

PRELIMINARY REPORT

SWALEY DRAIN



File No. 16-387

July 21, 2021



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SWALEY DRAIN PRELIMINARY REPORT
TOWNSHIP OF SPRINGWATER

1. EXECUTIVE SUMMARY

This is a Preliminary Report prepared in accordance with Section 78 of the Drainage Act for a repair/improvement to portions of the lower part of the Swaley Drain.¹

Appendix 1 of this Preliminary Report describes what is a Preliminary Report.

The Swaley Drain is a legal Municipal Drain that has existed since the early 1900's.

It serves approximately 4,000 acres of agricultural land in the Township of Springwater, the majority of which could be considered as prime agricultural lands (see **Drawing 1**).

Historically, the Drain commenced from an outlet in what was once the Muskrat Creek near the west limits of Lot 10, Concession 11. The Muskrat Creek in turn flowed downstream (westerly) and outletted into the Nottawasaga River in the east part of Lot 6, Concession 13. Also as part of the 1900's Engineer's work on the Swaley Drain, a 30 rod (150m) long channel or "cut" was excavated through the high east River Bank to give the Muskrat Creek a better outlet into the River.

It is believed the Swaley Drain functioned as a "Drain" should, until the 1970's±. But as the private farms along parts of the Muskrat and Swaley routes were acquired as part of the Minesing Swamp (as the scheme was called then), and as the Muskrat route and floodplain became inundated with what is now 600 to 1200mm± of water, and as the "cut" at the River became blocked, the very lower parts of the Swaley

¹ For purposes of this Preliminary Report, the "lower part of the Swaley Drain" is deemed to be the historic channel downstream of Highway 26 and primarily within Concessions 9, 10 & 11 plus the cut at the River.

Drain and the Muskrat Creek were rendered unusable. And with the loss of these components, the remaining lower part of the Swaley Drain is in disrepair due to ponded water in the channel. Indeed, tile drains outletting into the lower part of the Swaley Drain in Concessions 10 and 11 are submerged year-round.

K. Smart Associates Limited (KSAL) (K. A. Smart, P. Eng. specifically) are the Engineers retained in 2016 by the Township to provide an Engineering Report with respect to the Swaley Drain.

KSAL when retained in 2016 determined it was the lower part of the Drain in the area of the Minesing wetlands that was out of repair and accordingly advised that a Scoping Report should be prepared in advance of, and to justify, an appointment pursuant to Section 78 of the Drainage Act for repair/improvement of the Swaley Drain.

In 2017/2018 KSAL completed a Scoping Report that justified there was a need for an Engineering Report to provide repair/improvement of the Swaley Drain and the appointment to prepare a Preliminary Report was subsequently made.

The Scoping Report identified/confirmed the problem in the drain to be the high permanent water levels (resulting from inundation by the Minesing Wetlands) in the Swaley Drain channel downstream of Highway 26 and the affects such high waters and the resulting lack of outlet has on adjacent fields and drainage systems.

The Scoping Report also listed possible work options to address the problem.

KSAL and the Township recognized early the importance and necessity of working with the Nottawasaga Valley Conservation Authority (NVCA) on the implementation of any work option, due to the facts that:

- a) the majority of the lower part of the Swaley Drain exists within the Minesing Wetlands complex
- b) the NVCA is the majority landowner of the Minesing Wetlands complex;
- c) NVCA is also the “administrator” of the wetlands complex; and
- d) Ultimately a permit from NVCA to allow work would have to be applied for and hopefully obtained.

The time period from 2018 to May 2021 has indeed been primarily devoted to refining the work options presented in the 2018 Scoping Report to what is now proposed, while addressing the concerns and conditions of NVCA as much as possible to date.

The primary initial condition/request of NVCA in 2018, when engineering work commenced, was to prepare an environmental study. This took almost 2 years to complete and the resulting document is called the Natural Environment Report (NER).

Almost another year has been involved to review, discuss and refine in part the NER with NVCA.

Also during the period since 2018, additional survey work, watershed boundary reviews and preparation of sections for this Preliminary Report have occurred.

The Engineer now feels that a solution to the “problem” of the Swaley Drain, re permanent high water levels in the channel and the lack of outlet, can be presented in a Preliminary Report (PR).

The solution recommended by this PR is to extend the Swaley Drain channel from its current terminus further downstream into the wetlands over a length of 950m following historic routes (or 750m on the straight line diagonal route) to where the water level of the wetlands is 460mm lower than the wetlands level in the current westerly end of the Swaley Drain and 100mm lower than the invert of the lowest tile outlet believed to exist in the Swaley Drain. This particular tile has a minimum of 250 to 300mm of water above its top year long.

It is expected water will pond in the new 950m or 750m (whichever is finally agreed to) length of channel and also in the existing lower part of the Swaley channel similar to how waters currently pond but at a 450mm lower elevation. It is expected the wetlands water level at the 750m or 950m downstream location will have only a minimum gradient or rise in the full length of the Swaley Drain up to George Johnston Road provided the work as recommended here is constructed and provided the existing Swaley channel is kept in a good state of repair up to the Road

If the 950m long route is selected, it will mirror the historic route of the Swaley Drain for 550m and will mirror the route of the former Muskrat Creek where believed to last exist prior to its inundation.

Due to the depths of wetland waters over the 750m/950m length, the work will have to be done by an excavator sitting on a barge.

The width of wetlands grass removal to accommodate the barge would be 6m±.

A channel with a depth of 500mm± would be excavated in the floor of the wetlands once the 6m± width of grasses are removed. This would give a submerged channel comparable to that existing at the end of the current Swaley Drain and would minimize the possibility of grass regrowth.

Materials excavated by the barge mounted excavator would be cast on either side of the channel/barge path and would disappear into the adjacent wetlands grasses.

Minimal future maintenance is expected to be necessary in the new work since at the current end of the Swaley Drain, wetland vegetation have not re-emerged and sediments have not built up.

The Engineer and Environmental Consultant considered in detail the proposal of recommending work near/at the historic Muskrat Creek outlet into the River (the Muskrat/River Study Area) where the 150m long “cut” exists. Both a new route to the River and to the Downey Drain were considered.

However, it was determined significant environmental impacts would be introduced if such were done. Fortunately, it was found the wetland water levels near the historic outlet of the Muskrat Creek into the River are now controlled by the Downey Drain and the decision has been made by the Township and NVCA to clean the Downey Drain channel of fallen brush/debris from its junction with the Giffen Drain to the River.

This Downey Drain repair work will be undertaken by the Township separate from any work on the Swaley Drain.

The Engineer believes if this channel cleaning in the Downey Drain occurs, the levels of the wetlands can be stabilized. This Downey repair work coupled with the 750m/950m of work downstream of the current terminus of the Swaley is believed to be the optimum work that can now be pursued to return the balance of the lower part of the Swaley Drain to a proper state of repair.

The expected cost of this project is anticipated to be \$350,000 with approximately one half of this cost associated with the studies to date and with the other half for

the remaining engineering and studies during construction and the construction itself.

A Preliminary Report can not indicate how the costs are to be distributed/assessed in detail. However, general guidelines as to how the costs may be distributed can be set out in a Preliminary Report. If and when a Final Report is prepared, detailed assessments will be set out.

It is anticipated 50% of the cost will be levied to the Municipality, County, and provincial wetlands owners (NVCA and MNRF), with the remaining 50% being levied to privately owned parcels, other publically owned parcels and other roads in the watershed.

The cost is proposed to be assessed in two components with the described distribution for each component (the components are: studies/engineering before construction and then the construction costs including any engineering work during the construction). However, the Township of Springwater is proposing to pay the assessments levied to the Springwater residents in the watershed for their portion of the study costs.

It is expected a cost per acre of a resident's land within the watershed could therefore be \$25± if the project is completed at the above estimated cost.

Where any such land is recognized as agricultural by the province and is eligible for "grant", the final (or net) cost per acre to the affected land could be reduced by one-third.

Also a Preliminary Report (PR) can not provide detailed profiles, or specifications for the construction work and can not provide for the actual receipt of approvals. All of this occurs with a Final Report.

The contents of this PR are set out in the Table of Contents. Both the text and the drawings are listed.

In addition to the main sections of this PR, substantial appendices have been included to provide more background information and more data on the studies that have occurred. Again, the Table of Contents can be referred to.

The steps to be followed in processing this Preliminary Report and in continuing on afterwards are set out elsewhere in this Report and are repeated as follows:

- Preliminary Report is made available to all parties/landowners involved
- A meeting is set up by the Township for comments to be received regarding the Report (Consideration of the Preliminary Report)
- Council would determine at this Preliminary Report consideration meeting if the Engineer should be directed to prepare a Final Report.
- If the Engineer is so directed, further meetings may be set up with directly affected landowners and agencies, further survey/studies as necessary will be undertaken, then a Final Report to include detailed cost estimates and assessments, drawings and specifications will be prepared.
- The Final Engineer's Report would then be circulated to all parties/landowners affected and municipal meetings to deal with the design and assessments would be set up.
- Once all meetings and appeals (if any) on the design/assessments are addressed, the Municipality may adopt the Report as a Bylaw.
- Then final approvals from agencies would be applied for.
- Once all appeals and approvals are addressed, construction could occur.
- Construction has to occur in the early winter period and it is reasonable to expect the work could be completed within one to two months from start-up.

Some of the main items to discuss at the Consideration of the Preliminary Report are:

1. Confirmation that 450mm of lowering of water levels will be acceptable.
2. Should the work be on the 750m or 950m route?
3. Should the barge width stay at 6m or be increased to 10m?
4. Should the barge launching pool be increased in depth for a greater collection area of possible sediments?
5. Are there any further thoughts regarding mitigation or monitoring?
6. Can we still meet a winter of 2021/2022 construction period?

2. WHAT IS THE SWALEY DRAIN?

It is an open channel drain consisting of a Main Drain and two Branch Drains.

- The Main Drain open channel currently extends 7500m± in length from the Lot 9-10 Line, Concession 11 (an unsanctioned and shortened alteration to its legal outlet) upstream to a top end at the Lot 2/3 Line in Concession 8. The historic/legal outlet would be a further 1000m± downstream.
- The Binnie Branch and the Donnelly Branch open channels together add 5200m± additional length to the drain. The Binnie Branch extends upstream to the Hendrie Road/Wilson Drive intersection. The Donnelly Branch extends northerly to the area of the Golf Course.
- A history of the Swaley Drain is included in **Appendix 2**. This appendix indicates the Swaley Drain was initially constructed pursuant to an Engineer's Report in 1898, was then extended pursuant to a further report in 1901, and was modified and further extended by a Report in 1948. One subsequent report in 1970 provided a new maintenance schedule

3. WHAT ARE THE SPECIFICATIONS FOR THE DRAIN?

Unfortunately, there are no known available drawings or text to show the design/required dimensions of the Swaley Drain channel or the design/required gradients or the required specifications for the channels.

The drawings and specifications that would have described such would have been included with the most recent full Engineer's report on the Swaley Drain (1948) but only the text for the 1948 Report can be found.

The only profile that exists for the Swaley Drain is one that was to accompany an un-adopted report in 1930 (see "History" section in **Appendix 2**). This 1930 Report proposed to extend the Swaley Drain from its 1901 outlet in Concession 11 downstream to the River.

It had data that showed the fall/gradient in the Main Drain (as proposed in 1930) from the River to Lots 3 & 4, Concession 8 top end. It showed a difference in elevation from the then current outlet, then near the unopened 11th Line, to the top end at 8 meters (25± feet), most of which difference was in Concession 8 and 9.

4. WHAT IS THE WATERSHED OF THE SWALEY DRAIN?

Based in part on reviews of a 1970 Engineer's Report prepared to update the maintenance schedule at that time, based in part on a 2003 Bylaw that billed out maintenance costs at that time, and based in part on provincial topographic mapping, current findings and reviews, the gross watershed is estimated to be in the magnitude of 1,700± ha (4,200± acres). The adjusted watershed could be 1,600± ha/4,000± acre) for the Swaley Drain project in Lots 9/10, Concession 11 as recommended herein.

The plans enclosed and the data in **Appendix 3** (Hectares of Lands and Roads in the Swaley Drain Watershed) shows the watershed believed to be applicable (gross hectares but net (adjusted) acres). Some other adjustments from gross areas to net areas affected may be made at the time of a Final Report.

5. WHAT INITIATED THIS REPORT?

The work related to this Preliminary Report commenced as a result of submissions to the Township of Springwater in December 2016.

At that time, both a "Petition" pursuant to Section 4 of the Drainage Act and a "Request for Improvement" pursuant to Section 78 of the Act were submitted.

The Section 78 request was submitted by the owner (B. Haight) of Parcel 005-13800 as shown on the drawings, and it requested that the course of the drainage works be changed, and that the drainage works be otherwise improved, extended or altered.

The petition submitted was also from Mr. Haight but was also signed by the owner (M. Camack) of Parcel 005-14000. It requested that similar outlet work be done.

The Municipality determined the appropriate course of action would be to act pursuant to the Section 78 request, and in February 2017, approached the Engineer to prepare a Report pursuant to Section 78 of the Drainage Act.

The Engineer, being aware that the Swaley Drain outletted into the Minesing Wetlands, then reviewed some of the correspondence on file. He noted that substantial correspondence on file pertained to dialogue between the Municipality and the NVCA with respect to initiating work to improve the outlet of the Swaley Drain downstream in the Minesing wetlands.

Based on that existing correspondence, the Engineer recommended that the Municipality conduct a Project Scoping Study prior to any decision to proceed pursuant to Section 78.

Indeed, the Municipality agreed and in February 2017 retained the undersigned Engineer to conduct (Project) Scoping work on the Swaley Drain for the purpose of reporting back to Council with recommendations re moving forward.

The main activities suggested by the Engineer to be included in a Scoping Study were listed as:

1. To meet with the Township, review aerials, review existing knowledge of the drain, review what the landowners wish, review what can be seen in the field, discuss farm values in the area and discuss possible options.
2. Produce aerials, etc. at different time periods going back to the 1940's if possible to understand the changes, if any, of water levels with time.
3. Meet with NVCA to discuss what options there may be, what position NVCA may take on each, etc.
4. Talk to the landowner(s) who submitted the request for work.
5. Meet with other landowners affected to discuss if there is a project that could be implemented to give some relief and at a cost beneficial point of view.
6. Meet with all stakeholders, and hopefully make a decision if there should be a Drainage Act appointment that is deemed appropriate.

The Project Scoping Report was completed and was submitted on March 27, 2018. See **Appendix 4**.

As part of the work related to the Project Scoping Study, numerous on-site and inside meetings (individual and public) occurred with landowners and agencies affected. The Scoping Study lists, on pages 8 & 9, the various meetings, etc. that occurred and such can be summarized as follows:

- On site meeting with Mr. Haight, upstream landowners and Municipality on February 24, 2017

- On site meeting with downstream owners and Municipality also on February 24, 2017 (and field review afterwards)
- On site meeting with principal downstream landowner on Downey Drain March 7, 2017
- Meeting with NVCA staff on April 18, 2017
- Meeting with NVCA and MNRF on May 23, 2017 (and field review afterwards)
- Meeting with full watershed (all owners notified) on October 11, 2017
- Follow up meeting with NVCA staff on October 13, 2017
- Presentation to NVCA Board of Directors (BOD) on February 23, 2018

Other sections in the Scoping Study Report, on its Pages 7 to 13, list the documents reviewed and the investigations undertaken with respect to the problems to be solved/addressed. The miscellaneous telephone calls and e-mail correspondence are not listed.

The Scoping Report discussed the need/problem, justifications for work, possible solutions, possible costs and distributions and what options were available going forward.

After the Scoping Report was prepared and reviewed, the Municipality on April 18, 2018 by resolution, appointed Kenn Smart of K. Smart Associates Limited to prepare a Preliminary Report for works on the Swaley Drain, pursuant to Section 78 of the Drainage Act.

5.1 What Problem/Need has to be Addressed to Provide Repair/Improvement to the Lower Part of the Swaley Drain

The problem/need was set out in detail on Pages 12 & 13 of the Scoping Report (see **Appendix 4**).

A summary of the problem/need is that “long term water levels in the Muskrat Creek flood plain and in portions of the lower part of the Swaley Drain have risen in the past 20 years to be at times up to 600mm higher and now are well above tile outlets in that part of the Swaley Drain from Highway 26 downstream”.

This high water level in the Swaley Drain channel results from the inundation of both the original downstream part of the Swaley Drain and also its original outlet creek (the Muskrat Creek) as the Minesing wetlands developed since the 1970’s period.

The Swaley channel where, and how, it currently terminates permanently sits with up to 1200mm of water. The Muskrat Creek route is similarly under up to 1200mm± of water where examined.

This continuous submergence of tile outlets and increased high ground water levels will eventually cause connected tile drainage systems to fail and render area fields/farms more and more unsuitable for the agricultural activities practiced since the creation of the Swaley Drain.

5.2 Applicability of Section 78 to Address the Problem

Section 78 of the Drainage Act authorizes various projects including those necessary to:

- Change the course of an existing drainage works
- Make a new outlet for the whole or any part of an existing drainage works
- Otherwise improve, extend to an outlet, or alter an existing drainage works

The work required to restore, or to attempt to restore, the historic route and outlet of the lower part of the Swaley Drain, where deemed most suitable, is work authorized by Section 78.

6. WHAT WORK HAS BEEN DONE TO ADDRESS THE PROBLEMS WITH/NEEDS OF THE SWALEY DRAIN?

Appendices 5 and 6 describe in depth the work done, both prior to and then after the start of work on the Preliminary Report.

Briefly, and as set out in the previous sections, a Scoping Report was suggested and was completed prior to the appointment re the Preliminary Report.

The work activities included as part of the Scoping Report and/or as part of the Preliminary Report can be listed as:

- Preliminary drone and GPS summer time surveys as part of the Scoping Report.
- Review of all available data for the Swaley Drain and its setting

- Attendance to two on-site meetings with affected owners, one watershed-wide public meeting, various meetings with NVCA staff, various meetings with Springwater staff, one presentation to the NVCA Board of Directors, all as part of or during the time of the Scoping Report.
- Completion of a Natural Environment Report (NER). (See **Appendix 7**) (For those who may not review the full NER, the Engineer's summary of such is contained on pages 5 to 9 of **Appendix 6**).
- Communication between NVCA staff and the Engineer on at least six different dates since the filing of the NER in order to refine the recommendations for work.
- A further (virtual) presentation to the NVCA Board of Directors (May 28, 2021).
- Completion of winter time surveys to augment/expand the summer time scoping report surveys and to secure accurate wetlands water levels.
- Obtaining Contractor input on possible methods of excavating a small channel at the bottom of basically a lake with a 600 to 1200mm depth of water.
- Virtual presentations to Township Council and staff.
- Further on-site meeting.

Appendix 8 lists the primary interactions with NVCA after the Preliminary Report start up.

Appendix 9 contains a summary of the concerns raised by NVCA up to early April 2021 and comments re such by the Engineer.

Appendix 10 contains the minutes of the May 28 meeting. The minutes include the PowerPoint presentation made by the Engineer to the Board, an NVCA staff report made for the Board, and lastly the Resolution passed by the Board after consideration of the two inputs and follow-up discussions. **Appendix 10** also contains the reading notes of the Engineer during his presentation.

The Resolution in effect approved NVCA staff moving toward the issuance of a permit (Section 28 of Conservation Authorities Act (CAA)) subject to satisfactory

approval by staff of 'four details' for the up to 950m± extension proposal described in the Engineer's PowerPoint presentation.

These 'four details' are:

- Detail 1. "An amended Natural Environment Report, as deemed necessary, that examines the environmental impacts and provides recommendations that ensure that the final proposed works are designed in such a manner to avoid, mitigate and where necessary offset environmental impacts to achieve no net loss to the natural heritage system;*
- Detail 2. A report prepared by a professional engineer confirming that the proposed works will not result in adverse flooding impact to adjacent properties;*
- Detail 3. Detailed construction drawings/plans outlining the extent of the works, erosion and sediment control measures, restoration of disturbed areas, and enhancement plantings and habitat creation; and,*
- Detail 4. Appropriate landowner permissions and other required Regulatory review and/or approvals (e.g. MECP, MNR and DFO).*

The resolution also indicated that NVCA staff will continue to assist through ongoing discussions with Township staff, Drainage Engineer and other involved qualified professionals.

The 'four details' and the Engineer's comments re such are discussed in various sections of this Preliminary Report.

7. WHAT IS THE RECOMMENDED WORK?

As **Appendix 11** describes, there has been an evolution of the recommended work from the dates of the Scoping Report and NER to this Preliminary Report completion.

The evolving recommendations have all been prepared to reduce the impacts on the Minesing Wetlands and render the recommended work as acceptable as possible to NVCA and at the same time to address the need for lowering of the permanent wetlands water level in the Swaley Drain and to become satisfied the long term wetlands levels can be maintained.

Based on the work of the Engineer as described, based on the results of the Natural Environment Report, and based on the input from NVCA, the construction work recommended by this Preliminary Report would only be undertaken at the existing Swaley outlet area and would involve:

- Clearing of wetland vegetation over a $6\text{m}\pm$ width² and the excavation of a shallow ($500\text{mm}\pm$ deep) submerged channel at the base or floor of the vegetation/wetlands for a length of $600\text{m}\pm$ downstream of the existing Swaley Drain following as closely as possible to the original route of the Swaley Drain, where it runs along the north limits of Lot 10, Concession 11.
- Then the excavation of a similar submerged channel in a similar $6\text{m}\pm$ width of cleared wetland vegetation from that point approximately $350\text{m}\pm$ north following close to the route of the Muskrat Creek as it existed in the 1950's.
- As an option to this $950\text{m}\pm$ length of work, a $750\text{m}\pm$ long route could be followed along a non-historic course, diagonally in a northwesterly direction in Lot 10, Concession 11 as a direct extension to the current termination of the Swaley channel.
- Constructing the work by barge methods (where an excavator works from a barge), since along either of the two possible work lengths described, existing wetland water depths vary from $500/600$ to $1100/1200\text{mm}$ moving in an east to west direction downstream from the current Swaley channel.
- Thereby creating a lowering of the wetlands water levels at the existing Swaley outlet by $450\text{mm}\pm$.
- Thereby creating/allowing a similar lowering of water levels in the Swaley Drain channel upstream so that currently submerged tile outlets become visible considering that water levels in ponded excavated channels, like in the existing Swaley Drain downstream from George Johnston Road, are basically flat provided the channel itself is in good condition.³

² The $6\text{m}\pm$ width is selected as the minimum width to accommodate a barge and as the minimum width to allow construction of the floor channel to minimize re-emergence of vegetation in the width. Initially a $10\text{m}\pm$ wide barge was considered but in a continued effort to minimize wetlands disturbance, it is recommended the work be done using a $6\text{m}\pm$ width barge. A $6\text{m}\pm$ wide barge would require 800 to 900mm of water, while a $10\text{m}\pm$ barge would require 900 to 1000mm of water to work in.

³ A Drainage Superintendent initiated cleanout of the Swaley channel from the new extension recommended here upstream to George Johnston Road may be found necessary/desirable upon completion of the new work.

- The casting of the removed wetland vegetation and the materials excavated from the shallow floor channel, in amongst the adjacent wetland waters and grasses in widths of 3 to 4± metres on each side of the barge path.
- The construction of the work in the early winter period, i.e. between November± and January± to implement one of the primary environmental mitigation recommendations of the Natural Environment Report (NER) (that work be in the winter period), but yet to minimize the depth of ice that may have to be encountered along the route of the barge travel.
- The incorporation of all other NER recommendations re environmental mitigation, avoidance etc. measures.
- The over-excavation of the floor channel by up to 300mm immediately downstream of the existing Swaley outlet so that there is a minimum of 800 to 900mm of water for the barge when it returns to its starting area after existing levels are lowered. This over-excavated area is called a “deeper pool area”.
- The moving in of the equipment to the site of new work using access routes suitable for such, and at appropriate times of the year, to minimize damage to lands along the access routes. This would mean perhaps moving the equipment to the site after harvesting, and prior to fall rains. Alternatively, equipment would be moved in after some frost develops in the ground. However, the excavation itself should be undertaken prior to the development of significant frost/freezing.
- The removal of the equipment from the site before frost depths minimize again to minimize disturbance to access paths.
- The use of an access route either through the Gilroy and/or the Parker properties from George Johnston Road westerly. On the Gilroy property a route through the yard and fields to approximately half way back on the farm would be preferred as opposed to coming off George Johnston Road across the Parker farm.
- Once alongside the existing channel, the balance of the access route would follow the spoil berm that exists along the north side of the channel. Matting may be necessary in the lower part of this route along the spoil berm if conditions are not sufficiently dry or not sufficiently frozen at the time.

All this recommended work at the Swaley end is conditional on the implementation of the proposed Section 74 project to be undertaken by the Township to remove brush from the Downey Drain channel across parts of Concession 12 and 13.

9. MONITORING OF WORK ONCE DONE

A requirement of NVCA's final approval of this project is expected to be the need to establish a future monitoring program. The need for a monitoring program was first identified in correspondence from NVCA dated July 2020 and has been repeated in later correspondence. (See **Appendix 8** for NVCA/KSAL interactions.)

A detailed suggestion of the undersigned and the environmental sub-consultant re monitoring was set out in a response to NVCA on February 4, 2021.

A summary of what was suggested re monitoring is repeated:

- *Staff gauges would be installed at the existing Swaley end now, at the Gilroy tile outlet and also at George Johnston Road,*
- *If possible this winter we may try to establish a gauge at the end of the 950m length.*
- *These gauges will be read spring, summer and fall from now on even while the Reports are being prepared and then at the same frequency after construction.*
- *Township staff will be encouraged to gather the readings from the staff gauges at regular intervals during all weather conditions.*
- *As well, we will implement ecological monitoring by collecting and analyzing water samples and by establishing vegetation monitoring plots adjacent to the proposed works, at various distances, and by reviewing re-emergence of existing and new vegetation. This can be done by kayaking (or similar) along the new extension twice annually. At defined locations, along the route, a more thorough review of vegetation changes including a review for any invasive species would be undertaken.*
- *We will attempt to do these prior to construction, and then at one-year frequency after construction for a total of approximately 5 years. By the end of the 5-year period, any changes in vegetation should have occurred and the community should be stable.*

On June 23, 2021 a virtual dialogue occurred between the Engineer's Environmental Subconsultant (RiverStone Environmental Solutions) and NVCA re monitoring. On July 9 a suggested monitoring program was submitted by NVCA.

This proposal is still being discussed but as at the time of this Report, details are not finalized, so the above monitoring program described may change.

The construction cost estimate that is included in this Preliminary Report contains an allowance for the costs of monitoring up to the end of construction completion.

The cost of future monitoring for a 5-year period (after completion of construction) is included in the estimate of present day values of future maintenance costs included in the “Maintenance” section of this Preliminary Report. If the costs were separated, an annual monitoring cost of \$6,000 per year for 5 years is allowed for. The costs of post-construction monitoring would be assessed/levied to all municipalities, agencies, and landowners assessed for construction and in similar proportions.

10. MITIGATION, ENHANCEMENT MEASURES TO MINIMIZE WETLANDS IMPACTS

When NVCA first identified, in April 2018, that an Environmental Study would be necessary to study the impacts of the Swaley Drain repair/improvement on the Minessing Wetlands, NVCA’s stated requirement at that time was to prepare:

- *“An Environmental Impact Study that examines the environmental impacts and provides recommendations that ensure that the final proposed works are designed (and phased if necessary) in such a manner to avoid, mitigate and where necessary offset environmental impacts to achieve no net loss to the natural heritage system;”*

To fulfill this requirement, and prior to starting, the environmental sub-consultant met with NVCA and MNRF and agreed to a Terms of Reference for the Study. Then over the period of 2018 to 2020, the sub-consultant completed the Natural Environment Report (see **Appendix 7**).

The sub-consultant examined two work areas. One was the 750m/950m work area downstream of the existing Swaley termination (the Swaley Outlet Study Area) and the other was a 500m± work area proximate to the Nottawasaga River, the old Muskrat outlet and the Downey Drain (the Muskrat/River Study Area). **Drawing 2** outlines these two areas.

His report concluded that:

“There will be a low likelihood of negative impacts on significant heritage features and that any negative impacts on the natural environment can be acceptably mitigated.”

His specific recommendations to minimize/mitigate impacts on various species in, or to aspects of, the Wetlands are listed on Pages 16 to 22 of his NER (and are also summarized as part of **Appendix 6**).

One of his primary recommendations is that the work be undertaken in the early winter period, to minimize impacts on species and to minimize damages to lands needed to access the work area.

This recommendation is, and others of the NER will be, part of this Engineer’s recommendation in reports to be submitted.

One of his other significant recommendations was to avoid new work in the Muskrat/River Study Area near the historic Muskrat Creek junction with the River or near the Downey Drain in order to avoid an area of potentially higher negative environmental impacts.

This recommendation has also been implemented by this Report as work is no longer recommended in the River work area, as was once considered.

‘Detail 1’ of the May 28, 2021 Resolution of the NVCA Board to be addressed (see **Section 6**), states that the NER may have to be amended to provide for the final mitigation, avoidance and offsetting measures agreed to.

RiverStone Environmental Solutions (Al Shaw) has commenced dialogue with NVCA and is waiting for input re further offsetting, etc. recommendations. The final recommendations have to be in place prior to the Final Report of KSAL being adopted as a Bylaw. At this time brief descriptions and best estimates of what may be recommended are provided for in the cost estimate enclosed herein.

Certainly the facts that:

- a) the Swaley Drain existed prior to the development of the wetlands, as existing now with the current high depth of wetland water, and thus prior to the flooding of its lower parts and of the Muskrat Creek;

- b) the work will be done by barge methods with minimal working widths and disturbance;
- c) the work will be done in winter periods to further minimize disturbance and impacts; and
- d) the NVCA did not identify at the NER start up meeting specific concerns that needed to be further addressed beyond those studied by the sub consultant, would support the minimal inclusion of further enhancements, mitigation or off-setting measures.

Nonetheless on the recommendation of the environmental sub-consultant, an allowance of \$20,000 for further mitigation/enhancement measures is included in the cost estimate.

It has to be recognized it may be possible to reduce this allowance after further discussions with NVCA are completed, but it also has to be recognized that this allowance may have to be increased as further discussions occur.

11. ON-SITE MEETING (VIRTUAL) JULY 12, 2021

Although various on-site meetings, public meetings and reviews occurred with owners in the area requiring drainage and with owners in the full watershed as part of the Scoping Report, and although miscellaneous communication occurred with a few landowners since 2018, a separate on-site meeting after the appointment to prepare the preliminary report did not occur until July 12, 2021.

The primary reason for delaying this meeting was the uncertainty as to where the project may be heading in light of the preparation of the Natural Environment Report (NER) and its reviews with NVCA. The NER was deemed similar to an environmental appraisal that could be prepared pursuant to Section 6 of the Drainage Act and it is this Engineer's opinion that an on-site meeting should not occur until any needed environmental study is completed and its implementation is reasonably known.

The anticipated implementation of the NER was of concern until May 28, 2021. At that time, and upon the resolution of the NVCA Board of Directors, reasonable certainty of what could be proposed for work on the Swaley Drain, and how it could be pursued, was achieved.

After that date, work promptly occurred to set up the on-site meeting.

All farm owners deemed needing a drainage improvement plus two downstream owners who had been previously contacted for meetings were notified of the July meeting.

Due to COVID 19 protocol the meeting was conducted virtually.

Landowners, municipalities and agencies who participated in the virtual meeting were:

T. Walton	landowner
M. Camack	landowner
A. Bayer	landowner
S. Buchanan	Springwater (Drainage Superintendent)
J. Schmidt	Springwater (CAO)
M. Ramdeo	Springwater (GM Infrastructure)
C. Meile	Simcoe County (Director)
B. Wesson	NVCA (Director)

One other, R. Downey, listened in but could not participate.

Two owners who did not receive their notification (W. Gilroy and H. Parker), were contacted after.

The overall concerns/comments were;

- a) Two owners, Camack and Bayer, believe the work should be more extensive and involve a channel all the way to the Downey Drain (as had been discussed in the Scoping Report).
- b) One owner, Walton, believes the old cut at the Nottawasaga River should be reopened up.
- c) Municipal and agency representatives acknowledged the work proposed but had no specific concerns.
- d) Gilroy and Parker both stated they also would prefer more work ie go further towards the Downey Drain but understand why the proposal is as it is. Neither would want any less work done. An opinion was offered that doing the channel improvement work on the Downey should assist in doing the Swaley work.

- e) Downey acknowledged the proposal for the Swaley and reiterated he wanted to see the Downey channel cleanout as proposed.

The Engineer reiterated at the meeting that any proposal to join the Swaley to the Downey, as discussed in the 2018 Scoping Report, would most likely not be successful because of environmental objections and potentially very high costs (much more barge work, costly environmental offsetting measures, enlarging the Downey etc.). The Engineer's opinion is that any legal action to pursue such connection if necessary would most likely also fail.

12. ADDRESSING THE OTHER DETAILS OF THE NVCA MAY 28 RESOLUTION

Re 'Detail 2' of the Resolution requiring:

A report prepared by a professional engineer confirming that the proposed works will not result in adverse flooding impact to adjacent properties;

KSAL will include details in the Final Report to confirm that the works proposed by the Final Report will not result in adverse flooding to adjacent properties. K. Smart, the undersigned Engineer, can state now that there will be no adverse flooding with the 950m long project recommended by the Preliminary Report (or the 750m long route if selected). The works recommended will not result in any increased flow in the Swaley channel as existing. The work will actually result in more capacity in the Swaley channel and in the 950m or 750m of wetlands traversed and thus there will be less flooding than there is now.

Re 'Detail 3' of the Resolution requiring:

Detailed construction drawings/plans outlining the extent of the works, erosion and sediment control measures, restoration of disturbed areas, and enhancement plantings and habitat creation;

A Preliminary Report never includes the detailed construction plans etc. These are included with a Final Report once the final work is confirmed. The details of any enhancement planting/habitat creation to be recommended by the NVCA are still to come. At this time the Preliminary Cost Estimate includes costs to attend to what is believed will be necessary but details are not shown re Detail 3.

Re 'Detail 4' of the Resolution

Appropriate landowner permissions and other required Regulatory review and/or approvals (e.g. MECP, MNRF and DFO).

As previously described to NVCA, "landowner permission" is not a requirement of a Drainage Act report. The Engineer customarily attempts to ensure all affected landowners are "on board" with respect to a Drainage Act project but in some cases there may be concerns that cannot be resolved prior to a report being prepared. In a report the Engineer describes what lands are required and what impacts will result and then provides "allowances" as defined in the Drainage Act to traversed ownerships. If any landowner wishes to dispute or appeal the Engineer's recommended usage of lands or allowances made, there are described Drainage Act opportunities to appeal the Engineer's recommendations. The above is the approach to be taken on this Swaley Drain project.

With respect to the Regulatory Approvals, the Engineer recognizes that all agency approvals have to be addressed. The Engineer and Environmental Subconsultant have already initiated discussions re the 950m/750m long project with MECP and DFO being the two regulatory agencies in addition to NVCA. Every attempt will be made to ensure final approvals would be provided when and as required. Difficulties are not anticipated.

13. ESTIMATED COSTS OF THE RECOMMENDED WORK AND DISTRIBUTION OF THE COSTS

13.1 Cost Estimate of Recommended Work

A) Drainage Report Cost Estimates in General

Any cost estimate done for a Drainage Act project customarily consists of:

- the fixed cost allowances/payments for right-of-way and land damages necessary to be made to owners of lands having work on their properties (if any),
- the construction cost estimate including labour, materials and equipment costs and including a contingency allowance,
- the engineering cost estimate to prepare and process all reports including sub-consultant reports,

- an estimate of the construction supervision and project administration services (normally by the Engineer)
- an estimate of the eligible municipal administration costs which can include allowances for financing, approvals, applications and miscellaneous costs, and which also includes an HST allowance (1.76% on drains as opposed to normal 13%).

A Preliminary Report does not set out the cost estimates of any of the components in any detail. It is the Final Report that will provide more data re the cost estimate.

Appendix 12 to this Preliminary Report has a greater description of the components of a cost estimate included in a Drainage Act Engineering Report.

B) Cost Estimate for the Work Recommended by this Preliminary Report

This is the preliminary cost estimate of the 950m± length⁴ of construction downstream of the current Swaley Drain lower end and as described.

With respect to allowances, such will have to recognize access will be made through the Gilroy, Parker and NVCA properties and that 950m± of construction work will occur on the NVCA and MNRF properties.

With respect to the construction cost estimate, work by “barge” methods will have to be provided for.

With respect to the engineering cost estimate, all costs set out in the Preliminary Report will be the costs to date and the best estimates of the final work for the Natural Environment Report, the Final Engineering Report, and work during the tendering, construction and project finalization periods.

With respect to the administration cost estimate, the work expected to be involved with environmental approvals will have to be included, together with the estimate for the other described components.

⁴ The costs may marginally reduce if the 750m long route as described was selected.

The Preliminary Report's cost estimate for the recommended work is therefore as follows:

Table 13.1-1

ALLOWANCES (based on the 950m work length)	
- Gilroy	1,900
- Parker	100
- NVCA	5,400
- MNRF	<u>2,250</u>
Sub Total:	9,650
CONSTRUCTION (of the 950m work length)	
Mobilization/demobilization	20,000
80 hours excavation by barge methods	40,000
Additional excavation at pool area (barge launch area)	12,500
Lump Sum Contingency (10% of above)	7,500
Mitigation, Enhancements Contingency ⁵	<u>20,000</u>
Sub Total:	100,000
ENGINEERING/STUDIES	
a) Prior to Construction	
Preliminary Report (excl. Natural Environment Report)	62,500
Natural Environment Report	64,500
Final Report	<u>40,000</u>
Sub Total	167,000
b) During Construction	
Monitoring during construction	7,500
Supervision & Final Inspection	<u>50,000</u>
Sub Total:	57,500
ADMINISTRATION	
a) Prior to Construction Administration Allowance	5,000
b) During Construction Administration Allowance	<u>4,950</u>
Sub Total:	9,950
HST	
a) Prior to Construction HST allowance (1.76%)	3,000
b) During Construction HST allowance (1.76%)	<u>2,900</u>
Sub Total:	5,900
<hr/> TOTAL ESTIMATE SWALEY DRAIN OUTLET AREA: <hr/>	
	350,000 <hr/>

From the above

a) the costs incurred prior to Construction are estimated to be \$167,000 + \$5,000 + \$3,000 = \$175,000

b) The costs incurred During Construction are estimated to be \$9,650 + \$100,000 + \$57,500 + \$4,950 + \$2,900 = \$175,000

⁵ This cost allowance is based on creating habitat nesting features or similar

13.2 Distribution of the Costs of the Recommended Work

Any “distribution of costs” discussed in this Preliminary Report is intended to show approximately how the costs of any project actually constructed pursuant to a Final Report may be “assessed” to the lands and roads affected. The word “assessed” is used since the Drainage Act requires that the actual costs of a project, if and once built, are to be paid by the affected lands and roads in accordance with an “Assessment Schedule” prepared by the Engineer and included in the Final Report.

The Assessment Schedule that is included in a Final Report is based on the updated estimated costs of a project as set out in the Final Report. When the project is built, the actual costs are then prorated to all parties against the assessments in the Assessment Schedule.

Any suggested distribution of costs in this Preliminary Report is thus the Engineer’s thoughts on how actual project costs (as estimated now) would/could be assessed to the lands and roads affected in a Final Report.

When the Scoping Report was prepared in March 2018 to determine if a Swaley Drain project should be studied, a section on possible distribution of costs was included in the Scoping Report. This section indicated that a probable method of “distributing” the costs (i.e. future assessing of costs) would be to use the Schedule of Assessments from the 1970 Engineer’s Report (prepared in 1970 to assess out repair costs of the Swaley Drain) but with modifications. **Appendix 4** contains the modified 1970 Schedule referred to above in one of its appendices.

This Preliminary Report recommends that the distribution of costs as suggested by the Scoping Report be closely retained. However, since the date of the Scoping Report, the Swaley Drain watershed has been reviewed and an updated table of the lands and roads affected has now been prepared.

Appendix 3 shows this updated table of the lands and roads that would be involved in any distribution of costs for the works recommended and the areas of the lands and roads involved (in hectares and acres).

A possible distribution of costs for the recommended work if consistent with the Scoping Report recommendations is suggested to be:

- 33%± of the costs to the roads of the municipality (Springwater)
- 7%± of the costs to the roads of the County (Simcoe)
- 10%± of the costs to the owners of the wetland parcels affected (MNRF, NVCA)

- The balance of the costs (50%±) distributed proportionally to all adjusted acres shown to be affected by **Appendix 3** excluding the acres shown for the Township roads and County roads and excluding the lands of MNR and NVCA downstream/west of George Johnson Road i.e. in Concessions 10, 11 and 12. Some other areas may be adjusted in a final report assessment schedule.

The cost is proposed to be assessed in two components with equal distribution for each component (the components are “studies/engineering/administration prior to construction” and then the “construction costs including any engineering and administration work during the construction”). However, the Township of Springwater is proposing to pay the assessments levied to the Springwater residents in the watershed for their portion of the engineering/studies before construction component.

It is therefore expected a cost per acre of a resident’s land within the watershed could be \$25± if the project is completed at the above estimated cost.

Where any such land is recognized as agricultural by the province and is eligible for “grant”, the final (or net) cost per acre to the affected land could be reduced by one-third.

Also a Preliminary Report (PR) can not provide detailed profiles or specifications for the construction work and can not provide for the actual receipt of approvals. All of this occurs with a Final Report.

14. OTHER CONSIDERATIONS GIVEN PRIOR TO DEVELOPING THE RECOMMENDATIONS PROVIDED HEREIN

14.1 Minesing Wetlands

The Scoping Report contained an Appendix that provided data describing the Minesing Wetlands as a provincially and nationally significant wetlands area. The wetlands area was the subject of background studies in the 1970’s and has resulted from gradual acquisition of the lands now constituting the wetlands by the province (the Conservation Authority and the Ministry of Natural Resources).

A Master Plan for what was then to be called the Minesing Swamp was prepared in 1975 and it is believed land acquisition and protection by the Province commenced

in earnest thereafter. This Master Plan did recognize that Municipal Drains would however have to be recognized and provided for in any new wetlands developed.

The wetlands area is believed to encompass an area of approximately 15,000± acres (6,000± hectares). The perimeter of the wetlands in the area of this study, as shown to be an ANSI area (an Area of Natural and Scientific Interest), is designated on **Drawing 2** included with this Preliminary Report.

A simplified description of the wetlands in the area of the lower part of the Swaley Drain, the historic Muskrat Creek route, the River and the Downey Drain is that it is a reasonably deep body of water with wetland vegetation confined by the Downey Drain to the north, by the River to the west, by the Willow Creek to the south and by the agricultural and bush higher lands to the east. The depth of the waters where measured varies from 500/600 to 1100/1200mm and wetland vegetation predominate in this “lake” area. Tree skeletons and some perimeter bush areas also remain. The vegetation grasses exist as mats/clumps and are quite dense in areas.

This lake/wetlands area is believed to have resulted from the blockage of the 1901 cut made to the River, neglect of any previous watercourses and perhaps by higher River levels in the area⁶. The original drain history discussed in **Appendix 2** depicts, and a 1954 vintage aerial shows, the Muskrat Creek as a channel still flowing through a low and flat wooded area but as a channel that could be maintained and as one with an outlet to the River. Now the Muskrat Creek (remnants), and of course portions of the lower part of the Swaley Drain, are not visible due to their inundated condition.

The wetlands area is recognized by this report as a significant area and one that should desirably continue to remain with minimal disturbance. This report however does recognize that agricultural drainage must, and can also, be maintained while maintaining the significance of the wetlands.

⁶ This Engineer's survey shows a rise in River levels of 400mm± primarily due to blockages between the relatively close locations where the Downey Drain outlets and where the cut was made for the Muskrat Creek in 1901.

14.2 Soils

It was not possible to go out with an excavator in the winter of 2018/19, as once proposed, to investigate in detail the soils existing downstream of the current outlet of the Swaley Drain.⁷

However, reviews of existing literature and the analysis of results of the survey investigation indicate what is believed to exist re soils.

It is suspected that the soils at the wetlands floor in the work area will consist of a thin strata of saturated organic soils above more firm native loamy soils⁸. Of course all soils in the work area are inundated. Old sediments are also believed to exist above the original soils in the recommended work area.

The work that was done for the Minesing Swamp study in 1975 did have drawings which indicated a general descriptions of the soils. The soils in the route of work that is proposed in this Preliminary Report were shown by the 1975 study to be “medium sensitivity with the depths of the organics between 12” and 36” (300 to 900mm) overlying mineral soils”.

It is expected that this will be the case throughout the work area proposed since just upstream of the current Swaley termination outlet the soils are shown by the Soils Maps as loams (Tioga and Alliston) and since the limited field work able to be undertaken by the Engineer’s staff at the Swaley study area found similar conditions.

There is a gradual westerly down gradient of the surface of these loam soils and the overlying organic soils as elevations secured by the Engineer and shown in **Appendix 6, Subsection 6.1** indicate.

⁷ At one-time consideration was given to doing test holes in the downstream wetlands with an excavator in the winter period. However after, and fortunately in hindsight, being delayed in using excavator methods due to permitting requirements and after determining instead by hand, in iced up conditions, the actual depths of wetland waters to be encountered, it was concluded very high costs have been incurred to do excavator test holes as even the test hole work would have to have been done by barge (expensive moving costs) or by a high float excavator (which is not available). In hindsight the costs to have done this test hole work could have been close in cost to do the excavation work now recommended.

⁸ The word “loam” is only used since soils sieve analyses have not been made and since the type of loam could vary with location. The soils map describes the upstream loams as having a substantial content of sand. The landowner near the outlet describes the soils as having more of a silt content. Our surveyors felt there was a significant clay content where the test hole was dug. The presence of “topsoils” in the underlying sand/silt/clay soils would also contribute to its “loam” description.

The data in the appendix describes the Engineer's survey finding at the one 1-metre deep hand shovel test hole at the current Swaley termination. Here one half metre of mixed soil and organics: silts/organics/sediments (believed to be primarily the spoil bank at that particular location) were found above more native clayey/loamy soils into which the one half metre deep existing channel had been excavated. Any original topsoils/ organics would have been in the upper half metre depth of excavation.

Appendix 6, Subsections 6.1 & 6.2 also describe, and ***Drawings 2 and 3*** show, the finding that in the wetlands, where surveyed, firmer native grounds are encountered at depths of 500/600 to 1100/1200mm below wetland water surfaces, and that it is primarily wetland vegetation that exist above the firm soils. If sediments are present in areas other than in the recommended work area, they are very loose and saturated and possibly blended in with the grasses and organics.

It is suspected that downstream of the current termination of the Swaley Drain in much of the proposed work lengths, the firm ground elevation probed could be the top of sediments that have existed for many years. The overdigging described to create an area for the barge to launch would remove the majority of these accumulated sediments, if present, and would remove the soils that could be expected to promote re-growth of the wetland vegetation. Sediments are described in more detail in the following section.

14.3 Sediments

It is not considered that an unusual amount of sediments have recently travelled down the Swaley Drain.

This Engineer started securing elevations in the Swaley Drain in February 2017 and has found that the elevations of, and the difference between, Swaley ditch bottom elevations and Swaley water levels at its present downstream termination and at George Johnston Road has remained fairly constant.

Appendix 6, Subsection 6.2 contains a summary of elevations secured by the Engineer and the analyses made of such.

The data from an Ontario Land Surveyor's (Betts) survey in 2013 also shows that the drop in ditch bottom elevations at, and the water level/ditch bottom differences between, the same two locations have not changed from 2013 either. Bett's 2013

data in the wetlands also agrees with KSAL's 2019 data where secured data overlaps.

This indicates that over close to a 10-year period, no significant sediment accumulation has occurred in the Swaley channel or downstream.

It is suspected, however, that sediments do exist along the historic route of the Swaley Drain in Concession 11 and that such may be the source of the rising wetlands floor elevation in the 950m (or 750m) work length.

These sediments may have been introduced during the Hurricane Hazel event in October 1954, after the date of the aerial photos included, when the Willow Creek breached into the Swaley, possibly depositing some of the high sediment loading the Willow is believed to carry.

As in any open channel in a rural (or urban) setting, some sediment accumulation after construction does occur over time and some future maintenance should be anticipated. Frequency of maintenance for possible future sediment removal is described in a following section.

14.4 Access/Working Area

A further consideration that has been given in this report is the access and working area necessary to allow the recommended 950m of work (or 750m if selected) to be undertaken.

Currently the Swaley Drain downstream of the George Johnston Road (GJR) has a possible working area alongside of it consisting of the old spoil berm ("spoil" is the material excavated from a channel). This spoil berm would allow maintenance equipment to operate along the channel.

Over the easterly part of the length downstream of GJR, the spoil berm is on the south side of the channel and over the balance downstream to the current termination, the spoil berm is on the north side.

Current access to the berm where commencing on the north side of the channel (approximately 700/800m west of GJR) is believed to be through the property of Gilroy/Doner and involves a route through the yard and fenced areas adjacent to the owners' buildings. The Engineer has used this access during his site reviews and Mr. Gilroy was prepared to make this access available for the trial excavation

work that was planned to be taken in the winter of 2019 provided such could be done when the lands were frozen.

It is recommended that the Final Report provides that this Gilroy/Doner farm access be used in part and then the north side spoil berm (in parts on Gilroy/Doner, Parker and NVCA lands) be used for the remaining access.

It would also be recommended that this access only be used after harvesting is complete and when fields are dry, or are frozen.

Such timing would also implement a substantial recommendation of the Natural Environment Report.

It is recommended that the “working area” downstream of the access and thus along the new 950m (or 750m if selected) downstream extension be the 6± metre width of grass removal in the wetlands plus the material spreading widths with a buffer between.

With respect to a construction yard or staging area, it is recommended that the barge (in components) and the excavator(s)⁹ be floated to the gravel building site on the Gilroy/Doner property. From there it is recommended that the excavator skids the barge, once assembled at the staging area, to the point on the Swaley channel where the downstream extensions will commence.

The excavated material spreading width could be a 3m± width on each side if materials are cast equally on both sides into the wetlands waters with a buffer of 3m± of wetland vegetation on each side between the barge area and the spreading areas.

Only the 6m± barge width would appear as a working area since the 3m buffers would not be disturbed and since in the 3m± spreading areas, the spread materials would disappear in amongst the wetland vegetation.

The 950m outlet extension work as recommended would be two-thirds in length on NVCA lands and one third in length on MNRF lands. If the 750m long route was selected, all new excavation work would be on (and allowances would be to) MNRF lands.

⁹ Two excavators may have to be brought to the site. One just to excavate the launching area and the other to operate from the barge.

14.5 Timing

It is recommended that any construction work that occurs be undertaken in the period of November 1 to March 31 (and desirably prior to February to avoid extensive freezing) to be consistent with the recommendations of the Natural Environment Report. It is very possible that if the decision is made to start only after frost, work may not commence until the January period.

The earliest November to March period within which work could now be undertaken would be the winter period of 2021/2022. For work to occur then, this Preliminary Report would have to be accepted by the Municipality, the Municipality would have to direct the Engineer to prepare a Final Report, and the Final Report would have to be prepared and passed as a bylaw in the four-month maximum period prior to October/November of 2021.

Also in order to proceed with work in 2021/2022, the Township may have to consider waiving its formal procurement policy and consider single sourcing the Contractor who has contributed to the costing of this project and who has successfully completed barge works in the Holland Marsh. If a formal procurement route is followed, many additional months will be required and problems may be introduced.

All approvals would have to be immediately provided and appeals would have to be avoided in order to have any chance of working in this 2021/2022 time period.

If it is impossible to meet the 2021/2022 timeline, it should be expected that work would be undertaken in the winter period of 2022/2023.

14.6 Drainage Connection of Lands on South Side of Willow Creek at George Johnston Road

This writer is aware that there was, and may still be, a pipe connection to the Swaley Drain from farm lands on the south side of the Willow Creek in Lot 10, Concession 9 on the east side of George Johnston Road. It is not known if this connection is still functional. This connection is believed to have been done to provide better drainage from the affected field, since for a lengthy period after the spring flood and even after heavy storm events this area is flooded.

If the referenced pipe connection to the Swaley is to remain, it should be recognized pursuant to Section 65 of the Drainage Act since it does outlet waters to the Swaley Drain from outside its natural watershed. This recognition, if done, should be done

separately from the work now being undertaken on the Swaley. In use of Section 65, Council would first have to give their approval that the connection is to be recognized and then secondly would have to appoint an engineer to review assessments and charge out the costs.

14.7 Future Land Use Changes

It is not expected that significant future land use changes will occur in the Swaley Drain watershed. It is noted that past residential development in the watershed has been minor and has been primarily adjacent to the communities of Anten Mills and Minesing. (It is believed little future growth in Minesing will occur other than infilling.)

A significant control that should occur however if further land use changes occur anywhere within the Swaley Drain watershed is that storm water management principles be implemented to ensure that the downstream runoff for any such new development is controlled to, or below, pre-development levels.

Dialogue has occurred with the Municipality re such management of runoff from any future urban developments in the Swaley watershed. It was determined storm water management techniques will be applied as suggested above and will be to Township and Provincial standards.

The dialogue also indicated runoff management in the adjacent Willow Creek watershed will be to the same degree of control.

Another land use concern that has been expressed was by NVCA. Their concern is that agriculture not expand further into the wetlands than as existing now.

14.8 Willow Creek

The Willow Creek does not factor into the immediate work recommended by this Preliminary Report.

However, this creek is a significant consideration and it is the Engineer's opinion that firstly it should remain separated from the Swaley Drain and that secondly it should be studied in the future in some detail.

Appendix 13 is devoted to the Willow Creek and recommendations are made for a study on it for the betterment of the wetlands, for the betterment of the lands adjacent to Willow Creek and for the long term protection of the Swaley Drain.

14.9 Future Engineering Work Prior to any Significant Future Upstream Repair Work in the Swaley Drain

This Preliminary Report and any Final Report that will desirably follow, will not include repair/maintenance/minor improvement of the Swaley Drain upstream of its current downstream termination.

If any significant upstream repair/maintenance/minor improvements are to be pursued on the Swaley Drain including its branches, the work should be initiated and overseen by the Municipal Drainage Superintendent without the involvement of a Drainage Engineer.

As noted elsewhere in this Report, the full description of what is the Swaley Drain, including what are its components, its profile and applicable cross-sections, its detailed specifications and the description of the work to be done at the various culverts is either missing or not complete.

It would be recommended that prior to any substantial full works of repair, maintenance, improvement on the upstream Swaley Drain pursuant to the Drainage Superintendent's program and Section 74 of the Act, that the Municipality initiate a Section 78 report by an Engineer to provide and/or complete the following:

- A description/drawing of each component of the drain and its length and location
- Profiles
- Cross-sections
- Specifications
- Status of culverts along the drain

It is however this Engineer's opinion that a "bottom cleanout" type of repair of the Swaley channel should be considered by the Drainage Superintendent from the existing Swaley Drain termination upstream to the Gilroy outlet, as a minimum, to assist in creating a level water surface from the area of the recommended work to this outlet, after the recommended work is completed. This work should proceed shortly after the work of this Report and prior to preparing any new Report re

specifications, etc. It may be found desirable to extend this cleanout to the area of the Vespra Valley Road.

14.10 Future Maintenance Considerations of Extension Work Proposed

If it is considered that the Swaley Drain outlet was initially constructed in the early 1900's, that it is known to have been repaired/improved after the 1948 Report, that it is believed to have been repaired/cleaned out in the 1980's and that it may now be improved/extended in the 2020's, there would appear to be a 40 year± span between the various construction activities that have occurred in the lower portions of the Swaley Drain. (If repair work was done at any other periods, there is no data on file re such).

It is also believed the lower Downey Drain across Concession 12 and 13 has not been maintained since its construction in the 1960's which is greater than a 40-year period. Upper parts of both the Downey and Swaley are believed to have been repaired at more frequent intervals, but this would not be a consideration in lower end frequency of repair.

As has been stated herein already, there does not appear to be recent sediment build ups in the Swaley outlet area.

It is also apparent that the last construction at the Swaley outlet area was successful in removing the upper layer of the firmer grounds (the wetlands floor) as regrowth of wetland vegetation in the location of the current Swaley outlet has not occurred even though the channel terminates adjacent to wetland vegetation and is filled with wetlands water.

It is therefore reasonable to expect that if the new Swaley extension work involves a similar excavation (500mm±) into the original grounds/wetlands floor, that regrowth of wetlands grasses should not be expected for some time.

To excavate a deeper pool area where the barge is launched would create a new sediment collection area in addition to removing old sediments dating from the Hurricane Hazel event.

Even when normal annual sediment contribution is believed low, such pool area should also assist significantly in reducing the frequency of maintenance.

It is thus reasonable to expect this new Swaley outlet area may not require sediment removal maintenance for close to a further 40 years.

It is however a recommendation here that a Final Report, if authorized, provide that this new Swaley outlet area be inspected every five to ten years to determine if wetland vegetation are starting to reappear in the new route.

If regrowth is evident at the time of such inspection, perhaps something similar to a marine harrowing or dredging/harvesting of the floor channel vegetation using more conventional watercraft or a smaller barge could be considered. This would assist in delaying the more comprehensive cleanout to the 40-year frequency.

A budget or present day value for future maintenance if providing for both a possible 10-year vegetation harvesting frequency and a 40-year sediment removal frequency, plus including the 5-year monitoring program previously discussed, would be:

\$6,000 each year for 5 years for monitoring

\$7,500 once every 10 years for vegetation harvesting

\$60,000 once every 40 years for sediment removal

The present day value of such costs over a 100-year period would be \$75,000±.

It will be recommended that all future maintenance costs be billed out in the same proportion that the costs associated with the Final Report are levied. Agricultural properties would be eligible again for the one third provincial grant on maintenance assessments.

15. “WHAT IF’s”

This Preliminary Report discusses two possible “what if” situations that could develop.

a) *What if Final Report is Prepared and Final Approval from an Agency is not Given?*

First of all, it should be acknowledged that all best efforts will be made during the Preliminary Report and Final Report processing periods to address concerns to facilitate all final agency approvals.

However, should the situation arise where a final agency approval is withheld in spite of all best efforts and if all proponent parties (Municipality, Engineer, Environmental Sub-Consultant and Legal Advisor) believe the approval

should not be withheld, and if all further believe the legal provisions of the Drainage Act can be and should be pursued to obtain the required permission to construct, this legal approach should be considered.

b) What if the Recommended Project is Constructed and the Resulting Lowering of Wetlands Levels in the Swaley Drain Channel is Found not to be Sufficient Either Initially or in the Future?

First of all, parties affected should agree now, at this Preliminary Report stage, that a lowering of the wetlands levels in the Swaley Drain of 450mm±, as discussed, will be acceptable since such is the lowering to be provided.¹⁰

Then if at a later time wetland levels rise due to factors associated with nature and/or management of the wetlands or if landowner farming practices should identify that a greater lowering than discussed here is required, there are only two possible new work items that could be considered:

- a) Firstly the possible better connection of the wetlands to the Downey Drain near the historic Muskrat Creek outlet to the River could be reconsidered. The Engineer's study has shown wetlands levels could be potentially lowered here, but only up to 300mm±, if a direct connection to the Downey Drain were made. This area was studied as part of this Preliminary Report work but has not been included as part of the Recommended Work since:
 - i) it has been concluded an acceptable lowering can be obtained without doing such
 - ii) A greater potential of negative environmental impacts is introduced which could involve more costly mitigation, etc.
 - iii) The successfulness of this drop in wetland water levels at the Downey eventually migrating over the full wetlands area by a similar amount so that at 3 to 4 km upstream at the Swaley Drain an identical further 300mm± lowering occurs, can not be guaranteed or predicted how long to occur.

¹⁰ Unless wetland levels change between now and construction. There has been little change since 2013 when the Betts survey was done.

- iv) Keeping the Downey Drain channel in Concession 13 in good repair should stabilize wetlands water levels.

However, this work area could be re-examined if ever required.

- b) Secondly, the “major work” option discussed by the Scoping Report in 2018 could be revisited. This work option would involve barge work similar to what is proposed by this Preliminary Report but over a further 1600m± long downstream route adjacent to the west edge of the wooded area in Lots 7, 8 and 9, Concessions 11 and 12 to connect the Swaley Drain as to be extended now directly to the Downey Drain in Lot 7, Concession 12. When this option was presented to the public and agencies in 2017/2018, the majority, of those who spoke, favoured the lesser work as studied by the NER. Indeed the Scoping Report recommended that only the “lesser work” be pursued by a Preliminary Report. Surveys by the Engineer indicate there is a difference in water levels between the wetlands level where the Swaley is now proposed to be extended and the Downey Drain levels of approximately 1200mm (48”). A wetlands cleared path with a floor channel similar to what is proposed here could certainly provide more lowering but would introduce significant new environmental concerns and would no doubt require enlarging of the Downey Drain channel.

If either of these options were to be revisited after the construction of the recommended work in this Preliminary Report, a full new Engineering and Environmental Study process would have to be initiated. The environmental impacts and needed mitigation, enhancement or offsetting would have to be reassessed. The impacts on the Downey Drain channel would have to be studied. The cost benefits of doing the work would also have to be re-evaluated. Either or any of these issues could be prohibitive.

Certainly the “reason” for needing to pursue either option would have to be considered and weighed against environmental impacts and costs.

Lastly, the option of providing insufficient outlet allowances in lieu of further construction (as discussed in the Scoping Report) could be re-examined.

16. PROCEEDINGS ON THIS PRELIMINARY REPORT

It is recommended that this report, together with the Township's notification of the date that Council will consider such, be circulated to all parties shown on the attached plan (these are also listed in Appendix 3). This notification would include the Township of Springwater staff, the NVCA, MNRF, MECP, OMAFRA and any utility company known to be involved (none are expected).

A copy of the draft report has already been sent by the Environmental Subconsultant together with a Request for Project Review directly to the Department of Fisheries and Oceans for review and comment. Also, MECP has been notified by the Environmental Subconsultant of the proposed work recommended by this Preliminary Report.

At the meeting to consider this Preliminary Report, the owners and/or agencies should/could comment on:

- the work recommended, the possible costs, the watershed acres (hectares) involved, the described cost distributions,
- what the future proceedings should be
- the possible options to access the work area
- the spoil disposal, if to be different
- if the 6m± work area should go back to the 10m± width once considered
- the monitoring program
- the possible additional mitigation/enhancement measures
- the route to follow (diagonal or historic)
- overdigging of the barge launching area to give a greater collection area for possible sediments
- the timing of the Downey Drain repair prior to the Municipality directing the Engineer to prepare a Final Report.

The following may occur at the conclusion of the Preliminary Report consideration meeting:

- If the desire remains to construct work and if the environmental approvals are anticipated to be received, then the Council may instruct the Engineer to prepare a Final Report based on the recommendations of the Preliminary Report, and any discussions re such.
- If the desire is not to proceed to any construction and/or if the environmental concerns appear to present an issue of concern, then Council could elect to

take no further action to initiate a Report for construction. A decision would then be necessary as to what other proceedings under the Drainage Act, if any, could be initiated, and/or as to how the costs incurred to date, based on existing opinions, are addressed. Alternatively, Council could still direct the Engineer to provide a Final Report for construction and rely on the courts to address any appeals or lack of approvals.

- Possible alternatives, if it should be deemed that “construction” should not be pursued, but that some other type of Drainage Act proceeding should be pursued, would be:
 - a) To pursue a Final Report that would pay allowances to affected owners for insufficient outlet
 - b) To file a Section 40 report to state that the construction work cannot be proceeded with and to stop any further proceedings, and
 - c) To abandon part or all of the Swaley Drain pursuant to Section 84

In all of these possible alternative courses, costs incurred to date would be distributed as deemed appropriate/recommended by the Engineer in the applicable Report. The Engineer should consider why a Report for work other than construction is necessary and should consider the reason for high costs of engineering and allowances and should assess the costs accordingly.

- If the desire exists to do work and if the environmental issues are not an obstacle, but Council elects to not direct the Engineer to prepare a Final Report, then the municipality would be responsible for the costs associated with the Preliminary Report. The affected landowners could then appeal the Council’s decision to not proceed to a Final Report to the Drainage Tribunal.

If the Engineer is directed to prepare a Final Report, then additional survey work, if and as necessary, final design, detailed cost estimates, detailed assessment and future maintenance schedules and the Report itself will be prepared. If a Final Report is to be prepared, further meeting(s) (perhaps virtually) may be held with landowners, road authorities and agencies affected prior to the filing of the Final Report with the Municipality. Once a Final Report, if any, is filed with a Municipality, a further process of landowner and agency notifications and approval is also initiated.

17. LIMITATIONS OF A PRELIMINARY REPORT

To prepare this Preliminary Report and to be reasonably satisfied that the recommendation(s) to be presented are realistic, a substantial amount of work was necessary even though all such work completed may not appear within, or be referred to by, this report.

A Preliminary Report is intended to review problems and solutions without the benefit of either a full survey or a full design. In this project, substantial field work was necessary to be able to evaluate justifications and options. When a Final Report is prepared, more detailed surveys and designs are/can be prepared if necessary.

As a result of the necessity of further work after a Preliminary Report, and the possibility of some modified cost components, when a Final Report is prepared, cost estimates can vary from those shown in a Preliminary Report, but in the Engineer's experience, normally not to a significant degree.

Also since details of requested monitoring, mitigation, enhancement or offsetting measures are not firmly established yet at the time of this Preliminary Report, costs beyond the contingency estimate provided could be incurred.

Also Preliminary Reports are not to include profiles and indeed continuous profiles were not surveyed. The relative features and elevations that were secured have been shown in a sketched format (Since the sketches were prepared by computer methods, they do appear to be more than sketches).

Lastly Preliminary Reports can not include detailed assessment schedules and only broad discussions on the distribution or assessment of costs are presented. A Final Report would however show the assessments on a party by party basis.

18. PRELIMINARY REPORT COSTS

The costs to prepare this Preliminary Report involve the costs incurred since the completion of the Scoping Report and are therefore all known costs after the appointment pursuant to Section 78. The costs therefore include the preparation of the Natural Environment Report, the multiple negotiations with NVCA after the filing of the NER, the updating of the watershed boundary, the gathering of scattered ground and water elevations, the conducting of a further on-site meeting, the drafting of preliminary plans and data, the work to define the recommendation(s),

the work to write and print the Preliminary Report, and an allowance for the work to prepare for and attend the Consideration of the Preliminary Report.

The cost associated is thus:

- Preliminary Report preparation (excl. NER)	\$ 61,500
- Natural Environment Report (NER) component	64,500
- Consideration of Preliminary Report meeting	1,000
- Net HST (1.76%)	<u>2,250</u>

Total Preliminary Report Costs: \$ 129,250

This cost is included in the estimate of Engineering Costs in Table 13.1-1 on Page 24.

19. FINAL REPORT

If the Engineer is directed to prepare a Final Report, further meetings may be held with landowners, municipalities and agencies prior to filing the Final Report with the Township. It should be noted that recommendations presented in this Preliminary Report may be modified by the Final Report if new information arises from concurrent studies, further agency and landowner input or geotechnical investigations. Such modifications would be communicated to the Township and affected landowners during preparation of the Final Report.

20. FINAL AGENCY APPROVALS NECESSARY PRIOR TO ANY CONSTRUCTION

It is recognized that any Drainage Act Final Report prepared on this project will have to be submitted to Fisheries and Oceans Canada (DFO), to the Ministry of Environment, Conservation and Parks (MECP) with respect to Species at Risk, and also to the Nottawasaga Valley Conservation Authority (NVCA).

All these agencies have been or will be asked to provide comments at the time of this Preliminary Report review as necessary, but these agencies must also review and approve any Final Report prior to construction.

With respect to the MECP, drainage reports are customarily reviewed to determine if there is the potential of a species-at-risk (SAR) being involved under the Endangered

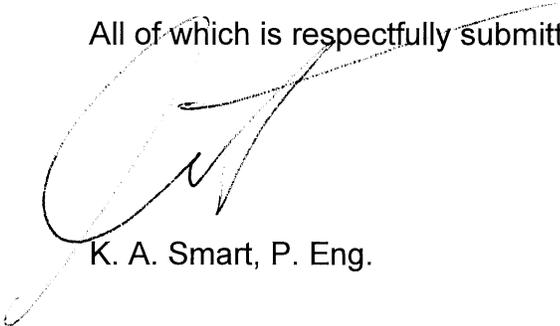
Species Act. The Natural Environment Report already completed on the project should void the necessity of any further significant review by MECP re SAR.

The NVCA is aware of the project and has participated significantly to date. It is hoped that NVCA comments issued during and since the time of the review of the Natural Environment Report would lead to a Section 28 permit from NVCA being given, provided final work is consistent with this Preliminary Report, and provided remaining conditions of NVCA are addressed.

With respect to Department of Fisheries and Oceans, again if no objections are received at the Preliminary Report stage and if work is not significantly altered, Final Report work should also be accepted by DFO.

It is expected MNR will also review the Report on the basis it is an affected landowner.

All of which is respectfully submitted.


K. A. Smart, P. Eng.



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