

IN THE MATTER OF THE *DRAINAGE ACT*, R.S.O. 1990, CHAPTER D.17, AS AMENDED

Tribunal File No.: 007Dell21

**AGRICULTURE, FOOD AND RURAL AFFAIRS APPEAL TRIBUNAL**

**B E T W E E N :**

806584 Ontario Ltd. (Jeff Ferguson), Gary & Frances Somerville, Keith Helmer, Phil  
McNamee Charitable Foundation, Roger Somerville, Somerville Farms Sparta Ltd.,  
Walter Hayhoe Enterprises Inc., William Jacklin

Appellants

– and –

The Corporation of the Municipality of Central Elgin

Respondent

**APPELLANTS' EXPERT REPORT VOLUME 1**

April 6, 2022

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1. John Kuntze's P. Eng. Report dated April 4, 2022

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April 4, 2022  
File 22-081

**To: Lerner LLP c/o Jacob Damstra, counsel for the Appellants**

**Re: Dell Drain Outlet Report – Tribunal File 007Dell21**

**Background**

The objective of this report is to review and comment on the assessment schedule in the Dell Drain Outlet report dated November 26, 2020 (2020 Report) prepared by Mark D. Hernandez PEng, Dillon Consulting (the Engineer).

In preparing this report I reviewed and relied on the following information/documentation:

1. Dell Drain Outlet report dated November 26, 2020
2. Dell Drain 1997 report dated June 20, 1997
3. Dell Municipal Drain report dated July 12, 1960 – report did not include the plan and profile
4. Branch "G" Dell Municipal Drain report dated October 30, 2015
5. Branch 'G' Dell Municipal Drain Tribunal Decision dated June 16, 2016, corrected June 23, 2016
6. My on-site examination of Dell Drain outlet and watershed area on March 21, 2022

**Drain History**

The 2020 report on pages 1 and 2 contains a brief summary of the history of the Dell Drain. The following outlines additional relevant information on the Dell Drain history.

Dell Municipal Drain July 12, 1960 – Appendix H

The report is for a *"new drain to replace the existing Dell Municipal Drain."*

This statement would imply that there may be earlier reports under the Drainage Act for the construction of the Dell Drain. No earlier reports were available for review.

Tile drain improvements were recommended in Concession 2 north of Dexter Line.

From Dexter Line downstream to Lake Road (now Barnums Gully Line) the existing ditch was to be cleared.

The report noted that at Lake Road:

*"a 40" culvert at present carries the water across into a drop silo on the south side of Lake Road."*

The report did not indicate if the drain across and downstream of Lake Road was under the Drainage Act.

The report did not propose any work across or downstream of Lake Road.

Dell Drain 1997 June 20, 1997 – Appendix F

The primary objective of the report was to provide a new outlet for the Dell Municipal Drain across Barnums Gully Line and south (downstream) of the road allowance for approximately 64m.

Two minor improvements were recommended north (upstream) of the road allowance:

- 190m of ditch cleanout upstream from the new inlet structure on the north side of the road
- Branch A tile extended across Roberts Line

The History section of the report states: *In 1984 portions of the main drain were replaced in lot 18.* No indication if this work was done under an engineer's report or was done as drain maintenance. The report also provides a maintenance schedule for Branch E which is shown to cross Roberts Line with outlet into Branch A. Branch E was not in the 1960 Report. The 1997 report did not state when Branch E was constructed as a part of the Dell Drain.

The History section of the report notes that the outlet across and downstream of Barnums Gully Line *"was installed many years ago to protect the Township Road and the private property to the south from gully erosion."*

The 1997 improvement of the Dell Drain outlet across and downstream of Barnums Gully Line was thus to protect the Township Road and the private property to the south of the road.

Total cost in the 1997 report was \$158,500.

From Schedule C – assessment schedule for construction:

Total Benefit Assessment \$94,540 – 60% of total cost

Total Outlet Assessment \$63,960 – 40% of total cost

For Barnums Gully Line and south

Roll 2-034 benefit assessment \$23,000 – 14.5% of total cost

Roll 2-036 benefit assessment \$23,000 – 14.5% of total cost

Barnums Gully Line benefit \$43,000 – 27.0% of total cost

Total \$89,000 – 56.0% of total cost

From Schedule D – assessment schedule for future maintenance

Main Drain – Outlet System

Roll 2-034, 2-036 and Barnums Gully Line – 52.6%

Branch "G" Dell Municipal Drain October 30, 2015 – Appendix E

Report was initiated by a Road Superintendent petition under Section 4(1)(c) of the Drainage Act.

Objective of the report was to provide an outlet for a culvert across Barnums Gully Line approximately 530m west of the Dell Drain crossing on Barnums Gully Line.

The natural outlet for the road culvert was southerly from the road to Lake Erie.

Report recommended a new outlet for the road culvert easterly to the Dell Drain 1997.

A pipe drain was to be constructed easterly from the road culvert for approximately 440m on the north side of the road allowance then southerly across the road and easterly to an outlet in the first manhole south of the road which is part of the Dell Drain 1997.

Total cost in the 2015 report was \$71,975.

From Schedule B – assessment schedule for construction:

Total Benefit Assessment \$57,360 – 80% of total cost (total benefit includes special assessment)

Total Outlet Assessment \$14,615 – 20% of total cost

Report did not reference provision for future maintenance and did not contain a Maintenance Assessment Schedule.



Branch 'G' Dell Municipal Drain Tribunal Decision June 16, 2016 – corrected June 23, 2016

Several assessed landowners appealed to the Agriculture, Food and Rural Affairs Appeal Tribunal (the Tribunal) under Section 54 of the Drainage Act. Tribunal Hearing was held on April 19, 2016. Tribunal Decision was dated June 16, 2015 with a notation for a corrected version issued June 23, 2016.

The Tribunal Decision did not change the total benefit assessment in the report.

The Tribunal Decision did increase the benefit assessment to the property on which the natural outlet existed (Roll 2-033) to \$6,569 from the \$160 benefit assessment in the report.

The Tribunal Decision created a Maintenance Assessment Schedule for the report.

In this assessment schedule Roll 2-033 and Barnums Gully Line are assessed 35%.

The 2020 Report Drain History section did not reference the 2015 Dell Drain report.

The 2020 Report watershed plan does show Branch G though it shows the branch fully on the south side of Barnums Gully Line.

The 2020 Report Schedule of Assessment C includes the Branch G watershed area.

Dell Drain Outlet November 26, 2020 – Appendix D

Report proposes to extend the 1997 pipe drain downstream an additional 83m.

The report implies that the pipe extension downstream is required to help stabilize the ravine bank slopes, primarily the west bank slope.

Total cost in the report is \$378,910.

From Schedule C – Schedule of Assessment page 20

Total Benefit Assessment \$ 30,000 – 8% of total cost

Total Outlet Assessment \$348,910 – 92% of total cost

For Barnums Gully Line and south

Roll 2-034 benefit assessment \$25,000 – 7% of total cost

Roll 2-036 benefit assessment \$ 5,000 – 1% of total cost

Barnums Gully Line benefit \$ 0 – 0% of total cost

Future Maintenance

The report does not contain a separate maintenance assessment schedule.

The Future Maintenance section on page 7 states:

*We recommend that future work of repair and maintenance of the Dell Drain Outlet be carried out by the Municipality at the expense of the lands and roads herein assessed in Schedule 'C' as Outlet Assessment.*

Total Outlet Assessment \$348,910

For Barnums Gully Line and south

Roll 2-034 outlet assessment \$0 – 0% of maintenance cost

Roll 2-036 outlet assessment \$0 – 0% of maintenance cost

Barnums Gully Line outlet \$8,055 – 2% of maintenance cost

**Conclusions**

By assessing 92% of the total cost in the 2020 Report to the Dell Drain watershed the Engineer appears to imply that the Dell Drain watershed is 92% responsible for the ravine bank erosion downstream of the current outlet of the Dell Drain 1997 pipe.

The Engineer in the report has not provided evidence to support a 92% outlet assessment to the Dell Drain watershed.

The Engineer in the report has provided evidence to support a higher benefit assessment to Barnums Gully Line and the lands south of Barnums Gully Line.

On page 2, *Existing Conditions*, second paragraph it is noted that the flow from the Dell Drain is only a partial cause of the ravine bank erosion.

In my opinion "a partial cause" would not equal 92%.

Under *Design Conditions*, 5<sup>th</sup> paragraph on page 3:

*It is important to note that while the proposed works are expected to significantly reduce the amount of erosion and the resulting bank failures along the pipe section of the ravine, it will not be possible to prevent it entirely.*

In this statement the Engineer has indicated that the proposed works will have a significant benefit to the adjacent lands. The current 8% benefit assessment to the adjacent lands should thus be increased to reflect that "*the proposed works are expected to significantly reduce the amount of erosion*".

No drainage improvements or changes have been made to the Dell Municipal Drain watershed since the 1960 report. The Dell Municipal Drain does not need an improved outlet.

Therefore there is no evidence for increased liability to the Dell Municipal Drain watershed that would warrant a 92% outlet assessment.

**What has changed since 1960?**

The 1997 Report provided for a pipe drain across and downstream of Barnums Gully Line.

The 1997 Report indicated that the pipe drain proposed "*was to protect the Township Road and the private property to the south from gully erosion.*"

The 1997 report had noted that in the spring of 1997 Barnums Gully Line had to be closed due to erosion of the road bed due to the failure of the pipe drain downstream of the road.

In my opinion the work proposed in the 2020 report is a continuation of the 1997 report drain.

Therefore the benefit assessments identified in the 1997 report would continue to apply to the work proposed in the 2020 report.

The other change since 1960 is the 2015 Branch G report which diverted a watershed area into the Dell Drain 1997. Currently Branch G has not made any contribution to the outlet it used but was not assessed for previously.

In my opinion the Branch G diversion needs to be recognized in the benefit assessment for the 2020 report since Branch G is connected directly to the Dell Drain 1997.



**Benefit Assessment**

Under *Assessment Rationale* Section 2 on page 7 of the report the Engineer provides an explanation of the benefit assessments in the report. The Engineer notes that for Roll 2-034 and 2-036 that *"the proposed works will significantly reduce the erosion on their properties"* yet only assesses \$30,000 in benefit assessment (8% of the total cost of the proposed works) to the two properties. It is possible that the Engineer may have attempted to justify the low benefit assessment to the above two properties with the last statement in Section 2:

*The benefit assessment recognizes that while the work will benefit these properties, the water within the Dell Drain is not generated from their properties.*

In my opinion magnitude of benefit assessment is not linked to how much drainage from a property flows into a drain – that is what outlet assessment is based on. The Engineer's statement above would support that Roll 2-034 and Roll 2-036 should not have an outlet assessment for the proposed work which I would agree with.

In the *Design Considerations* and *Geotechnical Considerations* sections of the report the Engineer and the geotechnical engineer note that the primary cause of the current ravine slope failures is groundwater discharge and surface runoff which is water from within the two parcels. In the words of the Engineer above, the proposed pipe drain will *"significantly"* help the two parcels address the erosion issues on their properties which should lead to a *"significant"* benefit assessment to the two properties.

**Calculation of Benefit Assessment**

Looking at the *Assessment Rationale* section in the 2020 Report it would appear to me that the Engineer may have started with a determination of Outlet assessment first since Outlet assessment is listed first.

In my practice when I start the assessment process in a report under the Drainage Act I always first start with a determination of benefit assessment.

In my opinion when an improved drain is proposed across a property then the construction of the drain is a benefit to the property since the drain better controls the way in which the upstream water will flow across the property. As a general rule of thumb I usually start my benefit/outlet split at 50/50 – \$1 of cost to the directly affected property and \$1 of cost to the upstream watershed. Also, the benefit assessment is determined based on the length of the drain across the property not the area drained on the property.

The next step is to determine if the benefit/outlet ratio should be adjusted. Is the drain of greater benefit to the affected property or is the drain required to provide an improved outlet for the drain upstream?

In my opinion the benefit/outlet ratio for the Dell Drain Outlet should be increased to 60/40.

My reason for the increase is based on the following:

Opinion of the Engineer as noted above that *"the proposed works will significantly reduce the erosion on their properties"*. My site examination supports this statement by the Engineer.

I noted above that the Dell Drain Outlet is a continuation of the Dell Drain 1997 with much the same objective and the 60/40 benefit/outlet ratio matches that from the 1997 report.

There is no evidence in the Report or from my field investigation that the Dell Municipal Drain requires an improved outlet. The Dell Municipal Drain has had adequate and sufficient outlet since at least 1960.



I would then make one final consideration for benefit assessment on the Dell Outlet Drain. As I noted above Branch G was connected to the Dell Drain 1997 even though the Branch G watershed area was not previously assessed into the Dell Drain 1997. Neither the engineer for the Branch G report nor the municipality considered the provisions of Section 65(3) of the Drainage Act with respect to subsequent connection. That oversight can be remedied now by a benefit assessment to Branch G.

Since the Branch G watershed area of 32.3ha increased the Dell Drain 1997 watershed area of 247.7ha by approximately 13% I would therefore provide for a 15% benefit assessment to Branch G to address the provisions of Section 65(3).

My breakdown for the benefit assessment would be as follows:

60% benefit assessment = \$227,500

Benefit assessment would be apportioned to Barnums Gully Line and Roll 2-034 and Roll 2-036. I would apportion the benefit assessment approximately equally to the downstream lands and to the road with \$100,000 to the downstream properties and \$127,500 to the road which is somewhat similar to the split in the 1997 report.

The benefit assessment to Barnums Gully Line is to reflect that the Dell Drain Outlet is a continuation of the Dell Drain 1997. The Dell Drain 1997 was essentially a downstream extension of a culvert under Barnums Gully Line. The Dell Drain Outlet is a continuation of that road culvert. The benefit assessment to the road under the 1997 report thus continues under the 2020 report.

I do not agree with the benefit assessment split for Roll 2-034 and Roll 2-036 noted in the *Assessment Rationale* section of the 2020 Report. It is my understanding that the property line between 2-034 and 2-036 is the center line of the ravine. According to the 2020 Report the Dell Outlet Drain is to be constructed in the bottom of the ravine. The objective of the Dell Drain Outlet is to protect the toe of slope of the ravine. This protection will apply equally to the east and west toe of slope. Therefore in my opinion the benefit assessment should be split equally with \$50,000 to each parcel.

My rationale for the split in the assessments would be supported in the 2020 Report where the Engineer divided the right of way allowance equally to the two affected parcels – refer to Schedule B on page 19 of the Report.

15% benefit assessment = \$57,000

I recommend that this benefit assessment be shown as Special Benefit in the assessment schedule since it is primarily an assessment under Section 65(3) for the Dell Drain 1997 and the Dell Drain Outlet. The special benefit will be a fixed amount, ie not prorated with the final cost, and will not apply for future maintenance.

I recommend that the \$57,000 special benefit be apportioned as follows:

Barnums Gully Line   \$50,000

Roll 2-033           \$3,500

5 parcels north of road \$3,500

For the 5 parcels north of the road the \$3,500 shall be apportioned based on watershed area from the 2015 report.

Additional Special Benefit

Page 2 of the 2020 Report in the second paragraph of Existing Conditions:

*The ravine is littered with tires and other debris.*

This statement gives the impression that there are a few tires in scattered locations in the ravine.

Drawing 2 of 5 notes a "pile of rubbish" at station 0+100.

Based on my site examination I determined that the "pile of rubbish" is a large quantity of automotive tires – see page 7 of my photo log in Appendix C.

The first item in the cost estimate table on page 5 of the Report:

*Removal and disposal of tires, existing cable concrete and other debris off-site \$5,000*

Based on my site examination I am not aware of any "other debris" requiring removal and disposal except for the length of old corrugated steel pipe shown in the photo on page 6 of my photo log.

I am not sure why the "cable concrete" would need to be removed from the site.

I think it could be re-used at the new outlet or buried on-site.

I would recommend that the first item in the cost estimate table be divided into three parts for the tender/contract for the Dell Drain Outlet.

1(a) Remove and dispose of automotive tires off-site	\$4,000
1(b) Remove and dispose of old corrugated steel pipe off-site	\$500
1(c) Remove cable concrete and re-use or bury on-site	\$500

I would note the following for Item 1(a)

- Dell Drain watershed should not be responsible for this cost
- Properties on which the tires are located should be responsible for this cost
- Estimated cost of \$4,000 is low

Item 1(a) in the cost estimate should be a special benefit assessment equally to Roll 2-034 and Roll 2-036. The final special benefit shall be based on the actual cost of Item 1(a).

The actual cost for Item 1(a) can easily be determined if it is a separate item in the tender/contract for construction of the Dell Drain Outlet.

**New Schedule of Assessment**

Summary of benefit and special benefit assessments:

60% benefit	\$227,500
15% special benefit	\$57,000
Special benefit tires	<u>\$4,000</u>
Total Benefits	\$288,500

Therefore Outlet assessment will be  $\$378,910 - \$288,500 = \$90,410$

Attached to my report is a recommended Schedule C – Schedule of Assessment for the Dell Drain Outlet based on the above assessment calculations.

The Outlet assessment of \$90,410 was prorated to the Outlet assessments in the 2020 Report Schedule C.



The following is a summary of the benefit assessments from the recommended Schedule C:  
Total Benefit Assessment \$288,500 – 76% of total cost (includes special benefit)  
Total Outlet Assessment \$ 90,410 – 24% of total cost

For Barnums Gully Line and south  
Roll 2-034 benefit assessment \$52,000 – 14% of total cost  
Roll 2-036 benefit assessment \$52,000 – 14% of total cost  
Barnums Gully Line benefit \$179,587 – 47% of total cost

Future Maintenance Dell Drain Outlet

In my time in preparing reports under the Drainage Act I have never created a maintenance assessment schedule for a drain or a portion of a drain that is based solely on outlet assessment.

In my opinion when a drain is maintained in the future that maintenance ensures that the original benefit to a property along the drain will continue. The analysis of the future maintenance assessment outlined above for the 2020 report indicates an inequitable maintenance assessment to the lands and roads benefitting from the 2020 drain.

Therefore the benefit assessments must be taken in to account when creating a future maintenance schedule.

In the 2020 Report *Future Maintenance* section on page 7 the first paragraph should be replaced with the following:

After completion the Dell Drain Outlet shall be maintained by the Municipality of Central Elgin with cost of maintenance assessed in accordance with Schedule C except that Special Benefit shall be deleted.

Respectfully submitted



John Kuntze P.Eng.  
K. Smart Associates Limited



SCHEDULE C - Schedule of Assessment  
DELL DRAIN OUTLET - Municipality of Central Elgin

Revised for Drainage Tribunal - April 4, 2022								
<b>MUNICIPAL LANDS:</b>								
			Ha		Special		Total	
Description		Affected	Owner	Benefit	Benefit	Outlet	Assessment	
County Road No. 24 (Dexter Line)		2.60	County of Elgin			4,226	4,226	
Roberts Line		2.30	Municipality of Central Elgin			3,739	3,739	
Barnums Gully Line		2.14	Municipality of Central Elgin	50,000	127,500	2,087	179,587	
<b>Total on Municipal Lands:</b>		7.04		50,000	127,500	10,052	187,552	
<b>PRIVATELY OWNED NON-AGRICULTURAL LANDS:</b>								
			Ha		Special		Total	
Roll No.	Con	Lots	Affected	Owner	Benefit	Benefit	Outlet	Assessment
2-032	1	Pt Lot 17 RP11R2837 Pt 1	6.73	S. Zovko	* 774	0	1,991	2,765
2-033	1	S Pt Lot 17	0.20	E. & B. Lyle	3,500	0	195	3,695
2-036	1	S Pt Lot 18	3.00	Devin Vandenwyngaert	2,000	50,000	0	52,000
2-03501	1	W Pt Lot 18 RP11R177 Pt 1	0.70	C. & R. Higgs	0	0	316	316
2-034	1	S Pt Lots 17 & 18	5.67	J. R. Miller	2,000	50,000	0	52,000
2-07701	2	N Pt Lot 19, RP11R26	0.29	C. & S. Barber	0	0	240	240
2-07101	2	Pt Lot 17, RP11R464	2.70	D. & B. Hamm	0	0	878	878
2-073	2	N Pt Lot 17, RP11R60	1.30	P. & F. Darrah	0	0	400	400
2-07401	2	Pt Lot 17	9.83	Phil McNamee Charitable Foundation	0	0	1,598	1,598
3-05601	3	S Pt Lot 18, RP11R18	1.20	S. Hennessy	0	0	393	393
<b>Total on Privately Owned Non-Agric</b>		31.62			8,274	100,000	6,011	114,285
<b>PRIVATELY OWNED AGRICULTURAL LANDS:</b>								
2-024	1	Pt Lot 16	0.71	E. Somerville	* 82	0	231	313
2-025	1	Pt Lot 16	0.36	D. Depuydt	* 41	0	117	158
2-03201	1	Pt Lot 17	22.56	R. Somerville	* 2,523	0	5,794	8,317
2-035	1	N Pt Lot 18	41.00	806584 Ontario Limited	* 80	0	12,063	12,143
2-037	1	Pt Lots 18 & 19 RP11R2604 Pt 1	3.60	Walter Hayhoe Enterprises	0	0	1,170	1,170
2-071	2	N Pt Lot 16 & W Pt Lot 17	15.19	Walter Hayhoe Enterprises	0	0	4,938	4,938
2-075	2	S Pt Lot 18	20.10	G. & F. Somerville	0	0	6,168	6,168
2-077	2	S Pt Lots 18 & 19	40.20	Walter Hayhoe Enterprises	0	0	11,501	11,501
2-074	2	Pt Lot 17	24.88	W. Hayhoe	0	0	8,088	8,088
2-076	2	N Pt Lot 18	40.50	N. Parker & Somerville Farms Sparta Ltd.	0	0	11,600	11,600
2-078	2	N Pt Lot 19	29.10	K. J. Helmer	0	0	8,514	8,514
3-045	3	Pt Lot 16	0.40	DeVries Family Farms Limited	0	0	65	65
3-048	3	Pt Lot 17	10.90	552727 Ontario Ltd.	0	0	2,668	2,668
3-052	3	S Pt Lot 18	4.40	W. Jacklin	0	0	1,430	1,430
<b>Total on Privately Owned Agricultural Lands:</b>					2,726	0	74,347	77,073
<b>TOTAL ASSESSMENTS:</b>					61,000	227,500	90,410	378,910
Note: Special Benefit with an * was prorated using watershed area from the 2015 Branch G report								



## **APPENDIX A**

**John Kuntze P.Eng.**

### **Acknowledgement of Expert's Duty**

**K. SMART ASSOCIATES LIMITED**

**85 McIntyre Drive, Kitchener, ON, N2R 1H6**



IN THE MATTER OF THE *DRAINAGE ACT*, R.S.O. 1990, CHAPTER D.17, AS AMENDED

Tribunal File No.: 007Dell21

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**B E T W E E N :**

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Phil McNamee Charitable Foundation, Roger Somerville, Somerville Farms  
Sparta Ltd., Walter Hayhoe Enterprises Inc., William Jacklin

Appellants

– and –

The Corporation of the Municipality of Central Elgin

Respondent

**ACKNOWLEDGMENT OF EXPERT'S DUTY**

1. My name is John Kuntze. I live at the Township of Perth East, in the County of Perth, of the Province of Ontario.
2. I have been engaged by or on behalf of the Lawyers for the Appellants to provide evidence in relation to the above-noted Tribunal proceeding.
3. I acknowledge that it is my duty to provide evidence in relation to this proceeding as follows:
  - (a) to provide opinion evidence that is fair, objective and non-partisan;
  - (b) to provide opinion evidence that is related only to matters that are within my area of expertise; and
  - (c) to provide such additional assistance as the Tribunal may reasonably require, to determine a matter in issue.
4. I acknowledge that the duty referred to above prevails over any obligation which I may owe to any party by whom or on whose behalf I am engaged.

April 4, 2022

  
\_\_\_\_\_  
John Kuntze

SOMERVILLE ET AL. and THE MUNICIPALITY OF CENTRAL  
Appellants ELGIN  
Respondent

Tribunal File No.: 007De1121

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**AGRICULTURE, FOOD AND RURAL  
AFFAIRS APPEAL TRIBUNAL**

**ACKNOWLEDGMENT OF EXPERT'S DUTY**

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Lawyers for the Appellants





## **APPENDIX B**

**John Kuntze P.Eng.**

### **Professional Experience**

**K. SMART ASSOCIATES LIMITED**

85 McIntyre Drive, Kitchener, ON, N2R 1H6



# JOHN KUNTZE, P. ENG.

## PROFESSIONAL EXPERIENCE AND RESPONSIBILITIES

- 1977 – 2002 Project Engineer-Drainage, K Smart Associates
- 2002- present Senior Project Engineer - Drainage and President of K Smart Associates Limited
- Preparation of drainage reports under the Drainage Act RSO 1990 for rural and urban areas which involves meeting with affected owners, site examinations, evaluation of alternatives, cost estimates, design analysis, assessment of cost to lands and roads affected, attend public meetings for Drainage Act process, construction and contract administration.
- Appearances before Ontario Drainage Tribunal and Drainage Referee to defend reports.
- Familiar with tile drains, open channels, storm sewers and erosion control works.
- Investigate and prepare reports on all manner of individual drainage problems.
- Involved in litigation on drainage problems, retained as expert witness for appellants before the Ontario Drainage Tribunal, Drainage Referee and in civil court actions related to drainage.

## KEY PROJECTS

### Bertie Bay Drain 2007 – Town of Fort Erie

Section 78 report to provide for the repair and improvement of 3 separate drain outlets through a cottage area along the Lake Erie shoreline. Outlets involved a new 450mm diameter pipe drain, a 1200x1800mm pre-cast concrete box structure and a ditch cleanout.

### Huron Sands Drain Branch A 2003

#### Ashfield-Colborne-Wawanosh Township, Huron County

Report under Section 4 of the Drainage Act for a new pipe drain in a gully in a Lake Huron shoreline cottage area. Upstream watershed was agricultural land. Report provided for 36m of 900mm diameter pipe drain in bottom of gully with backfill over the pipe.

### Vaughan Drainage System 2012 – Norfolk County

Section 4 report for a new storm drain system to replace an existing private drain system through a Lake Erie shoreline residential area known as the Vaughan Survey in the former Woodhouse Township. Required protected outlet on steep bank slope at the Lake.

## YEARS OF EXPERIENCE

44 years

## AREA OF EXPERIENCE

Municipal Drainage under the Ontario Drainage Act

## EDUCATION

1977 University of Guelph  
Bachelor of Science in  
Engineering-Water  
Resources

## PROFESSIONAL AFFILIATIONS

Association of Professional  
Engineers of Ontario (PEO)

Ontario Society for  
Professional Engineers (OSPE)

OSPE Land Drainage  
Committee

Drainage Superintendents  
Association of Ontario (DSAO)

Land Improvement Contractors  
of Ontario (LICO)

Canadian Water Resources  
Association (CWRA)

## CONFERENCES/COURSES

Yearly Drainage Engineers  
Conference, University  
of Guelph

Yearly LICO/DSAO  
Conference

2011 to 2017  
Presenter at annual Land  
Drainage Committee Drainage  
Engineers Course





## **APPENDIX C**

**John Kuntze P.Eng.**

**Photo Log from on-site examination**

**March 21, 2022**

**K. SMART ASSOCIATES LIMITED**

**85 McIntyre Drive, Kitchener, ON, N2R 1H6**

Photos and comments by John Kuntze

**Dell Municipal Drain 1960** upper watershed area

Roberts Line looking south – catchbasin at marker stake is on the 1960 Main Drain tile



Dexter Line looking north – tile outlets for 1960 Main Drain tile

Outlet pipe on right would be for 16" tile installed north from Dexter Line under 1960 report

Outlet pipe on left would be for tile that existed prior to the 1960 report

2020 Report Watershed Description page 1: 43

*The lands comprising the watershed are under intense agricultural production with cash crops.*

Not sure why the engineer used the word "intense" – my observation is normal cultivation of cash crops

*Most of the land parcels are systematically tiled.* – tiled land helps reduce downstream peak flows



Photos and comments by John Kuntze

**Dell Municipal Drain 1960 lower watershed area**

Barnums Gully Line looking north on ditch that continues north to Dexter Line  
Ditch is well vegetated including brush growth as evident in picture – ditch condition would moderate flow from upper watershed area

**Dell Drain 1997**

Inlet structure on upstream (north) side of Barnums Gully Line that provides outlet for 1960 ditch  
This structure is the upstream end of the Dell Drain 1997



**Dell Drain 1997**



Looking downstream (south) from Barnums Gully Line at first 1997 drop manhole south of road  
This manhole structure is also the outlet for the Dell Drain Branch G



**Dell Drain 1997**



Outlet of 1997 pipe drain – looking north  
End of pipe is Station 0+61.9 in 2020 report – upstream end of Dell Drain Outlet  
Drop manhole 1 to be installed on end of 1997 pipe drain



**Dell Drain 1997**



Outlet of 1997 pipe drain – looking south on concrete cable mat  
Concrete cable mat to be removed under 2020 Dell Drain Outlet report



**Dell Drain 1997**



Downstream end of 1997 concrete cable mat outlet protection

Lower part of photo is approximate location of downstream end of Dell Drain 1997

Not sure why the remnants of an old corrugated steel pipe exists here, may have been pre 1997 pipe that was removed during the installation of the new pipe drain in 1997

2020 Report Existing Conditions page 2:

*At the end of the concrete mat there is significant erosion including a vertical drop where rip-rap erosion protection had been placed under the 1997 report.*

I did not note "significant erosion" in this area. Flow from the concrete cable mat has created a plunge pool with any riprap pushed to the downstream end of the plunge pool

This area is stable with no evidence of ongoing erosion



**Dell Drain Outlet**



West side of ravine bottom looking north at a pile of tires that continue into the bottom of the ravine  
On Drawing 2 of 5 from the report what is shown above is identified as a pile of pile of rubbish at 0+100  
2020 Report Existing Conditions page 2: *The ravine is littered with tires and other debris.*



West side of ravine standing on pile of tires at Station 0+100 looking downstream  
Right side of photo shows upper slope failure area on west side of ravine that is not connected with the  
flow in the bottom of the ravine on the right side of the photo



**Dell Drain Outlet**



In bottom of ravine near Station 0+110 – downstream end of tires in bottom of ravine  
New Dell Drain outlet will be near the top of the photo where the ravine starts to bend to the left



**Dell Drain Outlet**



East side of ravine showing upper slope failure area not connected to flow in bottom of ravine



West side of ravine showing upper slope failure area not connected to flow in bottom of ravine



**Dell Drain Outlet**



West side of ravine showing top of bank slope failure not related to flow in bottom of gully



West side of ravine showing top of bank failure due to groundwater seepage in lower part of photo





Catchbasin on left is at Station 0+300 – looking downstream on route of drain along north side of road



Catchbasin at Station 0+300 – looking south toward culvert across Barnums Gully Line





Barnums Gully Line at culvert across road, looking southwest along route of original outlet for road culvert

Original culvert through berm which had provided outlet for road ditch has been removed or buried as recommended at the bottom of page 9 of the 2016 Drainage Tribunal Decision.





## **APPENDIX D**

### **DELL DRAIN OUTLET**

### **REPORT**

**November 26, 2020**

**K. SMART ASSOCIATES LIMITED**

**85 McIntyre Drive, Kitchener, ON, N2R 1H6**

**DRAINAGE REPORT  
FOR THE**

**DELL DRAIN OUTLET**

**FORMER TOWNSHIP OF YARMOUTH  
MUNICIPALITY OF CENTRAL ELGIN**



(FINAL REPORT)  
26 NOVEMBER 2020  
MARK D. HERNANDEZ, P.ENG.  
FILE No. 16-3433



File No. 16-3433

Mayor and Council  
Municipality of Central Elgin  
450 Sunset Drive, 1<sup>st</sup> Floor  
St. Thomas, Ontario  
N5R 5V1



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

**Drainage Report for the  
DELL DRAIN OUTLET  
In the Former Township of Yarmouth  
Municipality of Central Elgin**

Gentlemen:

**Instructions**

The Municipality received a request from the landowner of property Roll No. 2-034 to improve the outlet of the Dell Drain. Council accepted the request under Section 78 of the Drainage Act and on 17<sup>th</sup> February 2016 appointed Dillon Consulting Limited to prepare a report.

**Watershed Description**

The Dell Drain consists of two sections of open drain with a section of covered drain between them and a piped outlet to a ravine. The total length of drain is approximately 1,370 metres and the watershed contains an area of approximately 240 hectares. The lands comprising the watershed are under intense agricultural production with cash crops. The land is rolling. Most of the land parcels are systematically tiled.

The watershed has an irregular shape. Between Barnums Gully Line and Dexter Line, the watershed takes up parts of Lots 17, 18 and 19 in Concession 1. Between Dexter Line and Roberts Line the watershed is in part of Lot 17, all of Lot 18 and part of Lot 19. North of Roberts Line the watershed takes up a small part of Lots 16, 17 and 18.

Mapping provided by the Ontario Ministry of Agriculture, Food and Rural Affairs indicates that the surface soil along the drain up to the middle of Concession 2 is Berrien loamy sand which is an imperfectly drained soil with Brookston sandy loam to the east and Granby sand to the west which are both poorly drained soils. The soil on the north part of the drain is also Brookston sandy loam.

**Drain History**

The recent history of Engineers' reports for the Dell Drain Outlet follows:

- **20 June 1997 by J. R. Spriet, P.Eng.:** The report recommended a new culvert be installed across Barnums Gully Line with a new catch basin on the north side of the road to collect the open ditch flow. Two new drop manholes on the south side of the road and erosion protection at the end of the outlet pipe were to be installed.

Cleaning and brushing of the open drain upstream of the road was included. Also, Branch 'A' was recommended to be extended across Roberts Line.

The outlet of the open drain had consisted of a concrete box inlet, pipe and drop silo on Barnums Gully Line. That outlet pipe for the silo had failed and resulted in the collapse and closure of the road and severe gully erosion on adjacent properties.

- **12 July 1960 by G. Duncan Black, P.Eng.:** The drain was reconstructed under this report and consisted of 1,000 metres in Concession 1, south of County Road No. 24. Upstream of the County Road, in Concessions 2 and 3, the drain consisted of several hundred metres of main drain tile and five branch tile drains.

### **On-Site Meeting**

An on-site meeting was held on March 10, 2016. A second meeting was held on-site on April 28, 2016, to discuss environmental, constructability and geotechnical considerations. Records of the meetings have been provided in Schedule 'A' and Schedule 'A-1' respectively, which is appended hereto.

### **Survey**

Our examination of the Dell Drain Outlet was carried out on August 23, 2016. The survey was completed by a third party on June 9, 2016. The survey comprised the recording of topographic data. The survey was commenced at Barnums Gully Line and then proceeded downstream through Lot 18, Concession 1 to Lake Erie.

### **Existing Conditions**

The Dell Drain outlet consists of a 750 mm diameter steel pipe which extends approximately 63 metres south of Barnums Gully Line and outlets into the ravine. The ravine downstream of the outlet pipe currently does not have status under the Drainage Act. There is a cable concrete mat at the pipe outlet. At the end of the concrete mat there is significant erosion including a vertical drop where rip-rap erosion protection had been placed under the 1997 report. There are sections of the drain and ravine which have a significant amount of overgrowth and vegetation. The ravine is littered with tires and other debris.

The erosion is significant from the pipe outlet to the interface with Lake Erie. The erosion from flow from the Dell Drain outlet is in part, causing the erosion of the adjacent banks. The adjacent landowner to the west is concerned with the progression of the bank failures relative to the location of his residence.

### **Design Considerations**

We understand that the existing ditch inlet catch basin, steel pipes and manhole structures at the outlet of the Dell Drain are working satisfactorily. As the proposed works will not change the watershed or affect the peak flow rate, we propose to extend the Dell Drain with piping of a similar inside diameter and smooth wall interior. There is significant grade available for the new pipe to maintain the drain's hydraulic capacity.

It is proposed to remove the cable concrete mat and install a new manhole structure which will provide access for inspection and maintenance, will provide a hydraulic separation between the upstream and downstream pipes, and will serve as an anchor to restrain a portion of the new piping downstream of the structure.



Catch basin frames and grates on manholes are proposed for venting purposes and are not intended to capture additional flows.

High Density Polyethylene (HDPE) pipe is proposed for its constructability benefits including its flexibility to accommodate the winding ravine bottom and as it can be fused into long lengths and be pulled down into the ravine.

The new discharge point will be located at Station 0+145 for geotechnical reasons as noted below. Cable concrete mats will be placed at the pipe end to maintain the integrity of the outlet. Minor grading adjustments at the outlet will be required to ensure free flow out the pipe outlet. Beyond the outlet, flow will continue along the ravine.

Based on the feedback from the constructability review on-site, it is anticipated that only tracked equipment will be able to access the site which will limit the ability to import materials, especially granular and concrete mix. For this reason, it is proposed that the pipe be bedded and backfilled with the native materials on-site. In addition, an analysis has been completed to balance the cut and fill quantities to avoid importing or exporting material. The analysis identifies an excess of material. This material shall be placed along the west side of the ravine downstream of the outlet in consultation with the landowner.

It is important to note that while the proposed works are expected to significantly reduce the amount of erosion and the resulting bank failures along the pipe section of the ravine, it will not be possible to prevent it entirely. Further erosion and bank failures are expected to occur based on the steep and in some cases precarious nature of the existing banks as well as effects from precipitation and ground water. In addition, it is expected that the downstream end of the ravine will continue to recede due to wave action from Lake Erie.

It should be noted that alternative design solutions were considered including trenchless technologies and relocating the drain outlet around the ravine, however, the outlet design as proposed is considered to be the most practical and cost effective solution.

#### **Hydraulic Analysis**

A hydraulic analysis was undertaken for steady state and transient conditions. The analysis identified the magnitude and location of forces applied along the pipe under different flow conditions. Restraints were designed in the form of collars which are strategically located to resist the forces at the general location in which they occur. This was found to be a better solution than transferring the entire force to the upstream manhole. Further, this solution mitigates the potential for the pipe to be pulled from its trench.

The restraints are stainless steel collars which can be bolted to HDPE flex restraints. The flex restraints in turn, are welded to the HDPE pipe.

#### **Geotechnical Considerations**

The Municipality engaged Bedell Engineering Inc. to provide geotechnical input into the proposed design. Bedell Engineering Inc. provided the Municipality with a letter dated April 22, 2019 which has been appended as Schedule A-2. Their review included an assessment of the anticipated regression rate along the shoreline due to wave action as well as the anticipated regression of the ravine banks to due erosion from the flows of the Dell Drain. The analysis concluded that due to the regression anticipated along the shoreline, the piped outlet does not have to extend to a point near the current lake edge. Instead, the piped outlet can be terminated at Station 0+145 where the regression due to lake effects is the prevailing concern for the westerly residence.



Bedell Engineering Inc. also completed a review of a range of collar diameters including resulting thrust restraint and minimum collar spacings. It was decided that a 1.5 m diameter restraint would be used to resist the hydraulic forces. It was noted that proper compaction of the backfill is also required to develop sufficient resistance to these forces.

Bedell Engineering Inc. confirmed that while the proposed pipe extension will reduce the erosion of the gully, it will not prevent its continuance entirely as ground water and precipitation will continue to act on the banks. In addition, erosion from flows downstream of the proposed pipe outlet will continue. It was noted that a stable bank slope for the gully cross section is likely 2H to 1V. Existing side slopes vary with some steeper sections and some flatter sections.

### **Natural Environment Considerations**

A Species at Risk (SAR) screening and Fisheries Act self-assessment have been completed for the proposed work.

In summary, Butternut trees were identified in the vicinity of, but will not be impacted by, the proposed works. The nearest butternut tree has been identified as a Category 1 which is non-retainable, however, a subsequent review may be required prior to construction to confirm next steps with the Ministry of Natural Resources and Forestry. To mitigate impacts to migrating birds, it is recommended that the work not take place during the typical nesting season from April 1 to August 31.

With respect to the DFO self-assessment, a request for review and formal authorization will not be required from DFO as the proposed work presents a low risk of causing serious harm to fish. The proposed work is sufficiently far from the lake and will not change the conditions at the ravine/lake interface.

### **Allowances**

In accordance with Section 29 of the Drainage Act, we have made a determination of the amount to be paid for land taken to establish the drain from its current outlet to the proposed outlet at Station 0+145. The area of land taken represents a 6.0 metre wide corridor centred on the alignment of the new pipe from the new manhole to the discharge point. The average land cost for the surrounding area used to calculate the value of land taken is \$23,110.00 per hectare.

In accordance with Section 30 of the Drainage Act, we have determined that damages to the lands within the working area will not be sustained as the proposed work will result in an improvement to the land. Further any damages sustained to lands used to access the work area are to be restored to existing conditions or better. Accordingly, there is no assessment for damages.

### **Recommendations and Cost Estimate**

Based on our review of the history, the information obtained during the site meeting and our examination and analysis of the survey data, we recommend that the Dell Drain Outlet be repaired and improved as described below:

Item	Description	Amount
	<b><u>TILE DRAIN WORK</u></b>	
1.	Removal and disposal of tires, existing cable concrete and other debris off-site.	\$5,000.00
2.	Remove and reinstate guide rail to facilitate access to site.	\$500.00
3.	Brushing of the drain from Station 0+000 to Station 0+150 including the disposal by burning on-site or removal off-site with trimming and/or removal of existing trees as required to accommodate the drainage works.	\$6,000.00
4.	Earthworks including cutting and filling of clay banks to create a minimum 5 metre wide working platform. Work includes shaping of new banks and grading of working platform. (approximately 754 m <sup>3</sup> cut and 754 m <sup>3</sup> fill). Excess fill shall be placed along the west side of the ravine downstream of the pipe outlet in consultation with the landowner.	\$17,500.00
5.	Supply and install high density polyethylene pipe (HDPE) smooth interior wall (Sclairpipe IPS PE4710 DR-11 or approved equivalent) with thermal butt fusion joining system including mobilization and flange welded to pipe at MH1. This work is to include native backfill, compaction, grading and restoration of all disturbed areas. This work is to also include connection to the new manholes.	
	a) Station 0+061.9 to Station 0+145 - Supply and install 83 m of 900 mm outside diameter polyethylene pipe.	\$115,000.00
	b) Supply and install 24 flex restraints (Electrofusion Flex Restraint or approved equal).	\$7,500.00
	c) Supply and install HDPE Flange welded to DR-11 pipe at MH1. Includes bolted connection to manhole with 38 mm diameter 304 stainless steel rods, nuts and washers.	\$40,000.00
6.	Supply and install 6 – 1500 mm diameter 304 stainless steel collars, 12.5 mm thick including stainless steel bolted connections to flex restraints. Supply in two halves with stainless steel bolted connection to facilitate installation in the field.	\$20,000.00



Item	Description	Amount
7.	Supply and installation of precast concrete manhole including heavy duty cast iron frame and grate as manufactured by Coldstream Concrete or approved equal in accordance with OPSD 703.013, OPSD 400.020 providing a minimum 600 mm deep sump and 50 mm thick grout wearing surface. Work to include connection to existing pipe and concrete grouting of all pipe connections.	
	a) <u>Manhole No. 1</u> – Station 0+062 – 2400 mm diameter	\$28,000.00
8.	Extend and connect existing subdrains to MH1.	\$400.00
9.	Erosion protection works at outlet as follows:	
	a) Station 0+144 to Station 0+148.9 - Supply and install 23.8 m <sup>2</sup> CC70 cable concrete mat with anchors. Contractor designed drawings required, sealed by Ontario Professional Engineer.	\$7,500.00
10.	Stone Erosion Protection as follows:	
	a) Station 0+140 – Supply and install 25 m <sup>3</sup> of stone erosion protection including filter fabric underlay to construct berm.	\$7,500.00
11.	Restoration of access to work area including grading, placement of topsoil, hydroseed and mulch with High Performance Growth Medium by Flexterra or approved equal from Station 0+000 to Station 0+060 (approximately 900 m <sup>2</sup> ).	\$9,000.00
12.	Maintenance of Flows During Construction.	\$1,000.00
13.	Temporary Silt Control Measures During Construction	\$1,000.00
	<b>SUB-TOTAL</b>	<b>\$265,900.00</b>
14.	Allowances under Sections 29 and 30.	\$2,010.00
15.	Topographical Survey and Geotechnical Consultant	\$15,000.00
16.	Report, Assessment and Final Inspection	\$95,000.00
17.	Expenses and Incidentals	<u>\$1,000.00</u>
	<b>TOTAL – DELL DRAIN OUTLET</b>	<b>\$378,910.00</b>

The estimate provided in this report was prepared according to current materials and installation prices as of the date of this report. In the event of delays from the time of filing of the report by the Engineer to the time of tendering the work, it is understood that the estimate of cost is subject to inflation. The rate of inflation shall be calculated using the Consumer Price Index applied to the cost of construction from the date of the report to the date of tendering.

### **Assessment of Costs**

The individual assessments are comprised of three (3) assessment components:

- i. Benefit (*advantages relating to the betterment of lands, roads, buildings, or other structures resulting from the improvement to the drain*).
- ii. Outlet Liability (*part of cost required to provide outlet for lands and roads*).
- iii. Special Benefit (*additional work or feature that may not affect function of the drain*).

We have assessed the estimated costs against the affected lands and roads as listed in Schedule 'C' under "Value of Benefit" and "Value of Outlet."

### **Assessment Rationale**

The assessment shown in Schedule 'C' was derived as follows:

1. Costs for the Dell Drain Outlet have been assessed as an 'Outlet' assessment against the upstream lands and roads within the watershed. The Dell Drain Outlet constitutes the piped portion of the drain located below the base of the gully along with associated appurtenances. It does not include the reshaped gully and ravine except for the 5 metre wide working platform for the pipe works.
2. \$25,000 'Benefit' assessment to Roll No. 2-034 and also a \$5,000 'Benefit' assessment to Roll No. 2-036 as the proposed works will significantly reduce the erosion of their properties. Roll No. 2-034 has a higher benefit assessment as the proposed improvements have a greater impact in terms of reducing the rate of erosion in close proximity to the residence. This benefit assessment recognizes that while the work will benefit these properties, the water within the Dell Drain is not generated from their properties.

### **Utilities**

It may become necessary to temporarily or permanently relocate utilities that may conflict with the construction recommended under this report. In accordance with Section 26 of the Drainage Act, we assess any relocation cost against the public utility having jurisdiction. Under Section 69 of the Drainage Act, the public utility is at liberty to do the work with its own forces, but if it should not exercise this option within a reasonable time, the Municipality will arrange to have this work completed and the costs will be charged to the appropriate public utility.

### **Future Maintenance**

We recommend that future work of repair and maintenance of the Dell Drain Outlet be carried out by the Municipality at the expense of the lands and roads herein as assessed in Schedule 'C' as Outlet Assessment. Future maintenance costs shall be levied pro rata on the affected lands and roads.

The existing gully and ravine remain as private lands and are not a part of the municipal drainage works except for the 5 metre wide working platform which shall continue to provide access for the Dell Outlet Drain for maintenance purposes.

### **Drawings and Specifications**

Attached to this report is Schedule 'F', which are Specifications setting out the details of the recommended works, and Schedule 'G', which represent the drawings that are attached to this report.

**Page 1 of 5 - Watershed Plan**

**Page 2 of 5 - Site Plan**

**Page 3 of 5 - Profile**

**Page 4 of 5 - Cross Sections**

**Page 5 of 5 - Miscellaneous Details**

### **Approvals**

The construction and/or improvement to a drainage works, including repair and maintenance activities, and all operations connected therewith are subject to the approval, inspection, by-laws and regulations of all Municipal, Provincial, Federal and other authorities having jurisdiction in respect to any matters embraced by the proposed works. Prior to any construction or maintenance works, the Municipality or proponent designated on the Municipality's behalf shall obtain all required approvals/permits and confirm any construction limitations including timing windows, mitigation/off-setting measures, standard practices or any other limitations related to in-stream works.

### **Grants**

In accordance with the provisions of Sections 85, 86 and 87 of the Drainage Act, a grant in the amount of 33-1/3 percent of the assessment eligible for a grant may be made in respect to the assessment made under this report upon privately owned lands used for agricultural purposes. The assessments levied against privately owned agricultural land must also satisfy all other eligibility criteria set out in the Agricultural Drainage Infrastructure Program policies. Most of the privately owned lands are used for agricultural purposes and are eligible under the A.D.I.P. policies. We are not aware of any lateral drains involved in this work that would not be eligible for a grant. We recommend that application be made to the Ontario Ministry of Agriculture and Food in accordance with Section 88 of the Drainage Act, for this grant, as well as for all other grants for which this work may be eligible.

Respectfully submitted,



**DILLON CONSULTING LIMITED**

Mark D. Hernandez, P.Eng.

MDH:wlb:ges:lld





# MEETING MINUTES

**Subject:** Dell Drain Site Meeting No. 1 Minutes  
**Date and Time:** March 10, 2016  
**Location:** 45609 Barnums Gully Line  
**Our File:** 16-3433

## Attendees

Refer to Attached Sign-In Sheet

## Notes

Item	Discussion	Action By
1.	A request for improvement was submitted by the landowner of 45609 Barnums Gully Line to the Municipality of Central Elgin under Section 78 of the Drainage Act related to significant erosion taking place from the outlet of the Dell Drain to Lake Erie.	
1.1.	Currently the Dell Drain outlets via a steel pipe into a ravine approximately one-third of the distance from the road to the lake.	
1.2.	The remaining open portion does not have status under the Act.	
1.3.	Further, the volume and rate of flow is causing significant erosion along the open channel section which in turn is causing failure of the adjacent banks.	
2.	Although a topographical survey and detailed design are yet to be complete, the solution currently being considered includes a fused solid wall High Density Polyethylene (HDPE) installed by a traditional open cut approach.	
2.1.	It was discussed that extending the piped drain to the lake, the rate of erosion can be significantly reduced.	
2.2.	However, it was further discussed that some erosion will continue to take place due to the effects of precipitation and ground water.	
3.	A separate meeting will be arranged with the local Conservation Authority, a geotechnical engineer and a local contractor to discuss environmental impacts, geotechnical considerations and the constructability of the work.	
4.	Once a draft report has been prepared, the Municipality will arrange for a public meeting for landowners to review and provide comment.	
5.	The landowners noted that they are familiar with the Drainage Act process as they have lands in other watersheds and so confirmed that discussion on the Drainage Act process was not required.	

### **Errors and/or Omissions**

These minutes were prepared by Mark Hernandez who should be notified of any errors and/or omissions.



**Dell Drain Outlet Start-up Meeting**  
**INFORMATION MEETING - THURSDAY, MARCH 10, 2016 - 1:00PM**

Name	Address	Phone #	Email Address
John Miller	45609 Braum's Gully Line		
Jeff Ferguson	45511 Dexter Line		
John Ferguson	" "		
Barry Somerville	45624 Braum's Gully Line		
Rosea Somerville	45389 Dexter Line		
Chas Mayhoe	6569 Sunset Road		
Ed Lyle	45445 Braum's Gully Line		
Barbara Lyle	" "		
Geoff Braok	Central Elgin		
Ryan DeSutter	" "		
Mark Hernandez	Dillon Consulting		



# MEETING MINUTES

**Subject:** Dell Drain Site Meeting No. 2 Minutes  
**Date and Time:** April 28, 2016  
**Location:** 45609 Barnums Gully Line, Central Elgin  
**Our File:** 16-3433

## Attendees

Jennifer Dow	Kettle Creek Conservation Authority
Joe Gordon	Kettle Creek Conservation Authority
Phil Bedell	Bedell Engineering
Darrell Mills	Murray Mills Excavating & Trucking (Sarnia) Ltd.
John Miller	45609 Barnums Gully Line
Ryan DeSutter	Municipality of Central Elgin
Mark Hernandez	Dillon Consulting Limited

## Notes

Item	Discussion	Action By
1.	The intent of this site meeting is to determine at an early stage whether or not there are environmental, geotechnical or constructability road blocks which would require a holistic change to the design approach or which would prevent the project from proceeding.	
2.	The project background was discussed as follows:	
2.1.	A request for improvement was submitted by the landowner of 45609 Barnums Gully Line to the Municipality of Central Elgin under Section 78 of the Drainage Act related to significant erosion taking place from the outlet of the Dell Drain to Lake Erie.	
2.2.	Currently the Dell Drain outlets via a steel pipe into a ravine approximately one-third of the distance from the road to the lake.	
2.3.	The remaining open portion does not have status under the Act. Further, the volume and rate of flow is causing significant erosion along the open channel section which in turn is causing failure of the adjacent banks.	
3.	Although a topographical survey and detailed design are yet to be complete, the solution currently being considered includes a fused solid wall High Density Polyethylene (HDPE) installed by a traditional open cut approach.	
3.1.	It was discussed that extending the piped drain to the lake, the rate of erosion can be significantly reduced.	
3.2.	However, it was further discussed that some erosion will continue to take place due to the effects of precipitation and ground water.	



4. In discussion with the Conservation Authority, no road blocks were identified that would prevent the project from proceeding.
  - 4.1. It was noted that the CA will complete a detailed review of the draft report at the appropriate time.
  - 4.2. It was also discussed that the proponent self-assessment processes will have to be undertaken as required by Canada's Department of Fisheries and Oceans and the Province's Ministry of Natural Resources.
  - 4.3. DFO declined an invitation to this meeting.
  - 4.4. The CA noted that they are in possession of a topographical survey of the area from the 1980's that may be useful in assessing the areas and rate of erosion.
5. In discussion regarding the geotechnical considerations of the project, it was noted that the design solution will help to mitigate the erosion of the banks but it will not solve the problem completely.
  - 5.1. Depending on the final design, it may be possible to estimate the amount of land that will not be lost due to erosion by projecting a stable slope from the proposed finished grade.
6. With respect to constructability, the Contractor noted that while the project would be challenging, it is similar to projects they have completed in the past.
  - 6.1. It was discussed that due to the steep slopes, only tracked equipment would be able to access the site. This will present challenges in terms of importing materials.
  - 6.2. It was discussed that a cut-fill balance will have to be completed for the clay materials.
  - 6.3. Maintenance of flows during construction will also have to be considered.
  - 6.4. The Contractor roughly estimated that such a project would take approximately 2.5 months to complete.
  - 6.5. Approximate hourly rates were derived based on an estimate of labour and equipment required to complete the work.
  - 6.6. On this basis it was estimated, at a very high level, that the equipment and materials costs would be in the order of \$150k to \$250k. Material costs would be in addition to this amount.
7. It was discussed that there is a recent tribunal decision that will affect the extent of the watershed for the Dell Drain.

### **Errors and/or Omissions**

These minutes were prepared by Mark Hernandez who should be notified of any errors and/or omissions.





BEDELL ENGINEERING INC.  
Consulting Engineers

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BEI Ref. No. B16-09 L02

December 4, 2020

The Corporation of the Municipality of Central Elgin  
450 Sunset Drive  
St. Thomas, Ontario  
N5R 5V1

Attention: Mr. Geoff Brooks  
Director of Infrastructure and Community Services

**Re: Geotechnical Engineering Review  
Interaction between Lakeshore Bluff and Gully Side Slopes  
Dell Drain Outlet  
Municipality of Central Elgin, Ontario**

Dear Sir,

Further to our meeting on April 16, 2019 and as requested, we have carried out a geotechnical engineering review of the interaction between the lakeshore bluff slopes and the gully side slopes at the outlet of the Dell drain into Lake Erie. The review was carried out in conjunction with a review of the potential downstream limit of the proposed Dell drain outlet works. A site visit/meeting was carried out on September 3, 2020.

The current design concept extends the piped portion of the drain from the existing end of pipe located at station 0+060, about 60 meters south of Barnums Gully Line some 170 meters to within about 15 meters of the Lake Erie shoreline with a 750 millimeter diameter pipe having an invert about 1.5 meters below the gully invert and about 2.5 meters of cover. The actual outlet would have a hardened channel. The proposed works are shown on the attached plan, Figure 1, which was prepared by Dillon Consulting based on 2015 photography (Dillon Site Plan C-1).

While the installation of a pipe in the gully would arrest the erosion of the gully invert, the selection of the downstream limit of the work is complicated by the ongoing regression of the shoreline/toe of bluff slope. In this area, the historical bluff regression rate is approximately 1.7 meters per year and the 42 meter high bluff slopes are very steep and unstable. Similarly, the gully invert has been subject to downcutting from drain flows and the side slopes are also very steep and unstable.

The topographical information shown on Figure 1 is based on 2015 photography. No updated information is available on the current gully invert profile or its rate of erosion. However, information on the bluff regression is available from the Google Earth photographs.

The Google Earth photographs for the period 2006 to 2018 were examined to determine short term rates of regression for the top of the bluff slope and the toe of the slope. Based on our analysis of these photos, the following regression rates have been determined.

Date	East of Gully (m)		West of Gully (m)		Bluff Slope inclination (H:V)	
	Change from previous		Change from previous		East	West
	Top of Slope	Toe of Slope	Top of Slope	Toe of Slope		
2006	-	-	-	-	1.48	1.52
2009	2	-	3	3	1.48	1.52
2013	4	4	9	10	1.43	1.45
2015	10	10	18	11	1.43	1.64
2016	14	12	18	17	1.48	1.52
2018	23	21	20	24	1.43	1.43

## Discussion

The Dell drain outlet will continue to be impacted by the regression of the lakeshore bluff. It would, therefore be reasonable to limit the extent of the work on the outlet such that the improved outlet does not impact the residences before they are affected by the bluff slope.

The analysis of the air photos indicates an average short term rate of regression at the top of the slope of about 1.8 meters per year which is consistent with historical data for this reach of shoreline. However the top of slope and toe of slope do not regress at equal rates. The inconsistency results from variable rates of shoreline erosion, changes in groundwater levels and the effects of slope failures depositing debris at the toe of the slope.

A preliminary analysis of the geotechnical information suggests a stable (factor of safety of 1.0) slope of 2 horizontal to 1 vertical for both the bluff slope and the gully side slopes to define the imminent concern condition. For establishing the safe conditions for the houses, the toe of the bluff slope should be no closer than 88 meters to the residence roadway. However, locating the toe of the slope from the table land is not realistic and the use of a top of slope criterion is more practical. The top of slope criterion requires that the unstable slope inclination be approximated. The 2006 to 2018 data suggest that the unstable bluff slope remains at an inclination of 1.5 horizontal to 1 vertical (1.5H:1V). Based on the latter data, to prevent the residences from being in imminent danger, the top of the bluff slope to house distance should be at least 21 meters. The approximate locations of the tops of the 2 horizontal to 1 vertical slopes drawn from the gully invert are shown on Figure 1. The top of the short term



(1.5H:1V) bluff slopes and the long term imminent concern (2H:1V) slopes are shown for the actual 2018 and projected 2048 conditions based on the current rate of regression. By 2048, the westerly residence is within the zone of imminent danger from the bluff slope.


Based on the above, it would appear reasonable to terminate the upgraded drain outlet at station 0+145 with an open pipe discharge. The minor impacts which could potentially result from the gully invert eroding to lake level at the end of pipe on the top of the 2H:1V gully slopes are shown on Figure 1.

The previous experience with the Oille drain outlet indicates that it would be feasible to extend the existing pipe by simply laying flexible pipe in the invert of the gully and securely anchoring the pipe to prevent it from dislodging from the connection to the existing drain.

We trust that this letter adequately summarizes the results of our review and related comments. If any point requires further clarification or if we can be of additional assistance, please contact our office.

Yours truly,

BEDELL ENGINEERING INC.

  
Philip R. Bedell, B.E.Sc., M.E.Sc., P. Eng.,  
President, Senior Consultant

PRB/GAA

Attachment: Figure 1







**"SCHEDULE B"**  
**SCHEDULE OF ALLOWANCES**

**DELL DRAIN OUTLET**  
**MUNICIPALITY OF CENTRAL ELGIN**

Roll No.	Con.	Description	Owner	Section 30 Damages	Section 29 Land	Total Allowances
2-034	1	S. Pt. Lots 17&18	J. R. Miller	\$0.00	\$1,005.00	\$1,005.00
2-036	1	S. Pt. Lot 18	Devin Vandenwyngaert	\$0.00	\$1,005.00	\$1,005.00
<b>TOTAL ALLOWANCES</b> .....				<b>\$0.00</b>	<b>\$2,010.00</b>	<b>\$2,010.00</b>

**"SCHEDULE C"**  
**SCHEDULE OF ASSESSMENT**  
**DELL DRAIN OUTLET**  
**MUNICIPALITY OF CENTRAL ELGIN**

**MUNICIPAL LANDS:**

Description	Area Affected (Acres) (Ha.)		Owner	Special Benefit	Benefit	Outlet	Total Assessment
County Road No. 24 (Dexter Line)	6.42	2.60	County of Elgin	\$0.00	\$0.00	\$16,309.00	\$16,309.00
Roberts Line	5.68	2.30	Municipality of Central Elgin	\$0.00	\$0.00	\$14,428.00	\$14,428.00
Barnums Gully Line	5.29	2.14	Municipality of Central Elgin	\$0.00	\$0.00	\$8,055.00	\$8,055.00
Total on Municipal Lands.....				\$0.00	\$0.00	\$38,792.00	\$38,792.00

**PRIVATELY-OWNED - NON-AGRICULTURAL LANDS:**

Roll No.	Con.	Description	Area Affected (Acres) (Ha.)		Owner	Special Benefit	Benefit	Outlet	Total Assessment
2-032	1	Pt. Lot 17 RP11R2837 Pt. 1	16.63	6.73 *	S. Zovko	\$0.00	\$0.00	\$7,684.00	\$7,684.00
2-033	1	S. Pt. Lot 17	0.49	0.20	E. & B. Lyle	\$0.00	\$0.00	\$753.00	\$753.00
2-036	1	S. Pt. Lot 18	7.41	3.00	Devin Vandenwyngaert	\$0.00	\$5,000.00	\$0.00	\$5,000.00
2-03501	1	W. Pt. Lot 18 RP11R177 Pt. 1	1.73	0.70	C. & R. Higgs	\$0.00	\$0.00	\$1,219.00	\$1,219.00
2-034	1	S. Pt. Lots 17&18	14.00	5.67	J. R. Miller	\$0.00	\$25,000.00	\$0.00	\$25,000.00
2-07701	2	N. Pt. Lot 19 RP11R2660 Pt. 1	0.72	0.29	C. & S. Barber	\$0.00	\$0.00	\$928.00	\$928.00
2-07101	2	Pt. Lot 17 RP11R464 Pt. 1	6.67	2.70	D. & B. Hamm	\$0.00	\$0.00	\$3,387.00	\$3,387.00
2-073	2	N. Pt. Lot 17 RP11R6009 Pt. 1	3.04	1.23	P. & F. Darrah	\$0.00	\$0.00	\$1,543.00	\$1,543.00
2-07401	2	Pt. Lot 17	24.30	9.83 *	Phil McNamee Charitable Foundation	\$0.00	\$0.00	\$6,166.00	\$6,166.00
3-05601	3	S. Pt. Lot 18 RP11R184 Pt. 2	2.97	1.20	S. Hennessy	\$0.00	\$0.00	\$1,515.00	\$1,515.00
Total on Privately-Owned - Non-Agricultural Lands.....						\$0.00	\$30,000.00	\$23,195.00	\$53,195.00

**PRIVATELY-OWNED - AGRICULTURAL LANDS**

Roll No.	Con.	Description	Area Affected (Acres) (Ha.)		Owner	Special Benefit	Benefit	Outlet	Total Assessment
2-024	1	Pt. Lot 16	1.75	0.71	E. Sommerville	\$0.00	\$0.00	\$891.00	\$891.00
2-025	1	Pt. Lot 16	0.89	0.36	D. Depuydt	\$0.00	\$0.00	\$452.00	\$452.00
2-03201	1	Pt. Lot 17	55.75	22.56 *	R. Sommerville	\$0.00	\$0.00	\$22,360.00	\$22,360.00
2-035	1	N. Pt. Lot 18	101.31	41.00 *	806584 Ontario Limited	\$0.00	\$0.00	\$46,552.00	\$46,552.00
2-037	1	Pt. Lots 18&19 RP11R2604 Pt. 1	8.90	3.60	Walter Hayhoe Enterprises	\$0.00	\$0.00	\$4,517.00	\$4,517.00



Roll No.	Con.	Description	Area Affected (Acres) (Ha.)		Owner	Special Benefit	Benefit	Outlet	Total Assessment
2-071	2	N. Pt. Lot 16 & W. Pt. Lot 17	37.53	15.19	Walter Hayhoe Enterprises	\$0.00	\$0.00	\$19,057.00	\$19,057.00
2-075	2	S. Pt. Lot 18	49.67	20.10 *	G. & F. Sommerville	\$0.00	\$0.00	\$23,805.00	\$23,805.00
2-077	2	S. Pt. Lots 18&19	99.34	40.20 *	Walter Hayhoe Enterprises	\$0.00	\$0.00	\$44,383.00	\$44,383.00
2-074	2	Pt. Lot 17	61.47	24.88	W. Hayhoe	\$0.00	\$0.00	\$31,215.00	\$31,215.00
2-076	2	N. Pt. Lot 18	100.08	40.50 *	N. Parker & Sommerville Farms Sparta Ltd.	\$0.00	\$0.00	\$44,765.00	\$44,765.00
2-078	2	N. Pt. Lot 19	71.91	29.10 *	K.J. Helmer	\$0.00	\$0.00	\$32,858.00	\$32,858.00
3-045	3	Pt. Lot 16	0.99	0.40 *	DeVries Family Farms Limited	\$0.00	\$0.00	\$251.00	\$251.00
3-048	3	Pt. Lot 17	26.93	10.90 *	552727 Ontario Ltd.	\$0.00	\$0.00	\$10,297.00	\$10,297.00
3-052	3	S. Pt. Lot 18	10.87	4.40	W. Jacklin	\$0.00	\$0.00	\$5,520.00	\$5,520.00
Total on Privately-Owned - Agricultural Lands.....						\$0.00	\$0.00	\$286,923.00	\$286,923.00
<b>TOTAL ASSESSMENT .....</b>						<b>\$0.00</b>	<b>\$30,000.00</b>	<b>\$348,910.00</b>	<b>\$378,910.00</b>
			(Acres)	(Ha.)					
<b>Total Area:</b>			<b>722.74</b>	<b>292.49</b>					

\* denotes reduced assessment for surface water only (woodlot)

"SCHEDULE F"  
DRAINAGE REPORT FOR THE  
**DELL DRAIN OUTLET**  
FORMERLY YARMOUTH TOWNSHIP  
IN THE MUNICIPALITY OF CENTRAL ELGIN

**SPECIAL PROVISIONS - GENERAL**

**1.0 GENERAL SPECIFICATIONS**

The General Specifications attached hereto is part of "Schedule F." It also forms part of this specification and is to be read with it, but where there is a difference between the requirements of the General Specifications and those of the Special Provisions which follow, the Special Provisions will take precedence.

**2.0 DESCRIPTION OF WORK**

The work to be carried out under this Contract includes, but is not limited to, the supply of all **labour and materials** to complete the following items:

**TILE DRAIN WORK**

- Removal and disposal of tires, existing cable concrete and other debris off-site.
- Remove and reinstate guide rail to facilitate access to site.
- Brushing of the drain from Station 0+000 to Station 0+150 including the disposal by burning on-site or removal off-site with trimming and/or removal of existing trees as required to accommodate the drainage works.
- Earthworks including cutting and filling of clay banks to create a minimum 5 metre wide working platform. Work includes shaping of new banks and grading of working platform (approximately 754 m<sup>3</sup> cut and 754 m<sup>3</sup> fill). Excess fill shall be placed along the west side of the ravine downstream of the pipe outlet in consultation with the landowner.
- Supply and install high density polyethylene pipe (HDPE) smooth interior wall (Sclairpipe IPS PE4710 DR-11 or approved equivalent) with thermal butt fusion joining system including mobilization and flange welded to pipe at MH1. This work is to include native backfill, compaction, grading and restoration of all disturbed areas. This work is to also include connection to the new manholes.
  - Station 0+061.9 to Station 0+145 - Supply and install 83 m of 900 mm outside diameter polyethylene pipe.
  - Supply and install 24 flex restraints (Electrofusion Flex Restraint or approved equal).
  - Supply and install HDPE Flange welded to DR-11 pipe at MH1. Includes bolted connection to manhole with 38 mm diameter 304 stainless steel rods, nuts and washers.
- Supply and install 6 – 1500 mm diameter 304 stainless steel collars, 12.5 mm thick including stainless steel bolted connections to flex restraints. Supply in two halves with stainless steel bolted connection to facilitate installation in the field.



- Supply and installation of precast concrete manhole including heavy duty cast iron frame and grate as manufactured by Coldstream Concrete or approved equal in accordance with OPSD 703.013, OPSD 400.020 providing a minimum 600 mm deep sump and 50 mm thick grout wearing surface. Work to include connection to existing pipe and concrete grouting of all pipe connections.
  - Manhole No. 1 – Station 0+062 – 2400 mm diameter
- Extend and connect existing subdrains to MH1.
- Erosion protection works at outlet as follows:
  - Station 0+144 to Station 0+148.9 - Supply and install 23.8 m<sup>2</sup> CC70 cable concrete mat with anchors.
- Stone Erosion Protection as follows:
  - Station 0+140 – Supply and install 25 m<sup>3</sup> of stone erosion protection including filter fabric underlay to construct berm.
- Restoration of access to work area including grading, placement of topsoil, hydroseed and mulch with High Performance Growth Medium by Flexterra or approved equal from Station 0+000 to Station 0+060 (approximately 900 m<sup>2</sup>).
- Maintenance of Flows During Construction.
- Temporary Silt Control Measures During Construction

### **3.0 ACCESS TO THE WORK**

Access to the drain shall be from Barnums Gully Line. Access along the drain shall be via a 5 metre wide platform established as part of this work. The Contractor shall make his/her own arrangements for any additional access for his/her convenience. All road areas and grass lawn areas disturbed shall be restored to original conditions at the Contractor's expense.

### **4.0 WORKING AREA**

The working corridor will be within the limits of the excavation as shown on the drawings. Any damage resulting from non-compliance with this Section shall be borne by the Contractor.

## **SPECIAL PROVISIONS – TILE DRAIN**

### **5.0 BRUSHING**

Brushing shall be carried out on the entire drain within the above identified sections of the drain where required and as specified herein. **All** brush and trees located within the drain side slopes shall be cut parallel to the side slopes, as close to the ground as practicable. Tree branches that overhang the drain shall be trimmed. Small branches and limbs are to be disposed of by the Contractor along with the other brush. Tree stumps, where removed to facilitate the drain excavation, may be burned by the Contractor where permitted; otherwise, they shall be disposed of, off the site. The Contractor shall make every effort to preserve mature trees which are beyond the drain side slopes, and the working corridors. If requested to do so by the Drainage Superintendent, the Contractor shall preserve certain mature trees within the designated working corridors (see Section 4.0).

Except as specified herein, all brush and trees shall be stockpiled adjacent to the drain within the working corridors. Stockpiles shall not be less than 100 m apart and shall be a minimum of 2.0 m from the edge of the drain bank. All brush, timber, logs, stumps, large stones or other obstructions and deleterious materials that interfere with the construction of the drain, as encountered along the course of the drain are to be removed from the drain by the Contractor. Large stones and other similar material shall be disposed of by the Contractor off the site.

Following completion of the work, the Contractor is to trim up any broken or damaged limbs on trees which remain standing, disposing of the branches cut off along with other brush and leaving the trees in a neat and tidy condition. Brush and trees removed from the working area are to be put into piles by the Contractor, in locations where they can be safely burned, and to be burned by the Contractor after obtaining the necessary permits, as required. If, in the opinion of the Drainage Superintendent, any of the piles are too wet or green to be burned, he shall so advise the Contractor to haul away the unburned materials to an approved dump site. Prior to, and during the course of burning operations, the Contractor shall comply with the current guidelines prepared by the Air Quality Branch of the Ontario Ministry of Environment, Conservation and Parks and shall ensure that the Environmental Protection Act is not violated. Since the trees and brush that are cut off flush with the earth surface may sprout new growth later, it is strongly recommended that the Municipality make arrangements for spraying this new growth at the appropriate time so as to prevent regrowth.

As part of this work, the Contractor shall remove any loose timber, logs, stumps, large stones or other debris. **Timber, logs, stumps, large stones or other debris shall be disposed of off-site.**

### **6.0 DRAINAGE PIPE CONSTRUCTION**

#### **6.1 Setting Out**

The Engineer shall provide the Contractor in writing with benchmarks and points of reference. From these benchmarks and points of reference, the contractor will do his own setting out. The setting out by the Contractor shall include but shall not be limited to the preparation of grade sheets, the installation of centerline stakes, grade stakes, offsets, and sight rails.

If, during the setting out, the contractor finds an error in the benchmarks or points of reference provided by the Engineer or is uncertain as to the interpretation of the information provided or the work intended, he shall notify the Engineer immediately for additional verification or clarification before proceeding with construction.

The Contractor shall be responsible for the true and proper setting out of the works and for the correctness of the position, levels, dimensions and alignment of all parts of the work.



The Contractor shall be responsible to ensure that the alignment selected results in a minimum depth of cover of 600 mm over the top of the drainage pipe to be installed.

If, at any time during the progress of the works, an error shall appear or arise in the position, levels, dimensions or alignment of any part of the works, the Contractor shall, at his own expense, rectify such error to the satisfaction of the Engineer, unless such error is based on incorrect data supplied in writing by the Engineer.

## **6.2 Alignment**

The Contractor will be required to stake the alignment of the proposed drain in the field and obtain the approval of the Drainage Superintendent prior to commencement of the work. The Drainage Superintendent shall review the proposed alignment and shall have authority to recommend minor variations in the alignment, which may better suit field conditions.

## **6.3 Profile**

The drainage pipe shall be laid so that its invert shall be at the gradeline shown on the profile, which gradeline is governed by the benchmarks. The profile shows, for the convenience of the Contractors and others, the approximate depth of cut from the surface of the ground at 50 metre intervals, to the final invert of the drainage pipe in metres and decimals of a metre. Benchmarks, which have been established along the course of the drain, shall govern the final elevation of the drain. The locations and elevations of the benchmarks are shown on the drawings.

A variation in grade may be tolerated where the actual capacity of the drain exceeds the required capacity. The as-constructed invert of the drainage pipe shall not deviate from the specified gradeline more than 10% of the internal diameter of the drainage pipe. These deviations are allowable, provided they are gradual over a distance of not less than 10 m. No reverse grade shall be allowed.

## **6.4 Obstructions**

All brush, timber, logs, stumps, stones or other obstructions that interfere with the construction of the drain, encountered along the course of the drain are to be removed by the Contractor. Timber, logs and stumps are to be dealt with in the same manner as specified for brush and trees. Large stones and other similar material are to be piled near the limit of the working corridor and the disposal of this material will be the responsibility of the Owner.

## **6.5 Location of New Tile Drain**

The new tile drain shall be installed as shown on the Drawings attached hereto.

## **6.6 Drainage Pipe Materials**

### **6.6.1 H.D.P.E. Pipe**

Tile Drain (Sta. 0+062 to Sta. 0+145)	<i>New 900 mm outside diameter solid High Density Polyethylene smooth wall interior (Sclairpipe IPS PE4710 DR-11 or approved equivalent) unless otherwise specified conforming to the following specifications: ASTM @3350. Joined using thermal butt fusion joining method.</i>
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<i>Native Backfill</i>	<i>Dry native material free of topsoil, organic matter, broken concrete, steel, wood and deleterious substances. Material to be crushed into a granular condition prior to backfilling operations. Backfill to be compacted to 98% Standard Proctor Modified Dry Density (SPMDD).</i>
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<i>Filter Fabric</i>	<i>“Non-Woven” geotextile filter fabric with a minimum strength equal to or greater than Terrafix 270R, Amoco 4546, Mirafi 140NC or approved equivalent.</i>
<i>Erosion Stone</i>	<i>All stone to be used for erosion protection shall be 125 – 250 mm clear quarried rock or OPSS 1001, minimum 300 mm thickness.</i>

## **6.7 Working Platform**

The Contractor shall undertake the cut and fill necessary to create a five metre wide working platform that will also serve as an access along the site. The drawings indicate the extent of the cut fill required to create the platform and balance the cut/fill.

## **6.8 Excavating the Trench**

Construction of the trench shall normally start at the outlet and proceed upstream and be by excavator. The trench walls may be cut vertically to a height of 1 metre from the trench bottom. Beyond 1 metre of the trench bottom the walls are to be cut to 1:1 side slopes.

Minimum width of trench, measured at the top of the drainage pipe, shall be equal to the outside diameter of the drainage pipe plus approximately half of the outside pipe diameter on both sides of the pipe, to permit proper bedding placement around the drainage pipe.

The bottom of the trench shall be cut such that the pipe can rest directly on undisturbed soil.

The Contractor shall note that the intent is to balance the cut and fill volumes on this project.

## **6.9 Laying Drainage Pipe**

After pipe placement, crushed native backfill material shall be placed and compacted to the springline of the pipe throughout its entire length.

Laying of the drainage pipe shall normally begin at the upper end of the drain and progress downstream.

All soil or debris in the drainage pipe shall be removed before installation.

All drainage pipes shall be free from clinging wet or frozen material that would hinder the laying of the drainage pipe on grade.

Before work is suspended for the day, all drainage pipe laid in trenches shall be blinded and any open ends closed.

Care must be taken in handling plastic drain pipe in cold weather to avoid causing damage.

Plastic drain pipe shall be held in position on planned grade immediately after installation by careful placement of backfill material.

## **6.10 Blinding**

As the laying of drainage pipe progresses, the drainage pipe shall be blinded by placing crumbly sub-soils from the springline of the pipe to a minimum depth of 150 mm above the top of pipe.

Drainage pipe laid in open trenches shall be blinded by the end of each day.

Large stones and frozen lumps of soil shall not be permitted in the blinding material.



### **6.11 Backfilling**

After the Drainage Superintendent has inspected the laying of the drainage pipe, earth excavated from the trench shall be used as backfill material.

Large stones, roots, broken pipe and other material likely to impede or damage field equipment shall be removed from the backfill and placed in a suitable disposal area by the Contractor.

To avoid the danger of damaging the drainage pipe, large stones and lumps of frozen earth may not be placed in the trench during the backfill operation.

Where plastic tubing is not blinded in a separate operation, a backfilling method shall be used that permits backfill material to roll into the trench and provide uniform soil placement around tubing, immediately after installation.

All backfill material shall be compacted along the length of pipe and at manhole locations to 98% SPMDD. Particular care in compacting is required at the manholes and at the stainless steel collar locations.

### **6.12 Manholes (MH)**

The Contractor shall arrange for the supply and installation of concrete manholes at the location and elevation as shown on the drawings.

The Contractor shall install all precast structures plumb and true to line and grade. Precast bases shall be set to the specified grade, shall be level, and shall have uniform overall contact with the underlying soil.

All manholes installed shall meet the dimensions and locations outlined in the drawings. Precast concrete manholes shall conform to the requirements of Ontario Provincial Standard Specification (OPSS) 1351. The floor elevation shall be at least 600 mm below the invert of the outlet pipe in the wall of the manhole (no benching).

Pipe placed in the walls for inlet and outlet connections shall extend through the wall a sufficient distance to allow for connections. The pipes shall be trimmed flush with the inside wall unless otherwise noted and shall be securely sealed into place using grout.

The manhole shall be supplied with catchbasin frame and cover as per OPSD 400.020 Type 'A' as manufactured by Coldstream Concrete or approved equal.

### **6.13 Erosion Protection – Cable Concrete Mats**

Erosion protection for the tile outlet from Station 0+144 to Station 0+148.9 shall be constructed of cable concrete mats (IECS CC70 or approved equal), as shown on the drawings and as per manufacturer's recommendations. The concrete mat shall be 4.88 metres wide and be installed using stainless steel clamps. The concrete mats shall be installed with geotextile underlay. Contractor designed drawings required sealed by Ontario Professional Engineer.

## 7.0 STONE EROSION PROTECTION (SEP)

The Contractor shall supply and install the required quantities of graded stone rip-rap erosion protection materials where specified. All stone to be used for erosion protection shall be 125 - 250 mm clear **quarried rock** or OPSS 1001 placed over a non-woven filter fabric Terrafix 270R or approved equivalent. **Concrete rip-rap will not be permitted.**

## 8.0 SEEDING OF DRAIN BANKS

All existing grassed areas disturbed by construction or as identified as new or existing grass buffers shall be seeded as specified herein. The existing ground surface to be seeded shall be loosened to a depth of 25 mm and shall be rendered uniformly loose for that 25 mm depth. The surface shall be predominantly fine and free from weeds and other unwanted vegetation. All other loose surface litter shall be removed and disposed of. Mulching shall be High Performance Flexible Growth Medium by Flexterra or approved equal.

Grass seed shall be Canada No. 1 grass seed mixture meeting the requirements of a Waterway Slough Mixture as supplied by Growmark or approved equal, as follows:

<i>Creeping Red Fescue</i>	20%
<i>Meadow Fescue</i>	30%
<i>Tall Fescue</i>	30%
<i>Timothy</i>	10%
<i>White Clover</i>	10%

Bags shall bear the label of the supplier indicating the content by species, grade and mass. Seed shall be applied at a rate of 200 kg per 10,000 m<sup>2</sup>.

Fertilizer shall be 8-32-16 applied at 350 kg per 10,000 m<sup>2</sup>. It shall be in granular form, dry, free from lumps and in bags bearing the label of the manufacturer, indicating mass and analysis.

**The seeding shall be deemed "Completed by the Contractor" when the seed has established in all areas to the satisfaction of the Engineer. Re-seeding and/or other methods required to establish the grass will be given consideration to achieve the end result and the costs shall be incidental to the works.**

## 9.0 SITE CLEANUP AND RESTORATION

As part of the work and upon completion, the Contractor shall remove and dispose of, off-site any loose timber, logs, stumps, large stones, rubber tires, cinder blocks or other debris from the drain bottom and from the side slopes. Where the construction works cross a lawn, the Contractor shall take extreme care to avoid damaging the lawn, shrubs and trees encountered. Upon completion of the work, the Contractor shall completely restore the area by the placement and fine grading of topsoil and seeding or sodding the area as specified by the Engineer or Drainage Superintendent.



## **GENERAL SPECIFICATIONS**

### **1.0 AGREEMENT AND GENERAL CONDITIONS**

The part of the Specifications headed "Special Provisions" which is attached hereto forms part of this Specification and is to be read with it. Where there is any difference between the requirements of this General Specification and those of the Special Provisions, the Special Provisions shall govern.

Where the word "Drainage Superintendent" is used in this specification, it shall mean the person or persons appointed by the Council of the Municipality having jurisdiction to superintend the work.

Tenders will be received and contracts awarded only in the form of a lump sum contract for the completion of the whole work or of specified sections thereof. The Tenderer agrees to enter into a formal contract with the Municipality upon acceptance of the tender. The General Conditions of the contract and Form of Agreement shall be those of the Stipulated Price Contract CCDC2-Engineers, 1994 or the most recent revision of this document.

### **2.0 EXAMINATION OF SITE, PLANS AND SPECIFICATIONS**

Each tenderer must visit the site and review the plans and specifications before submitting his/her tender and must satisfy himself/herself as to the extent of the work and local conditions to be met during the construction. Claims made at any time after submission of his/her tender that there was any misunderstanding of the terms and conditions of the contract relating to site conditions, will not be allowed. The Contractor will be at liberty, before bidding to examine any data in the possession of the Municipality or of the Engineer.

The quantities shown or indicated on the drawings or in the report are estimates only and are for the sole purpose of indicating to the tenderers the general magnitude of the work. The tenderer is responsible for checking the quantities for accuracy prior to submitting his/her tender.

### **3.0 MAINTENANCE PERIOD**

The successful Tenderer shall guarantee the work for a period of one (1) year from the date of acceptance thereof from deficiencies that, in the opinion of the Engineer, were caused by faulty workmanship or materials. The successful Tenderer shall, at his/her own expense, make good and repair deficiencies and every part thereof, all to the satisfaction of the Engineer. Should the successful Tenderer for any cause, fail to do so, then the Municipality may do so and employ such other person or persons as the Engineer may deem proper to make such repairs or do such work, and the whole costs, charges and expense so incurred may be deducted from any amount due to the Tenderer or may be collected otherwise by the Municipality from the Tenderer.

### **4.0 GENERAL CO-ORDINATION**

The Contractor shall be responsible for the coordination between the working forces of other organizations and utility companies in connection with this work. The Contractor shall have no cause of action against the Municipality or the Engineer for delays based on the allegation that the site of the work was not made available to him by the Municipality or the Engineer by reason of the acts, omissions, misfeasance or non-feasance of other organizations or utility companies engaged in other work.

### **5.0 RESPONSIBILITY FOR DAMAGES TO UTILITIES**

The Contractor shall note that overhead and underground utilities such as hydro, gas, telephone and water are not necessarily shown on the drawings. It is the Contractor's responsibility to contact utility companies for information regarding utilities, to exercise the necessary care in construction operations and to take other precautions to safeguard the utilities from damage. All work on or adjacent to any utility, pipeline, railway, etc., is to be carried out in accordance with the requirements of the utility, pipeline, railway, or other, as the case may be, and its specifications for such work are to be followed as if they were part of this specification. The Contractor will be liable for any damage to utilities.

## **6.0 CONTRACTOR'S LIABILITY**

The Contractor, his/her agents and all workmen or persons under his/her control including sub-contractors, shall use due care that no person or property is injured and that no rights are infringed in the prosecution of the work. The Contractor shall be solely responsible for all damages, by whomsoever claimable, in respect to any injury to persons or property of whatever description and in respect of any infringement of any right, privilege or easement whatever, occasioned in the carrying on of the work, or by any neglect on the Contractor's part.

The Contractor, shall indemnify and hold harmless the Municipality and the Engineer, their agents and employees from and against claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of or attributable to the Contractor's performance of the contract.

## **7.0 PROPERTY BARS AND SURVEY MONUMENTS**

The Contractor shall be responsible for marking and protecting all property bars and survey monuments during construction. All missing, disturbed or damaged property bars and survey monuments shall be replaced at the Contractor's expense, by an Ontario Land Surveyor.

## **8.0 MAINTENANCE OF FLOW**

The Contractor shall, at his/her own cost and expense, permanently provide for and maintain the flow of all drains, ditches and water courses that may be encountered during the progress of the work.

## **9.0 ONTARIO PROVINCIAL STANDARDS**

Ontario Provincial Standard Specifications (OPSS) and Ontario Provincial Standard Drawings (OPSD) shall apply and govern at all times unless otherwise amended or extended in these Specifications or on the Drawing. Access to the electronic version of the Ontario Provincial Standards is available online through the MTO website, free of charge to all users. To access the electronic standards on the Web go to <https://www.library.mto.gov.on.ca/SydneyPLUS/TechPubs/Portal/tp/opsViews.aspx?lang=en-US>.

## **10.0 APPROVALS, PERMITS AND NOTICES**

The construction of the works and all operations connected therewith are subject to the approval, inspection, by-laws and regulations of all Municipal, Provincial, Federal and other authorities having jurisdiction in respect to any matters embraced in this Contract. The Contractor shall obtain all approvals and permits and notify the affected authorities when carrying out work in the vicinity of any public utility, power, underground cables, railways, etc.

## **11.0 SUBLETTING**

The Contractor shall keep the work under his/her personal control, and shall not assign, transfer, or sublet any portion without first obtaining the written consent of the Municipality.

## **12.0 TIME OF COMPLETION**

The Contractor shall complete all work on or before the date fixed at the time of tendering. The Contractor will be held liable for any damages or expenses occasioned by his/her failure to complete the work on time and for any expenses of inspection, superintending, re-tendering or re-surveying, due to their neglect or failure to carry out the work in a timely manner.

## **13.0 TRAFFIC CONTROL**

The Contractor will be required to control vehicular and pedestrian traffic along roads at all times and shall, at his/her own expense, provide for placing and maintaining such barricades, signs, flags, lights and flag persons as may be required to ensure public safety. The Contractor will be solely responsible for controlling traffic and shall appoint a representative to maintain the signs and warning lights at night, on weekends and holidays and at all other times that work is not in progress.



All traffic control during construction shall be strictly in accordance with the **Occupational Health and Safety Act** and the current version of the **Ontario Traffic Manuals**.

Access to the electronic version of the **Ontario Traffic Manual** is available online through the MTO website, free of charge to all users.

**Contractors are reminded of the requirements of the Occupational Health and Safety Act pertaining to Traffic Protection Plans for workers and Traffic Control Plan for Public Safety.**

#### **14.0 SITE CLEANUP AND RESTORATION**

As part of the work and upon completion, the Contractor shall remove and dispose of, off-site any loose timber, logs, stumps, large stones, rubber tires, cinder blocks or other debris from the drain bottom and from the side slopes. Where the construction works cross a lawn, the Contractor shall take extreme care to avoid damaging the lawn, shrubs and trees encountered. Upon completion of the work, the Contractor shall completely restore the area by the placement and fine grading of topsoil and seeding or sodding the area as specified by the Engineer or Drainage Superintendent.

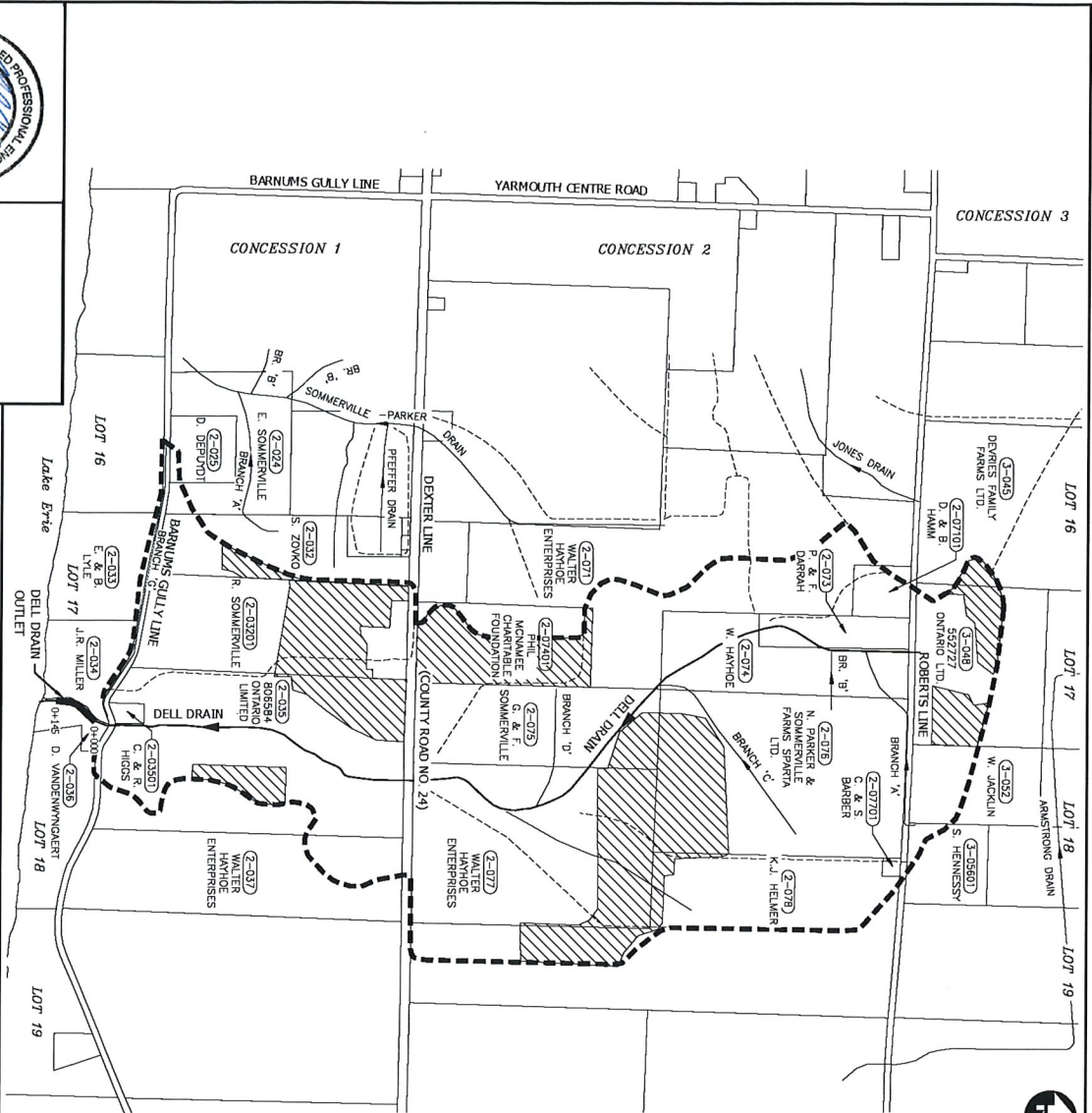
#### **15.0 UTILITY RELOCATION WORKS**

In accordance with Section 26 of the Drainage Act, if utilities are encountered during the installation of the drainage works that conflict with the placement of the new culvert, the operating utility company shall relocate the utility at their own costs. The Contractor however will be responsible to co-ordinate these required relocations (if any) and their co-ordination work shall be considered incidental to the drainage works.

#### **16.0 FINAL INSPECTION**

All work shall be carried out to the satisfaction of the Drainage Superintendent for the Municipality, in compliance with the specifications, drawings and the Drainage Act. Upon completion of the project, the work will be inspected by the Engineer and the Drainage Superintendent. Any deficiencies noted during the final inspection shall be immediately rectified by the Contractor.

Final inspection will be made by the Engineer within 20 days after the Drainage Superintendent has received notice in writing from the Contractor that the work is completed, or as soon thereafter as weather conditions permit.



# WATERSHED PLAN

SCALE=1:15,000

LEGEND	
	DELL DRAIN DRAINAGE AREA
	DELL DRAIN
	OTHER DRAINS
	SUB WATERSHED
	BENCHMARK
	WOOD LOT SURFACE WATER ONLY

SITE BENCHMARK	
BM1-TOP OF EXISTING MANHOLE (MH2) AT STATION 1+000.	ELEVATION=211.12m
BM2-TOP OF EXISTING MANHOLE (MH1) AT STATION 1+017.5.	ELEVATION=205.03m

NOTE: CONTRACTOR TO VERIFY BENCHMARK PRIOR TO CONSTRUCTION.

Conditions of Use			
Verify all dimensions and/or elevations on drawing prior to use. Report any discrepancies to Dillon Consulting Limited. Do not make dimensions from drawing. Do not modify drawing, re-use it, or use it for purposes other than those intended without prior written permission from Dillon Consulting Limited.			
No.	DESCRIPTION	DATE	BY
1	CLIENT REVIEW	MAR. 22/20	MDH
2	CLIENT REVIEW	MAR. 22/20	MDH
3	FINAL REPORT SUBMISSION	NOV. 26/20	MDH
DESIGN: MDH, CHECKED: WLB, DATE: November 26, 2020, SCALE: AS SHOWN			
PROJECT NO. 16-3433		SHEET TITLE: WATERSHED PLAN	
DRAWING SCALE: AS SHOWN		PAGE NO. 1 of 5	



Drainage Report for the  
Municipality of Central Egin



HORIZONTAL CONTROL (Droin Centreline)											
SEGMENT	START STATION	END STATION	LENGTH (m)	RIGHT FLUDES (m)	DELTA ELEVATION (mm)	DELTA INCLINATION (°)	SIGNAL PARAMETER (A)	START NORTHING (m)	START EASTING (m)	END NORTHING (m)	END EASTING (m)
L3	0+200.0	0+225.0	25.002	8.630	13	33.2346°	32+119.97°	4725977.4239	401319.9325	4725505.3536	401300.0032
L4	0+225.0	0+242.853	17.853	8.743	15	32.927333°	32+109.96°	4725950.2858	401318.3832	4725491.6379	401301.2385
L1	0+242.853	0+260.006	17.153	8.837	15	32.927333°	32+109.96°	4725935.4172	401317.5010	4725476.6379	401300.2385
L4	0+260.006	0+272.352	12.346	8.837	15	32.927333°	32+109.96°	4725918.6172	401316.5010	4725461.6379	401299.2385
L3	0+272.352	0+288.152	15.800	8.768	15	32.927333°	32+109.96°	4725891.6172	401315.5010	4725446.6379	401298.2385
L5	0+288.152	0+302.342	14.190	8.768	15	32.927333°	32+109.96°	4725864.6172	401314.5010	4725431.6379	401297.2385
L2	0+302.342	0+322.342	20.000	8.768	15	32.927333°	32+109.96°	4725837.6172	401313.5010	4725416.6379	401296.2385
L2	0+322.342	0+342.342	20.000	8.768	15	32.927333°	32+109.96°	4725810.6172	401312.5010	4725401.6379	401295.2385
L2	0+342.342	0+362.342	20.000	8.768	15	32.927333°	32+109.96°	4725783.6172	401311.5010	4725386.6379	401294.2385
L2	0+362.342	0+382.342	20.000	8.768	15	32.927333°	32+109.96°	4725756.6172	401310.5010	4725371.6379	401293.2385
L2	0+382.342	0+402.342	20.000	8.768	15	32.927333°	32+109.96°	4725729.6172	401309.5010	4725356.6379	401292.2385
L2	0+402.342	0+422.342	20.000	8.768	15	32.927333°	32+109.96°	4725702.6172	401308.5010	4725341.6379	401291.2385
L2	0+422.342	0+442.342	20.000	8.768	15	32.927333°	32+109.96°	4725675.6172	401307.5010	4725326.6379	401290.2385
L2	0+442.342	0+462.342	20.000	8.768	15	32.927333°	32+109.96°	4725648.6172	401306.5010	4725311.6379	401289.2385
L2	0+462.342	0+482.342	20.000	8.768	15	32.927333°	32+109.96°	4725621.6172	401305.5010	4725296.6379	401288.2385
L2	0+482.342	0+502.342	20.000	8.768	15	32.927333°	32+109.96°	4725594.6172	401304.5010	4725281.6379	401287.2385
L2	0+502.342	0+522.342	20.000	8.768	15	32.927333°	32+109.96°	4725567.6172	401303.5010	4725266.6379	401286.2385
L2	0+522.342	0+542.342	20.000	8.768	15	32.927333°	32+109.96°	4725540.6172	401302.5010	4725251.6379	401285.2385
L2	0+542.342	0+562.342	20.000	8.768	15	32.927333°	32+109.96°	4725513.6172	401301.5010	4725236.6379	401284.2385
L2	0+562.342	0+582.342	20.000	8.768	15	32.927333°	32+109.96°	4725486.6172	401300.5010	4725221.6379	401283.2385
L2	0+582.342	0+602.342	20.000	8.768	15	32.927333°	32+109.96°	4725459.6172	401299.5010	4725206.6379	401282.2385
L2	0+602.342	0+622.342	20.000	8.768	15	32.927333°	32+109.96°	4725432.6172	401298.5010	4725191.6379	401281.2385



**PROPOSED MANHOLE**

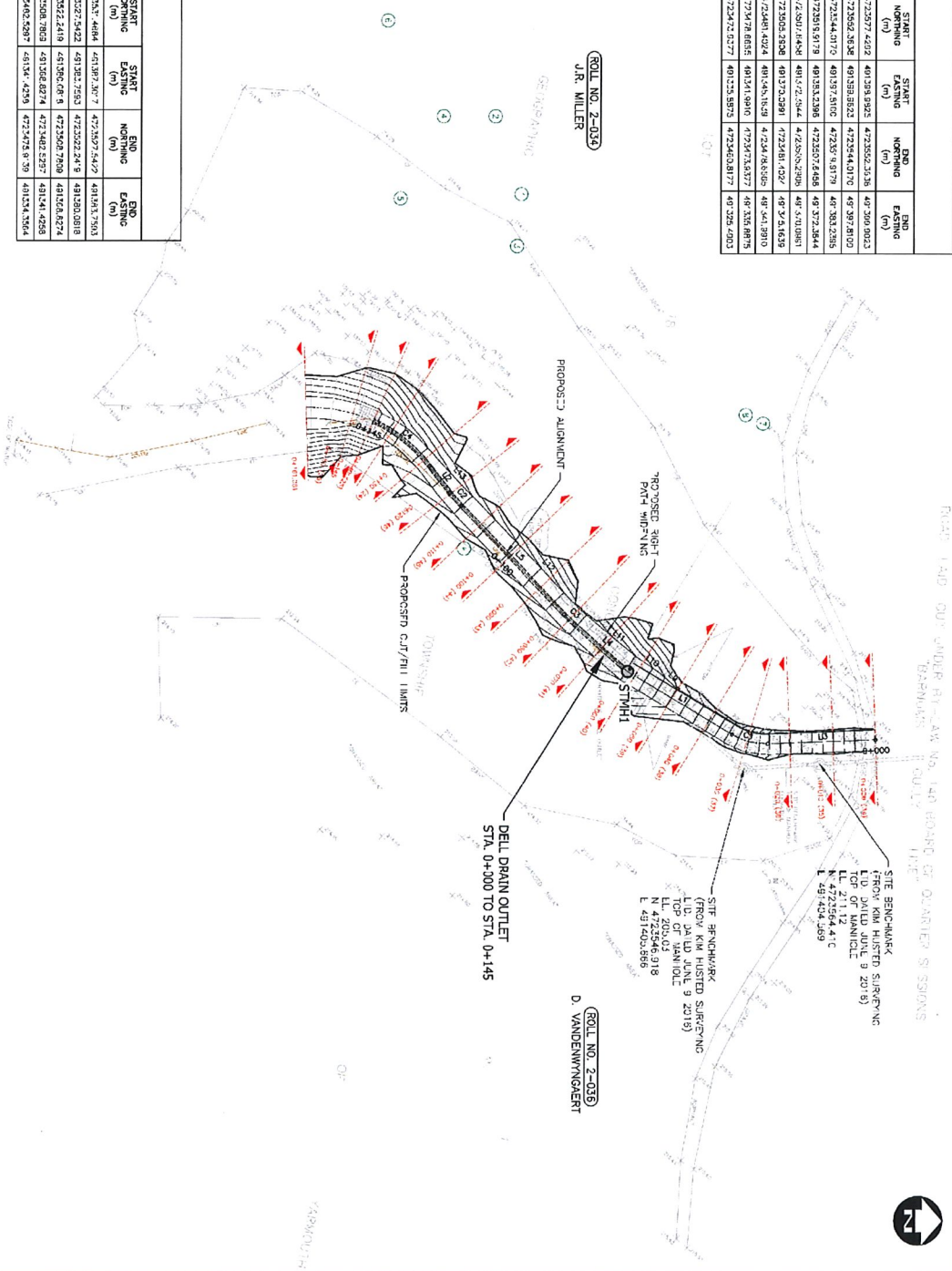
(ROLL NO. 2-036)  
D. VANDENWYNGAERT

HORIZONTAL CONTROL (Right Path widening)											
SECTION	STATION	RUN STATION	EDITION (m)	EDITION (m)	EDITION (m)	DATA ENDING (degree/m)	LINE/CHORD PARAMETER (m)	SPIRAL STARTING (°)	START POINT EASTING (m)	END POINT EASTING (m)	END POINT NORTHING (m)
1.0	0+000.00	0+000.00	5.246				546.52(29.7°)	427.335(4.461°)	472.561(7.447°)	4018.13(5.501°)	
1.10	0+020.00	0+011.78	5.461				473.527(2.942°)	491.762(7.753°)	472.552(2.748°)	40120.0(8.181°)	
1.11	0+040.00	0+028.48	5.461				503.554(4.13°)	473.527(2.416°)	472.552(2.748°)	40190.0(8.181°)	
1.12	0+060.00	0+047.27	5.461				473.527(2.416°)	491.762(7.753°)	472.552(2.748°)	40120.0(8.181°)	
1.13	0+080.00	0+076.22	5.461				546.525(2.7°)	473.527(2.416°)	472.552(2.748°)	40120.0(8.181°)	

**HORIZONTAL CONTROL  
(Right Path widening)**

## Conditions of Use

								Drainage Report for the <b>DELL DRAIN OUTLET</b> Municipality of Central Egin	
		SECTION	REVIEWED BY						
		MMM	R/R						
		S&AA	CHECKED BY						
		MMM	TRO						
3	PINAL REPORT SUBMISSION	NOV. 26/20	DATE	November 26, 2020					
2	CLIENT REVIEW	MAR. 2/20	MOH						
1	CLIENT REVIEW	JAN. 31/19	MOH						
	ESCALATOR	SCALE	BY	1:1=100					
					PROJECT NO.	16-3433	SHEET TITLE	SITE PLAN	
					DRAWING SCALES BASED ON A 1" X 17" SHEET			2 OF 5	

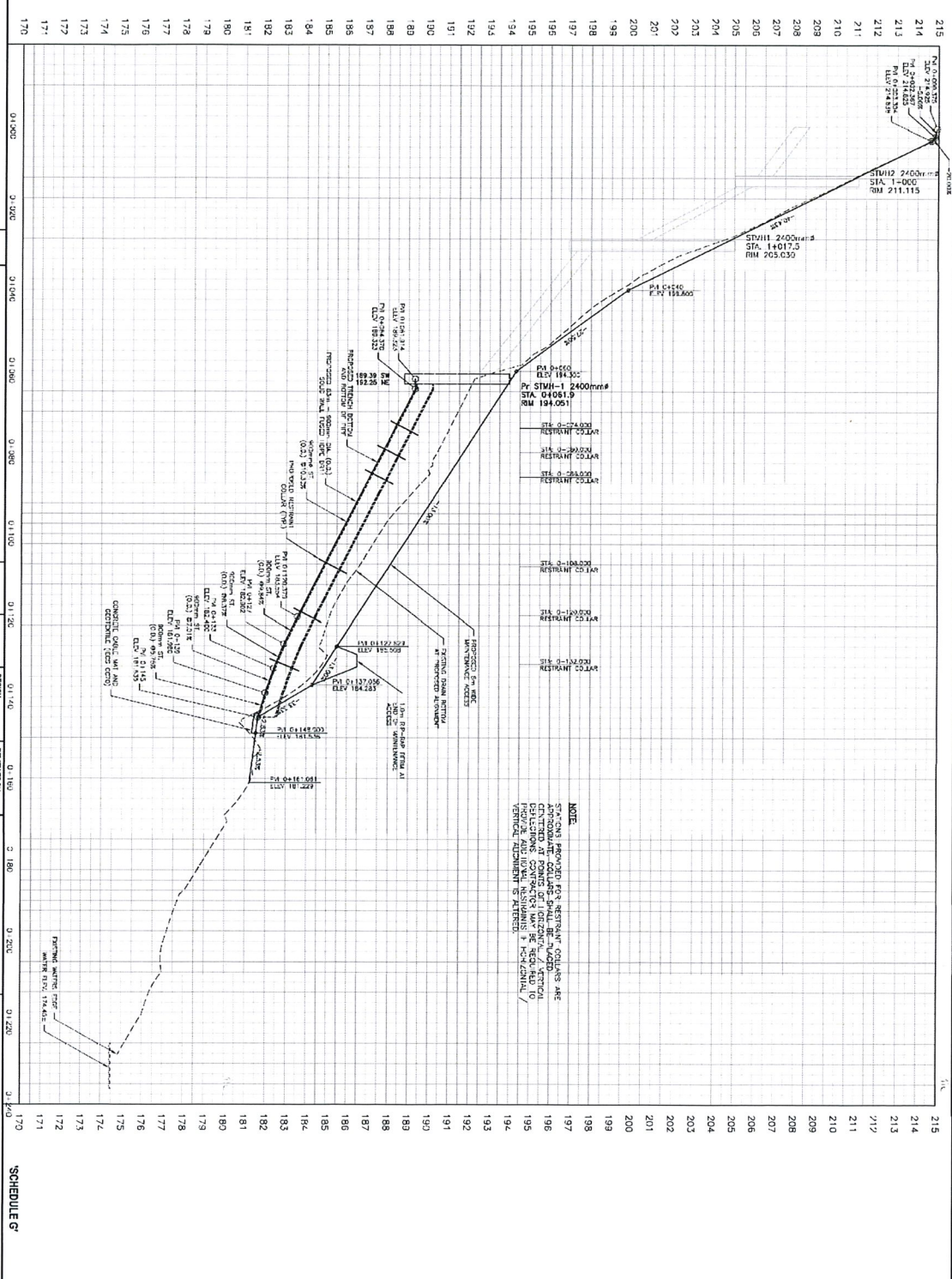




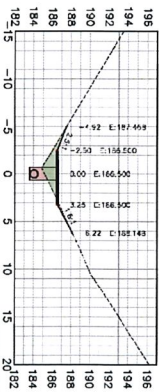
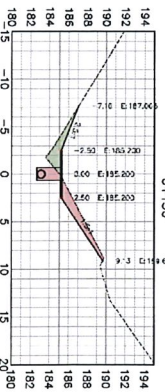
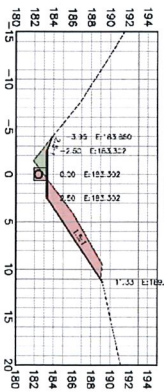
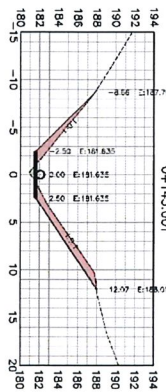
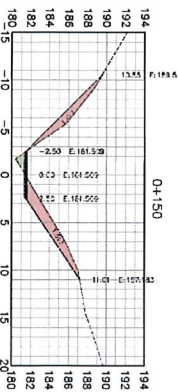
**Conditions of Use**  
Verify dimensions and/or elevations on drawings prior to use.  
Report any discrepancies to Dillon Consulting Limited.  
Do not scale dimensions from drawings.  
Do not modify, drawing, in whole or in part for purposes other than those intended.  
This drawing is the property of Dillon Consulting Limited.  
Written permission from Dillon Consulting Limited.

No.	CLIENT REVIEW	ISSUED FOR	DATE	BY	SCALE
1	CLIENT REVIEW	ISSUED FOR	JAN. 31/19	MDH	1:1000
2	CLIENT REVIEW	NOV. 26/20	MDH		
3	FINAL REPORT SUBMISSION	NOV. 26/20	MDH		

**DILLON CONSULTING**  
16-3433  
DRAWING SCALE: AS SHOWN ON PLOT SHEET  
Drainage Report for the  
**DELL DRAIN OUTLET**  
Municipality of Central Egin  
PROJECT NO. 16-3433  
SHEET NO. 3 of 5  
PROFILE











## **APPENDIX E**

### **BRANCH "G" DELL MUNICIPAL DRAIN**

#### **REPORT**

**October 30, 2015**

**K. SMART ASSOCIATES LIMITED**

85 McIntyre Drive, Kitchener, ON, N2R 1H6

# BRANCH “G” DELL MUNICIPAL DRAIN

MUNICIPALITY OF CENTRAL ELGIN

Our Reference: EM-3557

October 30, 2015



## 1.0 INTRODUCTION

### 1.1 AUTHORITY TO PREPARE REPORT

This report is as a result of valid drainage petition signed by the Director of Operations for the Municipality of Central Elgin , pursuant to Section 4 (1) (c) of the Ontario Drainage Act.

### 1.2 AREA REQUIRING DRAINAGE

The area requiring drainage can best be described as a portion of Barnum Gully's Lane between Lot 17 and Concession 1 a distance of approximately 750 metres. A road cross culvert was installed in the late 1990's by the road authority to try and alleviate drainage problems with the road, but without a sufficient outlet drainage problems persisted.

### 1.3 DESCRIPTION OF THE REPORT REQUIREMENTS

This report will set out the works required in the opinion of the Engineer together with an estimate of total project costs and an assessment schedule assessing the project costs to affected landowners including the local Road Authority.

### 1.4 HISTORY OF THE DRAINAGE AREA

The area to be drained is approximately 31 hectares and is between the limits of the Dell Municipal Drain and the Summerville Parker Municipal drain. This area is not presently part of a municipal drainage report and will be incorporated into the Dell municipal Drain as Branch G.

### 1.5 TOTAL DRAINAGE AREA

The new area to be drained is approximately 31 hectares. Note that the proposed outlet for Branch G is at the lower end of the main drain just to the south of Barnum's Gully Line and will have no impact on landowners upstream of the point where Branch G, joins the Main Drain.

## 2.0 MEETINGS AND DISCUSSIONS

### 2.1 Land Owner Concerns

- Roger Somerville advised that Eva Somerville has a tile drainage outlet that needs to be connected to the proposed new drain. It was determined that the connection to this tile drain would not be feasible via a piped sewer connection. Ditching will be constructed to this westerly limit.
- Roger Somerville advised that he has an existing tile drain which outlets southerly across Barnum's Gully Line. Mr. Somerville requested that this outlet also be incorporated in the new work.
- Jim Swartz, John Miller, and Roger Baker requested that the existing assessment schedule be revised to reflect the proposed changes. Bryon Wiebe advised that this would all be taken into account at the time the new report is written.
- Bryon Wiebe advised that a further meeting will be held with the affected land owners once the Survey work has been completed and Report would be in Draft stage. At that time land owners can provide further output.
- John Miller raised the issue of existing erosion on his property and wanted assurance that the new works would not create additional erosion. This issue will be reviewed on site prior to the report being submitted. It was determined that there is an existing 150 mm diameter perforated pipe between the Miller house and the proposed outlet on the west side of the 2400 mm diameter manhole just South of Barnum's Gully Line.

Branch G, Dell Municipal Drain  
Central Elgin, County of Elgin

- Jeff Ferguson requested that the ditches on both the South and North of Barnum's Gully Road be redirected to the outlet into the new drainage system. Bryon Wiebe advised that this will be addressed in the report.
- Geoff Brooks advised that there is an existing water main along at least a portion of Barnum's Gully Line.
- The proposed outlet for the westerly extension will be the 2400 mm diameter manhole just south of Barnum's Gully Line on the main drain.
- Roger Summerville questioned the assessment, and requested that it be investigated whether landowners on the south side of Barnum's Gully Line should be assessed. It was agreed that Parsons would investigate the contribution of drainage from these landowners' properties. Upon further investigation it was determined that a small area drained to the catch basin the south ditch and this area would be assessed under the report.
- Jim and Marlene Swartz raised the concern of increased erosion at Dell Drain Outlet to the lake. This concern was addressed by Matt de Wit, Henry Huotari, and Geoff Brooks. It was stated that while the total volume of water passing through the existing gully from the Dell Drain Outlet would be increased by the proposed sewer, the overall erosion effects should not be affected due to the fact that the peak flow from the Branch 'C' outlet would pass through the system prior to the larger upstream flows.

### 3.0 FIELD INVESTIGATION

#### 3.1 EXISTING LAND USES

The existing land use is primarily agricultural in nature.

#### 3.2 SOIL AND TOPOGRAPHIC CONDITIONS

See Section 4.2 Hydrology

#### 3.3 DESCRIPTION OF FIELD WORK

A topographic survey was undertaken to determine the best location for the new drainage works.

#### 3.4 GENERAL EXISTING CONDITIONS

There is an existing road cross culvert which was installed by the Municipality some time ago to improve road drainage in the affected area. Unfortunately a proper and sufficient outlet does not exist for this existing culvert. The works proposed will provide a sufficient outlet for upstream lands. The existing cross culvert will be removed.

#### 3.5 LOCATION AND CONDITION OF OUTLET

The present outlet for the existing drainage area is a road cross culvert located at Station 0+298. Unfortunately this cross culvert primarily moves water from the north side of the road allowance to the south side of the road allowance. The petition by the Road authority is to secure a sufficient outlet for the road allowance, and to provide a legal outlet for the upstream area being drained to this cross culvert for Road # 002-03201 (R. Sommerville) who currently does not have a legal outlet for his tile drainage system.



### 3.6 UTILITIES

Utilities will be located by the various utility groups at the time of construction. Including contacting the West Elgin Water System.

## 4.0 DESIGN

### 4.1 DESIGN CRITERIA

The proposed sewer has been designed in accordance with the Drainage Guide for Ontario, Publication 26 by the Ontario Ministry of Agriculture, Food, and Rural Areas. A 24 hour storm depth of 38mm was used to determine the runoff from the proposed drainage area.

### 4.2 HYDROLOGY

The runoff from the catchment area was determined using the SCS hydrograph method. Soil type was checked using OMAFRA Soil Survey Complex data. The soils within the drainage area are B class hydrologic group soils. The land use in the 31ha design drainage area is mainly agricultural use and forest in good condition resulting in a composite CN value for this drainage area of 68. The time of concentration for this area was determined to be 2.72 hours with a time to peak of 1.83 hours. Using these factors the peak runoff was calculated at 55 l/s.

The time of concentration of the receiving system was investigated to determine capacity issues. Through this analysis it was found that the time of concentration of the receiving system was significantly longer than the design drainage area and no capacity issues would arise from the proposed increase in total drainage area.

### 4.3 HYDRAULICS

The proposed storm sewer has been designed to convey the calculated runoff and allow for the most cost-effective construction. A 350mm, smooth walled pipe storm sewer at 0.32% will convey the collected storm water to a new manhole at the existing outlet of the Dell Drain.

### 4.4 ROAD CROSSINGS

There will be one road crossing at a depth of 2.5m. This road crossing may be constructed using trenchless methods to reduce costs and traffic impacts. If soil conditions do not allow for trenchless methods, open cut is a possibility, to be completed in two stages so that local traffic access will be possible at all times.

## 5.0 MUNICIPAL ROAD CROSSINGS

The existing road crossing located at station 0+298 will be removed. A Ditch Inlet CB will be installed on the South side of the road allowance so that flows from the south road side ditch will be conveyed to the north side of the road allowance to enter into a Ditch Inlet Catch Basin located on the new Branch G. The existing road ditches along either side of the travelled road will be re-graded to the new outlet created at 0+298 as part of the construction of the drain. Future maintenance will be undertaken by the municipal road authority and will not form part of the works for future maintenance.

## 6.0 EROSION AND SEDIMENT CONTROL

Erosion and sediment control measures are to be applied in order to reduce and or eliminate the loss of productive farmland, sedimentation of any downstream channels and the deterioration of the quality of the water within the system. Techniques used may include buffer strips, vegetation of susceptible areas and temporary sediment basins.





## **8.0 AVAILABLE GRANTS**

### **8.1 OMAF GRANT FOR AGRICULTURAL LANDS**

Landowners of agricultural lands will be eligible for whatever grants are currently available from the Ontario Ministry of Agriculture, Food and Rural Affairs. Grants will be applied for by the municipality and applied to the landowner's assessment at the time of billing. The Assessment Schedule indicates which lands in our opinion are suitable for agricultural purposes. The final determination of eligibility rests with the Ontario Ministry of Agriculture, Food and Rural Affairs.

## **9.0 WORKING SPACE**

### **9.1 GENERAL**

As Per Section 63 of the Drainage Act, the total working space required for this installation will be 15 metres. Working space required at road crossings or for work being undertaken on the branch drains within the road allowance will be the total width of the road allowance.

### **9.2 LEVELLING OF SPOIL**

Any Spoil shall be disposed of as noted in the description of the proposed work. Generally the spoil will be disposed of adjacent to the drain unless otherwise specified. Should any landowner require that all or a portion of the spoil be trucked away from their property, the cost of trucking spoil shall be assessed totally to the landowner requesting same, and will not form part of the total cost of the drainage system.

## **10.0 SUMMARY AND CONCLUSIONS**

### **10.1 FUTURE EXTENSIONS AND IMPROVEMENTS**

For any new crossing culverts requested in the future, a qualified Engineer shall be retained to size the opening design the structure, and assess the cost as per Section 78 of the Drainage Act. Future extensions or additional branches of the Dell Municipal Drain may be undertaken provided a valid petition is submitted by any landowner or group of landowners, pursuant to Section 4 of the Drainage Act. Any landowner who is assessed on a municipal drain, can petition to the municipality to have the drain extended upstream to provide better outlet for a particular drainage problem. Downstream extensions, improvements, or modifications may proceed under Section 78 of the Drainage Act without petition, but on the report of an Engineer appointed by the municipality.

There are provisions in the Drainage Act, particularly Section 65 dealing with the subsequent subdivision of land and Section 66, which addresses both subsequent connection to the drainage works, and the subsequent alteration of the nature or extent of the use of a drainage works. Both sections of the Drainage Act take into account future land use changes within the drainage area, and as appropriate, the municipality can ensure that the assessment schedule for the drain is kept current.

### **10.2 CONCLUDING REMARKS**

In Summary, the intention of this proposed Municipal Drain is to provide a sufficient outlet for the area requiring drainage.

A detailed topographic survey has not been made of all of the lands within the affected watershed area, and the report does not intend to show how any of these land might be underdrained.

This report provides sufficient details as to the magnitude and extent of the proposed works, including a general description of the work which is proposed on each property.

Drawings attached to this report may have been reduced in size. Measurements should not be scaled from these drawings.

Branch G, Dell Municipal Drain  
Central Elgin, County of Elgin

Construction specifications for this project have been included on the drawing and these specifications shall govern future maintenance of the drain as well.

As per Section 83 of the Drainage Act, any person who discharges any liquid, material, or substance into the drain other than unpolluted drainage water, is liable to fine.

It will be the responsibility of the landowner to remove any merchantable timber located along the route of the drain prior to construction. Any logs cut by the contractor along the drain route will be pushed into piles by the contractor at locations designated by the landowner during construction. Small trees and brush are to be chipped and piled by the contractor at regular intervals along the drain.

Based on the above report, it is respectfully recommended that Central Elgin adopt this Report by by-law under authority of the Drainage Act.

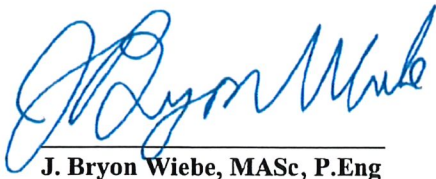
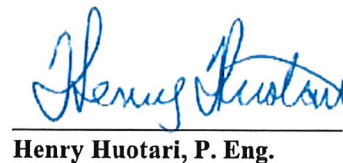
If the Council of the Central Elgin decides, after meeting with the property owners, to proceed with the construction of the Branch G, Dell Drain, it may adopt this report by passing a provisional by-law as set out in Section 45 of the drainage Act. When the time for appeals has expired, or after all appeals have been decided the Council, in order to proceed, may finally pass the by-law as set out under Section 58 of the Drainage Act. Third reading of the by-law provides that all of the work recommended in this report (including plans and specifications) is to be carried out. However, should minor changes in the works be necessary, in the opinion of the Engineer, in order to produce a more satisfactory drain, or a more economical one, it is recommended that the Engineer have the authority to authorize these minor changes.

Should major changes be required, these can only be authorized by the Council of Central Elgin by amending the by-law and Report with the consent of the property owners affected and the approval of the Ontario Drainage Tribunal. Reference Section 58 of the Drainage Act.

Respectfully submitted:

**Parsons Inc.**

Per:

  
J. Bryon Wiebe, MAsC, P.Eng  
Henry Huotari, P. Eng.

October 30, 2015





## Branch G, Dell Municipal Drain

Municipality of Central Elgin

### SCHEDULE 'A' - ALLOWANCES

In accordance with Sections 29 and 30 of the Drainage Act, the allowances payable to owners entitled thereto as follows:

<u>Concession</u>	<u>Lot</u>	<u>Roll Number (Owner)</u>	<u>Section 29 Right-of-Way</u>	<u>Section 30 Damages</u>	<u>TOTALS</u>
BRANCH "G"					
1	16	002-0240D (E.C Sommerville)	\$ 100.00	\$ 400.00	\$ 500.00
1	17	002-03200 (S. Zovko)	\$ 200.00	\$ 800.00	\$ 1,000.00
1	17	002-03201 (R. Sommerville)	\$ 310.00	\$ 1,240.00	\$ 1,550.00
1	18	002-03500 (806584, Ontario Limited)	\$ 130.00	\$ 520.00	\$ 650.00
1	18	002-03400 (J.R. Miller)	\$ 20.00	\$ 80.00	\$ 100.00
1	18	002-03600 (J.R. / M.B. Swartz)	\$ 10.00	\$ 40.00	\$ 50.00
Central Elgin (Barnum's Gully Line)			\$ 70.00	\$ 280.00	\$ 350.00
TOTAL ALLOWANCES ON BRANCH "G"			<u>\$ 840.00</u>	<u>\$ 3,360.00</u>	<u>\$ 4,200.00</u>

## SCHEDULE 'B' - ASSESSMENT FOR CONSTRUCTION

### Branch G, Dell Municipal Drain

\*\*Amended - June 20, 2016 (per OMAFRA Tribunal Decision)\*\*

<u>CON.</u>	<u>LOT</u>	<u>HECTARES</u> <u>AFFECTED</u>	<u>ROLL No. (OWNER)</u>	<u>ORIGINAL</u> <u>REPORT</u> <u>BENEFIT</u>	<u>REVISED</u> <u>COR</u> <u>BENEFIT</u>	<u>REVISED</u> <u>TRIBUNAL</u> <u>BENEFIT</u>	<u>%</u> <u>Change</u>	<u>OUTLET</u>	<u>TOTAL</u>
1	16	0.36	002-02500 (D. T. Depuydt)	\$310	\$286	\$234	-18%	\$100	\$334
1	16	0.71	002-0240D* (E.C. Sommerville)	\$610	\$563	\$461	-18%	\$205	\$666
1	17	6.73	002-03200* (S. Zovko)	\$5,800	\$5,349	\$4,368	-18%	\$1,900	\$6,268
1	17	21.94	002-03201* (R. Sommerville)	\$18,850	\$17,385	\$14,240	-18%	\$6,300	\$20,540
1	17	0.20	002-03300 (B.M. / E.O. Lyle)	\$160	\$2,193	\$6,569	200%	\$60	\$6,629
1	18	0.69	002-03500* (806584 Ontario Limited)	\$590	\$544	\$448	-18%	\$200	\$648
		1.64	Barnum's Gully Line	\$17,540	\$17,540	\$17,540	0%	\$5,850	\$23,390
			Sub-Totals	<u>\$43,860</u>	<u>\$43,860</u>	<u>\$43,860</u>	<u>0%</u>	<u>\$14,615</u>	<u>\$58,475</u>

Special Assessment against the Municipality of Central Elgin for the cost of crossing Barnums Gully Line and relocating appurtenances

\$13,500

TOTAL ASSESSMENT

\$71,975

\* Lands determined eligible for grant purposes



**APPENDIX A – MAINTENANCE ASSESSMENT SCHEDULE**  
**As Prepared by the Agriculture, Food and Rural Affairs Appeal Tribunal**  
**Branch G, Dell Municipal Drain**

<u>CON.</u>	<u>LOT</u>	<u>HECTARES AFFECTED</u>	<u>ROLL No. (OWNER)</u>	<u>%</u>
1	16	0.36	002-0250 * (D. T. Depuydt)	1.0
1	16	0.71	002-02400 (E.C. Somerville)	2.0
1	17	6.73	002-03200 (S. Zovko)	15.0
1	17	21.94	002-03201 (R. Somerville)	45.0
1	17	10.12	002-03300 * (B.M. / E.O. Lyle)	15.0
1	18	0.69	002-03500 (806584 Ontario Limited)	2.0
		1.64	Barnum's Gully Line *	<u>20.0</u>
TOTAL				100.0

The Municipality of Central Elgin shall also be responsible for 100% of the costs of maintaining the Barnum's Gully Line road crossings and all catchbasins.

\* not agricultural lands

**APPENDIX B – ASSESSMENTS FOR CONSTRUCTION**  
**As Amended by the Agriculture, Food and Rural Affairs Appeal Tribunal**  
**Branch G, Dell Municipal Drain**

<u>CON.</u>	<u>LOT</u>	<u>HECTARES AFFECTED</u>	<u>ROLL No. (OWNER)</u>	<u>BENEFIT</u>	<u>OUTLET</u>	<u>TOTAL</u>
1	16	0.36	002-0250 * (D. T. Depuydt)	\$ 234	\$ 100	\$ 334
1	16	0.71	002-02400 (E.C. Somerville)	\$ 461	\$ 205	\$ 666
1	17	6.73	002-03200 (S. Zovko)	\$ 4,368	\$ 1,900	\$ 6,268
1	17	21.94	002-03201 (R. Somerville)	\$ 14,240	\$ 6,300	\$ 20,540
1	17	0.20	002-03300 * (B.M. / E.O. Lyle)	\$ 6,569	\$ 60	\$ 6,629
1	18	0.69	002-03500 (806584 Ontario Limited)	\$ 448	\$ 200	\$ 648
		1.64	Barnum's Gully Line *	\$ 17,540	\$ 5,850	\$ 23,390
Sub-Totals				<u>\$ 43,860</u>	<u>\$ 14,615</u>	<u>\$58,475</u>

Section 26 Assessment to the Municipality of Central Elgin for  
the cost of crossings on Barnum's Gully Line and Relocating  
appurtenances.

\$ 13,500

TOTAL ASSESSMENT

\$ 71,975

\* not agricultural lands

2016 ONAFRAAT 15 (CanLII)







## **APPENDIX F**

### **DELL DRAIN 1997**

#### **REPORT**

**June 20, 1997**

**K. SMART ASSOCIATES LIMITED**

**85 McIntyre Drive, Kitchener, ON, N2R 1H6**



**DELL DRAIN 1997**  
**Township of Yarmouth**



**SPRIET ASSOCIATES**

**Job No. 97052**

**June 20, 1997**

London, Ontario  
June 20, 1997

## **DELL DRAIN 1997**

### **Township of Yarmouth**

To the Reeve and Council  
of the Township of Yarmouth

Reeve and Council:

We are pleased to present our report on the construction of a new outlet for the Dell Municipal Drain serving parts of Lots 16-19, Concessions 1 to 3 in the Township of Yarmouth.

#### **AUTHORIZATION**

This report was prepared pursuant to Sections 4 and 78 of the Drainage Act in accordance with instructions received from your Clerk with respect to a motion of the Township Council.

The work on the outlet portion, south of Barnums Gully Line was initiated by a petition signed by all of the affected landowners. The work on the existing ditch was requested by some of the upstream owners.

#### **DRAINAGE AREA**

The total watershed area contains approximately 240 hectares.

#### **HISTORY**

The Dell Drain was last reconstructed pursuant to a report submitted by G. Duncan Black, P. Eng. dated July 12, 1960 and consisted of an open ditch drain for 1000 meters in Concession 1 south of County Road No. 24. Upstream of the County Road in Concessions 2 and 3 the drain consists of several hundred meters of main drain tile and five branch tile drains. In 1984 portions of the main drain were replaced in Lot 18. The outlet of the open drain is a concrete box inlet, pipe and drop silo on Barnums Gully Line. The system was installed, many years ago, to protect the Township road and private property to the south from gully erosion.

This spring it appears that the outlet pipe for the silo has failed and the result over the spring months was the collapse and closure of the Township road and severe gully erosion on adjacent properties. The silo has undermined and tipped over pulling the road pipe apart under the old roadbed.

## EXISTING DRAINAGE CONDITIONS AND DESIGN CONSIDERATIONS

A field survey was made prior to a public meeting to determine elevations, slope lines and possible outlet locations. A soils investigation was also made, to determine soil type and stability at the site.

A site meeting with respect to the project was held on May 26, 1997 and the owners of lands within the watershed area were invited to attend. The purpose of the meeting was to review proposals for repairs to the Dell Drain outlet.

## PROPOSED WORK AND DESIGN CRITERIA

We are therefore recommending the following:

- that a new outlet pipe be installed under Barnums Gully Line to a point 63 meters south of the road
- that a new catchbasin inlet be installed on the north side of the road to collect the open ditch flows
- that two new drop manholes be installed on the south side of the Barnums Gully Line to carry the flows
- that erosion protection be placed at the end of the outlet pipe
- that the existing open ditch upstream of the road be cleaned and brushed for 200 meters
- that Branch 'A' be extended to cross Roberts Line

The capacity of the new pipe and drop manhole system is approximately 5.5 cubic meters per second which is equivalent to a 100 year storm. The proposed work consists of approximately 200 meters of open ditch reconstruction and 70 meters of 750mm pipe including catchbasin and manholes. Also included is a new road crossing and catchbasin on Roberts Line.

## SCHEDULES

Four schedules are attached hereto and form part of this report, being Schedule 'A' - Allowances, Schedule 'B' - Cost Estimate, Schedule 'C' - Assessment for Construction and Schedule 'D' - Assessment for Maintenance.

Schedule 'A' - Allowances. In accordance with Section 30 of the Drainage Act, we have provided allowances for damages to lands and crops along the route in which the drain is actually constructed. In accordance with Section 29 of the Drainage Act, an allowance for right-of-way is also provided to the lands used for the construction of the drain and for temporary access.



## **SCHEDULES (cont'd)**

Schedule 'B' - Cost Estimate. This schedule provides for a detailed cost estimate of the proposed work which is in the amount of \$158,500.00. This estimate includes engineering and administrative costs associated with this project, including the net Goods and Services Tax.

Schedule 'C' - Assessment for Construction. This schedule outlines the distribution of the total estimated cost of construction over the roads and lands which are involved.

Schedule 'D' - Assessment for Maintenance. This schedule outlines the distribution of future repair and/or maintenance costs for portions of, or the entire drainage works.

Drawing No.'s 1 to 3, Job No. 97052 and specifications form part of this report. They show and describe in detail the location and extent of the work to be done and the lands which are affected.

## **ASSESSMENT DEFINITIONS**

In accordance with the Drainage Act, lands that make use of a drainage works are liable for assessment for part of the cost of constructing and maintaining the system. These liabilities are known as benefit liability, outlet liability and special benefit liability as set out under Sections 22,23,24 and 26 of the Act.

Benefit liability as defined in the Drainage Act means the advantages to any lands, roads, buildings or other structures from the construction, improvement, repair or maintenance of a drainage works such as will result in a higher market value or increased crop production or improved appearance or better control of surface water, or any other advantages relating to the betterment of lands, roads, buildings or other structures.

Outlet liability is assessed to lands or roads that may make use of a drainage works as an outlet either directly or indirectly through the medium of any other drainage works or of a swale, ravine, creek or watercourse.

In addition, a Public Utility or Road Authority shall be assessed for and pay all the increased cost to a drainage works due to the construction and operation of the Public Utility or Road Authority. This may be shown as either benefit or special assessment.

## **ASSESSMENT**

The actual cost of the work involving this report is to be assessed on a pro-rata basis against the lands and roads liable for assessment for benefit and outlet as shown in detail [below] on Schedule 'C' - Assessment for Construction.

## GRANTS

In accordance with the provisions of Section 85 of the Drainage Act, a grant may be available for assessments against privately owned parcels of land which are used for agricultural purposes. Section 88 of the Drainage Act directs the Township to make application for this grant upon certification of completion of this drain. The Township will then deduct the grant from the assessments prior to collecting the final assessments.

## MAINTENANCE

Upon completion of construction, all owners are hereby made aware of Sections 80, 82 and 83 of the Drainage Act which forbid the obstruction of, damage or injury to, and pollution of a municipal drain.

After completion, the entire Dell Drain including the existing branches shall be maintained by the Township of Yarmouth at the expense of all upstream lands and roads assessed in Schedule 'D' - Assessment for Maintenance and in the same relative proportions, until such time as the assessment is changed under the Drainage Act.

Respectfully submitted,

SPRIET ASSOCIATES LONDON LIMITED



J. R. Spriet, P. Eng.

sjs

## SCHEDULE 'A' - ALLOWANCES

DELL DRAIN 1997

Township of Yarmouth

In accordance with Sections 29 and 30 of the Drainage Act, we determine the allowances payable to owners entitled thereto as follows:

CONCESSION	LOT	ROLL NUMBER (Owner)	DAMAGES AND RIGHT-OF-WAY
1	18	2-034(G. V. Dragon)	200.00
1	18	2-036(J. & M. Swartz)	200.00
1	18	2-035(R. Caloz)	700.00
2	18	2-076(L. Sommerville & C. Parker)	50.00
Total Allowances			=====
			\$ 1,150.00
			=====

Total Allowances under Sections 29 and 30 of the Drainage Act

\$ 1,150.00



# **SCHEDULE 'B' - COST ESTIMATE**

## **DELL DRAIN 1997**

### **Township of Yarmouth**

We have made an estimate of the cost of the proposed work which is outlined in detail as follows:

200 meters of open ditch reconstruction including levelling of material and disposal of brush	\$ 1,000.00
Dewatering for construction period	\$ 2,000.00
70 meters of 750mm dia. smooth wall steel pipe, 9.5mm thickness	
Supply	\$ 10,000.00
Installation at outlet between appurtenances, including welding, bedding, anchors, etc. Complete	\$ 10,000.00
Supply and install 25 meters of 200mm Boss 2000 pipe at road crossing on Roberts Line and connect to Branch A	\$ 900.00
Supply and install two 2400mm dia. precast concrete manholes with M.T.O. frame and covers and safety landings	\$ 29,000.00
Supply and install one 1800mmx1800mm ditch inlet catchbasin and one 600mmx600mm standard catchbasin including birdcage grate on 1800mm catchbasin	\$ 4,200.00
Installation of the following Boss 2000 perforated sub-drain including 300mm envelope of pea stone	
105 meters of 150mm (6") perforated pipe	\$ 3,000.00
Remove and dispose of existing c.s.p. inlet headwall, concrete silo and existing c.s.p. outlet pipe	\$ 3,000.00
Clearing and grubbing including removal of debris from fill area and level ravine invert	\$ 3,500.00
Supply and install compacted granular pit-run fill material (Approx. 8000 tonnes) including benching side slopes	\$ 39,000.00
Supply and install 100mm topsoil on new slopes (Approx. 3500mm <sup>2</sup> )	\$ 4,600.00

Hydroseed and mulching (Approx. 3500m <sup>2</sup> )	\$ 2,000.00
Supply and install cable concrete at pipe outlet including placing of broken concrete from silo structure beyond including filter blanket	\$ 5,000.00
Restore existing roadway with 300mm Granular 'A' (Approx. 120 tonnes)	\$ 1,700.00
Allowances under Sections 29 and 30 of the Drainage Act	\$ 1,150.00

#### ADMINISTRATION

Interest and net Goods and Services Tax	\$ 5,950.00
Preliminary Investigation and Soils Report	\$ 4,500.00
Survey, Plan and Report	\$ 23,500.00
Assistance and Expenses	\$ 980.00
Supervision and Final Inspection	\$ 3,520.00

TOTAL ESTIMATED COST	\$ 158,500.00
	=====

## SCHEDULE 'C' - ASSESSMENT FOR CONSTRUCTION

8

## DELL DRAIN 1997

## Township of Yarmouth

Job No. 97052

June 20, 1997

CON.	LOT	HECTARES AFFECTED	ROLL No. (OWNER)	BENEFIT	OUTLET	TOTAL
* 1	Pt 17 & 18	—	2-034(G. V. Dragon)	\$ 23,000.00	\$	\$ 23,000.00
* 1	Pt 18	—	2-036(J. & M. Swartz)	23,000.00		23,000.00
1	NEPt 17	3.0	2-032-01(R. Sommerville)	12'K	735.00	735.00
* 1	Pt 18	0.70	2-035-01(R. Baker)	1,500.00	170.00	1,670.00
1	NPt 18	41.0	2-035(R. Caloz)	2,500.00	10,000.00	12,500.00
1	NPt 19	3.6	2-037(Walter Hayhoe Enterprises)		880.00	880.00
2	WPt 17	9.4	2-071(Walter Hayhoe Enterprises)		2,300.00	2,300.00
* 2	Pt 17	2.70	2-071-01(J. & J. Hamm)		660.00	660.00
* 2	Pt 17	1.23	2-073(R. & M. Debackere)		300.00	300.00
2	NEPt 17	19.0	2-074(W. Hayhoe)		4,650.00	4,650.00
2	SEPt 17	14.6	2-074-01(N. & M. Jones)		3,600.00	3,600.00
2	SW¼ 18	20.1	2-075(G. & F. Sommerville)		4,920.00	4,920.00
2	N½ 18	40.5	2-076(L. Sommerville & C. Parker)		9,930.00	9,930.00
2	Pt 18 & 19	40.2	2-077(D. B. Walker)		9,850.00	9,850.00
2	N&EPt 19	29.1	2-078(K. J. Helmer)		7,130.00	7,130.00
* 2	Pt 19	0.29	2-077-01(C. & S. Barber)		75.00	75.00
3	16	0.4	3-045(DeVries Family Farms Ltd.)		100.00	100.00
3	SPt 17	10.9	3-048(C. L. Brear)		2,670.00	2,670.00
3	SWPt 18	4.4	3-052(J. F. Malloy)		1,080.00	1,080.00
3	SEPt 18	1.2	3-056-01(S. Underhill)	700.00	300.00	1,000.00
TOTAL ASSESSMENT ON LANDS				\$ 50,700.00	\$ 59,350.00	\$ 110,050.00
Barnums Gully Line	0.5	Township of Yarmouth	43,000.00	370.00	43,370.00	
County Road No. 24	2.6	County of Elgin		2,550.00	2,550.00	
Roberts Line	2.3	Township of Yarmouth	840.00	1,690.00	2,530.00	
TOTAL ASSESSMENT ON ROADS				\$ 43,840.00	\$ 4,610.00	\$ 48,450.00
TOTAL ASSESSMENT ON THE DELL DRAIN 1997						\$ 158,500.00

NOTE: All the above lands, with the exception of those noted with an asterisk, are classified as agricultural.



## SCHEDULE 'D' - ASSESSMENT FOR MAINTENANCE

9

## DELL DRAIN 1997

## Township of Yarmouth

Job No. 97052

June 20, 1997

CON.	LOT	HECTARES AFFECTED	ROLL No. (OWNER)	PERCENTAGE OF MAINTENANCE COST
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MAIN DRAIN - OUTLET SYSTEM

* 1	NEPt 17	-	2-034(G. V. Dragon)	16.14 %
* 1	NEPt 17	-	2-036(J. & M. Swartz)	16.14
1	NEPt 17	3.0	2-032-01(R. Sommerville)	0.52
* 1	Pt 18	0.7	2-035-01(R. Baker)	1.17
1	NPt 18	41.0	2-035(R. Caloz)	8.77
1	NPt 19	3.6	2-037(Walter Hayhoe Enterprises)	0.62
2	WPt 17	9.4	2-071(Walter Hayhoe Enterprises)	1.61
* 2	Pt 17	2.7	2-071-01(J. & J. Hamm)	0.46
* 2	Pt 17	1.2	2-073(R. & M. Debackere)	0.21
2	NEPt 17	19.0	2-074(W. Hayhoe)	3.26
2	SEPt 17	14.6	2-074-01(N. & M. Jones)	2.53
2	SW¼ 18	20.1	2-075(G. & F. Sommerville)	3.45
2	N½ 18	40.5	2-076(L. Sommerville & C. Parker)	6.96
2	Pt 18 & 19	40.2	2-077(D. B. Walker)	6.91
2	N&EPt 19	29.1	2-078(K. J. Helmer)	5.00
* 2	Pt 19	0.3	2-077-01(C. & S. Barber)	0.05
3	16	0.4	3-045(DeVries Family Farms Ltd.)	0.07
3	SPt 17	10.9	3-048(C. L. Brear)	1.87
3	SWPt 18	4.4	3-052(J. F. Malloy)	0.76
3	SEPt 18	1.2	3-056-01(S. Underhill)	0.20

TOTAL ASSESSMENT ON LANDS

=====  
76.70 %  
=====

Barnums Gully Line	0.5	Township of Yarmouth	20.30
County Road No. 24	2.6	County of Elgin	1.80
Roberts Line	2.3	Township of Yarmouth	1.20

TOTAL ASSESSMENT ON ROADS

=====  
23.30 %  
=====

TOTAL ASSESSMENT FOR MAINTENANCE OF  
MAIN DRAIN - OUTLET SYSTEM

=====  
100.0 %

## SCHEDULE 'D' - ASSESSMENT FOR MAINTENANCE (Cont'd)

10

DELL DRAIN 1997  
Township of Yarmouth

CON.	LOT	HECTARES AFFECTED	ROLL No. (OWNER)	PERCENTAGE OF MAINTENANCE COST
<b>MAIN DRAIN - OPEN PORTION</b>				
1	NEPt 17	3.0	2-032-01(R. Sommerville)	0.7 %
* 1	Pt 18	0.7	2-035-01(R. Baker)	2.3
1	NPt 18	41.0	2-035(R. Caloz)	43.0
1	NPt 19	3.6	2-037(Walter Hayhoe Enterprises)	0.8
2	WPt 17	9.4	2-071(Walter Hayhoe Enterprises)	2.2
* 2	Pt 17	2.7	2-071-01(J. & J. Hamm)	0.6
* 2	Pt 17	1.2	2-073(R. & M. Debackere)	0.3
2	NEPt 17	19.0	2-074(W. Hayhoe)	4.4
2	SEPt 17	14.6	2-074-01(N. & M. Jones)	3.4
2	SW¼ 18	20.1	2-075(G. & F. Sommerville)	4.6
2	N½ 18	40.5	2-076(L. Sommerville & C. Parker)	9.3
2	Pt 18 & 19	40.2	2-077(D. B. Walker)	9.3
2	N&EPt 19	29.1	2-078(K. J. Helmer)	6.7
* 2	Pt 19	0.3	2-077-01(C. & S. Barber)	0.3
3	16	0.4	3-045(DeVries Family Farms Ltd.)	0.3
3	SPt 17	10.9	3-048(C. L. Brear)	2.5
3	SWPt 18	4.4	3-052(J. F. Malloy)	1.0
3	SEPt 18	1.2	3-056-01(S. Underhill)	0.3
TOTAL ASSESSMENT ON LANDS				92.0 %
County Road No. 24				2.6
Roberts Line				2.3
County of Elgin				6.4
Township of Yarmouth				1.6
TOTAL ASSESSMENT ON ROADS				8.0 %
TOTAL ASSESSMENT FOR MAINTENANCE OF MAIN DRAIN - OPEN PORTION				<u>100.0 %</u>

## SCHEDULE 'D' - ASSESSMENT FOR MAINTENANCE (Cont'd)

11

DELL DRAIN 1997  
Township of Yarmouth

CON.	LOT	HECTARES AFFECTED	ROLL No. (OWNER)	PERCENTAGE OF MAINTENANCE COST
<b><u>MAIN DRAIN - CLOSED PORTION</u></b>				
2	WPt 17	9.4	2-071(Walter Hayhoe Enterprises)	4.0 %
* 2	Pt 17	2.7	2-071-01(J. & J. Hamm)	1.5
* 2	Pt 17	1.2	2-073(R. & M. Debackere)	2.0
2	NEPt 17	19.0	2-074(W. Hayhoe)	24.4
2	SEPt 17	6.0	2-074-01(N. & M. Jones)	3.0
2	SW¼ 18	16.0	2-075(G. & F. Sommerville)	12.0
2	N½ 18	40.5	2-076(L. Sommerville & C. Parker)	14.4
2	Pt 18 & 19	29.0	2-077(D. B. Walker)	22.0
2	N&EPt 19	19.1	2-078(K. J. Helmer)	2.5
* 2	Pt 19	0.3	2-077-01(C. & S. Barber)	0.1
3	16	0.4	3-045(DeVries Family Farms Ltd.)	0.1
3	SPt 17	10.9	3-048(C. L. Brear)	6.3
3	SWPt 18	4.4	3-052(J. F. Malloy)	2.4
3	SEPt 18	1.2	3-056-01(S. Underhill)	0.7
				=====
TOTAL ASSESSMENT ON LANDS				95.4 %
				=====
Roberts Line		2.3	Township of Yarmouth	4.6
				=====
TOTAL ASSESSMENT ON ROADS				4.6 %
				=====
TOTAL ASSESSMENT FOR MAINTENANCE OF MAIN DRAIN - CLOSED PORTION				<u>100.0 %</u>



DELL DRAIN 1997  
Township of Yarmouth

CON.	LOT	HECTARES AFFECTED	ROLL No. (OWNER)	PERCENTAGE OF MAINTENANCE COST
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**BRANCH "A"**

2	NEPt 17	2.0	2-074(W. Hayhoe)	15.5 %
2	N½ 18	5.0	2-076(L. Sommerville & C. Parker)	43.0
3	SWPt 18	3.0	3-052(J. F. Malloy)	13.0
3	SEPt 18	1.2	3-056-01(S. Underhill)	8.0

TOTAL ASSESSMENT ON LANDS

79.5 %

Roberts Line	0.9	Township of Yarmouth	20.5
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TOTAL ASSESSMENT ON ROADS

20.5 %

TOTAL ASSESSMENT FOR MAINTENANCE OF BRANCH "A" 100.0 %**BRANCH "B"**

2	NEPt 17	-	2-074(W. Hayhoe)	50.0 %
2	N½ 18	-	2-076(L. Sommerville & C. Parker)	50.0

TOTAL ASSESSMENT ON LANDS

100.0 %

TOTAL ASSESSMENT FOR MAINTENANCE OF BRANCH "B" 100.0 %**BRANCH "C"**

2	NEPt 17	1.0	2-074(W. Hayhoe)	10.0 %
2	N½ 18	20.0	2-076(L. Sommerville & C. Parker)	90.0

TOTAL ASSESSMENT ON LANDS

100.0 %

TOTAL ASSESSMENT FOR MAINTENANCE OF BRANCH "C" 100.0 %**BRANCH "D"**

2	SW¼ 18	3.5	2-075(G. & F. Sommerville)	74.0 %
2	Pt 18 & 19	1.5	2-077(D. B. Walker)	26.0

TOTAL ASSESSMENT ON LANDS

100.0 %

TOTAL ASSESSMENT FOR MAINTENANCE OF BRANCH "D" 100.0 %

SCHEDULE 'D' - ASSESSMENT FOR MAINTENANCE (Cont'd)

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DELL DRAIN 1997  
Township of Yarmouth

CON.	LOT	HECTARES AFFECTED	ROLL No. (OWNER)	PERCENTAGE OF MAINTENANCE COST
<b><u>BRANCH "E"</u></b>				
2	N½ 18	—	2-076(L. Sommerville & C. Parker)	7.5
3	SWPt 18	3.6	3-052(J.F. Malloy)	21.0
3	SEPt 18	1.2	3-056-01(S. Underhill)	4.5
				=====
TOTAL ASSESSMENT ON LANDS				33.0 %
				=====
Rogers Line		0.8	Township of Yarmouth	67.0
				=====
TOTAL ASSESSMENT ON ROADS				67.0 %
				=====
TOTAL ASSESSMENT FOR MAINTENANCE OF BRANCH " E "				<u>100.0 %</u>

NOTE: All the above lands, with the exception of those noted with an asterisk, are classified as agricultural.

# SCHEDULE OF NET ASSESSMENT

## DELL DRAIN 1997

### Township of Yarmouth

(FOR INFORMATION PURPOSES ONLY)

Job No. 97052

June 20, 1997

\* = Non-agricultural

CODE	ROLL NUMBER (OWNER)	TOTAL ASSESSMENT	GRANT	ALLOWANCES	APPROX. NET
*	2-034(G. V. Dragon)	\$ 23,000.00	\$	200.00	\$ 22,800.00
*	2-036(J. & M. Swartz)	23,000.00		200.00	22,800.00
	2-032-01(R. Sommerville)	735.00			735.00
*	2-035-01(R. Baker)	1,670.00			1,670.00
	2-035(R. Caloz)	12,500.00	4,167.00	700.00	7,633.00
	2-037(Walter Hayhoe Enterprises)	880.00			880.00
	2-071(Walter Hayhoe Enterprises)	2,300.00	767.00		1,533.00
*	2-071-01(J. & J. Hamm)	660.00			660.00
*	2-073(R. & M. Debackere)	300.00			300.00
	2-074(W. Hayhoe)	4,650.00	1,550.00		3,100.00
	2-074-01(N. & M. Jones)	3,600.00	1,200.00		2,400.00
	2-075(G. & F. Sommerville)	4,920.00	1,640.00		3,280.00
	2-076(L. Sommerville & C. Parker)	9,930.00	3,310.00	50.00	6,570.00
	2-077(D. B. Walker)	9,850.00	3,283.00		6,567.00
	2-078(K. J. Helmer)	7,130.00	2,377.00		4,753.00
*	2-077-01(C. & S. Barber)	75.00			75.00
	3-045(DeVries Family Farms Ltd.)	100.00	33.00		67.00
	3-048(C. L. Brear)	2,670.00	890.00		1,780.00
	3-052(J. F. Malloy)	1,080.00	360.00		720.00
	3-056-01(S. Underhill)	1,000.00	333.00		667.00
*	Barnums Gully Line	43,370.00			43,370.00
*	County Road No. 24	2,550.00			2,550.00
*	Roberts Line	2,530.00			2,530.00
TOTALS		\$ 158,500.00	\$ 19,910.00	\$ 1,150.00	\$ 137,440.00





## **APPENDIX G**

**DELL DRAIN 1997**

**DRAWINGS**

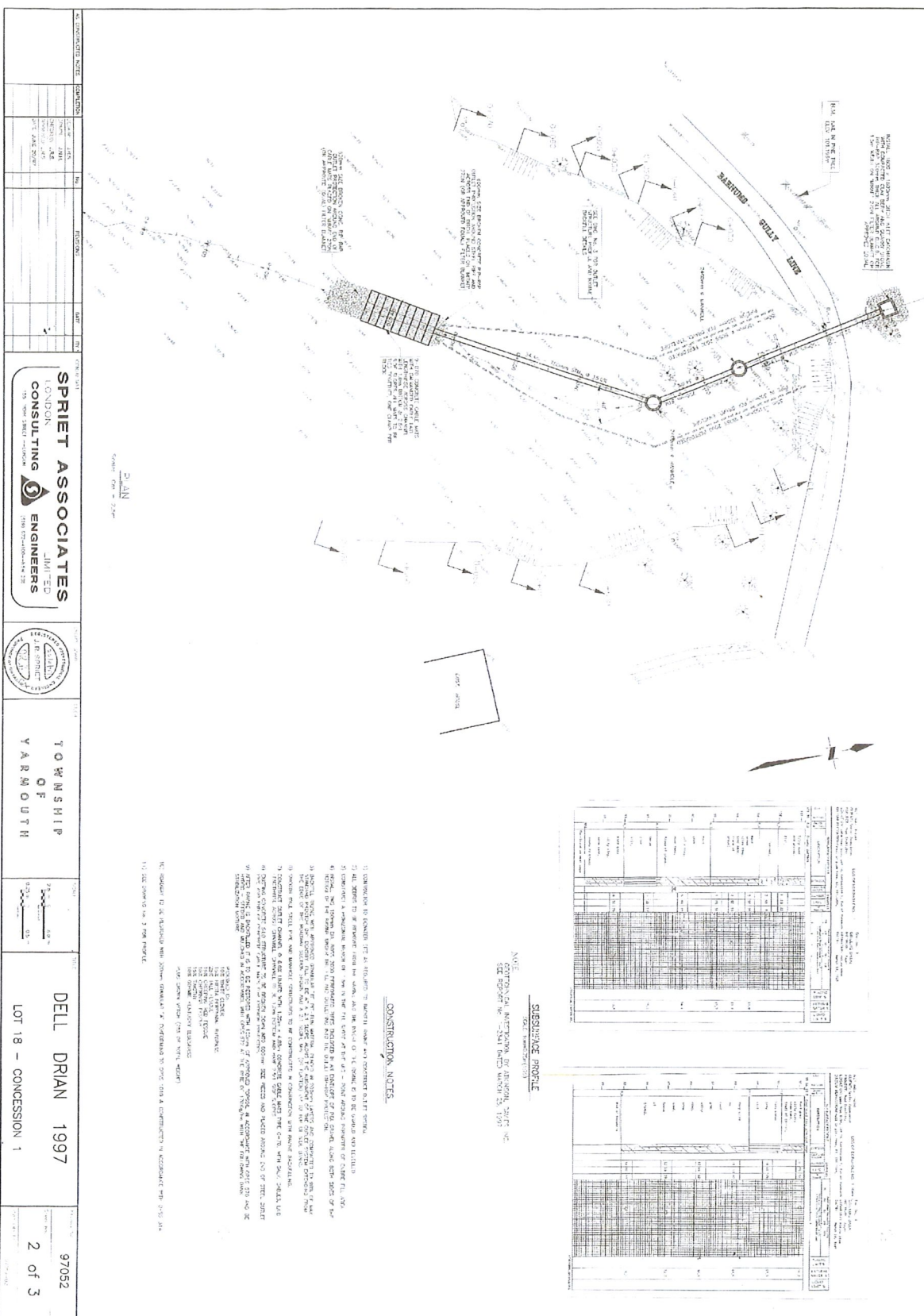
**June 20, 1997**

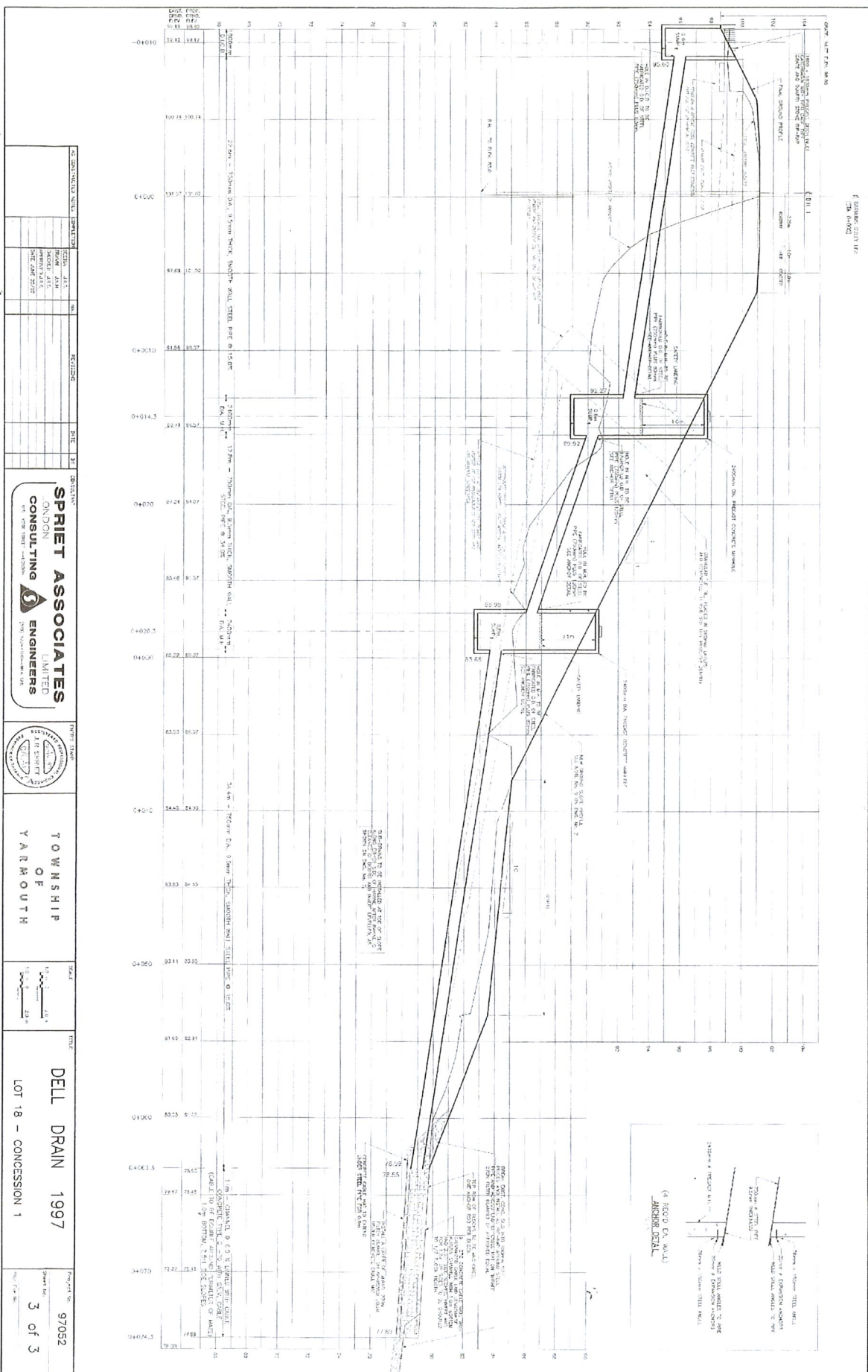
**K. SMART ASSOCIATES LIMITED**

**85 McIntyre Drive, Kitchener, ON, N2R 1H6**













## **APPENDIX H**

### **DELL MUNICIPAL DRAIN**

#### **REPORT**

(no plan and profile drawing)

**July 12, 1960**

**K. SMART ASSOCIATES LIMITED**

85 McIntyre Drive, Kitchener, ON, N2R 1H6

# G. DUNCAN BLACK

Consulting Engineer

6 Princess Avenue  
ST. THOMAS - ONTARIO  
Telephone 5670

July 12, 1960

To The Reeve and Council,  
Township of Yarmouth,  
St. Thomas, Ontario.

Re: Dell Municipal Drain  
Yarmouth Township

Gentlemen:

In accordance with your request and petition signed by G. Van Colen, Lot 17, Concession 2, Yarmouth Township, and others, being a majority of those benefitted, I have made an examination and survey and submit herewith Plan, Profile, Specifications, and Report for a new drain to replace the existing Dell Municipal Drain.

The owners of the various properties benefitted were present at the times I attended the site, and this report is made up to agree with their wishes insofar as possible.

Please note that, as discussed at meetings with the owners, the flat slope of this drain necessitates fairly large and costly tile sizes. Also, the sand conditions have caused my recommendation for the use of Glass Fibre Felt under the tile with Tile Guard glass fibre over the tile - similarly increasing the cost. After discussion with the owners, in order to reduce the costs as much as possible, I have made re-use of that portion of the existing drain between stations 52 + 68 and 62 + 68 as an overflow.

The invert elevation of the existing drain is slightly higher than the new drain at station 52 + 68, so that the existing drain will be used only at the times of more pronounced flow. Although this will likely be quite satisfactory, I can give no guarantee as to the condition of the existing drain, and it is possible that it may have to be replaced in the future.

I have checked with the County Engineer, and the County will place the 42" culvert across the road between Concessions 1 and 2 at the time of the construction of the drain.

The open ditch has been shown to be cleared down to the Lake Road. As you are aware, a 40" culvert at present carries the water across into a drop silt on the south side of the Lake Road. It is my opinion that this culvert may be found inadequate for the increased drainage from the lands and the County Road. However, since a new culvert installation would be completely at the Township's expense, this report has not included the costs of replacement. Nevertheless, at Council's direction I would be pleased to make recommendations and supervise the installation of a new culvert at the time of the completion of the work covered in this report. It is important that Council give early consideration to this matter.

The following amounts will, in my opinion, compensate the properties indicated for damages under Section 8 of the Municipal Drainage Act.

Conc.	Lot or Part	Owner	Damages to Lands & Crops (if any) S.S. #7	Allowance for Bridges or Severance S.S.#4 & S.S.#5
1	18	F. Vanvelzer	\$ 280.00	\$ 200.00
2	18	R. & E. Walker	150.00	
	18	W. Kelley	110.00	
	17	C. Jones	10.00	
	17	G. Tansley	240.00	
	18	G. Van Colen	220.00	
			1010.00	200.00
				1010.00
				\$ 1210.00

The following is my ESTIMATE of the cost of the work and incidental expenses. The figures for the tile include the costs of supply, excavation, installation (complete with "Glass Fibre Felt" underneath and "Tile Guard" over the tile), and backfill. The figures for the culvert, catch basins, etc., include the complete supply and installation of these items.

Catch Basin at STN 0 + 00	\$	60.00
8" - 16 g. C.I.P. STN 0 + 00 to 0 + 44		90.00
Catch Basin at STN 0 + 44		60.00
8" Field Tile - "A" Drain - 2070'		
"    "    "    "    " - 700'		
"    "    "    "    " - 1500'		
"    "    "    "    " - 1200'		
Main " - 606'		
6076 l.f.		2610.00
10" Field Tile "C" Drain - 865'		
Main. " - 350'		
1215 l.f.		740.00
12" Field Tile Main Drain - 1900 l.f.		1500.00
14" " " " " - 1100 l.f.		1170.00
16" " " " " - 2250 l.f.		2800.00
Replace existing 16" Field Tile from STN		
61 + 68 to 62 + 50 - 85 l.f.		100.00
Special Catch Basin @ STN 52 + 68		100.00
21" C.I.P. @ outlet - 18 l.f.		100.00
Rock Riprap outlet and surface run at County Ditch		
and Fill existing small ditch washout at County Road		200.00
Open Ditch to Lake Road		750.00
Allowances (Sec. 8 M.D.A.)		1210.00
Survey, Plan, Report		795.00
Clerk's Fees		385.00
By-Law, Letting Contract, Advertising, etc.		150.00
Assistance & Expenses (see Attached Letter for Payment)		41.00
Engineer's Supervision of Contract Work		395.00
Total Estimated Cost		\$13,256.00

The attached schedules of assessment show the assessment of the above ESTIMATED Costs against the lands and roads affected.

When the work is completed, all maintenance work shall be carried out by the Township at the expense of the various lands and roads assessed herein, and in the same relative proportions, subject to any variations made under the Municipal Drainage Act.

Yours respectfully,

*G. Duncan Black*

G. Duncan Black, P. Eng.



July 12, 1960

DELL MUNICIPAL DRAINYarmouth TownshipSchedules of Assessment.(1) - TILE PORTION

Conc.	Lot or Part	Acres Affected	Owner	Benefit	Outlet
3	S $\frac{1}{4}$ W $\frac{1}{2}$ 18	11	W. Owen	-	224.00
	E $\frac{1}{2}$ 18	3	Mrs. D. Latimer	-	60.00
	Lot 16	1	R. DeVries	-	21.00
	S $\frac{1}{2}$ 17	27	L. Brear	-	494.00
2	N $\frac{1}{2}$ 18	100	G. Van Coten	1900.00	2756.00
	Pt. W $\frac{1}{2}$ 17	30	F. Albert	-	483.00
	N.E. $\frac{1}{4}$ 17	50	G. Tansley	1065.00	511.00
	S.E. $\frac{1}{4}$ 17	18	C. Jones	285.00	184.00
	S.W. $\frac{1}{4}$ 18	39	W. Kelley	1120.00	629.00
	N.W. $\frac{1}{4}$ 19	48	C. Helmer	-	280.00
	S.W. $\frac{1}{4}$ 19	22	R. & E. Walker	-	182.00
	S.E. $\frac{1}{4}$ 18	50	R. & E. Walker	964.00	400.00
				<u>\$5334.00</u>	<u>\$6224.00</u>
					<u>5334.00</u>
			Total Lands		11558.00
			Road between Concs. 2 and 3 - Yarmouth Township		728.00
			Total Lands and Roads		<u>\$12286.00</u>

(2) - OPEN DITCH PORTION

Conc.	Lot or Part	Acres Affected	Owner	Benefit	Outlet
3	S $\frac{1}{4}$ W $\frac{1}{2}$ 18	11	W. Owen	-	11.00
	E $\frac{1}{2}$ 18	3	Mrs. D. Latimer	-	3.00
	Lot 16	1	R. DeVries	-	1.00
	S $\frac{1}{2}$ 17	27	L. Brear	-	28.00
2	N $\frac{1}{2}$ 18	100	G. Van Coten	-	103.00
	Pt. W $\frac{1}{2}$ 17	30	F. Albert	-	31.00
	N.E. $\frac{1}{4}$ 17	50	G. Tansley	-	50.00
	S.E. $\frac{1}{4}$ 17	18	C. Jones	-	35.00
	S.W. $\frac{1}{4}$ 18	39	W. Kelley	-	52.00
	N.W. $\frac{1}{4}$ 19	48	C. Helmer	-	50.00
	S.W. $\frac{1}{4}$ 19	50	R. & E. Walker	-	52.00
	S.E. $\frac{1}{4}$ 19	30	C. Helmer	-	31.00
	S.E. $\frac{1}{4}$ 18	50	R. & E. Walker	-	52.00
1	Pt. lot 18	85	F. Vanvelzer	400.00	-
				<u>400.00</u>	<u>499.00</u>
					<u>400.00</u>
			Total Lands		\$899.00
			Road between Concs. 2 and 3 - Yarmouth Township		21.00
			Road " " 1 and 2 - Elgin County		50.00
			Total Roads		<u>\$ 71.00</u>
			Total Lands and Roads		\$970.00

SOMERVILLE ET AL.

-and-

THE MUNICIPALITY OF CENTRAL  
ELGIN

Tribunal File No.: 007Dell21

**AGRICULTURE, FOOD AND RURAL  
AFFAIRS APPEAL TRIBUNAL**

**APPELLANTS' EXPERT REPORT**

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