Springmount Municipal Drain
A Case Study

2018 Drainage Engineers Conference
Introduction

- Ian Eriksen, P.Eng. with GM BluePlan Engineering Ltd. in Owen Sound

- I am a graduate of the University of Guelph Water Resources Engineering program.

- I have acted as the Drainage Superintendent for the Township of Chatsworth and Township of Georgian Bluffs since 2010.

- The Springmount Drain was my first Engineers Report.

- Thank-you to Sid!
Springmount Area
A Scoping Meeting was held with MTO, Grey County, Township, and GSCA

Intended to provide all parties with an overview of:
- The Drainage Act Process,
- Several potential issues,
- The MTO and County expectations from the Drain,
- Expected level of Service
- The GSCA requirements.
Sufficiency of Outlet

• Section 15 of the Drainage Act
  – “every drainage works constructed under the Drainage Act shall be continued to a sufficient outlet.”

• Downstream Erosion Concerns – Pottawatomi River

• Sufficient Outlet
  – A point at which water can be discharged safely so that it will do no damage to lands or roads.

  – When there is already an existing hardship, such as erosion, sufficient outlet can also be established on the basis that no increase in the hardship (erosion) would occur. (Established through case law)
Topography of Owen Sound and Springmount
Sufficiency of Outlet 2

• Springmount Drain catchment area = 674 ha

• Pottawatomi River catchment area = 7,627 ha

• Offset Peak Flows

• Conclusion - No expected increase in volume or peak flow of runoff to the Pottawatomi River
South Portion of Drain – Historical Conditions
Downstream of Pedestrian Bridge
Pedestrian Bridge – On GSCA Trail
Bends Upstream of Private Bridge
Downstream Side of South MTO Culvert
Downstream Side of South MTO Culvert contd
Upstream of South MTO Culvert
South Portion of Drain

GM BluePlan
Downstream of North MTO Culvert
Upstream of North MTO Culvert
Upstream of North MTO Culvert cont’d
Commercial Entrance Culvert
Upstream of Grey County Culvert
Grey County Road 17 Intersection
PRELIMINARY REPORT – OPTIONS

South Option 3

- Deepen and widen reach B, C, D, F and G to constant slope.
- Basic cleanout of reach E.
- Deepen and widen reach H.
- Replace culverts at commercial entrance with 3000 x 1500 mm concrete box culvert.
- Replace culverts at Jason and Shane streets with 3000 x 1500 mm concrete box culverts.
- Replace private bridge crossing with twin 2130 x 1400 mm steel arch culverts.
- Replace Highway 6 South culvert with 1800 mm dia. steel culvert.
- Replace Highway 6 North culvert with 900 mm dia. steel culvert.
- Replace Highway 6 South culvert with 3000 x 1500 mm concrete box culvert.
- Replace Highway 6 North culvert with 900 mm dia. steel culvert.
- SCPACE of Jason Street with 25 mm of twin 3000 x 1500 mm concrete box culvert.
- Replace of private residential crossing with 15 cm of twin 2130 x 1400 mm CSPA culverts.

Scale: 1:2,500

Springmount Municipal Drain
Township of Georgian Bluffs

Figure No. 2C
• Reasons Interesting Option Not Recommended
  – Legal – Downstream landowners deprived of water flowing to them
  – Legal – East landowners would now have a larger CA Regulated Area
  – Legal – Sewage system setbacks from watercourse could be affected
  – GSCA – Concerns regarding amphibian and/or bird breeding
  – GSCA – Safe Access over Township Roads
  – MTO – Safety
  – MTO – Does change fit with their fundamental purpose of drainage systems along a provincial highway
Proposed Improvements – Lower Reach
Proposed Improvements
MTO Culvert Design

• Original MTO Culvert Design - Twin 3.0 m x 1.5 m box culverts

• MTO – Resize Culverts following Drain improvements?

• New Floodplain Study - Single 3.6 m x 1.8 m box culverts with 300 mm of substrate for both culverts

• Section 69(1) - MTO to undertake work?

• MTO wanted the culverts to be included as part of the Drain works
• Department of Fisheries and Oceans confirmed no formal approval required by DFO after a site specific review. Letter.

• Niagara Escarpment Commission Approval – No Concerns
  – Landowner Appeal – April 2015
  – Appeal Withdrawn – September 2015

• Grey Sauble Conservation Authority Permit – Consulted Often
• Once the NEC Appeal was dropped, we were able to proceed with issuing the Final Engineers Report.

• Final Plans and Report were signed on November 11, 2015
Meeting to Consider Report

- Landowners - Not happy with the costs

- Council ultimately decided to use the general funds to pay for the landowners costs for the Drain improvements, but NOT to pay for future maintenance.
• Still five (5) appeals to the Court of Revision for adjustment in the assessments for future maintenance.

• Following review, I agreed with two (2) of the revisions and disagreed with the other three (3).
• Two (2) appeals to the Tribunal.

• One appeal was dropped before the hearing.

• A hearing was held on May 2016 for the appeal.

• Tribunal decision was issued June 2016 which denied the appeal.
Union Gas Lowering High Pressure Mains

- Union Gas was consulted throughout the Design Process
- HP and LP Gas Mains to be lowered – 2 Locations
- Section 26 “…the public utility or road authority shall be assessed for and shall pay all the increase of cost of such drainage works caused by the existence of the works of the public utility or road authority.”
- Union Gas Position - the drainage improvements fell within the definition of “drainage works” as defined under the Franchise Agreement.
- Both the MTO and Township were advised early of the Union Gas position.
Union Gas Lowering High Pressure Mains contd

- MTO and Township obtained legal opinions
- Gas mains on the MTO right-of-way. Does Franchise Agreement trump the Drainage Act?
- June 2016 – Formal request to lower gas mains
- Union maintains position
- Queue the Lawyers – Wait for Norwich Decision
- Sept. 2016 – Norwich Superior Court Decision for Norwich
- Union Gas appealed the Decision
Ultimately, lawyers reached an agreement for Union Gas to proceed with the lowering of the gas mains.

Both parties would respect the Norwich Appeal Decision.

As such, in the spring of 2017, Union Gas commenced the lowering of the Gas Mains.

Ultimately, Union Gas won its appeal in the Norwich case.

Township of Georgian Bluffs 35% Share - Over $200,000

My Opinion - The Norwich case is considered dangerously precedent setting.
• 15% Assessed as Outlet Liability

• 85% Assessed as Benefit
  – 35% to 50% to MTO
  – 20% to Grey County
  – 15% to 35% to Adjacent Landowners
**Summary of Assessment Breakdown**

<table>
<thead>
<tr>
<th></th>
<th>Part A - Majority of Drainage Improvements</th>
<th>Part B - South MTO Culvert</th>
<th>Part C - North MTO Culvert</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Construction Costs</strong></td>
<td>$327,000</td>
<td>$405,000</td>
<td>$399,000</td>
</tr>
<tr>
<td><strong>Engineering and Administration</strong></td>
<td>$111,000</td>
<td>$140,000</td>
<td>$120,000</td>
</tr>
<tr>
<td><strong>Total Costs</strong></td>
<td>$438,000</td>
<td>$545,000</td>
<td>$519,000</td>
</tr>
</tbody>
</table>

**TOTAL Project COST = $1,540,000**
- MTO Assessment = $1,245,000
- Grey County Assessment = $93,000
- Township Assessment = $140,000  ($138,000 on behalf of Landowners)
- GSCA Assessment = $26,000 (Special Benefit for Pedestrian Bridge)
- Union Gas = $30,000
South Culvert - Upstream Side
South Culvert – Downstream Side
Working with the MTO

- Confirmed with MTO - A Municipal project, with a Municipal Tender.

- The MTO agreed with the approach for administration, testing, and reporting.

- MTO culvert installations - 4 ½ Day Construction window each culvert, working 24 hours if necessary.

- Highway 6 not allowed to be fully closed for more than 10 min

- GM BluePlan had an inspector on-site at all times. Compaction, inspection, structural design, was all completed in-house.
South Culvert – Installation
South Culvert – Installation 2
North Culvert – Installation
North Culvert – Installation 2
Completed Springmount Drain
Completed Springmount Drain 2
Completed Springmount Drain 3
Completed Springmount Drain 4
Completed Springmount Drain 5
Completed Springmount Drain 6
Completed Springmount Drain 7
Completed Springmount Drain 9
Completed Springmount Drain 10

Before Springmount Drain

Dec 2017 – After Springmount Drain
Completed Springmount Drain 11

Spring 2018 – After Spring Flows

Fall 2018 – After County Work
Completed Springmount Drain 12
Completed Springmount Drain 13
Summary of Timeline

- Oct. 2012 – Council Appointment
- Oct. 2013 – Preliminary Report Issued
- Feb. 2015 – Preliminary Final Report for Approvals
- April 2015 – NEC Appeal
- Sept. 2015 – NEC Appeal Withdrawn
- Nov. 2015 – Final Report Issued
- June 2015 – Tribunal Decision Issued
- Dec. 2016 – Agreement Reached with Union Gas
- June 2017 – Beaver Dam Removed
- July 2017 – Construction Commenced
- Aug. 2017 – South Culvert Replaced
- Sept. 2017 – North Culvert Replaced
- Oct. 2017 – Majority of Work Completed
- This Past Monday – Final Sign-off and Release of Holdback
Closing Summary

• Overwhelming Success
  – MTO, County, Township and Landowners are all happy with the final result

• It Works!

• Few concerns regarding acting as Drainage Engineer and Drainage Superintendent

• Due to the number of parties involved... transparency and consultation are key.
GM BluePlan Engineering

Ian Eriksen, P.Eng.
ian.eriksen@gmblueplan.ca
519-376-1805

Questions?