

Engineer's Report

Smith Drainage Works 2025

The Municipality of Huron East

Submitted to:

Municipality of Huron East

72 Main Street South

Seaforth, ON, N0K 1W0

Submitted by:

GEI Consultants Limited

975 Wallace Avenue North

Listowel, ON, N4W 1M6

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February 2025

321053-1

Matt Ash, C.E.T.
Author



Ben Gowing, P.Eng
Signing Engineer

February 20, 2025

Our File: 321053-1

Mayor and Members of Council
The Municipality of Huron East

Re: Smith Drainage Works 2025

Mayor MacLellan and Members of Council:

We are pleased to present our report on the "Smith Drainage Works 2025" serving lots 63 to 70, Concession 1 Grey in the Municipality of Huron East, County of Huron, and lots 44 to 53, Concession 1 Wallace in the Municipality of North Perth, County of Perth.

Authority to prepare this report was obtained by a resolution of Huron East Council as stated in its August, 2022 letter to appoint GEI Consultants (formerly GM BluePlan Engineering Limited) to prepare an Engineer's Report.

In accordance with your instructions pursuant to a request received by Council under Section 78 of the Drainage Act, R.S.O. 1990, for the request for drainage improvements, GEI has held an on-site meeting, undertaken a field survey and prepared for Council's consideration the following Drainage Report, Plan, Profiles and Specifications for this work to be completed on the Smith Drainage Works Municipal Drain.

We trust that the information contained within will be satisfactory. If there are any questions or concerns please do not hesitate to contact us.

Yours truly,

GEI CONSULTANTS CANADA LTD.

Per:



Ben Gowing, P.Eng.

Encl.

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1. INTRODUCTION

At the request of property owners in the Municipality of Huron East, council have appointed GEI Consultants (formerly GM BluePlan Engineering) under Section 78 of the Drainage Act to investigate improvements to be made to the Smith Drainage Works. The request was originally related to enclosing a portion of the Smith Drain to permit additional expansion of the Marcrest Holdings property, however the scope was expanded as a result of comments received to include a clean-out of the entire drain and a new maintenance schedule.

The owner and property represented on the request are:

Marcrest Holdings c/o Mark Horst	For Pt. Lots 69 & 70	Concession 1 Grey
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Based on site observations and previous drainage reports, twenty-four properties and three roads have been determined as within the drainage area of the Smith Drainage Works.

2. HISTORY

The Municipality of Huron East has provided background municipal drain maps and reports.

The Smith Drainage Works originally began in 1895 as the McCallum Award Drain and was subsequently improved and designated as the Smith Drainage Works (Municipal Drain) in 1956 under a report by James A. Howes of Listowel.

The drain as designated in 1956 consisted of approximately 3,600 lineal metres of open ditch and included road crossings under King's Highway 86 (Perth Line 86) and the Elma/Grey Townline (Road 172). The 1956 report is silent regarding the size and type of crossing under Perth Line 86 however it notes that a 48" (1,200mm) pipe is required for the Road 172 crossing.

To our knowledge, no further changes or improvements have been made to the Smith Drainage Works since the 1956 report was filed.

3. PROCEEDINGS UNDER THE DRAINAGE ACT

The Drainage Act is a vehicle by which a drainage scheme can be constructed and the cost raised by local special assessment. That is, the cost is assessed in varying proportions to lands within the watershed, as a one-time charge over and above any taxes paid. Maintenance of the drain is likewise charged to the watershed, most often in the same proportions as the original construction.

The Act has evolved over many years and attempts have been made to balance the rights of the individual against the benefits of the construction of drains that involve more than one property. The Act recognizes that perfect agreement is not possible in every case and provides a number of proceedings that give owners and others the opportunity to influence the outcome.

This Report is one of those proceedings. To aid in the understanding of the process listed below in chronological order are all normal proceedings with the notation “Completed” beside those which have been completed. This listing is a summary of many but not all parts of the Drainage Act and applies to the ordinary course of events. Further proceedings are available, and for these the Drainage Act should be consulted directly.

1. Submission of a Request. *Completed.*
2. Notification of the Project to the Maitland Valley Conservation Authority (MVCA). *Completed.*
3. Engineer appointed. *Completed.*
4. On-site meeting. *Completed.*
5. Preparation of Report. *Completed.*
6. Report considered by Council and a By-Law is adopted.
7. Court of Revision convened to consider and deal with appeals on assessment if necessary.
8. Appeal is available from the decisions of the Court of Revision and on other matters to the Ontario Drainage Tribunal.
9. Disposition of appeals by the Tribunal, or if none, final passage of the By-Law, which establishes the drain in law and authorizes construction.
10. Construction of Municipal Drain Improvements.
11. Levying and collecting of assessments.

4. ON-SITE MEETING

In accordance with Section 9(1) of the Drainage Act, R.S.O. 1990 an on-site meeting was held on May 31st, 2023. The meeting was scheduled to take place at 2:00 pm at the Marcrest Holdings site on Perth Line 86.

11 landowners attended this meeting, as well as council representatives from Huron East and the Drainage Superintendents of both Huron East and North Perth.

A handout was distributed which described the procedures under the Drainage Act, steps already taken by Council in appointing an Engineer, a map of the pertinent part of the watershed, and preliminary results of the investigation to date.

It was noted at the site meeting by the Drainage Superintendent that the drain likely required a clean-out for the full length, including brush removal where necessary. It was also noted that the maintenance schedule dated to 1956 and was now out of date. The project was to include a new maintenance schedule for the entire watershed.

Landowners were also informed that since the date of appointment, GEI had undertaken consultation with the Department of Fisheries and Oceans (DFO) which included a site visit by DFO staff and discussions regarding the proposed works. In general, DFO staff were in agreement with the proposed works with the provision that certain environmental improvements were incorporated into the project.

Landowners in attendance had general questions only, pertaining to process and cost. Some concerns were expressed regarding the clean-out through the bush areas, as well as sizing of the pipe for the proposed enclosure.

5. FINDINGS

Based on information received at the site meeting, a visual inspection of the drainage works, and site visits and discussion with DFO staff, we find that the Smith Drainage Works can be enclosed on the Marcrest Holdings property by way of approximately 106m of 1,200mm diameter concrete pipe. In addition, the Smith Drainage Works will be cleaned out for its entire length, including full clean-out, spot clean-outs, and brush removal where appropriate. And finally, this report will provide an updated Maintenance Schedule for all properties within the watershed.

6. BASIS FOR DESIGN

The clean-out of the open ditch drain is designed only to restore original capacity, and no capacity analysis has been conducted. It is also not planned to replace the existing road crossings.

The Marcrest Holdings enclosure will use pipe of similar size to the Road 172 crossing (1,200mm diameter) which is immediately upstream of the enclosure section. As no widespread flooding has been reported by the landowners, it is assumed that this pipe size is sufficient to pass the majority of the flow in the drain.

7. ENVIRONMENTAL CONSIDERATIONS

This drain has been subject to the review of the MVCA and the Department of Fisheries and Oceans (DFO).

DFO have done an extensive review and determined that the enclosure would require a site-specific Fisheries Act Authorization. The authorization requires that mitigation measures be incorporated into the drainage works, and that a monitoring plan and financial securities also be provided to DFO satisfaction. This has all been outlined in a technical memo provided to DFO on July 17th, 2024 and is appended to this report. Preliminary DFO authorization was received on August 9th, 2024, and the final Fisheries Act Authorization was received February 20th, 2025. The authorization is also appended to this report and the requirements contained therein shall govern the work performed under this Drainage Report.

The mitigation measures include the construction of a series of riffles and pools downstream of the enclosure. These measures will be fully contained within the footprint of the drain and no bank widening should be required. In addition, trees will be placed along the south bank of the drain on the Marcrest property to assist with shading the watercourse. All mitigation measures are outlined in the referenced memo and are noted on the project drawings. The riffles and pools will become part of the drainage works,

and shall be maintained as such by the Municipality, with any associated maintenance costs assessed to the benefitting landowner (Marcrest Holdings).

8. RECOMMENDATIONS FOR THE SMITH DRAINAGE WORKS MUNICIPAL DRAIN

It is our recommendation that:

1. The drain will be partially enclosed across the Marcrest Holdings site with the use of approximately 106m of 1,200mm diameter concrete pipe. The enclosure will include rip-rap erosion protection at the inlet.
2. The drain will be cleaned out throughout its length. The clean out will include brush and tree removal where appropriate and as designated by the Drainage Superintendent or Engineer. Material from the clean-out will be spread on adjacent lands.
3. A new maintenance schedule will be provided for all properties in the watershed.
4. Mitigation measures will be incorporated into the drainage works, including a series of 6 pairs of riffles and pools extending downstream from the limits of the enclosure to the bend in the ditch, at approximately station 1+060.
5. Shade trees will be planted along the south bank of the drain on the property of Marcrest Holdings wherever space permits, from approximately station 1+280 to station 1+360, and spaced at approximately 5m. Trees shall be native deciduous type.

The drawings included with the Report show the extent of the work, land affected, profile of the tile and other details of the work. The plan shown on Drawing No. 1 – Smith Drainage Works Plan gives the area considered to be in the drainage area of the work proposed.

During construction, contingencies may arise and will be dealt with as determined by the Engineer and included as part of construction. There will be no special assessments for contingencies.

9. WORKING AREA

The working area for both construction and maintenance purposes shall be a width of 15m from top of bank. Each Landowner on whose property the drainage work is to be improved shall designate access to and from the working area at the time of construction or upon failure to do so, the Engineer or Drainage Superintendent, as the case may be, shall designate access.

10. WATERSHED CHARACTERISTICS

The Drainage Area comprises approximately 300 hectares. Land use within the watershed is primarily agricultural.

Specific land uses within the watershed are as follows:

Agricultural	- 278.0 ha
Industrial	- 13.0 ha
Roadway	- 9.0 ha

11. ALLOWANCES

Various allowances are considered part of a Municipal Drain. The Drainage Act provides in Sections 29 to 33 that the Engineer is to allow in money for the value of several items, as follows:

a) Section 29 – Right-of-Way

As this project includes only the improvement of an existing drain, no allowance for right-of-way is provided.

b) Section 30 - Damages

The work on the property of Rymert Los, N Pt. Lot 68, which is required to install the pools and riffles will be subject to damage allowance for crop loss. It is calculated that the area involved is approximately 1,575 m², and accordingly a damage allowance is provided in the amount of \$670.00 which is based on a crop value of \$2,550 per hectare.

As the remainder of the work is primarily related to maintenance of the existing drain, no other allowances for damages have been provided.

c) Section 31 – Allowance for Existing Drains

No existing private drains are involved in this project.

d) Section 32 – Allowance for Damage Due to Insufficient Outlet

As sufficient outlet has been confirmed, there is no allowance for insufficient outlet.

e) Section 33 – Allowance for loss of Access

As crossings are provided at each property where crossings were originally provided, no loss of access allowance is considered appropriate.

12. ASSESSMENTS

Section 21 of the Drainage Act requires that the Engineer *“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 therefore.”* On this project, Outlet liability and Special Benefit assessments are involved.

Assessment for Outlet Liability is described in **Section 23(1)** of the Act which states *“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.” Outlet liability is the part of the cost of the works that is required to provide such outlet or improved outlet.

Outlet liability for all roads was calculated using the methodology outlined in “*Outlet Liability Assessment Factors for Highway Rights of Way*”, as published by the Ontario Ministry of Transportation. It was determined that 50% of the right-of-way was developed and that the adjacent soil runoff coefficient (‘C’ factor) was 0.45. As a result the roadway was assigned an Equivalent Area factor of 1.75.

Assessment for Special Benefit is described in **Section 24** of the Act and is defined as any additional work or feature included in the construction, repair or improvement of a drainage works that has no effect on the functioning of the drainage works.

The drain enclosure on the Marcrest Holdings property is considered a Special Benefit, and all costs relating to this work, including the environmental mitigation measures, will be assessed to Marcrest. There is no grant for these works.

Assessment for clean-out and the new maintenance schedule were determined on an outlet basis only, being divided proportionally amongst all properties in the watershed based on contributing area and equivalent area factors. Maintenance cost was further sub-divided into sections, being the section south of Perth Line 86 which is assessed to the entire watershed, and the section north of Perth Line 86 which was assessed only to landowners draining to that part of the Smith Drainage Works.

There is no injuring liability assessment on this drain. No property is considered to have riparian rights insofar as assessment is concerned.

Assessments on agricultural lands may be eligible for a one third provincial grant. Neither the availability nor the amount of the grant can be determined in advance.

Should the project not proceed for any reason, costs to date are payable by the watershed prorated to the most recent assessment schedule. There is no grant should this happen.

13. COST ESTIMATE

The cost of this Municipal Drain Improvement is estimated as **\$285,170** and is raised by assessment from properties within the watershed. A Schedule of Estimated Assessments can be found in **Appendix A**.

GM BluePlan estimates the cost of the Smith Drainage Works Municipal Drain as follows:

COST ESTIMATE - Smith Drainage Works The Municipality of Huron East		
Allowances	\$	670
Drain Enclosure		
Supply and install 106m of 1,200mm diameter concrete pipe	\$	127,200

COST ESTIMATE - Smith Drainage Works The Municipality of Huron East		
Worksite Isolation and Diversion	\$ 5,000	
Rip rap erosion control at inlet and outlet of pipe	\$ 1,500	
Creation of riffle pools and environmental plantings	\$ 30,000	
Supply and place approximately 18 shade trees (to be done by Marcrest Holdings)	\$ -	
Monitoring and Reporting for DFO purposes (directly paid by Marcrest Holdings)	\$ -	
Contingency	\$ 10,000	
Total Estimated Drain Enclosure Cost		\$ 173,700
Drain Cleanout - Huron		
Clean out approximately 1,350m of drain	\$ 16,200	
Allowance for clearing and brushing	\$ 8,000	
Total Estimated Road Crossing Construction Cost		\$ 24,200
Drain Cleanout - Perth		
Clean out approximately 1,800m of drain	\$ 21,600	
Allowance for clearing and brushing	\$ 10,000	
Total Estimated Road Crossing Construction Cost		\$ 31,600
Non-Construction Costs		
On Site Meeting, Survey, Plan, Profile, and Report	\$ 7,500	
Costs Related to Enclosure including DFO Application and Approvals	\$ 25,000	
Development of New Maintenance Schedule	\$ 5,000	
Tendering, Construction Review, Contract Administration and Grant Application	\$ 6,500	
Carrying Costs (est. @ 3% for 1 year) & Net HST (1.76%)	\$ 11,000	
Total Non-Construction Costs		\$ 55,000
TOTAL ESTIMATED COST		\$ 285,170

*The above costs are estimates only. The final costs of engineering and administration cannot be determined until construction is completed. The above costs also do not include costs to defend the drainage report should appeals be filed with the Court of Revision, Drainage Tribunal and/or Drainage Referee as the extent of the work required cannot be determined. Should additional costs be incurred, unless directed otherwise, the costs would be assessed in pro rata fashion as per the Schedule of Assessments.

14. MAINTENANCE

As per section 74 of the Act, after construction of the improvements the Smith Drainage Works Municipal Drain as described in this Report shall be maintained by Huron East at the expense of the upstream lands and

roads assessed, in the proportions set out in the By-Law which adopts this Report. Any future maintenance or repair costs shall be distributed pro rata in accordance with **Appendix B**, the Schedule of Assessments for Future Maintenance. The Schedule of Assessments for Future Maintenance is based on the equivalent contributing areas for all properties.

Future costs for maintenance of the road crossings are to be fully assessed to the respective road authorities. Road authorities have the right under Section 69 (1) to undertake any maintenance or repair to their culverts as they deem necessary. The Drainage Superintendent should be advised of any works being undertaken.

Future costs for maintenance of the mitigation measures, primarily the Riffles and Pools, shall be fully assessed to the benefitting landowner being Marcrest Holdings Inc, Concession 1 Pt. Lots 67 and 70.

Landowners should take note that there is responsibility for landowners to not damage or block flow in the Municipal Drain. Section 80(1) of the Drainage Act states;

"When a drainage works becomes obstructed by a dam, low bridge, fence, washing out of a private drain, or other obstruction, for which the owner or occupant of the land adjoining the drainage works is responsible, so that the free flow of the water is impeded thereby, the persons owning or occupying the land shall, upon reasonable notice sent by the council of the local municipality whose duty it is to maintain and repair the drainage works or by a drainage superintendent appointed by the council, remove such obstruction and, if it is not so removed within the time specified in the notice, the council or the drainage superintendent shall forthwith cause it to be removed, and the cost thereof is payable to the municipality by the owner or occupant of the land."

Any landowners, who have questions as to their rights and responsibilities under the Drainage Act, should contact the Huron East Drainage Superintendent who can provide additional information and answer any questions that landowners may have.

Regular inspection of the culverts and drainage course should be undertaken by the Huron East Drainage Superintendent. Landowners can assist with the inspection by making regular inspections of the drain as it crosses their property, clearing debris from the drain and culverts if possible, and reporting any problems or concerns to the Drainage Superintendent who can inspect and take any necessary actions.

All of which is respectfully submitted.

Yours truly,

GEI Consultants Limited

Per:



Ben Gowing, P.Eng.



Appendix A Schedule of Estimated Assessments for Construction

Schedule of Estimated Assessments Prepared by GEI Consultants February 2025 Smith Drainage Works												
Roll No.	Legal Description	Owner	Affected Area		Adjusted Area		Benefit (sect. 22)	Outlet (sect. 23)	Section 24/26	TOTAL ASSESSMENT ¹	Allowances	NET ASSESSMENT ²
			ac.	ha.	ac.	ha.						
Lands in Huron East												
404042000108400	45175 PERTH LINE 86 CON 1 N;PT LOT 63 N PT LOT 64	Andreas Rechsteiner	32.74	13.25	32.74	13.25	\$ -	\$ 1,360		\$ 1,360	\$ -	\$ 1,360
404042000108600	CON 1 N PT LOT 65 TO N PT;LOT 68	Rymert Los	149.69	60.58	149.69	60.58	\$ -	\$ 6,219		\$ 6,219	\$ (670)	\$ 5,549
404042000109105	CON 1 PT LOTS 67 68 69 70	Hughbert Edward Haverkamp	70.78	28.64	70.78	28.64	\$ -	\$ 2,940		\$ 2,940	\$ -	\$ 2,940
404042000109200	CON 1 PT LOT 70 AS RP;22R1154 PART 1 & RP 22R3866;PART 1	David James Menzies	1.27	0.51	1.27	0.51	\$ -	\$ 53		\$ 53	\$ -	\$ 53
404042000109300	CON 1 N PT LOT 69 N PT LOT;70	Ronald James Menzies	15.38	6.22	15.38	6.22	\$ -	\$ 639		\$ 639	\$ -	\$ 639
404042000109302	CON 1 PT LOTS 67 AND 70	Marcrest Holdings Inc.	32.15	13.01	53.69	21.73	\$ -	\$ 2,230	\$ 217,907	\$ 220,137	\$ -	\$ 220,137
404042000109500	CON 1 NE PT LOT 70 AS RP;22R1636 PART 1	Mark M Horst	2.07	0.84	2.07	0.84	\$ -	\$ 86		\$ 86	\$ -	\$ 86
Lands in North Perth												
314036000102100	CON 1 PT LOT 1 PT LOT 2 AS;RP 44R239 PART 1	JASON & MELISSA GULUTZEN	5.00	2.02	5.00	2.02	\$ -	\$ 819		\$ 819	\$ -	\$ 819
314036000102200	CON 1 N PT LOT 1	LORRAINE & BRADLEY BOHNERT	21.06	8.52	21.06	8.52	\$ -	\$ 3,450		\$ 3,450	\$ -	\$ 3,450
314036000102300	CON 1 N PT LOT 1 TO N PT LOT;4	DONEGAN'S HAULAGE LIMITED	29.25	11.84	29.25	11.84	\$ -	\$ 4,792		\$ 4,792	\$ -	\$ 4,792
314041000201800	CON 1 N PT LOT 44 E PT LOT;45 LESS HWY	PAUL BRISTOWE	15.31	6.19	15.31	6.19	\$ -	\$ 2,507		\$ 2,507	\$ -	\$ 2,507
314041000202000	CON 1 W PT LOT 45 LESS HWY	BRIAN & ANGELA MCCrackEN	22.49	9.10	22.49	9.10	\$ -	\$ 3,684		\$ 3,684	\$ -	\$ 3,684
314041000202100	CON 1 LOT 46 LESS HWY	BRIAN & ANGELA MCCrackEN	56.39	22.82	56.39	22.82	\$ -	\$ 9,237		\$ 9,237	\$ -	\$ 9,237
314041000202200	CON 1 S PT LOT 47 LESS HWY;SUBJT TO ROW	VALERIE & DOUGLAS BUCHANAN	18.26	7.39	18.26	7.39	\$ -	\$ 2,991		\$ 2,991	\$ -	\$ 2,991
314041000202215	CON 1 PT LOT 47 AS RP 44R991;PART 1	MARY & JOHN ROBINSON	1.57	0.64	1.57	0.64	\$ -	\$ 258		\$ 258	\$ -	\$ 258
314041000202300	CON 1 N PT LOT 47 WITH ROW	KENNETH & VICKI STARK	60.10	24.32	60.10	24.32	\$ -	\$ 9,845		\$ 9,845	\$ -	\$ 9,845
314041000202400	CON 1 LOT 48	ELISEN FARMS LTD.	47.32	19.15	47.32	19.15	\$ -	\$ 7,752		\$ 7,752	\$ -	\$ 7,752
314041000202500	CON 1 LOT 49	SYNERGY TURKEY INC.	30.97	12.54	30.97	12.54	\$ -	\$ 1,287		\$ 1,287	\$ -	\$ 1,287
314041000202600	CON 1 LOT 50 LESS HWY	KENNETH & MARY KNECHTEL	34.60	14.00	34.60	14.00	\$ -	\$ 1,437		\$ 1,437	\$ -	\$ 1,437
314041000202700	CON 1 LOT 51	MURRAY & BARBARA ELLIOTT	28.51	11.54	28.51	11.54	\$ -	\$ 1,184		\$ 1,184	\$ -	\$ 1,184
314041000202800	CON 1 N PT LOT 52 WITH ROW	LARRY & NANCY SKINNER	8.15	3.30	8.15	3.30	\$ -	\$ 339		\$ 339	\$ -	\$ 339
314041000202810	CON 1 S PT LOT 52 LESS HWY;SUBJT TO ROW	LISA & JOE NEVES	10.17	4.11	10.17	4.11	\$ -	\$ 422		\$ 422	\$ -	\$ 422
314041000202900	CON 1 S PT LOT 53 S PT LOT;54 LESS HWY	JONATHON & CHERYL MATHESON	24.14	9.77	24.14	9.77	\$ -	\$ 1,003		\$ 1,003	\$ -	\$ 1,003
Total Estimated Assessment - Lands			717.39	290.32	738.93	299.04	\$ -	\$ 64,535	\$ 217,907	\$ 282,441	\$ (670)	\$ 281,771
Roads												
	Road 175	The Municipality of North Perth	2.22	0.90	3.89	1.58	\$ -	\$ 162		\$ 162	\$ -	\$ 162
	Perth Line 86 West Area	The County of Perth & The County of Huron	12.43	5.03	21.75	8.80	\$ -	\$ 904		\$ 904	\$ -	\$ 904
	Perth Line 86 East Area	The County of Perth	5.24	2.12	9.17	3.71	\$ -	\$ 1,502		\$ 1,502	\$ -	\$ 1,502
	Road 172	The Municipality of North Perth & The Municipality of Huron East	2.22	0.90	3.89	1.58	\$ -	\$ 162		\$ 162	\$ -	\$ 162
Total Estimated Assessment - Roads			22.12	8.95	38.70	15.66	\$ -	\$ 2,729	\$ -	\$ 2,729	\$ -	\$ 2,729
TOTAL ESTIMATED ASSESSMENTS												
			739.50	299.27	777.63	314.70	\$ -	\$ 67,263	\$ 217,907	\$ 285,170	\$ (670)	\$ 284,500

¹Agricultural lands may be eligible for a one third provincial grant. Neither the availability nor the amount of the grant can be determined in advance

²Allowances are shown for information only, and should not be used for comparison purposes

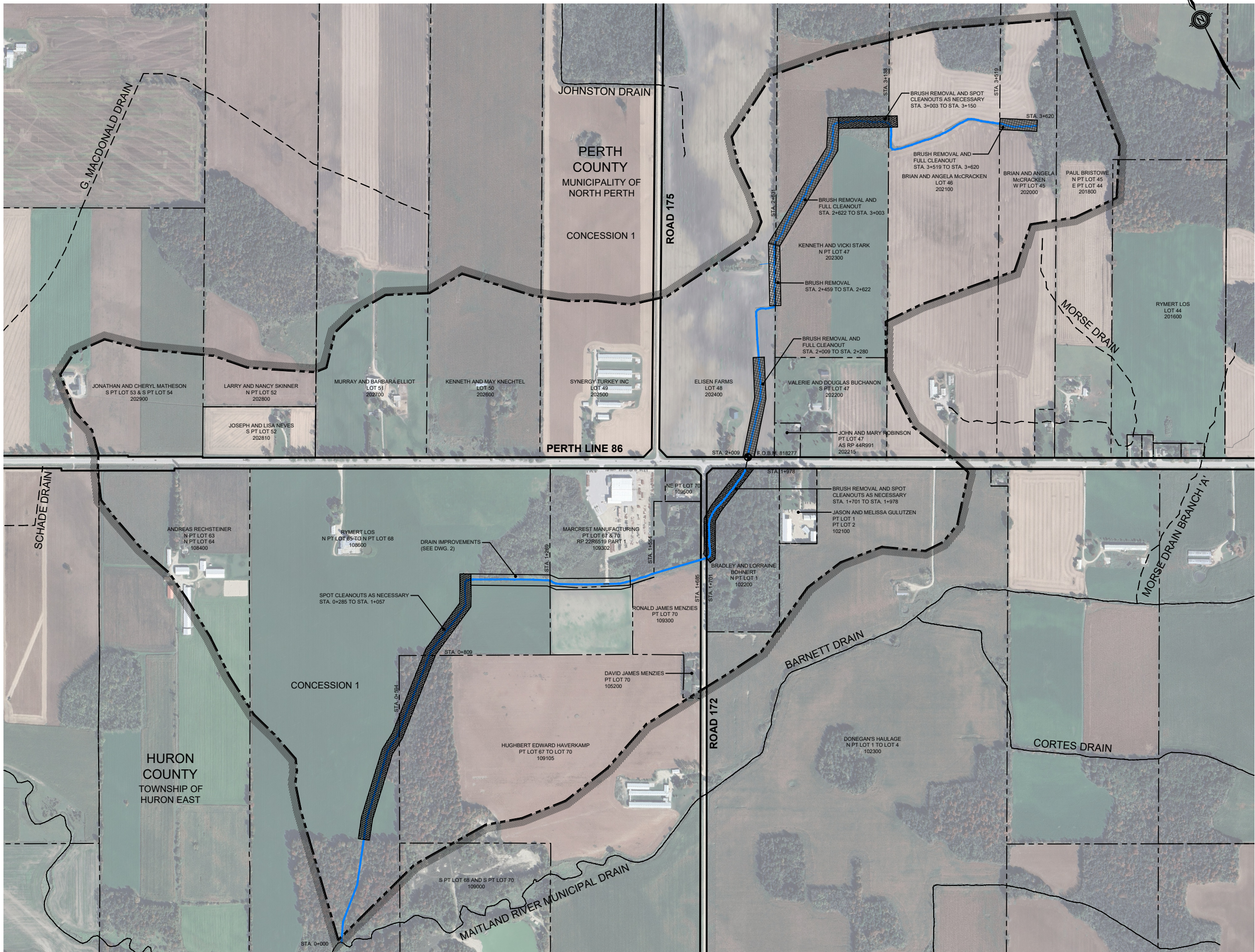
Appendix B Schedule of Assessments for Future Maintenance

Schedule of Assessment for Future Maintenance Prepared by GEI Consultants February 2025 Smith Drainage Works - Huron East Section						
Roll Number	Legal Description	Owner	Land Area	Adjusted Area		Maintenance Assessment
			ha.	ha.	ac.	
LANDS IN HURON EAST						
404042000108400	45175 PERTH LINE 86 CON 1 N;PT LOT 63 N PT LOT 64	Andreas Rechsteiner	13.3	13.3	32.7	4.2%
404042000108600	CON 1 N PT LOT 65 TO N PT;LOT 68	Rymert Los	60.6	60.6	149.6	19.3%
404042000109105	CON 1 PT LOTS 67 68 69 70	Hughbert Edward Haverkamp	28.6	28.6	70.8	9.1%
404042000109200	CON 1 PT LOT 70 AS RP;22R1154 PART 1 & RP 22R3866;PART 1	David James Menzies	0.5	0.5	1.3	0.2%
404042000109300	CON 1 N PT LOT 69 N PT LOT;70	Ronald James Menzies	6.2	6.2	15.4	2.0%
404042000109302	CON 1 PT LOTS 67 AND 70	Marcrest Holdings Inc.	13.0	21.7	53.7	6.9%
404042000109500	CON 1 NE PT LOT 70 AS RP;22R1636 PART 1	Mark M Horst	0.8	0.8	2.1	0.3%
LANDS IN NORTH PERTH						
314036000102100	CON 1 PT LOT 1 PT LOT 2 AS;RP 44R239 PART 1	JASON & MELISSA GULUTZEN	2.0	2.0	5.0	0.6%
314036000102200	CON 1 N PT LOT 1	LORRAINE & BRADLEY BOHNERT	8.5	8.5	21.1	2.7%
314036000102300	CON 1 N PT LOT 1 TO N PT LOT;4	DONEGAN'S HAULAGE LIMITED	11.8	11.8	29.2	3.8%
314041000201800	CON 1 N PT LOT 44 E PT LOT;45 LESS HWY	PAUL BRISTOWE	6.2	6.2	15.3	2.0%
314041000202000	CON 1 W PT LOT 45 LESS HWY	BRIAN & ANGELA MCCRACKEN	9.1	9.1	22.5	2.9%
314041000202100	CON 1 LOT 46 LESS HWY	BRIAN & ANGELA MCCRACKEN	22.8	22.8	56.4	7.3%
314041000202200	CON 1 S PT LOT 47 LESS HWY;SUBJT TO ROW	VALERIE & DOUGLAS BUCHANAN	7.4	7.4	18.3	2.3%
314041000202215	CON 1 PT LOT 47 AS RP 44R991;PART 1	MARY & JOHN ROBINSON	0.6	0.6	1.6	0.2%
314041000202300	CON 1 N PT LOT 47 WITH ROW	KENNETH & VICKI STARK	24.3	24.3	60.1	7.7%
314041000202400	CON 1 LOT 48	ELISEN FARMS LTD.	19.2	19.2	47.3	6.1%
314041000202500	CON 1 LOT 49	SYNERGY TURKEY INC.	12.5	12.5	31.0	4.0%
314041000202600	CON 1 LOT 50 LESS HWY	KENNETH & MARY KNECHTEL	14.0	14.0	34.6	4.4%
314041000202700	CON 1 LOT 51	MURRAY & BARBARA ELLIOTT	11.5	11.5	28.5	3.7%
314041000202800	CON 1 N PT LOT 52 WITH ROW	LARRY & NANCY SKINNER	3.3	3.3	8.2	1.0%
314041000202810	CON 1 S PT LOT 52 LESS HWY;SUBJT TO ROW	LISA & JOE NEVES	4.1	4.1	10.2	1.3%
314041000202900	CON 1 S PT LOT 53 S PT LOT;54 LESS HWY	JONATHON & CHERYL MATHESON	9.8	9.8	24.1	3.1%
TOTAL ON LANDS			290.3	299.0	738.6	95.0%
	Road 175	The Municipality of North Perth	0.9	1.6	3.9	0.5%
	Perth Line 86 West Area	The County of Perth & The County of Huron	5.0	8.8	21.7	2.8%
	Perth Line 86 East Area	The County of Perth	2.1	3.7	9.2	1.2%
	Road 172	The Municipality of North Perth & The Municipality of Huron East	0.9	1.6	3.9	0.5%
TOTAL ON ROADS			9.0	15.7	38.7	5.0%
TOTALS			299.3	314.7	777.3	100.0%

Schedule of Assessment for Future Maintenance Prepared by GEI Consultants February 2025 Smith Drainage Works - North Perth Section						
Roll Number	Legal Description	Owner	Land Area	Adjusted Area		Maintenance Assessment
			ha.	ha.	ac.	
LANDS IN NORTH PERTH						
314036000102100	CON 1 PT LOT 1 PT LOT 2 AS;RP 44R239 PART 1	JASON & MELISSA GULUTZEN	2.0	2.0	5.0	1.7%
314036000102200	CON 1 N PT LOT 1	LORRAINE & BRADLEY BOHNERT	8.5	8.5	21.1	7.4%
314036000102300	CON 1 N PT LOT 1 TO N PT LOT;4	DONEGAN'S HAULAGE LIMITED	11.8	11.8	29.2	10.2%
314041000201800	CON 1 N PT LOT 44 E PT LOT;45 LESS HWY	PAUL BRISTOWE	6.2	6.2	15.3	5.4%
314041000202000	CON 1 W PT LOT 45 LESS HWY	BRIAN & ANGELA MCCRACKEN	9.1	9.1	22.5	7.9%
314041000202100	CON 1 LOT 46 LESS HWY	BRIAN & ANGELA MCCRACKEN	22.8	22.8	56.4	19.7%
314041000202200	CON 1 S PT LOT 47 LESS HWY;SUBJT TO ROW	VALERIE & DOUGLAS BUCHANAN	7.4	7.4	18.3	6.4%
314041000202215	CON 1 PT LOT 47 AS RP 44R991;PART 1	MARY & JOHN ROBINSON	0.6	0.6	1.6	0.6%
314041000202300	CON 1 N PT LOT 47 WITH ROW	KENNETH & VICKI STARK	24.3	24.3	60.1	21.0%
314041000202400	CON 1 LOT 48	ELISEN FARMS LTD.	19.2	19.2	47.3	16.6%
TOTAL ON LANDS			112.0	112.0	276.6	96.8%
	Perth Line 86 East Area	The County of Perth	2.1	3.7	9.2	3.2%
TOTAL ON ROADS			2.1	3.7	9.2	3.2%
TOTALS			114.1	115.7	285.8	100.0%

Appendix C Drawings

FILE: B:\Working\MARCHEST MANUFACTURING\201053 - 321053\Merced Engineer's Work to Program\Drawings\4021003 - Marcrest Designing LAYOUT Smith Drain Plan
LAST SAVED BY: M.B. GOWING 2023-05-15 10:15 AM PLOTTED BY: M.B. GOWING 2023-05-15 10:15 AM



NOTES :

1. CONTRACTOR IS TO OBTAIN UTILITY LOCATES PRIOR TO CONSTRUCTION.
2. CONTRACTOR IS TO CONNECT EXISTING TILES DURING CONSTRUCTION.

NOMENCLATURE:

APPROX.	APPROXIMATE
SW	COMPLETE WITH
CB	CATCH BASIN
CONC.	CONCRETE
CL	CENTER
CSP	CORRUGATED STEEL PIPE
D	DIAMETER
DICB	DITCH INLET CATCH BASIN
ELEV.	ELEVATION
EX.	EXISTING
INV.	INVERT
MIN.	MINIMUM
PL	PROPERTY LINE
R.	RADIUS
STA.	STATION
TYP.	TYPICAL
T/G	TOP OF GRATE ELEVATION (NOTE: FOR BIRD-CAGE GRATE = LOWER / GROUND ELEV.)

LEGEND:

---	PROPERTY LINE
●	BENCHMARK LOCATION
---	OPEN MUNICIPAL DRAIN (PART OF REPORT)(LINE ONLY=NO WORK)
---	CLOSED MUNICIPAL DRAIN (PART OF REPORT)
---	OPEN MUNICIPAL DRAIN (NOT PART OF REPORT)
---	CLOSED MUNICIPAL DRAIN (NOT PART OF REPORT)
---	WATERSHED BOUNDARY
---	SUB-WATERSHED BOUNDARY
---	DRAIN SPOT CLEANOUTS
---	DRAIN FULL CLEANOUTS
---	DRAIN BRUSH REMOVAL
---	DRAIN IMPROVEMENT AREA
---	COUNTY LIMIT

75 0 50 100 200
1:5000 (m) ARCH D' 24x36

BENCH MARKS :

F.O.B.M. 818277 - ELEV = 366.437m
TABLET SET IN LARGE CONCRETE CULVERT ON NORTH SIDE OF PERTH COUNTY LINE 86, 0.2 km EAST OF ROAD 172. TABLET IS SET VERTICALLY IN TOP OF CULVERT, 0.35m SOUTH OF NORTH EDGE, 0.55m EAST OF WEST EDGE.

BM 316054-1 - ELEV = 369.488m
CONCRETE MONUMENT LOCATED ON THE NORTH SIDE OF PERTH COUNTY LINE 86, 19.8m EAST OF HYDRO POLE THAT IS LOCATED TO THE EAST OF THE GRAVEL DRIVEWAY FOR HOUSE 8726.

THE POSITION OF POLE LINES, CONDUITS, WATERMANS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND, WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED.

BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR ANY DAMAGE TO THEM.

0	02/20/2025	FOR ENGINEERS REPORT	B.G.
NO.	MM/DD/YYYY	REVISION DESCRIPTION	CHKD

GEI Consultants
975 WALLACE AVENUE NORTH
LISTOWEL, ONTARIO N4W 1M6
519.291.9339

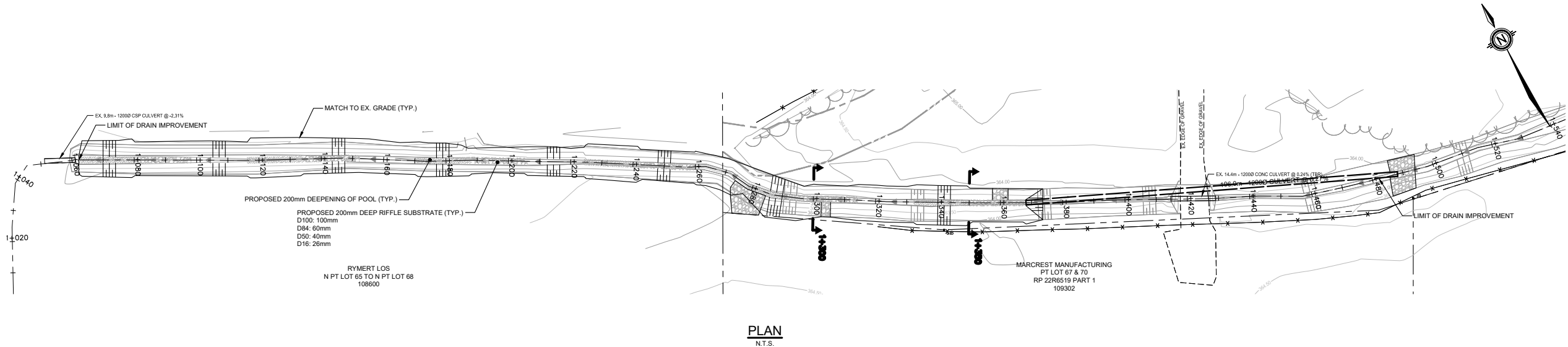
SMITH DRAINAGE WORKS

MUNICIPALITY OF HURON EAST

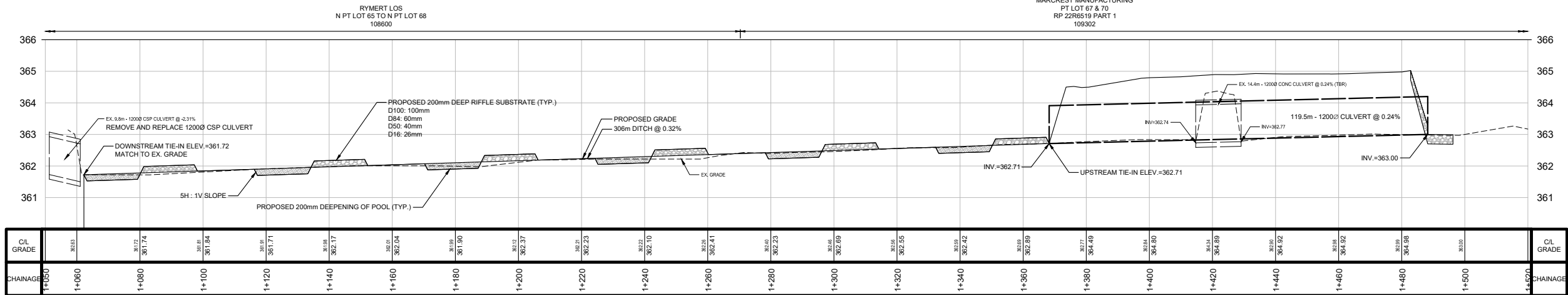
WATERSHED PLAN AND CLEANOUT PLAN

DRAWN BY :	APPROVED BY :	PROJECT NO. :	DRAWING NO. :
W.B.	-	321053-1	1
DESIGNED BY :	DATE :	SCALE :	
M.A.	MAY 2024	AS NOTED	

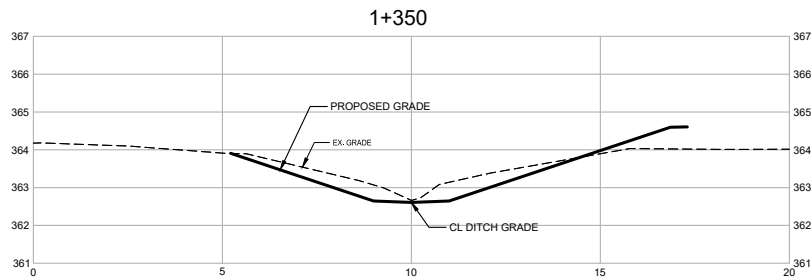
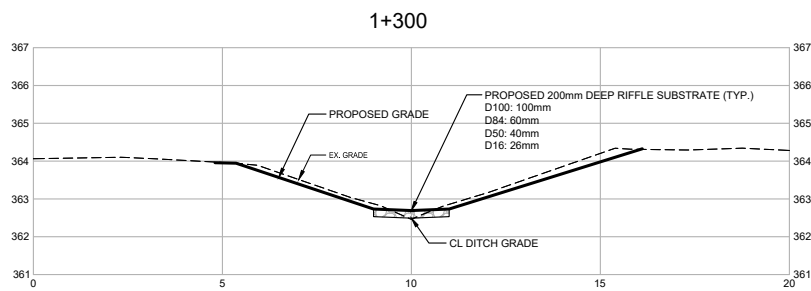
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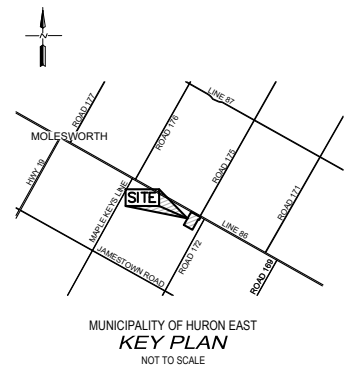
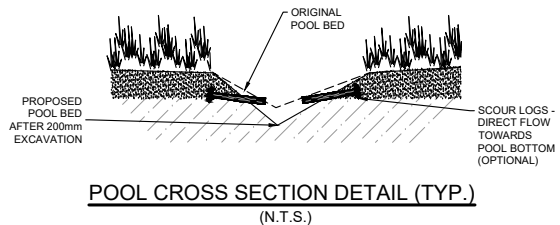
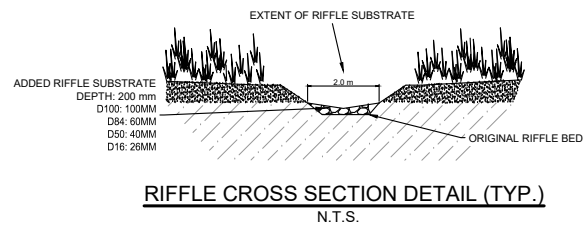
PLAN
N.T.S.



PROFILE
N.T.S.



SECTIONS
SCALE 1:100



- NOTES :
- TOPOGRAPHIC AND EXISTING FEATURES SURVEY COMPLETED BY GM BLUEPLAN ENGINEERING LIMITED, DATED DECEMBER 8, 2016 AND SEPTEMBER 28, 2021
 - LEGAL PROPERTY LINES SHOWN ON THIS DRAWING WERE INTERPRETED FROM EXISTING FENCE LINES, LEGAL SURVEY BARS FOUND DURING THE TOPOGRAPHICAL SURVEY, AND A LEGAL SURVEY DONE BY J. DON MACMILLAN, DATED DECEMBER 2016. THE ACCURACY OF ANY LEGAL PROPERTY LINES SHOWN ON THIS DRAWING AS TO THEIR LOCATION IS NOT GUARANTEED.

- LEGEND :
- EXISTING TOPOGRAPHICAL CONTOUR (M.A.S.L.)
 - WETLAND BOUNDARY
 - SIGNIFICANT WOODLAND
 - VARIABLE SETBACK FROM WOODLAND
 - 15m SETBACK FROM WETLAND

- BENCH MARKS :
- F.O.B.M. 818277 - ELEV = 366.437m
TABLET SET IN LARGE CONCRETE CULVERT ON NORTH SIDE OF PERTH COUNTY LINE 86, 0.2 km EAST OF ROAD 172. TABLET IS SET VERTICALLY IN TOP OF CULVERT, 0.35m SOUTH OF NORTH EDGE, 0.55m EAST OF WEST EDGE.
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THE POSITION OF POLE LINES, CONDUITS, WATERMANS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND, WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED.

BEFORE STARTING WORK, THE CONTRACTOR SHALL CONFIRM THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR ANY DAMAGE TO THEM.



0 02/20/2025 FOR ENGINEERS REPORT B.G.
NO. MMDDYYYY REVISION DESCRIPTION CHKD



SMITH DRAINAGE WORKS

MUNICIPALITY OF HURON EAST

SMITH DRAIN IMPROVEMENT PLAN
PLAN, PROFILE, SECTIONS AND
DETAILS

DRAWN BY : W.B. APPROVED BY : B.G. PROJECT NO. : 321053-1 DRAWING NO. :
DESIGNED BY : M.A. DATE : MAY 2024 SCALE : AS NOTED

Appendix D Special Provisions

Special Provisions (Non-Tender Items)
For The Construction Of The
Smith Drainage Works 2025
The Municipality of Huron East

1. STANDARD SPECIFICATIONS

Where reference is made to OPSS or OPSD, the Contractor shall refer to the latest revision of the Ontario Provincial Standard Specifications and the Ontario Provincial Standard Drawings. Where reference is made to OPSS, it shall be assumed to refer to OPSS.MUNI wherever equivalent municipal specifications exist. These specifications and drawings may not be bound within this document. They are available on-line from the Ontario Ministry of Transportation.

All work to be undertaken shall comply with the latest version of OPSS and OPSD, unless superceded by the Special Provisions included herein. Work shall also comply with the requirements of the Fisheries Act Authorization for this project, #22-HCAA-01942 issued February 13th, 2025.

Where in the Specifications the word “Corporation”, “Municipality” or “Owner” occurs it shall mean the “Municipality of Huron East”.

Where in the Specifications the word “Engineer” occurs it shall mean “GEI Consultants”.

2. SALES TAXES

Harmonized Sales Tax (H.S.T.)

The Total Tender Price shall include an allowance for H.S.T., calculated as 13% of the cost of the works as itemized in the Schedule of Unit Prices in the Form of Tender.

This allowance is simply an estimate of the amount of H.S.T. to be paid to the Contractor.

The Engineer will determine the appropriate amount of H.S.T. to be paid on each progress payment and on the final payment, and this amount may be more or less than the “allowance” included in the Total Tender Price.

3. ALIGNMENT

The Contractor shall use a laser beam or equivalent line and grade control methods for laying all drain tile to maintain the on grade and alignment shown on the plans. Batter boards or any other means will not be acceptable. Tile drains shall be laid to a grade not more than +/- 25mm from the alignment as shown on the plans. Tile drains with a vertical variation of greater than 25mm may be rejected by the Engineer, and in that event the Contractor will be required to take up and re-lay those sections of tile drain at their expense.

4. TRENCHES TO BE CLOSED

No trench may be left open at the end of each day unless authorized by the Engineer. Any trench that is to be left open shall be completely fenced off with steel construction fencing. All fencing shall be at the Contractor's expense. If the Contractor neglects to fence a trench, the Engineer shall have the right to have this work done by others and charged to the Contractor.

5. ROAD SIGNS

The Contractor, at his/her own expense, shall carefully remove and satisfactorily replace Municipal Road Signs which must be removed in order to carry out the contract. Where traffic control signs, such as Stop Signs, have to be temporarily or permanently relocated, they shall be immediately reset either temporarily or permanently, as conditions dictate. All temporarily relocated signs shall be permanently reset as soon as site conditions permit. Where replacements are necessary, new signs shall conform to Huron East Development Standards.

6. DAMAGE TO TREES

A penalty of \$1,000.00 will be levied against the Contractor to be deducted from monies payable under this Contract for each and every tree destroyed or damaged due to the Contractor's carelessness or negligence and which is not designated in the Contract for removal. As to what constitutes the carelessness or negligence on the part of the Contractor, the Engineer's decision shall be final.

7. COORDINATION MEETINGS

The Contractor shall attend such meetings with the Owner, Engineer, landowners and Utility Company Authorities (as necessary) as may be required by the Engineer to co-ordinate services affected by this Contract.

8. DISPOSAL OF SURPLUS OR UNSUITABLE EXCAVATED MATERIAL

All earth material excavated in carrying out the work of the various tender items included in this Contract and which is unsuitable for, or which is surplus to, the requirements for backfill shall be disposed of off-site. The excess material may be disposed of at a site arranged by the contractor upon receipt of a sign-off by the property owner.

All concrete, asphalt pavements, curbs, sidewalks, large boulders and other "solid" materials are to be loaded and hauled separately from the other earth and granular materials and disposed of at an MOECC- approved site obtained by the Contractor at no cost to the Owner.

9. COMPACTION

This Contract contains no separate tender item for compaction equipment as may be required to compact the earth or granular materials whether used for embankment construction, base courses, bedding, or backfill.

The Contract prices for the materials to be placed or the work to be carried out shall include full compensation for supplying and operating such compaction equipment as the Contractor may require and for compacting the materials to the specified density.

When it is impractical with the larger types of compaction equipment to obtain the required degree of compaction in areas where working space is limited, the Contractor shall provide and use mechanical hand compaction equipment in order to achieve the specified density.

Granular materials used as bedding shall be compacted to a density of 98% of the maximum dry density, granular backfill or base courses shall be compacted to a density of 100% of the maximum dry density. All other earth materials shall be compacted to a density of 95% of the maximum dry density.

When field tests indicate that the required degree of compaction cannot be obtained with the equipment in use or the procedure being followed, the Contractor's operations shall be halted until the Engineer is satisfied that the Contractor has made such modifications, in his/her equipment and procedure, which will produce the required results.

10. NATURAL GAS CONSTRUCTION SPECIFICATIONS

Where the Contractor is working near natural gas mains the work shall be carried out in accordance with the requirements and specifications of the Gas Company having control over such mains.

11. OTHER CONTRACTORS WITHIN OR ADJACENT TO THE LIMITS OF THE WORK

The Contractor is advised that other work may be in progress within and adjacent to the limits of this Contract and that he/she shall co-operate with other Contractors, Utility Companies, and the Corporation and they shall be allowed free access to their work at all times.

The Engineer reserves the right to alter the method of operation on this Contract to avoid interference with other work.

12. UTILITY POLE LINES

Where utility poles may have to be supported, the Contractor shall make arrangements with the hydro authority to do this work. There shall be no charge to the Contractor for this work.

13. UTILITIES AND PIPE CROSSINGS

The location and depth of underground utilities shown on the Contract Drawings are based on information received by the Engineer. The position of all pole lines, conduits, watermains, sewers and other underground and over ground utilities and structures is not necessarily shown on the Contract Drawings and where shown, the accuracy of the position of such utilities and structures is not guaranteed. It is the Contractor's responsibility before starting any work to contact the Municipal Authorities or Utility Companies for further information in regard to the exact location of these utilities and to take such other precautions as necessary to safeguard the utilities from damage.

Where pipes and other utilities are encountered in the excavation, these shall be maintained and supported by the Contractor to minimize damage done to them. Prior to backfilling, the Contractor shall submit to the Engineer, for his/her approval, details of the proposed method of support of such pipes and utilities and no backfilling may take place prior to the Engineer's review of such details. Approval by the Engineer of any such details will in no way relieve the Contractor from his/her responsibility to avoid any damage where possible.

14. DAMAGE BY VEHICLES AND OTHER EQUIPMENT

If at any time, in the opinion of the Engineer, damage is being or is likely to be done to any highway or any improvement thereon, other than such portions as are part of the work, by the Contractor's vehicles or other equipment, whether licensed or unlicensed, the Contractor shall, on the direction of the Engineer and at the Contractor's own expense make changes in or substitutions for such vehicles or other equipment or shall alter loading or shall in some other manner remove the cause of such damage to the satisfaction of the Engineer. Where such damage has occurred, the Contractor shall make repairs satisfactory to the Owner or, where the Owner has found it necessary to make the repairs, make payment to the Owner of the cost of repairs carried out by the Owner.

15. SURVEY BARS AND MONUMENTS

The Contractor shall be responsible for replacing all survey bars which are bent, moved, removed, due to carelessness but will not be responsible for survey bars that have to be removed for construction. The contractor shall provide a list of all damaged and removed survey bars to the Engineer.

16. MAINTENANCE OF ROAD

The Contractor shall at all times and at his/her own expense, maintain safely and adequately, all private entrance facilities throughout the length of the Contract.

17. ACCESS TO PRIVATE PROPERTIES

If a traffic lane is closed temporarily to allow asphalt paving or road grading (including patch work), local access shall be maintained as much as possible and notifications shall be made 24 hours in advance.

18. CONSTRUCTION HOURS

The Contractor will be allowed to work from 7:00 a.m. to 7:00 p.m., Monday to Friday. Additional hours may be permitted under certain circumstances if approved by the Engineer.

19. MAINTENANCE OF FLOWS

The contractor shall be responsible to maintain all drainage flows during construction. No extra payment will be made for pumping, hauling or disposing of any drainage flow or removing any granular material that enters the drainage system through manhole or catch basin frame adjustments. The contractor will be responsible for maintaining and directing storm water flows during construction so that flooding of private property and silt migration or washouts do not occur. The contractor shall be responsible to pay for any damages caused by storm water flooding due to, or as a result of, construction activities during the duration of this project.

**Special Provisions
For The Construction Of The
Smith Drainage Works 2025
The Municipality of Huron East**

SPECIFICATIONS

The Special Provisions, along with the "*Specifications for the Construction of Municipal Drainage Works*" attached hereto, shall apply to and govern the construction of the "*Smith Drainage Works*".

PLAN AND REPORT

The Plan and Profile and the Engineer's Report on the proposed Drainage Works shall be a part of this Specification.

EXTENT OF WORK

General

1. All standard Detailed Drawings are attached to these Specifications.
2. The Contractor shall notify the Owners and the Engineer forty-eight (48) hours prior to construction.
3. The Contractor shall verify the location of any tile drains with the Engineer and the landowners prior to construction.
4. The working area shall be 15m from top of bank of the open drain. Each landowner on whose property the drainage works is to be constructed shall designate access to and from the working area.
5. All utilities shall be located and uncovered in the affected areas by the Contractor prior to construction.
6. The Contractor shall supply all materials unless otherwise stated at the time of tendering.
7. All CSP pipe shall be minimum 2.0mm (14 gauge) with a 68mm x 13mm corrugation profile, and galvanized.
8. All HDPE pipe shall be CSA rated 320kPa with bell and spigot gasket joints. Pipe shall be double wall smooth interior, Boss2000 or approved equivalent.
9. All clear stone shall be 19mm Type I as per OPSS.MUNI 1004.

10. All Rip Rap stone shall be R50 quarry stone unless otherwise specified, as per OPSS.MUNI 1004.
11. The Contractor shall be responsible for all trench settlement.
12. The Contractor shall clean up the site and leave it in a neat and tidy condition.
13. The tender shall be based upon unit prices and shall be as detailed on the tender form.
14. Nothing in these Specifications shall be construed as requiring less than a complete and satisfactory job in accordance with the obvious intent of the Drawings and Specifications.
15. All work shall be done to the satisfaction of the Engineer.
16. In accordance with the General Specifications, the Contractor shall be responsible for all faulty materials or workmanship which appears within a one-year period from the date of the Engineer's final Payment Certificate. An amount equal to 3% of the final contract price shall be retained for the maintenance period. Any part of the money retained may be used to make good any deficiencies after five (5) working days' notice being given to the Contractor. This notice may be either in writing or by telephone.

CLOSED WORK

C-1 Rip Rap Scour Protection

Place approximately 40m² of rip rap at the concrete pipe inlet in accordance with the detail shown on Drawing #2.

Rip rap shall be field or quarry stone, of 150mm to 300mm diameter (R50) or as approved by the Engineer on a filter mat base (Terrafix 270R or approved equivalent), machine placed to produce a smooth locked surfaced. All rip rap and geotextile shall be installed as shown on the drawings accompanying the Report, and in accordance with OPSD 810.010 Type B.

C-2 Worksite Isolation, Diversion and Sediment and Erosion Control

The provisions of OPSS 182, 412, 518, 805 shall apply to this item.

Payment for this item shall include the supply, installation, maintenance, removal and disposal of temporary coffer dams, by-pass piping or pumping, sediment bags and straw bale filters, or any other dewatering, diversion or sediment and erosion control systems deemed necessary to control the flow of water, including restoration of the affected area, if required.

At least 2 weeks prior to commencement of construction, the Contractor shall submit for review a dewatering, diversion and sediment and erosion control plan for the pipe installation. At a minimum, the plan shall account for the peak flow rate in the upstream catchment resulting from the 2-year design storm. The estimated peak 2-year flow is 24 L/s, however the Contractor shall confirm the peak flow rate to be passed by their diversion system necessary to maintain the site in dry conditions. The work of this item shall conform and comply with the requirements of the permit requirements set by the Conservation Authority

and Department of Fisheries and Oceans best practices, and in conformance with the DFO Fisheries Act Authorization which is included in this Contract.

The Contractor shall be responsible for monitoring weather forecasts and shall take appropriate actions to secure the site from undue damage when severe weather is imminent.

Included in this item and prior to installation of the diversion system, the Contractor shall drag a mesh seine through the culvert, as well as upstream and downstream of the culvert, to exclude fish from the project area. Upon installation of the diversion system, the Contractor shall relocate any fish still stranded within the project area. All fish stranded within the project area shall be relocated prior to dewatering.

The proposed diversion system is not to be installed until the “In-Water” timing window has taken effect. The price for this item shall include all maintenance on the diversion system during construction.

Measurement for payment of this item shall be lump sum.

C-3 Reinforced Concrete Pipe

This item shall include all excavation, disposal of surplus material off-site, dewatering, pipe, and imported Granular “A” bedding compacted to 98% Standard Proctor Density and placed conforming to OPSD 802.030 – 802.032 (Rigid Pipe), Class ‘B’. HL-4 asphalt coarse aggregate bedding shall be acceptable for wet conditions only. Cover material shall be suitable native or imported granular material, all compacted to 98% SPD. Minimum cover shall be 400mm.

Acceptable pipe materials are reinforced concrete pipe as per CSA A257.2. All reinforced concrete pipe shall be minimum class 50-D, unless otherwise determined by the pipe manufacturer.

All pipes shall be jointed with the use of self-lubricating rubber gaskets.

Measurement for payment shall be by the linear metre of pipe installed.

Payment for this item shall be for all labour, equipment and materials required to install concrete pipe as outlined above and as shown and specified on the Contract Drawings.

C-4 Riffles

Riffles shall be constructed in the locations as shown on the plans, and to the dimension shown. Riffle construction will include excavation of the ditch to the shape and grade as shown, and the installation of substrate above ditch bottom consisting of stone in the depths, areas, and types as shown on the Riffle detail on Sheet #2.

All excess soil generated shall be hauled and disposed of off-site as part of this item.

C-5 Pools

Pools shall be constructed in the locations as shown on the plans, and to the dimension shown. Pool construction will include excavation of the ditch to the shape and grade as shown, to a depth approximately 200mm below the natural stream bed as shown on the Pool detail on Sheet #2.

All excess soil generated shall be hauled and disposed of off-site as part of this item.

C-6 Restoration

All areas of the drain disturbed for the installation of the riffles and pools, including the portions of drain between the riffles and pools, will be restored by the placement of topsoil and re-vegetation with hand applied seed, MTO Lowland Mix or similar. This work shall be considered part of the project and no additional payment will be provided for restoration.

O-1 Brushing and Clearing

Where identified on the drawings or by the Engineer, the Contractor shall remove brush and trees from the drain to restore the water flowpath. Brush shall be chipped and spread on-site, and trees shall be cut and piled in a location suitable to the landowner. Refer to the Specifications for the Construction of Municipal Drains.

O-2 Drain Cleanout

Where identified on the drawings or by the Engineer, the Contractor shall excavate any silt or spoil from the drain to solid bottom to restore proper water flowpath. Excess soil shall be spread immediately adjacent to the drain. Refer to the Specifications for the Construction of Municipal Drains

Appendix E Construction Specifications

Appendix F DFO Mitigation Measures

Technical Memorandum

975 Wallace Avenue North • Listowel, ON N4W 1M6 • 519.291.9339

Via Email: christopher.biberhofer@dfo-mpo.gc.ca
To: Christopher Biberhofer, DFO
From: Matt Ash
cc: Mark Horst, Marcrest Manufacturing
Date: July 17, 2024
Re: Smith Drainage Works, Huron East
Listowel, ON
Project No.: 2402427

Christopher,

As discussed at our site meeting, this memo is intended to outline the offsetting works, monitoring and financial securities required for the Smith Drainage Works in Huron East. The offsetting items discussed below will also be included in the final Smith Drainage Works Engineer's Report, to be submitted to the Council of Huron East for formal enactment in a bylaw authorizing the works under the *Drainage Act*. The items outlined in this memo is required as part of a Fisheries Act Authorization to permit a 100m long enclosure of the Smith Drainage Works to allow for a proposed expansion of the Marcrest Manufacturing facility.

Offsetting Works

GEI have prepared a design showing offsetting measures to be implemented on the section of the Smith Drainage Works immediately downstream of the proposed enclosure, which are shown on the drawing included with this memo. These measures have been designed by GEI's in-house stream geomorphologist as a natural habitat enhancement. They include a number of repeating riffles and pools, 6 pairs in all, and extend downstream from the enclosure for a distance of approximately 200m. There is approximately 18m between each pair of riffle and pool. The riffles will be constructed with a 2m wide bottom consisting of a 200mm deep layer of stone ranging in size from 26mm diameter to 100mm diameter and are approximately 10m in length. The pools are similarly approximately 10m in length and are to be excavated to a depth of approximately 200mm below existing stream bed. Where the alignment permits, scour logs will be placed in the banks adjacent to the pools to direct flow towards the pool bottom.

As an additional measure, shade tree plantings will be placed along the south bank of the drain, limited to the extent of the Marcrest property, for approximately 90m downstream of the enclosure. Trees to be planted will be native deciduous species and spaced approximately 5m apart.

Monitoring

GEI staff will monitor the Offsetting Works for a period of 2 years. Monitoring will consist of a twice-yearly site visit to assess the condition of the riffles and pools, and to monitor the health of the trees. Where deficiencies are noted, a

contractor will be hired to make the necessary repairs or to replace any trees which may have died. The monitoring will be recorded in a formal report complete with photographic evidence and will be submitted to DFO annually.

Financial Securities

As discussed, we understand that financial security is to be deposited with DFO for a period of 2 years and is to cover the cost of the plantings, the monitoring and reporting, and a contingency amount of 10% of the offsetting costs. In support of this, we offer the following:

1. 18 Trees @ \$500 ea.	\$9,000
2. Riffles and Pools @ \$5,000 ea.	\$30,000
3. Monitoring and reporting	\$2,600
4. Contingency 10% of \$40,000 (est. cost of offsetting works)	\$4,000

We understand that the security to be deposited will not include the riffles and pools, as these will be constructed and maintained in accordance with an Engineer's Report to be issued under the Drainage Act. Total securities are estimated to be \$15,600 and is to be deposited with DFO by the owner, Marcrest Manufacturing. Upon expiry of the 2-year period, we understand the security deposit will be returned to the owner upon submittal of a satisfactory final inspection and monitoring report.

As previously noted, the measures outlined above will also be included in the Smith Drainage Works Engineer's Report which is to be submitted to the Council of Huron East for formal adoption under the *Drainage Act*.

All of which is respectfully submitted,

Per:
GEI Consultants Limited.

Matt Ash, C.E.T.



Fisheries and Oceans
Canada

Pêches et Océans
Canada

Ontario and Prairies Region
Fish and Fish Habitat
Protection Program
867 Lakeshore Road
Burlington, ON L7S 1A1

Région de l'Ontario et des Prairies
Programme de la protection
du poisson et de son habitat
867 Lakeshore Road
Burlington, ON L7S 1A1

February 13, 2025

Our file Notre référence

22-HCAA-01942

Municipality of Huron East
72 Main Street South
Seaforth, Ontario
N0K 1W0

Subject: Drain Enclosure, Smith Drainage Works, Listowel – *Fisheries Act* Authorization

Dear Municipality of Huron East:

Pursuant to Paragraphs 34.4(2)(b) and 35(2)(b) of the *Fisheries Act*, Fisheries and Oceans Canada (DFO) authorizes the carrying on of your proposed work, undertaking or activity that results in:

- the death of fish by means other than fishing and the harmful alteration, disruption or destruction of fish habitat, which are prohibited under subsections 34.4(1) and 35(1) of the *Fisheries Act*

The enclosure of 106 linear meters of the open Smith Drainage Works, a Class C municipal drain. The proposed enclosure is anticipated to isolate approximately 2400 linear meters of open municipal drain upstream. The authorization under paragraphs 34.4(2)(b) and 35(2)(b) of the *Fisheries Act* is attached.

Failure to comply with any of the terms or conditions of the attached authorization may lead to prosecution under the *Fisheries Act*.

A copy of this authorization should be kept on site while the work is in progress and, upon request, be provided to relevant federal or provincial officials. The authorization holder is responsible for ensuring work crews are familiar with, and able to adhere to, the conditions.

As you are aware, Bill C-68 included new provisions (sections 42.2 to 42.5) in the *Fisheries Act* that require the Minister of Fisheries and Oceans to establish a public registry to facilitate public access to certain records, including amongst other items,

Canada 

authorizations issued pursuant to paragraphs 34.4(2)(b) and 35(2)(b) of the *Fisheries Act*. While the public registry provisions of the *Fisheries Act* are not yet in force, the Department has begun to post a list of authorizations issued since August 28, 2019, when amendments to the fish and fish habitat protection provisions of the Act came into force.

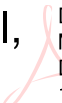
Information pertaining to this authorization will be posted to the *Fisheries Act* Registry and accessible from the Department's website at <https://www.dfo-mpo.gc.ca/pnw-ppe/registry-registre-eng.html> as well as from the Open Government Portal at <https://open.canada.ca/data/en/dataset/2c09d2fd-9a8e-4d8c-b5af-95747e36eaac> and the Common Project Search at <https://common-project-search.canada.ca/>. Information and data will be updated as the Department continues to develop the *Fisheries Act* Registry.

Any disclosure of information will be conducted in accordance with the *Access to Information Act* and the *Privacy Act*. Should you have any documents that contain sensitive or proprietary information that you believe should be protected from public disclosure, please contact us to discuss whether and how the information may be protected.

If you or anyone conducting work on your behalf have any questions please contact Christopher Biberhofer at 905-336-4510, or by email at Christopher.Biberhofer@dfo-mpo.gc.ca.

Yours sincerely,

Mitchell,
Tricia



Digitally signed by
Mitchell, Tricia
Date: 2025.02.18
10:51:55 -05'00'

Tricia Mitchell
Regional Director General
Ontario & Prairie Region
Fisheries and Oceans Canada

CC: Matt Ash, GEI Consultants Ltd.

Attachment: *Fisheries Act* Authorization

**Paragraphs 34.4(2)(b) and 35(2)(b) Fisheries Act Authorization**

Authorization issued to:

The Municipality of Huron East (*hereafter referred to as the "Proponent"*)

Attention to: Ken McCallum

72 Main Street South

Seaforth, Ontario

N0K 1W0

And

Marcrest Holdings Inc

45415 Perth Line 86

Listowel, Ontario

N4W 3G6

Location of Proposed Project

Nearest community (city, town, village): Listowel

Municipality, district, township, county: Municipality Huron East

Province: Ontario

Name of watercourse, waterbody: Smith Drainage Works

Longitude:-81.03588 Latitude: 43.7607

Valid Authorization Period

This Authorization remains in force from the **Date of Issuance** until Fisheries and Oceans Canada (DFO) confirms to you in writing that all of the requirements of this Authorization have been met, in particular those requirements relating to monitoring, the offsetting plan and the contingency measures.

Please note that this Authorization may contain more specific timing requirements and limitations. These are set out in the Conditions of Authorization section.

Description of Proposed Project

The proposed project of which the work, undertaking or activity authorized is a part of involves:

The enclosure of 106 linear meters of the open Smith Drainage Works, a Class C Municipal Drain. The existing channel will be replaced with a 106 meter long 1200 mm diameter culvert.

Description of Authorized work(s), undertaking(s) or activity(ies) likely to result in the harmful alteration, disruption or destruction of fish habitat:

- Enclosure of approximately 106 linear metres of municipal drain habitat.
- Isolation of approximately 2400 linear meters of fish habitat upstream of the enclosure.

The authorized work(s), undertaking(s), or activity(ies) are likely to result in the following impacts to fish and fish habitat:

- Destruction of approximately 106 linear meters of open channel fish habitat.
- Harmful Alteration of approximately 2400 linear meters of open channel fish habitat due to loss of connectivity to downstream habitat.

Conditions of Authorization

The above described work, undertaking or activity must be carried on in accordance with the following conditions.

1. **Conditions that relate to the period during which the work, undertaking or activity can be carried on**

The work, undertaking or activity that is/are authorized to be carried on during the following period:

From **Date of Issuance** to **December 31, 2025**.

If the Proponent cannot complete the work, undertaking or activity during this period, Fisheries and Oceans Canada (DFO) must be notified in advance of the expiration of the above time period. An application for amendment, suspension or cancellation of the authorization should be submitted to DFO.

The periods during which other conditions of this authorization must be complied with are provided in their respective sections below.

2. Conditions that relate to measures and standards to avoid and mitigate impacts to fish and fish habitat.

- 2.1 Sediment and erosion control: Sediment and erosion control measures must be in place and shall be upgraded and maintained, such that release of sediment is avoided at the location of the authorized work, undertaking, or activity.
- 2.1.1 Effective erosion and sediment control measures shall be in place prior to, during, and after construction activities and shall remain in place until the site is permanently stabilized.
 - 2.1.2 Erosion and sediment control measures shall be inspected regularly and repaired or upgraded as required and temporary measures removed once the site is permanently stabilized.
 - 2.1.3 All fill material, including construction rubble, rock, and soil, to be used in construction shall be clean and free of fine materials and debris prior to placement.
 - 2.1.4 Clearing of riparian vegetation shall be kept to a minimum and where removal is necessary, proper clearing techniques shall be used.
 - 2.1.5 Stockpiled material shall be stored in a manner that prevents entry into nearby waterbodies.
 - 2.1.6 All areas disturbed by any work, undertaking or activity associated with the project shall be stabilized through revegetation with native species, suitable for the site, upon completion of the work.
 - 2.1.7 In-water works and activities shall be completed during low-flow or dry conditions, where possible, and avoid precipitation events.
 - 2.1.8 The modified bank slopes will be covered with topsoil and seeded, and erosion control blankets will be placed over both bank slopes.
- 2.2 List of measures and standards to avoid and mitigate impacts to fish and fish habitat
- 2.2.1 No in-water work shall occur between March 15 and July 15 of any year.
 - 2.2.1.1 If the site is isolated prior to March 15, works below the high water mark can be completed within the isolated work area at any time of the year.
 - 2.2.2 A qualified environmental professional shall be on-site to conduct fish salvage and relocation from the isolated area, as required, for the duration of the in-water works.
 - 2.2.3 All water intake screens shall be installed and maintained to prevent impingement and/or entrainment of fish and shall follow DFO's *Interim code of practice: end-of-pipe fish protection screens for small water intakes in freshwater*.
 - 2.2.4 Work shall be conducted in the dry where possible.

- 2.2.5 Machinery shall be washed, refuelled, and serviced in such a way as to prevent any deleterious substance from entering the water.
- 2.2.6 A Spill Response Plan shall be prepared, available on site, and adhered to throughout construction.
- 2.2.7 Machinery shall operate on land above the high water mark (HWM) in a manner that reduces disturbances to the banks and bed of the watercourse.
- 2.2.8 Aquatic invasive species are introduced and spread through transporting water, sands, and sediments and using contaminated construction equipment. To prevent the spread of aquatic invasive species during construction in aquatic environments:
 - 2.2.8.1 All machinery shall arrive on site in a clean condition and be maintained free of fluid leaks, invasive species, and noxious weeds.
 - 2.2.8.2 Clean, drain, and dry any equipment used in the water.
 - 2.2.8.3 Never move organisms or water from one body of water to another.
- 2.3 DFO shall be notified immediately and contingency measures shall be put in place by the Proponent if monitoring required in Section 3 below indicates that the measures and standards to avoid and mitigate impacts to fish and fish habitat are not successful.
 - 2.3.1 In the event of failed measures and standards to avoid and mitigate impacts to fish and fish habitat, the Proponent shall develop and implement contingency measures in consultation with, and to the satisfaction of, DFO to correct the situation and minimize the impact. Monitoring and regular reporting of the corrective actions taken shall be provided to DFO until the contingency measures are successful.
- 2.4 Dates by which these measures and standards shall be implemented: Measures and standards to avoid and mitigate impacts to fish and fish habitat shall be implemented prior to the initiation of works, undertakings or activities.
- 3. Conditions that relate to monitoring and reporting of measures and standards to avoid and mitigate impacts to fish and fish habitat.**
 - 3.1 Monitoring of avoidance and mitigation measures: The Proponent shall monitor the implementation of avoidance and mitigation measures referred to in section 2 of this authorization and report to DFO, by **January 31, 2026**, and indicate whether the measures and standards to avoid and mitigate impacts to fish were conducted according to the conditions of this authorization. This shall be done, by:
 - 3.1.1 Demonstration of effective implementation and functioning: Providing dated photographs and inspection reports to demonstrate effective implementation and functioning of mitigation measures and standards described above to limit the impacts to fish and fish to what is covered by this authorization.

- 3.1.2 Contingency measures: Providing details of any contingency measures that were employed to prevent impacts greater than those covered by this authorization in the event that mitigation measures did not function as described.
- 3.1.3 As-built survey: An as-built survey shall be undertaken to show the project has been constructed as proposed. A copy of the as-built survey shall be provided to DFO as part of the construction monitoring report.
- 3.1.4 A record of all fish removal efforts that were conducted with the abundance and species of fish removed, number of mortalities, and relocation locations.

4. Conditions that relate to the offsetting plan

- 4.1 Letter of credit: DFO may draw upon funds available to DFO as the beneficiary of the letter of credit provided to DFO as part of the application for this authorization (Letter of Credit No.: **OSB93953TOR** in the amount of **\$15,600.00**), to cover the costs of implementing and maintaining the offsetting plan required to be implemented under this authorization, including the associated monitoring measures included in section 5 of this authorization, in instances where the Proponent fails to implement these required measures.
- 4.2 Scale and description of offsetting measures: The offsetting measures shall be carried out in accordance with the measures set out in the Proponent's offsetting plan and associated drawings, "Technical Memorandum", dated **July 17, 2024** approved by DFO.
 - 4.2.1 Install six (6) pool riffle sequences downstream of the enclosed channel. The pool riffle sequences will be at approximately 18m intervals as noted in the Offsetting Plan.
 - 4.2.1.1 Riffles will be constructed out of stone ranging in diameter from 26mm to 100mm and will have a bottom width of 2.0 m, and will be a height of 0.2m.
 - 4.2.1.2 Pools will have, a bottom width of 2.0 m and will be 0.2m deep.
 - 4.2.2 Native deciduous trees (18) will be planted along the south bank, downstream of the proposed enclosure.
- 4.3 Offsetting criteria to assess the implementation and effectiveness of the offsetting plan: All fish habitat offsetting measures shall be completed and functioning according to the criteria below;
 - 4.3.1 All offset structures and features in the channel shall be constructed by December 31, 2025, in accordance with the location and specifications set out in the Proponent's offsetting plan dated July 17, 2024 and demonstrated to be stable by visual inspection and photographs for two years post construction.
 - 4.3.2 Deciduous tree plantings shall be completed by Dec 31, 2025. Trees shall be in good health with an overall survival rate of a minimum of 80% for 2 years post-construction, and shall be assessed by visual inspection and photographs.

4.4 Contingency measures: If the results of monitoring as required in section 5 indicate that the offsetting measures are not completed by the date specified and/or are not functioning according to the above criteria in 4.3, the Proponent shall give written notice to DFO and shall implement the contingency measures and associated monitoring measures, as contained within the approved offsetting plan (attached to this authorization or referenced in section 4.2), and as set out in section 5 of this authorization, to ensure the implementation of the offsetting measures is completed and/or functioning as required by this authorization.

4.4.1 Scale and description of contingency measures:

4.4.1.1 Should the habitat enhancement features in section 4.3.1, as designed in the Proponent's Offsetting Plan, be deemed unstable by the end of the monitoring period, additional measures shall be taken to meet the design specifications within one year of the observation.

4.4.1.2 Should the offsetting criteria in 4.3.2 be deemed to have a survival rate less than 80% within two years post construction, supplemental replacements shall be planted within one year.

4.4.2 Monitoring measures to ensure offsetting contingency is completed and/or functioning as required:

4.4.2.1 The Proponent shall conduct monitoring to document the success of any contingency offsetting habitat to the satisfaction of DFO, to meet the offsetting requirements associated with the Authorization.

4.5 The Proponent shall not carry on any work, undertaking or activity that will adversely impact the offsetting measures.

5. Conditions that relate to monitoring and reporting of implementation of the offsetting plan (described in section 4):

5.1 Schedule(s) and criteria: The Proponent shall conduct monitoring of the implementation of offsetting measures according to the timeline and criteria below [or according to the timeline and criteria in the offsetting plan approved by DFO, referred to in section 4.2 and which are the following]:

5.1.1 List of timeline(s) and monitoring and reporting criteria:

5.1.1.1 The Proponent shall provide monitoring reports to DFO one month, one year, and two years after construction has concluded. These reports are due no later than **January 31, 2026, January 31, 2027, and January 31, 2028.**

5.1.1.2 A digital photographic record of pre-construction, during construction, and post-construction conditions shall be compiled using the same vantage points and direction during approximately the same time of year in each report to show that the approved works have been completed in

accordance with the offsetting plan. This information shall be provided as part of the Year 0: As-Built/Post-Construction Monitoring Report due no later than **January 31, 2026**.

5.1.1.3 Survivorship of riparian vegetation shall be conducted via visual assessment and a photo log shall be completed. Riparian vegetation survivorship shall be assessed following initial site restoration efforts and for two years post-construction.

5.2 List of reports to be provided to DFO: The Proponent shall report to DFO on whether the offsetting measures were conducted according to the conditions of this authorization by providing the following:

5.2.1 Year 0 As-Built/Post-Construction Monitoring Report: Due one month after construction concludes, or no later than **January 31, 2026**;

5.2.2 Year 1 Post-Construction Monitoring Report: Due one year after the construction concludes, or no later than **January 31, 2027**; and

5.2.3 Year 2 Post-Construction Monitoring Report: Due two years after the construction concludes, or no later than **January 31, 2028**.

Authorization Limitations and Application Conditions

The Proponent is solely responsible for plans and specifications relating to this authorization and for all design, safety and workmanship aspects of all the works associated with this authorization.

The holder of this authorization is hereby authorized under the authority of Paragraphs 34.4(2)(b) and 35(2)(b) of the *Fisheries Act*. R.S.C., 1985, c.F-14, to carry on the work(s), undertaking(s) and/or activity(ies) that are likely to result in impacts to fish and fish habitat as described herein.

This authorization does not purport to release the Proponent from any obligation to obtain permission from any private landowner or to comply with the requirements of any other regulatory agencies.

This authorization does not permit the deposit of a deleterious substance in water frequented by fish. Subsection 36(3) of the *Fisheries Act* prohibits the deposit of any deleterious substances into waters frequented by fish unless authorized by regulations made by Governor in Council.

At the date of issuance of this authorization, no individuals of aquatic species listed under the *Species at Risk Act* (SARA) were identified in the vicinity of the authorized works, undertakings or activities.

It is also your *Duty to Notify* DFO if you have caused, or are about to cause, the unauthorized death of fish by means other than fishing and/or the harmful alteration, disruption or destruction of fish habitat. Such notifications should be directed to (<http://www.dfo-mpo.gc.ca/pnw-ppe/CONTACT-eng.html>).

The failure to comply with any condition of this authorization constitutes an offence under Paragraph 40(3)(a) of the *Fisheries Act*, and may result in charges being laid under the Act.

A copy of this authorization will be kept on site while the work is in progress and upon request be provided to relevant federal or provincial officials. The authorization holder is responsible for ensuring work crews are familiar with, and able to adhere to, the conditions.

This authorization cannot be transferred or assigned to another party. If the work(s), undertaking(s) or activity(ies) authorized to be conducted pursuant to this authorization are expected to be sold or transferred, or other circumstances arise that are expected to result in a new Proponent taking over the work(s), undertaking(s) or activity(ies), the Proponent named in this authorization shall advise DFO in advance.

Date of Issuance: February 13, 2025

Approved by: Mitchell, Tricia
 Tricia Mitchell
 Regional Director General
 Ontario and Prairie Region
 Fisheries and Oceans Canada

Digitally signed by Mitchell,
 Tricia
 Date: 2025.02.18 10:51:26
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