

**Environmental Assessments & Approvals** 

April 30, 2020

AEC 08-019

Ventawood Management Inc. 2458 Dundas Street W Mississauga ON L5K 1R8

Attention: Carmen Jandu, MCIP RPP

## Re: Wetland Water Balance Risk Evaluation (Updated) Laurelpark Subdivision

Dear Ms. Jandu:

Azimuth Environmental Consulting, Inc. (Azimuth) is pleased to submit an updated Wetland Water Balance Risk Evaluation (WWBRE) for the proposed Laurelpark Subdivision located along Mount Pleasant Road on Part of Lot 19, Concession 9, Town of Caledon in the Region of Peel. This WWBRE is required as the proposed residential estate subdivision has the potential to impact the water balance of wetlands that will be protected during and following development.

The Laurelpark Subdivision site currently contains a total of seven wetland features which vary in size and hydrological classification. Azimuth has previously completed a Hydrogeological Assessment Report (2017) and an Environmental Impact Study (2017) for the property, which have provided important hydrogeological and ecological data for completion of this WWBRE.

# Magnitude of Potential Hydrological Change

To first determine the magnitude of potential hydrological change within each wetland, information was collected pertaining to catchment areas and proposed changes within these areas. The existing and post-development catchment sizes were included in Azimuth's Hydrogeological Assessment Report (2017) and were originally provided by Calder Engineering. Table 1 provides a summary of this information. Figures 5b - 5f are also appended illustrating each wetland catchment, development, impervious and natural system areas (areas in ha included in figures).



The impervious cover score for each wetland was calculated using the formula provided in Appendix A (Example 1) of the TRCA document "Wetland Water Balance Risk Evaluation" (2017). It should be noted that no water taking is proposed within any of the wetland catchment areas, and no locally significant recharge areas are located on the subject property.

Wetland ID	Catchment AreaWetland AreaDevelopment AreaImpervious AreaImpervious Cover Score(C)(Cdev)(IC)(S)								
Wetland 4	wetland ca	tchment size i	increasing sligh	tly – no assess	sment needed				
Wetland 5	1.79 ha	0.12 ha	0.36 ha	0.04 ha	2%				
Wetland 6	2.60 ha	0.25 ha	0.31 ha	0.05 ha	2%				
Wetland 7	1.60 ha	1.60 ha 0.22 ha 0.37 ha 0.07 ha <b>5%</b>							
Wetland 8	1.92 ha	0.06 ha	0.57 ha	0.10 ha	6%				
Wetland 10	3.29 ha	0.24 ha	1.93 ha	0.41 ha	12%				
MNRF									
Identified	wetland catchment size will not change – no assessment needed								
Wetland									

 Table 1: Wetland Information Summary

It should be noted that the catchment area for Wetland 4 will increase slightly on a postdevelopment basis, so an assessment was not deemed necessary for this feature. Also, the catchment size for the MNRF Identified Wetland will not change so an assessment was also not required for this feature.

Following TRCA's calculation formula (S = IC x  $C_{dev}$  / C), the on-site Wetlands 5, 6, 7, 8 and 10 were given impervious cover scores of between 2% - 12%. These scores for Wetlands 5 – 8 would fall under the "Low Magnitude" (<10%) category for probability of hydrological change. As the Impervious Cover Scores for these wetlands are between 2% -6%, it is unlikely that the proposed development will have a significant impact on wetland hydrology. Wetland 10 was given a score of 12% which would fall under the "Medium Magnitude" (10% – 25%) category for probability for hydrological change.

Please refer to the images below for how each wetland impervious cover score was calculated (TRCA Wetland Water Balance Risk Evaluation – Appendix A "Example 1" figure used). It should be noted that the catchment area used in each calculation was the total catchment area subtracted by the wetland feature area. Also please refer to the attached figures 5b - 5f for further visual aids.



**Image 1: Wetland 5 Impervious Cover Score Calculation** 













**Image 4: Wetland 8 Impervious Cover Score Calculation** 









# Wetland Sensitivity (Ecological)

The sensitivity of a wetland to hydrological change is assessed based on the abiotic and biotic characteristics of the wetland that are directly related to hydrology and/or ecology. Other aspects of wetland ecology not relating directly to hydrology may be evaluated through parallel processes external to this Risk Evaluation. To assess the sensitivity of a wetland to hydrological change five criteria are used:

- *i*) Vegetation community
- *ii)* Fauna species
- *iii)* Flora species
- *iv)* Significant wildlife habitat for hydrologically sensitive species
- *v*) Hydrological classification

The sensitivity of each wetland to hydrological change was assessed using the data listed below. The data tables were compiled using the information collected during the completion of Azimuth's Environmental Impact Study (2017). The compiled data was then used to determine the sensitivity of each wetland. The highest magnitude sensitivity category with one or more criteria satisfied determines the overall sensitivity of the wetland to hydrological change. Please refer to Tables 2 - 7 for all data analysis and rankings.



#### **Vegetation Community**

ELC Community Type	Sensitivity Level (TRCA 2017)	ELC Type	Wetland #
MAM3-2	Medium	Reed Canary Grass Organic Meadow Marsh	MNRF
			Identified
MAS2-1	Medium	Cattail Mineral Shallow Marsh	4, 8
SAF1-3	Medium	Duckweed Floating-Leaved Shallow Aquatic	7
SAS1-3	Medium	Stonewort Submerged Shallow Aquatic	4, 10
SWD3-2	Medium	Silver Maple Mineral Deciduous Swamp	5
SWT2-5	Low	Red-osier Mineral Thicket Swamp	6,7

### Table 2: Wetland community types represented on the property (and associated sensitivity levels)

\* Figure 2a highlights the vegetation communities present on the property.

#### **Fauna Species**

<b>A</b>	I I	· · · · · · · · · · · · · · · · · · ·	
Fauna Species	Sensitivity Level	Wetland Community Association	Wetland #
	(TRCA 2017)		
American Toad	Medium	N/A (General observation)	N/A
Gray Treefrog	High	SAS1-3, SAF1-3, SWT2-5	4, 7, 10
Wood Frog	High	SAS1-3, SAF1-3, SWT2-5, MAS2-1	4, 6, 7, 8, 10
Northern Spring Peeper	High	SAS1-3, SAF1-3, SWT2-5	4, 6, 7, 10
Western Chorus Frog	High	SAS1-3	4
Green Frog	Medium	SAS1-3, SAF1-3	4, 7, 10
Common Snapping Turtle	High	SAF 1-3, SWT2-5	7
Midland Painted Turtle	High	SAS1-3, MAS2-1	4
Wood Duck	Medium	N/A (General observation)	N/A

	Table 3: Fauna species documented on the	property, associated sensitivity	v level, and wetland	community associations
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Mallard	Low	N/A (Flyover)	N/A
Canada Goose	Low	N/A (Flyover)	N/A
Great Blue Heron	Low	N/A (Flyover)	N/A
Common Yellowthroat	Low	SAF1-3, SWT2-5	7
Green Heron	Low	SAF1-3	7
Alder Flycatcher	Low	SWT2-5	7

# Flora species

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Flora Spacios	Sensitivity Level	SWD 3-2	SWT	MAM	MAS	SAS 1-	SAF 1-	Wetland
Fiora Species	(TRCA 2017)	5WD 5-2	2-5	3-2	2-1	3	3	#
Calla palustris	High					Х		4
Equisetum pratense	High	Х	Х					5, 6, 7
Glyceria borealis	High				Х			8
Alisma triviale	Low		Х		Х			6,7,8
Bidens cernua	Low	Х						5
Bidens frondosa	Low							N/A
Epilobium coloratum	Low				Х			8
Eupatorium	Low		Х					6, 7
perfoliatum								
Eutrochium	Low	Х	Х	Х				5, 6, 7
maculatum								
Leersia oryzoides	Low							N/A
Salix discolor	Low	Х	Х	Х				6, 7, and
								MNRF
								Identified
Salix petiolaris	Low		Χ	X				6, 7, and



							MNRF
							Identified
Scirpus atrovirens	Low	Х	Х				4, 6, 7
Sparganium	Low				X		8
eurycarpum							
Spiraea alba	Low			Х			9
Typha latifolia	Low	Х	Х		X		5, 6, 7, 8
Acer saccharinum	Medium	Х					5
Acer x freemanii	Medium		Х				6,7
Alopecurus aequalis	Medium				Х		8
Bidens tripartite	Medium						N/A
Carex pseudocyperus	Medium						N/A
Ceratophyllum	Medium					X	10
demersum							
Cicuta maculata	Medium	Х	Х				5, 6, 7
Dryopteris	Medium						N/A
carthusiana							
Eleocharis	Medium						N/A
erythropoda							
Galium palustre	Medium	Х	Х				5, 6, 7
Galium tinctorium	Medium		Х				6,7
Glyceria grandis	Medium						N/A
Impatiens capensis	Medium	Х	Х	Х			5, 6, 7
Lycopus americanus	Medium						N/A
Lycopus uniflorus	Medium						N/A
Mimulus ringens	Medium						N/A
Onoclea sensibilis	Medium	Х	Х				5, 6, 7



Poa palustris	Medium	Х	Х		X		5, 6, 7, 8
Potamogeton foliosus	Medium					X	10
Potamogeton natans	Medium					X	4
Potamogeton	Medium					X	4
zosteriformis							
Ribes hirtellum	Medium						N/A
Ribes triste	Medium		Х				6, 7
Sagittaria latifolia	Medium						6, 7
Salix amygdaloides	Medium						N/A
Salix bebbiana	Medium		Х	Х			N/A
Salix eriocephala	Medium		Х				6, 7
Salix lucida	Medium		Х				6, 7
Schoenoplectus	Medium		X				6, 7
tabernaemonta							
Scirpus cyperinus	Medium						N/A
Scutellaria	Medium						N/A
galericulata							
Scutellaria lateriflora	Medium		Х				6, 7
Sium suave	Medium		Х				6, 7
Spirodela polyrhiza	Medium					X	4
Symphyiotrichum	Medium						N/A
puniceum							
Thuja occidentalis	Medium				X		8
Viburnum opulus	Medium						N/A



Significant Wildlife Habitat for Hydrologically Sensitive Species

 Table 5: Wetland community types represented on the property with Significant Wildlife Habitat function for hydrologically-sensitive species.

<b>ELC Community</b>	Significant Wildlife Habitat Function (MNRF 2014)	Wetland #
Туре		
SWT2-5	Confirmed Habitat for Species of Special Concern or Rare	7
	Wildlife Species (presence of Western Chorus Frog)	
SWD3-2	N/A	
MAM3-2	N/A	
MAS2-1	N/A	
SAF1-3	Confirmed Habitat for Species of Special Concern or Rare	7
	Wildlife Species (presence of Western Chorus Frog)	
SAS1-3	N/A	

Table 6: Hydrological classification considering ecology for wetland community types represented on the property.

Wetland No	Hydrological	Presence of Medium Sensitivity Vegetation	Sensitivity
	Classification	<b>Communities or Medium Sensitivity Species</b>	
4	isolated	Yes	High
5	palustrine	Yes	High
6	palustrine	Yes	High
7	palustrine	Yes	High
8	isolated	Yes	High
10	palustrine	Yes	High
MNRF Identified	isolated	Yes	High
Wetland			



Sensitivity Evaluation Criteria		(	Community	-specific Se	nsitivity Ra	nk	
	4	5	6	7	8	10	MNRF
							Identified
							Wetland
Vegetation Community	Medium	Medium	Low	Medium	Medium	Medium	Medium
Fauna Species	High	Low	High	High	High	High	Low
Flora Species	Medium	Medium	Medium	Medium	Medium	Medium	Low
Significant Wildlife Habitat	Low	Low	Low	High	Low	Low	Low
Hydrological Classification	High	High	High	High	High	High	Low
(considering ecology)							
<b>Overall Sensitivity (Highest</b>	High	High	High	High	High	High	Medium
magnitude of sensitivity)							

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## **Summary and Conclusions**

To summarize, each on-site wetland was assessed from both hydrological and ecological perspectives to determine the degree of change proposed to the wetland catchments, and the level of sensitivity of each feature. Following the assessments the following determinations have been made:

- Wetlands 4 & MNRF Identified Wetland will not experience a loss of wetland catchment area and do not require a WWBRE.
- Wetlands 5, 6, 7 & 8 were given impervious cover scores of between 2% 6%. These score fall under the "Low Magnitude" (<10%) category for probability of hydrological change. Wetland 10 was given an impervious cover score of 12% which falls under the "Medium Magnitude" (10% - 25%) category for probability of hydrological change.
- Wetlands 4, 5, 6, 7, 8 & 10 were given overall sensitivity ranking of "High".
- The MNRF Identified Wetland was given an overall sensitivity ranking of "Medium".

According to Figure 3 of the TRCA Wetland Water Balance Risk Evaluation document (Wetland Risk Evaluation Decision Tree), Wetlands 5, 6, 7, 8 & 10 are ranked as "Low Risk". Low Risk wetlands do not require monitoring, although a non-continuous hydrological model and mitigation plan to maintain water balance to wetlands are required. As Azimuth has completed a Features Based Water Balance for these wetlands within our Hydrogeologic Assessment Report (2017), this should fulfill the non-continuous hydrological model requirement. Also, the impacts to the wetland catchment areas will be minimal (1% change in most cases), so mitigation strategies should not be necessary.

Wetland 10 is ranked as "High Risk", as it has a Medium Risk for hydrological change and High Risk for ecological sensitivity. According to Figure 3 of the TRCA WWBRE document, a High Risk wetland requires a monitoring plan, continuous hydrological model and mitigation plan. Azimuth will work with TRCA regarding the specific requirements for monitoring. To date, there has been no baseline hydrological data collected for Wetland 10 as it is located on a neighbouring property. Permission from the landowner must be granted prior to any monitoring taking place.

Wetland 4 & the MNRF Identified Wetland are of no risk to hydrological or ecological change and require no action.



If you have any questions or concerns please do not hesitate to contract the undersigned.

Yours truly, AZIMUTHENVIRONMENTAL CONSULTING, INC. 0 ť.a U Mike Jones, MES P.Geo. President ONT

Lisa Moran, B.Sc.Env. Terrestrial Ecologist



LEGEND:         Approx. Property Boundary         Existing Drainage Catchment Areas Wetland 5 = 1.79ha         Natural Systems Area = 1.31ha         Development Area = 0.36ha         Wetland Area = 0.12ha         Impervious Area = 0.04ha	Drainage Catchment Analysis Wetland 5 Pt. Lot 19, Con. 8 Town of Caledon
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	15m 0 30m HORIZONTAL SCALE 1:1,000
LEGEND:         Approx. Property Boundary         Existing Drainage Catchment Areas Wetland Area = 1.92ha         Natural Systems Area = 1.29ha	AZIMUTH ENVIRONMENTAL CONSULTING, INC.
Development Area = 0.57ha         Wetland Area = 0.06ha         Impervious Area = 0.10ha	Drainage Catchment Analysis Wetland 8 Pt. Lot 19, Con. 8
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