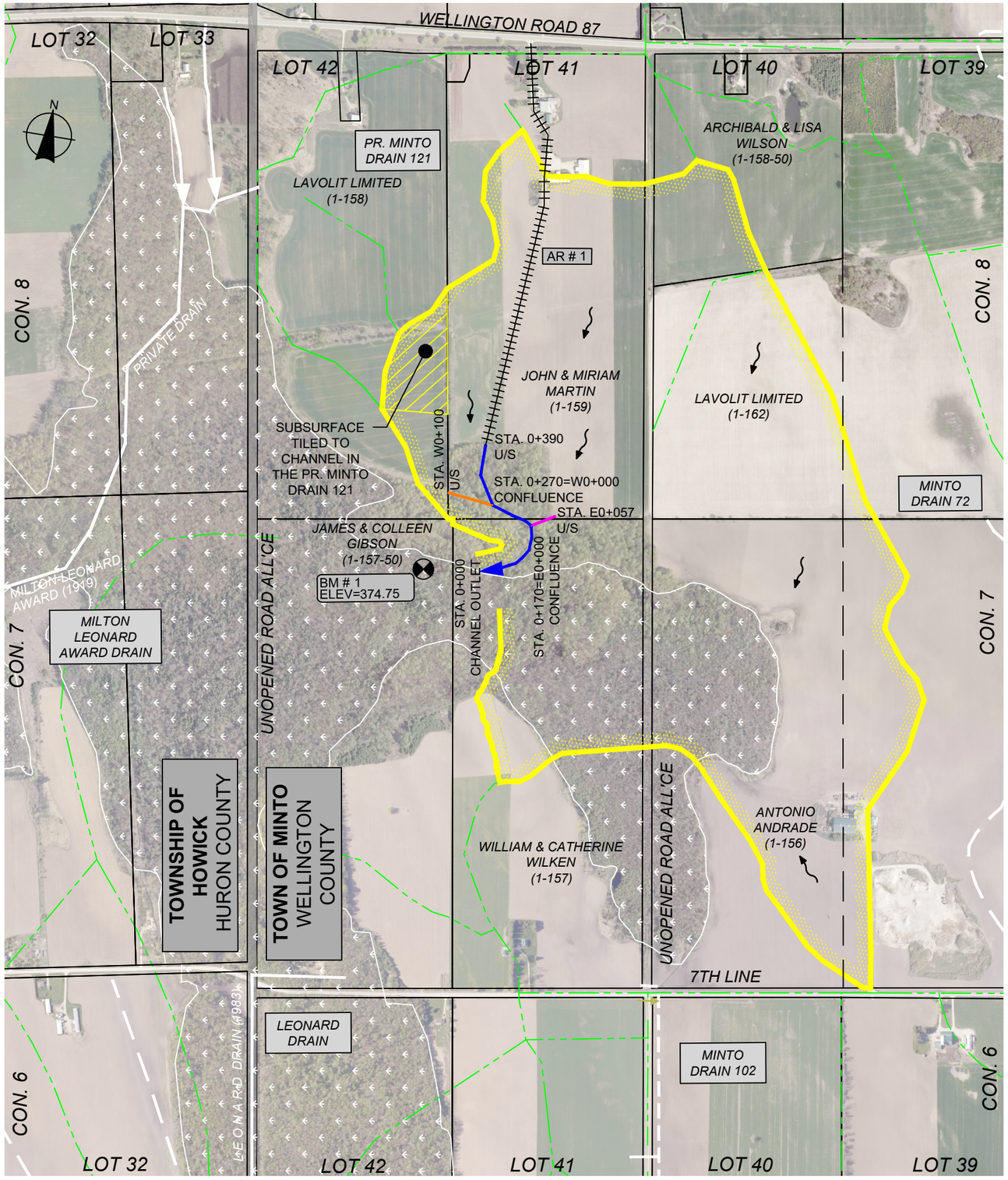
Appendix H

Drawings



BENCHMARKS

BENCHMARK #1 **ELEVATION = 374.75m**
TOP OF UPSTREAM SIDE OF 300mm HDPE CULVERT.

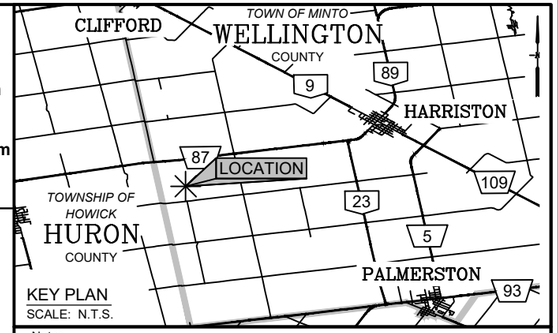
BENCHMARK #2 **ELEVATION = XXX.XXm**
TO BE SET AT TIME OF CONSTRUCTION.

LEGEND

- WATERSHED BOUNDARY
- SUB WATERSHED BOUNDARY
- DRAIN LOCATION & DIRECTION — OPEN DRAIN / CLOSED DRAIN
- BENCHMARK NUMBER — BM # ? / AR # ? — BENCHMARK LOCATION
- ACCESS ROUTE
- ROLL NUMBER (1-234)
- WETLAND AREA
- SURFACE FLOW DIRECTION

BRANCH COLOURS

- PROPOSED MAIN DRAIN
- PROPOSED EAST BRANCH
- PROPOSED WEST BRANCH
- EXISTING DRAIN



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2. The contractor shall verify all dimensions, levels, and datums on site and report any discrepancies or omissions to this office prior to construction.
3. This drawing is to be read and understood in conjunction with all other plans and documents applicable to this project.
4. All property lines are approximate and for information purposes only.

PRELIMINARY

LICENSED PROFESSIONAL ENGINEER
S. M. Vander Veen
February 3, 2025
PROVINCE OF ONTARIO

No.	Issue / Revision	Date	Auth.
0	ISSUED FOR INFO MEETING	2024/01/30	GN
1	ISSUED FOR DRAFT REPORT	2024/10/11	GN
2	ISSUED FOR FINAL REPORT	2025/02/03	GN

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web www.rjburnside.com

Client
TOWN OF MINTO
5941 HIGHWAY 89
HARRISTON, ONTARIO
N0G 1Z0

Drawing Title
MUNICIPAL DRAIN

MINTO DRAIN 119 - 2024 WATERSHED PLAN

Drawn	Checked	Date	Drawing No.
EP	GN	2024/01/30	1OF3
Scale		Project No.	
1:10000		300054764.2000	

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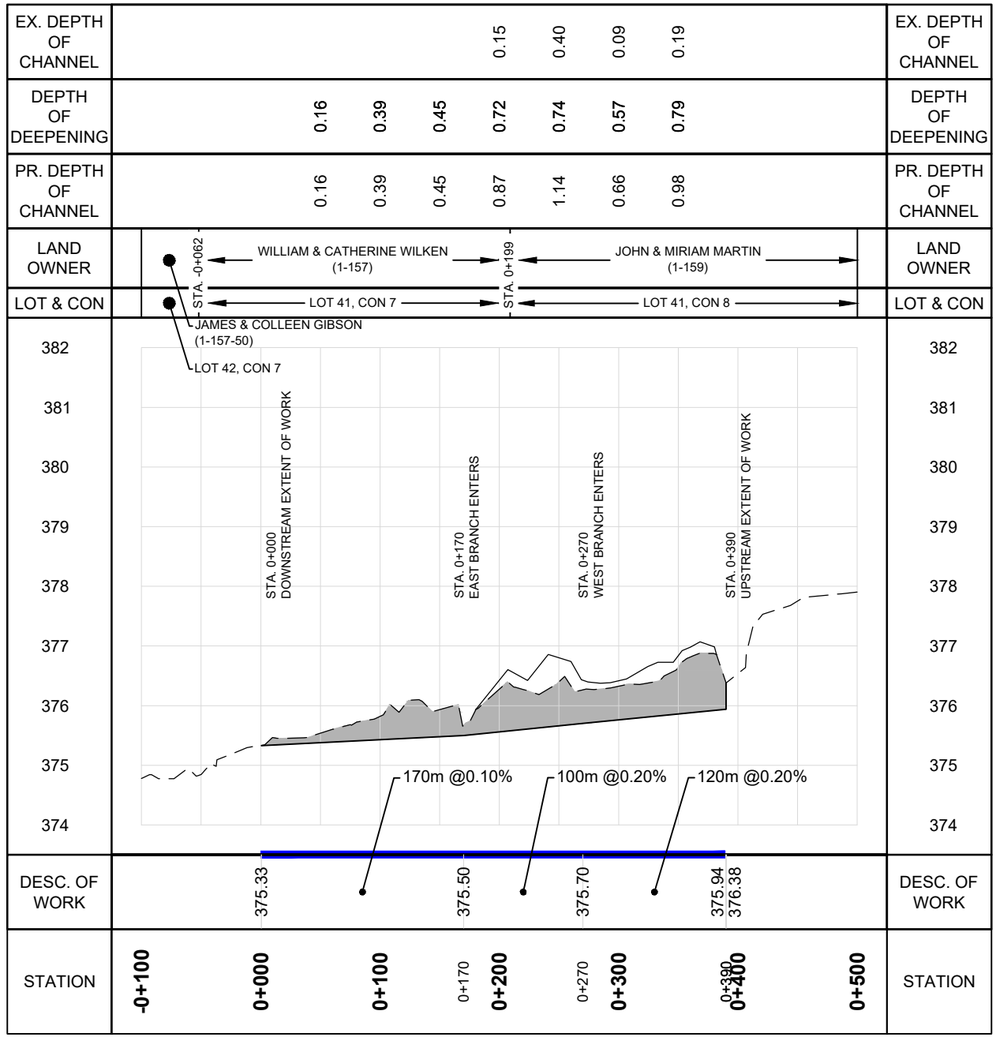
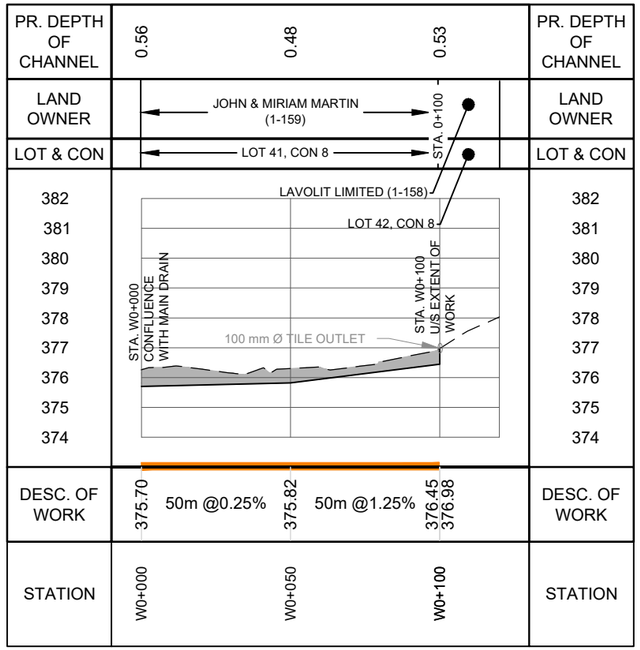


MAIN DRAIN

SCALE

H 1:5000 V 1:100



WEST BRANCH

SCALE

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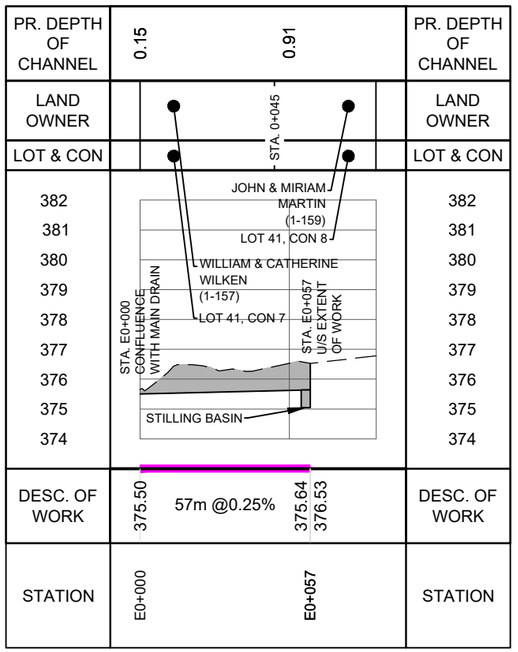


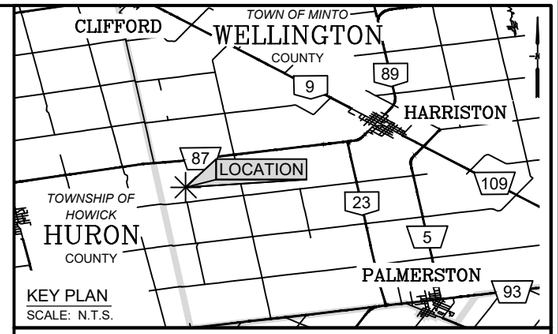
EAST BRANCH

SCALE

H 1:2000 V 1:200

CHANNEL NOTES:

1. ALL CHANNEL WORKS SHALL BE IN ACCORDANCE WITH THE PROVIDED PROFILE, AND SPECIFICATIONS.
2. ALL CHANNEL WORKS SHALL CONFORM TO THE GENERAL SPECIFICATIONS.
3. ALL CHANNEL WORKS AND EXCAVATIONS SHALL CONFORM TO THE GOVERNING OPSS AND OPSD.
4. ACCESS TO THE CHANNEL AND WORKING SPACE SHALL BE EXECUTED IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
5. SPOIL SHALL BE SPREAD ON THE DESIGNATED CHANNEL BANK, A MINIMUM OF 2m FROM THE TOP OF THE BANK, UNLESS OTHERWISE DIRECTED BY THE ENGINEER IN THE SPECIAL PROVISIONS OR AT THE TIME OF CONSTRUCTION.
6. ALL FUNCTIONING OUTLET PIPES AFFECTED BY THE EXCAVATION SHALL HAVE RIP-RAP EROSION PROTECTION (MINIMUM 2m²) PLACED BELOW THE OUTLET.
7. ALL WORKING OUTLET PIPES DAMAGED DURING THE EXCAVATION SHALL BE REPLACED SECURELY WITH CORRUGATED STEEL PIPE (CSP) OR HIGH DENSITY POLYETHYLENE (HDPE) TO THE SATISFACTION OF THE CONTRACT ADMINISTRATOR.
8. ALL WORKING OUTLET PIPES SHALL HAVE A RODENT GRATE.
9. CHANNEL SHALL HAVE 2H:1V SIDE SLOPES. CHANNEL SHALL HAVE A MINIMUM 0.6m BOTTOM WIDTH



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February 3, 2025
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1	ISSUED FOR DRAFT REPORT	2024/10/11	GN
2	ISSUED FOR FINAL REPORT	2025/02/03	GN

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Client

TOWN OF MINTO

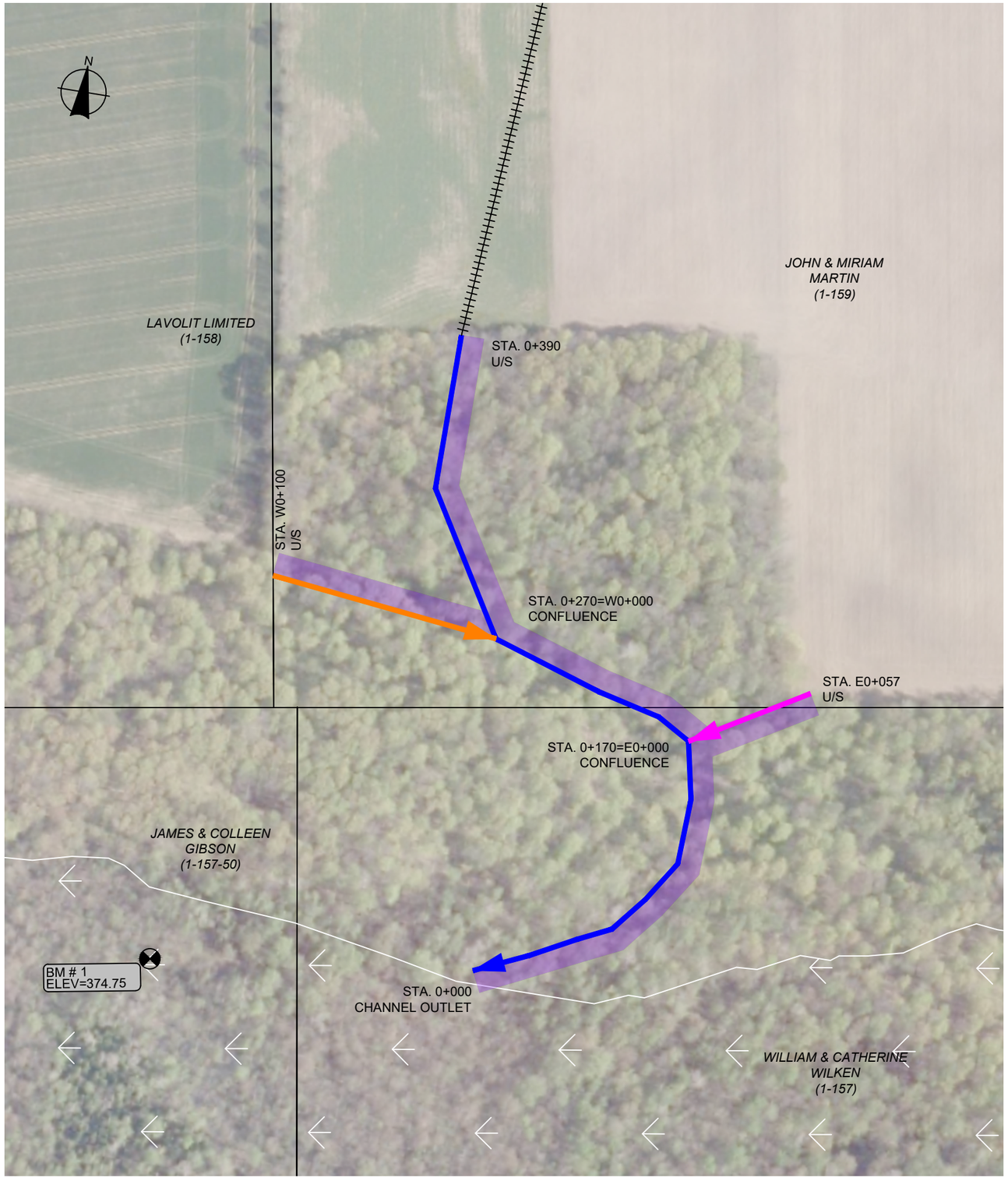
5941 HIGHWAY 89
HARRISTON, ONTARIO
N0G 1Z0

Drawing Title

MUNICIPAL DRAIN

MINTO DRAIN 119 - 2024 PROFILES

Drawn	Checked	Date	Drawing No.
EP	GN	2024/01/30	2OF3
Scale: AS NOTED		Project No.: 300054764.2000	



BENCHMARKS

BENCHMARK #1 **ELEVATION = 374.75m**
TOP OF UPSTREAM SIDE OF 300mm HDPE CULVERT.

BENCHMARK #2 **ELEVATION = XXX.XXm**
TO BE SET AT TIME OF CONSTRUCTION.

LEGEND

BENCHMARK NUMBER — BM # ? — BENCHMARK LOCATION

ACCESS ROUTE

ROLL NUMBER (1-234)

WETLAND AREA

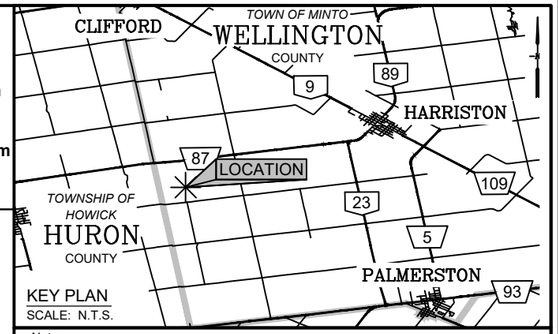
BRANCH COLOURS

PROPOSED MAIN DRAIN

PROPOSED EAST BRANCH

PROPOSED WEST BRANCH

WORKING SPACE



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N0G 1Z0

Drawing Title
MUNICIPAL DRAIN

MINTO DRAIN 119 - 2024 CONSTRUCTION PLAN

Drawn	Checked	Date	Drawing No.
EP	GN	2024/01/30	3OF3
Scale		Project No.	
1:2000		300054764.2000	

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