

Darryl M. Robins Consulting Inc. Responses to the Kaufman's Stormwater comments are imbedded below:

Stormwater Management comments

As described by the Grey Sauble Conservation Authority, the 31-hectare subject property is utilized for agricultural purposes with naturalized areas featuring woodlands, watercourses and valleys and falls within the Niagara Escarpment Development Control. The watercourses, valleys and woodlands are all located within the proposed development area. The valley systems convey watercourses to their outlet at Georgian Bay. Two valley systems run directly through the development area. A third valley system runs along the south portion of the development area and conveys the watercourse known as Indian Falls and Indian Creek.

The existing drainage of the subject property slopes west (from the escarpment) to east (the settlement area) with the Indian Creek crossing through the western portion of the property. The majority of the water drains towards the central watercourse within the proposed development area. It has been identified that this central water course has fish habitat. It is proposed that the new lots will drain towards the Maple Ridge Road Allowance with the existing ultimate outlet for the water remaining the same.

- Existing homes in Maple Ridge Subdivision abutting the central watercourse experience standing surface water on their properties well into June. The existing outlet and drainage ditches do not adequately control the stormwater and groundwater today.
- Our property is situated adjacent the valley system featuring Indian Creek along the south of our lot and the Road Allowance along the west of our lot. We too experience standing surface water into June and try to manage the situation naturally with landscaping.

The Stormwater model identified that with the proposed drainage improvements post development flows will be controlled to pre-development conditions. So there would be no increase in flow leaving the development as a result of this development with the proposed storm drainage works. The Stormwater Management Report fulfilled the requirements outline by the GSCA.

- Any additional surface/groundwater as a result of the removal of woodlands, vegetation and soil, coupled with the development of potentially four residential dwellings, septic systems and pervious surfaces poses a major risk to the existing residents of Maple Ridge Subdivision and those downstream. o Water has to flow somewhere and when its course is altered and interrupted it will find a new path.

Grading Plan identifies limited tree removal is anticipated. Most of the proposed swales are located on the west side of Maple Ridge Road, where it is partially cleared already. The new lot

owners are only able to clear 0.133m for their entire building envelope including dwelling, driveway, septic and swales (on private property). The stormwater model accounts for 4 new dwellings and driveways and identified that the flows would be controlled to pre-development conditions. There should be no negative impacts as a result of this development.

The development areas are less than 2 hectares so there is not sufficient space to accommodate a stormwater management pond. The topography of the area also causes further limitations to the controls that can be employed. Instead, grassed swales will need to be used to mitigate the lack of space for a management pond to manage stormwater.

- The use of grass swales instead of a management pond supports the rationale for the cautious approach the Township has taken with the current RU zoning it has designated for the subject property since runoff from the proposed development could increase existing drainage or water quality problems.

Grassed Swales are approved means to provide quantity and quality controls per the Ministry of the Environments' Stormwater Management Guideline. Upon review of Table 4.1 "Physical Constraints of SWMP Types" and upon review of the specific constraints of the Site, grassed swales are a suitable option to achieve the quality controls.

- Is a .75m grassed swale, that inevitably will get over grown and fill with sediment, enough to control the quantity and quality (free of pollutants) of stormwater run off when we know that today's stormwater management measures before development, already pose issues for the residents in Maple Ridge Subdivision? The grassed swales and ditches will not be aesthetically pleasing to look at.

The Grassed Swales do need to be maintained. The maintenance requirements were outlined in the Stormwater Management Report.

The new grassed swales and the improved grassed swales will be deeper and wider than the existing ditches. They will assist to containing the flows and directing stormwater towards the existing watercourses, rather than stormwater over-topping the road.

- Will protective measures be put in place to ensure the ditches and swales put in along the road allowance do not interfere and harm the root system of the large Maple trees growing along the road allowance?

As noted above: Based on the Grading Plan limited tree removal is anticipated. Most of the proposed swales are located on the west side of Maple Ridge Road, where it is partially cleared already. The new lot owners are only able to clear 0.133ha (1333m²) for their entire building

envelope including dwelling, driveway, septic, and swales. The trees are on private property and can be removed with the respective mitigative measures noted in the EIS.

- Has it been established that the grass swales/ditches will provide “enhanced” level quality controls that remove 80% of the total suspended solids on a net annual basis as requested by the Grey Sauble Conservation Authority? ○ Should an Assimilative Capacity Study also be completed to determine the ability for pollutants to be absorbed by the environment without detrimental effects to the environment?

Yes, it has been established that grassed swales provide enhanced quality controls. The US EPA (website) references a study completed by Schueler (1997) which indicates that grassed swales are effective in removing 80% of suspended solids, 29% of total phosphorus, 38% nitrogen and 38-55% of metals.

- A less intensive development of the property will ensure disturbance to the natural woodlands, vegetation and soil is minimalize and help with water absorption.

The Stormwater Management report has identified that the quantity and quality measures can be achieved. The Mitigative measures of the EIS limit the developable areas to 0.133 Ha for lots 1 to 3. This is not an intensive development.

In addition to the watercourses already mentioned, the Stormwater Management Report raises the concern that there also appears to be a poorly defined watercourse or that some overland flow may occur towards the east across the proposed Lot 3. To mitigate this concern, the Report recommends installing another grassed swale between proposed Lot 2 and Lot 3 to redirect the surface water along the property line and not across the development area, adding water to the existing ultimate outlet.

- There is obviously hazard lands and water running all over the proposed development area that if interfered with will pose a risk of flooding not only to the current residents of Maple Ridge Subdivision and those in the community located downstream towards Georgian Bay, but also to the new residents that choose to invest and build on these new lots or retained parcel.

The proposed swale between Lot 2 and 3 is proposed to route the stormwater around new dwellings. The stormwater modelling identified that the flows were being contained in the 5-to-100-year design storms.

Section 7 of the Report identifies the maintenance that would be required to support the proposal. It indicates that maintenance of the grassed swales must be maintained by the Township and inspected each spring and fall and after major storm events. Any accumulated sediment should be removed.

- Is the Township able to commit to this needed maintenance program?

We expect that the Town or their operator would complete the Maintenance. But the Town must confirm.

It is a fact that Pre-development waterflows experience by the residents living in the Maple Ridge Subdivision today already create concerns on our properties. The Post-development flow projections in the report are based on predictions and estimates.

- These predictions and estimates are established using Grey County soil and drainage maps from 1983, 2010 rainfall data and June 2021 site samples from the subject property. While this may meet industry standards, due to the dated data and low rainfall month used, caution should be exercised and the calculations and modelling be given the appropriate weight. ○ June is a relatively dry month and when the standing water problems the residents experience begin to dissipate.

*Soil types can vary based on location. But, at one location soil types **don't** change without significant events and as such Soils of Grey County North Sheet has not been updated since 1983. (It is still available on the Government of Canada's website on March 1, 2022, <https://sis.agr.gc.ca/cansis/publications/surveys/on/on17/index.html>.) But the Stormwater Management report also references the soils found in the test pits which were completed by Peto MacCallum on July 28, 2021. The Peto MacCallum report identifies sandy silt or silt. Soil Group C was used in the storm modelling which reflects Silts and Clay loams. Soil Type C is an appropriate Soil Type based on the Grey County Mapping AND the soil types identified in the test pits. The Peto MacCallum report also noted sandy silt, but this would allow more infiltration. We used a soil type that would limit the potential infiltration, to model the worst-case scenario.*

The Ministry of Transportation IDF data was used because we could specify the actual project location to obtain data (rather than Owen Sound or Warton with Environment Canada data. The data was retrieved from the website on June 28th, 2021. It does not mean that the data came from June 2021 or June. The MTO's IDF website states " The Time Trend Analysis was done using observations from 1960 to 2014. MTO data is a credible source for Rainfall data. Alternatively, we would be using data Environment data from Owen Sound or the Warton. We have also used Environment Canada data for other projects. Environment Canada data is compiled over a period. It does not provide rainfall data for a specific month. In my experience using Environment Canada data or MTO IDF data, the month noted on data has no bearing on the quantity.

- Good planning would be to plan for the worse case scenario, especially in light of the growing storm events being reported today.

It is common practise to model the worst-case scenario in stormwater modelling. The 100-year design storm was reviewed / modelled. The stormwater management report fulfills the requirements outlined by the GSCA.

- It is strongly encouraged that another study be completed using Spring time (April/May) samples from the subject property.

As noted above the rainfall data was retrieved in June. The rainfall data is compiled over a period of time.

- When it comes to managing stormwater, these predictions and estimates do not consider climate change and more frequent and intensive storm events.

The stormwater report reviewed the 5-year, 10-year, 25-year, 50 year and 100-year design storm. The Stormwater Management report was completed as per the current industry standards. We have not been advised to update the modelling procedures yet due to climate change. When we are advised of a directive – we will follow that procedure.

The Report recommends approval authorities support the development.

- Is this opinion based on just this one Stormwater Management Study? ○ Surely there are more factors than this one report that go into good planning decisions and the quality of severances.

The Stormwater Management Report identified that stormwater management measures can address the runoff quantity and quality concerns (which were expressed by the GSCA). And for that reason, we suggested that the development could proceed. The other comments listed in the Stormwater Management are outside the scope of our work. Clearly, we would defer to the other experts to decide in recognition with all the contributing factors and studies.

- Just because something can be physically done does not mean it should be done. There are other public policy concerns to be considered. ○ The disruption required with grassed swales and ditches to these naturalized areas featuring woodlands, watercourses and valleys is a strong argument for maintaining the RU zoning to minimize this disruption and strike a responsible balance.

The grassed swales are standard means of providing stormwater conveyance, quantity controls, and quality controls. Minimal disturbance is required to accommodate the proposed development. Most of the stormwater management works are proposed in the existing road allowance which includes an existing roadway.

- What is the cost of squeezing in these three lots to the community and environment?
- What are the risks to the current residents of Maple Ridge Subdivision and future residents that choose to invest in these lots?

Minimalizing the disturbance to the natural landscape and avoiding interference or changing/diverting the watercourses running through the subject property is good, safe planning for the residents of the community and lessens the impact on the environment. This is being accomplished by the Township of Georgian Bluffs with the current RU zoning, and strongly aligns with the Provincial Policy Statement when dealing with Natural Hazards

and the County of Grey's Official Plan when dealing with Natural Heritage features which say development should generally be directed elsewhere.

Efforts are being made to minimize the disturbance to the natural landscape. Lot 1 is 5,090 m² but only 1,333m² can be developed. Lot 2 is 2,374m² but only 1,333m² can be developed. Lot 3 is 2,910m² but only 1,333m² can be developed.

Minimal alterations are being made to the watercourses. The drainage areas are ultimately being maintained. Please refer to the Pre-Development Plan and Post Development Plan.

The report was prepared using measures from the Ministry Environment's Stormwater Design Guideline. The Grey Sauble Conservation Authority has accepted the findings of the Stormwater Management Report, but suggested that Site Plan Control be implemented.