



Environmental Assessments & Approvals

April 13, 2020

AEC 08-019

Town of Caledon
6311 Old Church Road
Caledon ON
L7C 1J6

Attention: Leilani Lee-Yates, Senior Planner [via Town of Caledon - Planning]

Re: **Proposed Draft Plan of Subdivision and Zoning By-law Amendment
Laurelpark Inc.
0 Mount Pleasant Road, Part East Half Lot 19, Concession 8 (ALB)
File Numbers: 21T-17006C; RZ 17-09**

Dear Ms. Lee-Yates:

The purpose of this letter is to provide you with a response to review comments issued by the Region of Peel (Region), Town of Caledon (Town), Toronto and Region Conservation Authority (TRCA) and Golder related to Azimuth Environmental Consulting Inc.'s (Azimuth):

- Response to comments – Hydrogeological Report (May 22, 2019);
- Wetland Water Balance Risk Evaluation (April 2019);
- Update/Response regarding EIS/MP, Headwater Drainage Feature Assessment and Tree Inventory and Assessment Report (May 2, 2019);
- Headwater Drainage Feature Assessment (May 2019); and
- Tree Inventory and Assessment Report (Updated, April 2019).

Subsequent and in response to these comments, revisions have been made to the proposed draft plan which are reflected on updated Figure 5 (Appendix A). The updated draft plan was prepared to address these *comments*.

Subsequent to receipt of these comments, a meeting was held at the TRCA office to discuss comments issued by TRCA. The meeting was held on December 11, 2019. Minutes to the meeting with TRCA are attached (Appendix B).



A second meeting was held at the Town of Caledon Office on February 6, 2020 to discuss comments issued by the Town. Minutes to the meeting with the Town area attached (Appendix B).

For your convenience, the original comments are included in *italics*, followed by Azimuth's response.

TOWN OF CALEDON (NOVEMBER 14, 2019)

Comments received from the Town of Caledon (November 14, 2019). This letter provided a summary of comments received from various Town departments and agencies that were circulated the above-listed materials.

General Comments:

Comment 5. The developer shall confirm all landscape, remediation and protection requirements with the TRCA at the draft plan and detail design stages for all lands being conveyed to the TRCA. The TRCA shall review and approve all drawings for the items listed above on all lands conveyed to the TRCA.

Azimuth Response: Proponent is currently working with TRCA in this regard. Azimuth's Figure 6 (Proposed Compensation Areas) has been updated to depict the location of the proposed compensation plantings. A detailed planting plan for the Minimum Vegetation Protection Zone (MVPZ) will be prepared at detailed design stages that will be reviewed by TRCA.

Comment 8. TRCA will continue to work with the applicant to ensure Blocks 9 & 10 are transferred into public ownership and a Reforestation and Environmental Management Plan agreement is developed.

Azimuth Response: As per previous correspondence (May 2, 2018) we can confirm that all Open Space Blocks (*i.e.* Block 9 and Block 10) will be dedicated to the TRCA. TRCA has informed the proponent that a Reforestation and Environmental Management Plan is not required and TRCA will not be involved in the restoration as part of the subdivision process (Jason Wagler, February 5, 2020 correspondence) [Appendix C].

Comment 19 related to Environmental Mapping:

Comment 19d. Please note staff continue to have concerns with the Headwater Drainage Feature seasonally connecting Block 9 to Block 10. As detailed in the attached TRCA comments, the catchment area is proposed to be significantly reduced and altered to road drainage that is directed through private property and trigger concerns with respect to amphibian movement, water balance, long term protection and transition to the natural system. Please consider alternate designs for this feature, i.e. eco-passage under the road, replicate catchment area and flows, provide a natural or appropriate transition, place feature in block for dedication to public authority for long term protection.



Azimuth Response: Please refer to response below under TRCA comment 3.

Comment 19e. The Environmental Impact Study and Environmental Mapping now include the proposed compensation and reforestation plans; however, a number of areas within the MVPZ's are not proposed for restoration. Please note that staff are seeking plantings within the 30m buffers as per Sections 7.1.9.17, 7.1.9.29, 7.1.9.33, 7.1.9.49 and 7.10.5.1.4 of the Town's Official Plan. In addition, staff would support restoration of the area behind Lot 1 to provide an enhanced ecological connection to the development to the north. Please note such reforestation programs can be requested in the absence of density bonusing, as per Section 7.1.9.17 of the Official Plan.

Azimuth Response:

Town OP Section	Policy	Azimuth Response
7.1.9.17	Notwithstanding the above provisions for bonus lots the Town may require the applicant to implement suitable environmental protection, management, and reforestation programs even though the plan may not qualify for bonus lots. Such programs are subject to the approval of the Town of Caledon and other relevant agencies.	Through discussion with TRCA, it has been determined that is TRCA's preference that the MVPZ is restored 60-70% coverage. TRCA's preference is that smaller stock (<i>i.e.</i> whips, live stakes) are utilized for restoration plantings (Appendix C). Figure 6: Proposed Compensation Areas has been updated to reflect Town's OP and TRCA's requirements.
7.1.9.29	A buffer of natural vegetation, a minimum of 30 metres wide over at least 90 percent of the shore frontage, will normally be required around every pond and stream and its inlet watercourses to minimize the impacts of development. If the existing buffer of natural vegetation covers less than 90 percent of the shore frontage, rehabilitative plantings will be required to the satisfaction of the Town and Conservation Authority in order to achieve this standard. Rehabilitation plantings will normally qualify as a credit towards environmental bonus lots and will be included on the Environmental Management/Reforestation Plan.	Provided. Please refer to Figure 6 (Appendix A).
7.1.9.33	Areas of Policy Area 4 or other areas of potential significance to the cold water fishery of Cold Creek will be upgraded to EZ 1 through appropriate environmental rehabilitation and conservation measures. Measures to achieve this policy may qualify as a credit towards environmental bonus lots and will be included in the Environmental Management/Reforestation Plan.	No lands with potential significance to the cold water fishery of Cold Creek are present on the property. The Policy Area 4 (PA4) is located within Lot 1 (former Block 11). Through discussions with TRCA and the Town, it has been confirmed that



		there are no natural heritage features or functions associated with the PA4. A conservation easement will apply the PA4 lands within Lot 1.
7.1.9.49	Every application for development or site alteration shall ensure that natural self-sustaining vegetation is maintained or restored for the long-term protection of any key natural heritage feature or hydrologically sensitive feature on the lot or lots created.	All MVPZs will be composed of self-sustaining natural vegetation (Appendix A, Figure 6).
7.10.5.1.4	(iv) and (v) “provide for the maintenance and, where possible, improvement or restoration of natural self-sustaining vegetation within it” (referring to the approved MVPZ).	The MVPZs will be restored with 60% coverage as per TRCA’s direction and will be composed of self-sustaining natural vegetation (Appendix A, Figure 6).

The Proposed Compensation areas have been updated as per Town comments through the extension of the restoration plantings around Wetland No. 7 and as per TRCA’s preference to include 60% coverage of the MVPZ. Approximately 60% of the MVPZ will be planted with whips/live stakes of a mixture of trees and shrubs suitable to the conditions. The total area of the MVPZ is approximately 3.2ha whereby approximately 1.8ha will be planted with trees/shrubs for total tree/shrub coverage of approximately 2.0ha (Appendix A, Figure 6). Areas within the MVPZ that are currently in a natural state (*i.e.* treed, cultural meadow) will be left undisturbed and will remain as natural self-sustaining vegetation (Appendix A, Figure 6). The detailed planting plan outlining species composition, installation instructions, general maintenance and monitoring requirements will be provided at detailed design stage and circulated to TRCA for review and approval. As highlighted above and as per TRCA, a Reforestation Agreement is not required and TRCA will not be involved in the restoration as part of the subdivision process. The required restoration plan will be implemented by the proponent. Securities and warranties for the restoration material and implementation would form part of the subdivision agreement (Appendix C).

Comment 20 related to EIS and MP:

- a) *In Section 1.0, Proposed Draft Plan of Subdivision Updates it is noted that minor encroachments in the form of transitional grading will be required within the EZ1 area of Lots 1 and 2. Please note the EZ1 areas are located outside the structure envelopes for Lots 1 and 2, as required, and that grading outside the structure envelope is not permitted as per OP Section 7.1.9.3. Please revise the EIS and Environmental Map 3B, Slope Map with Proposed Contours*

Azimuth Response: The updated plan includes encroachment of the boundaries of proposed Lot 1 and 2 into the 30m MVPZ. However, the portion of the MVPZ extending into the lots will be zoned Environmental Zone 1 (EZ 1). EZ 1 includes a number of more sensitive biological



communities but also includes all Oak Ridges Moraine Conservation Plan (ORMCP) Key Natural Heritage Features (KNHF) and Hydrologically Sensitive Features (HSF), and their related MVPZ (Caledon OP; Section 7.1.9.1). Furthermore, Section 7.1.7.4 indicates that ‘EZ 1 and ponds may be included within a lot but no part of these features may be included in the calculation of net lot area’. There is no encroachment proposed into the KNHF/ HSF themselves. A portion of the MVPZ associated with Wetland No. 7 and Wetland No. 8 of the Mount Wolfe Provincially Significant Wetland (PSW) will extend into Lots 1 and 2 (Appendix A, Figure 5). Minor encroachment in the form of transitional grading will be required within the EZ1 areas within Lots 1 and 2. All exposed soils will be stabilized and overseeded with a native seed mix post-construction in order to naturalize these portions of the lots to provide native self-sustaining (*i.e.* no mow) EZ1 areas within Lots 1 and 2 (Figure 6). Through naturalization, the EZ1 areas associated with Lots 1 and 2 will provide an enhanced buffer function to the wetland units as this area is currently void of native vegetation. The structure envelopes associated with Lots 1 and 2 will be located away from the identified EZ 1 (Figure 5).

- b) Staff recommend Figure 6 be revised to expand the proposed tree compensation area around Wetland 7 to create a link to the existing woodlot to create a natural area linkage.*

Azimuth Response: Figure 6 has been updated as per the Town of Caledon’s request.

- c) To protect lands slated for restoration from encroachment of rear yard amenity areas, TRCA staff recommend fencing be placed along the building envelope of Lots 1, 2 and 7.*

Azimuth Response: Noted. Fencing will be placed along the building envelopes of Lots 1, 2 and 7 as requested.

- d) TRCA staff are concerned the expected changes (reduction) to the drainage area for the PSW south of Lots 6 and 7 could lead to negative impacts to the PSW. Please revise the Wetland Water Balance Risk Evaluation and EIS to assess potential impacts (and mitigation measures) to this wetland.*

Azimuth Response: The Wetland Water Balance Risk Evaluation (WWBRE) has been updated (March 2020). The offsite wetland to the southeast of Lots 6 and 7 (now referred to as Wetland 10) has been included in the updated WWBRE. Through discussions with TRCA, it is our understanding that they have concerns with respect to potential flooding due to the fact that it has no outlet (*i.e.* “kettle feature”). Based on the proposed plan, there will be no net gain of water inputs into Wetland No. 10. Surface water runoff will continue to enter the wetland while all road runoff will be directed to the ditch/bioretention pond (*i.e.* no stormwater to enter wetland no. 10). As per the WWBRE, overall, the wetland has been categorized as “High Risk” and the required monitoring program, continuous hydrological model and mitigation plan will be discussed with TRCA prior to implementation. It should be noted that wetland and a significant portion of its catchment is located offsite of the Laurelpark development property and permission from the wetland owner will be required for site access. Please see TRCA comment responses #13 and #18.



Comment 21 related to the Tree Inventory and Assessment Report

Azimuth Response: The Tree Inventory and Assessment Report has been updated to address the Town comments (21a-d) [March, 2020].

Comment 24 related to Hydrogeological Submission:

b) The additional ground water quality analysis that has been completed and referenced in the Hydrogeological response letter needs to be provided for review.

Azimuth Response: Please refer to information described in response to Concern 2 of Golder Peer Review Comments. The water quality data are appended (Appendix D).

c) The addendum memorandum is currently under review by the Town's peer reviewer and comments will be forwarded separately.

Separate Peer Review Comments on Hydrogeological Submission, prepared by Golder (November 29, 2019)

The following concerns are paraphrased from Golder's letter (November 29, 2019) and our response follows each concern.

Concern 1: Concern regarding the background value of nitrate utilized for the Reasonable Use Policy calculation

Azimuth Response: The original assessment utilized a background nitrate of 0.2mg/L and had concluded that the higher nitrate concentrations (near 14 mg/L) measured in shallow monitoring wells was due to impacts associated with fertilizer / agricultural practices. Golder identified that the assessment should evaluate the sources and demonstrate that the observed concentrations are not related to other sources that could affect aquifer conditions, notably septic beds from nearby houses.

The water quality samples from the on-site monitoring wells were collected in April 2013 at wells MW3 and MW5. Two of the adjacent houses were under construction in 2013 and the remaining two adjacent houses were built in 2015. This timing sequence was not presented previously. The two monitoring wells are constructed on the periphery of two small on-site wetlands that are polder features and are shallow monitors (3m and 7.6m below ground respectively). The polders collect local runoff from the adjacent farm fields so that the well chemistry reflects this source.

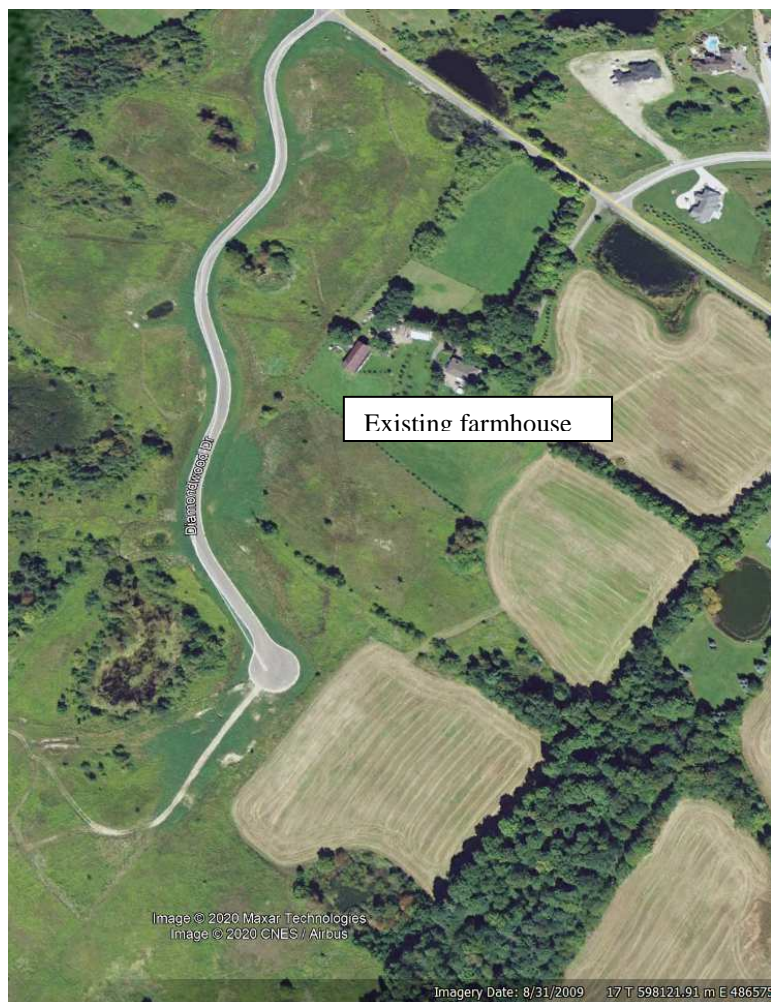


Photo 1: August 2009 photo (Google Earth) – no houses on Diamondwood Drive.



Photo 2: 2011 photo (Streetview in Google Earth) showing the original farmhouse to the left and a house built in 2011 to the right. Note that the shallow ground water flow for the 2011 house is towards the right (west) towards the adjacent wetland and does not flow towards the Laurelpark property.

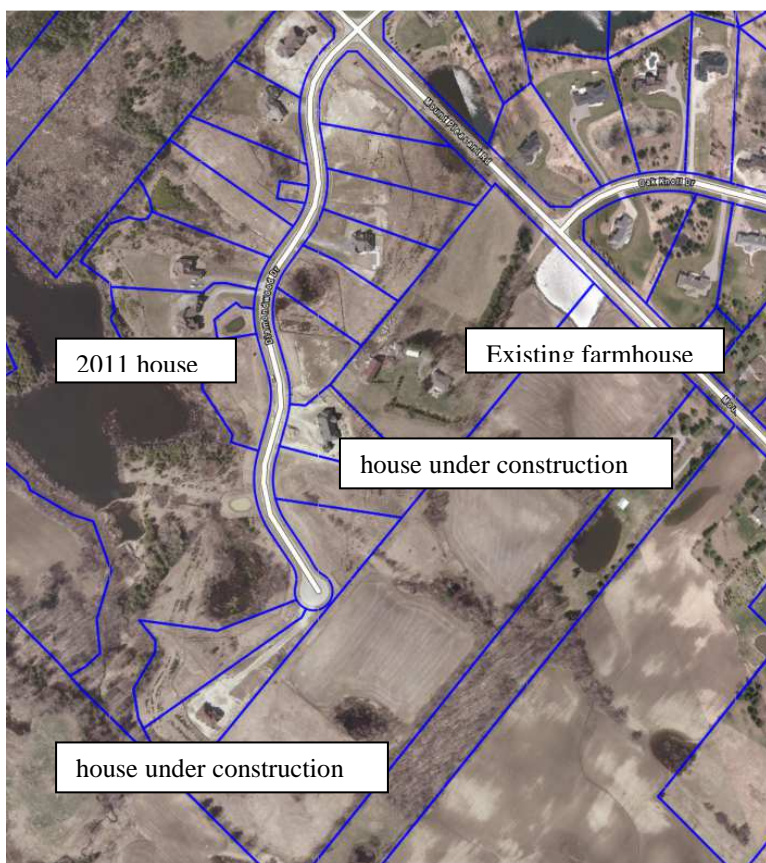


Photo 3: 2013 Photo (First Base Solutions) – shows two houses under construction



Photo 4: April 2015 (Google Earth) photo – shows two houses under construction at south end of Diamondwood Dr.

Subsequently, in 2018, water quality samples were collected and analysed from three neighbouring wells along Mt Pleasant Road. More detailed information is presented below, however, the nitrate levels in these three private wells was observed at 0.38 mg/L, 3.36mg/L and 3.82mg/L. The RUP calculations have been completed again using 3.82mg/L as the background value and the same values for the other variables as presented in our previous report.

The RUP calculation is outlined below:

$$C_{rup} = \frac{Q_1 C_1 + Q_2 C_2}{Q_T}, \text{ where,}$$



$Q1 = (\text{contribution from 60\% of property}) = \text{total area (m}^2\text{)} \times \text{infiltration (m/a)} (10,000 \text{ m}^2 \times 0.159 \text{ m/a infiltration} = 10,494 \text{ m}^3/\text{a}),$

$C1 = (\text{background nitrate concentration}) 3.82 \text{ mg/L},$

$Q2 = (\text{contribution from the leaching beds}) = 8 \text{ dwellings} \times 8,000 \text{ Lpd} = 8,000 \text{ Lpd} (2,929 \text{ m}^3/\text{a}),$

$C2 = (\text{septic effluent nitrate concentration}) = 40 \text{ mg/L (conservative for tertiary treatment)},$

$QT = (\text{total offsite discharge}) = Q1 + Q2,$

$CRUP = \text{nitrate concentration at downgradient property boundary (mg/L)} = 10 \text{ mg/L}$

Using the above assumptions, the predicted concentration in the shallow ground water system at the downgradient property boundary is 11.7 mg/L, which is above the RUP criteria of 10mg/L. The calculations are conservative since they assume an effluent nitrate of 40mg/L (whereas tertiary treatment systems typically achieve 30-50% denitrification) and a site-specific infiltration rate of 159mm/a was utilized (compared to the value of 250mm/a recommended by MECP). If the average nitrate of treated effluent is 34mg/L or an infiltration of 215mm/a was utilized, the RUP value would match the criteria of 10mg/L.

The site will be serviced by municipal water supply so that the installation of wells is not expected to occur for the proposed subdivision. Tertiary treatment systems are intended to be utilized to promote higher quality septic effluent. Existing wells in the area include a mix of shallow bored and deeper drilled wells. In general, it is recommended that shallow bored wells drawing water from the surficial aquifer not be utilized as the primary target for potable water. Instead, confined or semi-confined aquifers in the Oak Ridges Moraine should be the primary targets, and wells should be constructed with extended casing to minimize the influence of shallow sources.

Ground water flow from the property is towards the southwest. Figure 4 in our 2017 report shows an inferred flow direction of the shallow system based on on-site monitoring wells, topography and watershed mapping. The site is part of a tributary subwatershed to the Humber River, joining the main branch near Bolton. In the direction of ground water flow, there are no residences until Mt. Hope Road, which is about one kilometer to the southwest.

Concern 2: Golder and TRCA requested additional information and the results from the private well monitoring program and a proposed monitoring well program

Azimuth Response: In 2018, Azimuth completed a private well survey by dropping off letters to all residential properties serviced by private wells within 500m of the project site. This included homes along Mount Pleasant Road. There are nine residences along Mount Pleasant Road, and three residents agreed to participate in the private well sampling program. They also indicated a willingness to participate in a long term monitoring plan. However, these homes are not downgradient of the proposed subdivision. These homes are at 15535 Mount Pleasant Road, 15586 Mount Pleasant Road and 15609 Mount Pleasant Road, which include the residences



immediately southeast of the project site on both sides of Mount Pleasant Road, and the third is about 200m further southeast. The well chemistry results of these three wells is appended. A monitoring plan is proposed to contact private well users along Mount Pleasant Road again and to sample volunteer properties twice per year for three years. Water quality samples will be analyzed for major and minor inorganics, nutrients, metals and bacterial parameters.

Concern 3: Concern regarding the discussion about discharge of stormwater to kettle lakes

Azimuth Response: As Golder identified in their review, the general area has knob and kettle topography. We agree with Golder in this matter. TRCA raised the specific question about the proposed site plan addressed Section 45(7) of the ORMCP, which prohibits the discharge of stormwater to kettle lakes. MECP have previously indicated that Section 45(7) refers to the 32 significant kettle lakes identified in the ORMCP. There are no Kettle Lakes on or adjacent to the property as defined within the ORMCP.

As discussed above, TRCA was concerned about potential flooding of the kettle features. The proposed site plan does not discharge stormwater to any of the kettle features. Overland runoff from grassed areas of the property that contribute to the features under pre-construction conditions will continue post-development. The roadside ditches of the cul-de-sac discharge to the bioswale feature and then to the roadside ditch of Mt Pleasant Road.

Additional Information – Delineation of EZ2 area on Lot 1

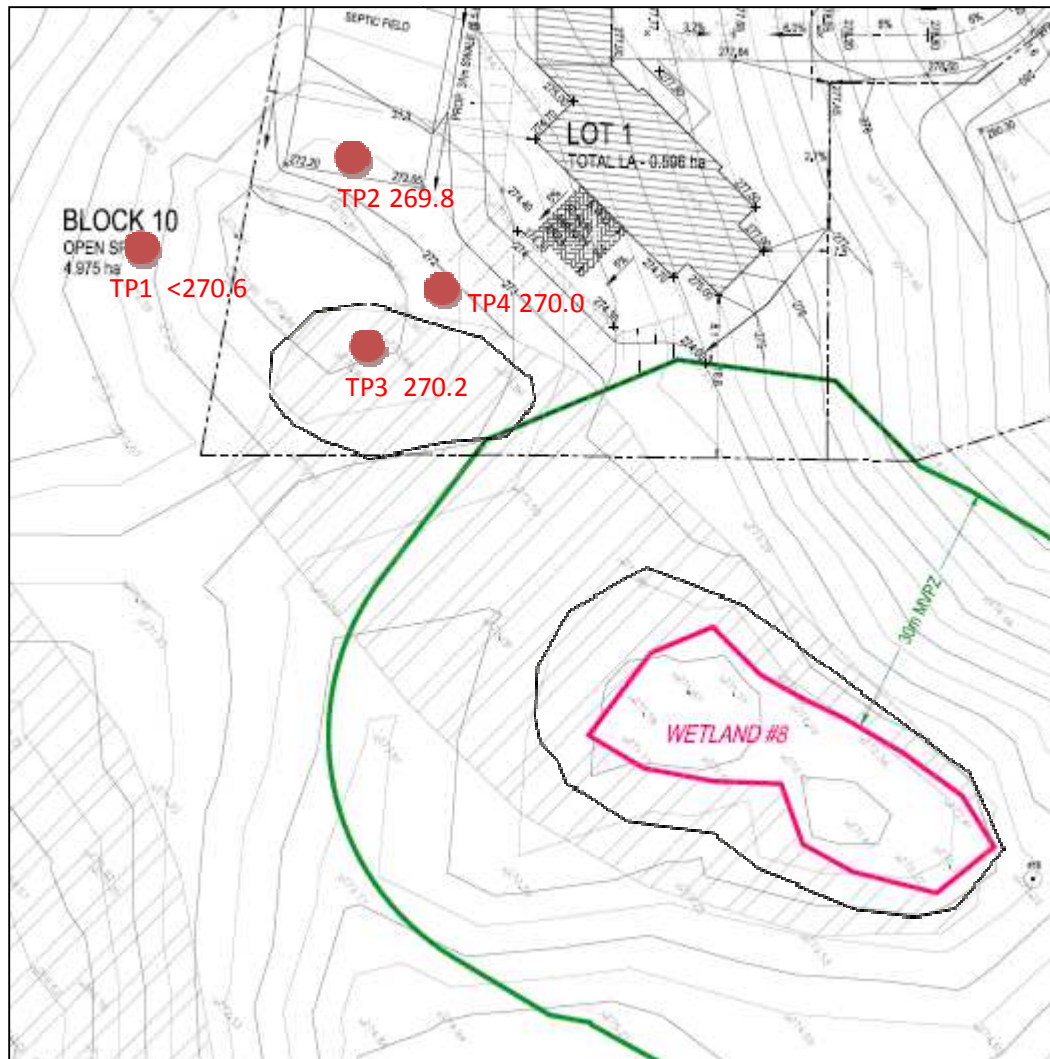
Azimuth Response: Section 7.1.9.1 of the Caledon Official Plan indicates that EZ 2 areas are based, in part, on areas of high ground water table, defined under the policy as those areas where the water table is usually within 1.5m or less of the ground surface. Section 7.1.9.2 provides, in part, that EZ2 limits are shown on Schedule I to the ToCOP, however individual features and their boundaries shall be determined through detailed studies. As such, the policy further provides for minor changes and refinements to EZ2 limits without the need for an amendment to the ToCOP.

The EZ2 area on Lot 1 has been refined based on revised topographic information and our analysis of same. The previous mapping of EZ2 was based on larger scale contour mapping that did not show a topographic rise between the small depression on Lot 1 and Wetland 8. However, recent detailed topographic mapping using a 0.5m contour interval shows that there is a topographic rise that forms a saddle between the depression feature on Lot 1 and the wetland 8 feature. The topographic rise is approximately 1.7m above the perimeter elevation of the Lot 1 depression. Therefore, the EZ2 areas for the Lot 1 depression and Wetland 8 should be modified and separated from each other.

Transitional grading from the Lot 1 residence will also have some effect, as it requires placement of fill at the rear of the house, which will modify the grading of the depression. This will effectively remove the EZ2 area on Lot 1 but will maintain the attenuation and direction of



surface runoff and the ground water infiltration function of this area. Wetland 8 is a wetland, and the EZ2 boundary around this feature is fully protected within the 30m MVPZ.



The EZ2 boundary has been updated and is shown on the included site figure.

- d) *TRCA staff advise the Hydrogeology Report is not satisfactory until the following comments have been addressed (comment i. through ix. provided in original Town comments but not reiterated here)*

Azimuth Response: Please refer to response to TRCA comment 20, 22, 23, 24, 25, 27, 29, 30, 31 and 32 below.

- e) *Peel Region Staff advise the Hydrogeology Report is not satisfactory until the following comments have been addressed:*
- I. *Clarification needs to be provided regarding the door to door survey*



II. *A map should be provided to clarify if all the properties within the 500m radius were included*

III. *A contingency plan must be provided.*

Azimuth Response: Please refer to Appendix E for clarification on the well survey boundaries. A map has been provided showing all properties serviced by a private well (blue dot) within 500 metres of the development site, which were included in the well survey. All other wells within 500 metres are currently serviced by municipal water.

A well contingency plan has also been included in Appendix E which summarizes a recommended response plan for any well-related complaints during construction.

TRCA COMMENTS (AUGUST 27, 2019)

TRCA Staff Comments on the 2nd Submission for Subdivision Application 21T-17006C and Zoning Bylaw Amendment RZ 17-09 (0 Mount Pleasant Road, Caledon) [August 27, 2019]

TRCA Comment 1. TRCA staff will continue to work with the applicant to ensure Block 9 and 10 (previously Block 1 and 2) are transferred into public ownership and a Reforestation and Environmental Management Plan Agreement is developed.

Azimuth Response: Through subsequent correspondence with TRCA, it has been confirmed that a Reforestation and Environmental Management Plan Agreement is no longer a requirement of TRCA (Appendix C).

TRCA Comment 3. Thank you for identifying the feature on the plans. Please note that the headwater feature seasonally connecting Block 9 to the offsite wetland south of Block 10 appears to be severed by the proposed road and the catchment area of this feature is proposed to be significantly reduced and altered to road drainage. Moreover, the feature is proposed to direct road drainage through a private property. As such, TRCA staff have the following concerns:

- *Amphibian movement may be impeded by the proposed road;*
- *The water balance of the receiving wetland may be affected;*
- *The conveyance of stormwater from the road onto private property does not provide for long term maintenance/protection of the feature;*
- *The current design of the drainage feature does not emulate that of an enhanced conveyance swale; and*
- *The feature has a rip-rap pad at its terminus without an appropriate transition into the natural system.*

Given the above, Ecology staff recommends the following design considerations for the drainage feature:

- *An ecopassage under the road;*
- *The catchment area and flows to the feature be replicated;*



- *An appropriate transition (e.g. created wetland, use of existing hedgerow etc.) from terminus of the feature to the nearby wetland; and*
- *The drainage feature be placed into public ownership for long term protection.*

Azimuth Response: As per Figure 3b (Appendix A), two KNHFs have been identified within/adjacent to the north end of the property: 1. Wetland Unit No. 4 of the Mount Wolfe PSW (On property, Appendix A, Figure 3b) 2. Wetland Unit No. 10 which is also part of the Mount Wolfe PSW (Appendix A, Figure 3b) [Note: This is wetland unit No. 17 within the MNRF Wetland Evaluation (Appendix F) but referred to as Unit No. 10 for the purposes of our reports]. These pond features function to provide breeding habitat for a variety of frog species including Wood Frogs, Gray Treefrogs, Spring Peepers and Green Frogs (Azimuth, EIS & MP, 2017).

Although not confirmed, potential exists for seasonal migration to post-breeding habitat and/or juvenile dispersal to occur between the ponds and nearby natural heritage features.

As per the current site plan, a road (Tivoli Circle) is proposed off of Mount Pleasant Dr. in order to access five (5) lots (Figure 5). TRCA expressed concern regarding the road potentially impeding the movement of amphibians.

Amphibians tend to migrate/disperse at night and often cross roadways when doing so. Traffic on the road is expected to be light during the daytime and likely even lighter at night when most amphibian dispersal is likely to occur. Credit Valley Conservation's (CVC) Fish and Wildlife Crossing Guidelines suggest that if the annual average daily traffic volume is less than 300 cars, a crossing system and/or Best Management Practice (BMP) is typically not required (CVC, 2017). For five (5) lots, traffic volumes would be well below this threshold.

Furthermore, the proposed curb has a height of 50mm with a softer, rounded shape than that of a typical curb (*i.e.* 150mm with a vertical face). Attached is the Ontario Provincial Standard Drawing 600.060 for a semi-mountable curb (Appendix G). An excerpt from the FSR depicting a typical road cross-section is also appended (Appendix G). Since there are no 'typical' curbs, the road does not present an impediment to potential seasonal migration and/or dispersal of amphibians.

With respect to the headwater drainage feature and the water balance of the receiving wetland, the feature is a gentle swale across an active, plowed and cropped farm field. Figure 2 in the Headwater Assessment shows that the flow is divided at the height of land, which closely matches the location of the road. The feature collects local runoff, and flows both north and southwest, so that the road is not changing the basic location of the divide.

According to the updated WWBRE prepared by Azimuth (March 2020), the Wetland 10 catchment area was given an impervious cover score of 12% which is categorized as medium risk to hydrologic change. Based on many visual observations of Wetland 10 by Azimuth staff over years of monitoring the Laurelpark property, it is assumed that this feature is hydraulically connected to the upper ground water aquifer and relies on ground water for the maintenance of surface water levels throughout the year. This pond is a permanent feature which has never been observed to dry out in the summer/fall months, with seasonal water level fluctuation even



observed to be low. It's reliance on surface water runoff is presumed to be very low (and will likely be confirmed with future water level monitoring). The impact to this feature from having a portion of the wetland catchment area lost to impervious surfaces is presumed to be very low.

Calder Engineering Ltd. will address comments related to conveyance and design of the drainage feature including the terminus.

TRCA Comment 4. Based on our review of the reforestation plan, it appears that a number of areas within MVPZs are not slated for restoration. In accordance with the ORMCP and Palgrave Estates Secondary Plan, TRCA staff recommends that all areas within a MVPZ are restored. This should include the MVPZ of the MNR identified wetland at the southern corner of the site. Further to the above, TRCA staff would look favourably upon restoration of the area behind lot 1. This area has the potential to serve as an ecological connection from the recently reforested area to the north (i.e. Diamondwood Drive) to the MNR identified wetland and wetland #8 to the south.

Azimuth Response: The Proposed Compensation areas have been updated as per Town comments through the extension of the restoration plantings around Wetland No. 7 and as per TRCA's preference to include 60% coverage of the MVPZ. Approximately 60% of the MVPZ will be planted with whips/live stakes of a mixture of trees and shrubs suitable to the conditions. The total area of the MVPZ is approximately 3.2ha whereby approximately 1.7ha will be planted with trees/shrubs for a total coverage of approximately 1.9ha (Appendix A, Figure 6). Areas within the MVPZ that are currently in a natural state (*i.e.* treed, cultural meadow) will be left undisturbed and will remain as natural self-sustaining vegetation (Appendix A, Figure 6). The detailed planting plan outlining species composition, installation instructions, general maintenance and monitoring requirements will be provided at detailed design stage and circulated to TRCA for review and approval.

It is proposed that there will be four areas of compensation/rehabilitation related to the property as depicted on Figure 6 (Appendix A) and summarized in the table below.

Compensation/Restoration	Number of Plantings	Area	Policy Conformity
Butternut Compensation	140 trees	2 240m ²	<i>Ont. Reg. 242/08</i>
Tree Compensation (as per Tree Inventory and Assessment Report)	93 trees	1 571m ²	Town of Caledon (2:1 compensation ratio)
Rehabilitative Planting Area	TBD	13 661m ²	Town OP Section 7.1.9.29
Diamondwood Severance Compensation Area	TBD	815 m ²	TRCA

For further information related to these compensation areas, please refer to Azimuth's May 2, 2019 response that generally describes the rationale for these four compensation areas. Please



note that the Rehabilitative Planting Area has been increased to meet the TRCA's 60% coverage request.

As confirmed by the Ministry of Natural Resources and Forestry (MNR) Wetland No. 9 is no longer part of the Mount Wolfe PSW (Appendix A, Figure 3b, Appendix F). Further analysis revealed that the 0.41ha unit would no longer be considered a wetland for the purposes of applying the policies of the ORMCP (Appendix H). Although this does not alter the Proposed Draft Plan of Subdivision, the EZ mapping has been updated to reflect this change (Appendix A, Figure 5). Based on this information, no planting has been proposed within 30m adjacent to the MNR identified wetland, although this area will be left to naturalize and will be composed of natural self-sustaining vegetation.

TRCA Comment 13. Based on our review of the WWBRE, it appears that developable area of each catchment was not included in the impervious score calculations. In addition, the applicant should also provide further details on how the impervious cover score was calculated and provide a figure/map illustrating how the different components of the WWBRE were estimated.

Azimuth Response: The southern wetland has been included in Azimuth's updated WWBRE (March 2020) and is now referred to as "Wetland 10". Azimuth has updated our WWBRE with updated areas and the inclusion of Wetland 10 as a catchment feature. Supporting calculations and figures are also provided in this updated document which is provided in this submission package.

It should be noted that TRCA's recommended formula for calculating development area (C_{dev}) does not match with the WWBRE guideline document (2017). In the guideline document, C_{dev} is described simply as the area to be developed within the catchment area, not the catchment area minus the wetland size as suggested in TRCA's last response. Azimuth continued to use the suggested formula from the guideline document to calculate the impervious cover scores in our updated WWBRE.

TRCA Comment 18. It appears that the catchment area for the PSW to the south of Lot 6 and 7 will be altered (2.58 ha to 1.61 ha) in the post development condition. The WWBRE should identify as assess this wetland given the proposed impacts. In addition, please ensure this southern wetland is labeled on all figures/plans.

Azimuth Response: As highlighted above, the southern wetland has been included in Azimuth's updated WWBRE (March 2020) and is now referred to as "Wetland 10" (Appendix A, Figure 3b). This wetland will be labeled in all figures within Azimuth's future reports. Wetland names will also be consistent between hydrogeological and natural heritage reports.

TRCA Comment 20. Thank you for providing the geologic cross section. However, elevations for dwelling foundations were not provided. It is indicated that basement elevations are not expected to be below the water table. Staff have no concerns provided basement elevations are above the water table.



Azimuth Response: In the current stage of the approval process, the proponent has not developed detailed design figures showing proposed basement elevations. The project's Engineering consultant (Calder Engineering Ltd.) will ensure that basement elevations will be above the high water table elevation, with this aspect being included in the detailed design stage. As the basements are not within EZ 2 areas, it is concluded that staying above the water table is practical.

TRCA Comment 22. Thank you for providing additional charts for the data period between 2008 – 2012. However, it was our understanding that Graphs 1 to 5 in the Hydrogeologic Report would be updated with data prior to 2012. Please update all graphs with available data and provide them in an updated Hydrogeologic Report. If monitoring continued beyond 2013, this data should also be added to the charts.

Azimuth Response: The information requested has been appended to our response (Appendix A), but the report graphs continue to be the best reference because they cover the time period when the data sets overlap.

All graphs (datalogger data) were included in the last submission, which included ground water level data for MW1 – MW7 between 2012 and 2017. Dataloggers were only installed in the on-site wetlands between fall 2012 and summer 2013. Wetland water level data was also provided in Table 2 (page 22) of the Hydrogeologic Assessment Report (June 2017), which summarizes all manual water level measurements taken prior to the installation of dataloggers within the wetland features.

TRCA Comment 23. Please provide supporting calculations for infiltration volumes proposed in the table on Page 5 of the Hydrogeologic Report response memo. How are the summer and winter gradients determined? It is recommended that hydraulic conductivity values be determined based on site specific investigations instead of literature.

Azimuth Response: As indicated in the response, the infiltration and exfiltration values are determined from a Darcy flux calculation ($Q = KiA$).

The winter gradients and summer gradients are based on the observed water level gradient between the wetland and the adjacent ground water monitor, and we picked typical values across the site. The gradients are the vertical gradient across the soils that form the base of the wetlands. A summer gradient of +2m/m implies that the water table is two meters below the water level in the wetland (or two meters below ground surface when the wetland is dry) and that water is exfiltrating from the wetland into the ground water system. A winter gradient of -1m/m implies that the water level in the wetland is 1m lower than the water table, and that water is discharging into the wetland. We selected a number of weeks per year to reflect the period of recharge / discharge and applied the calculation for that period. It could have been applied iteratively to calculate actual gradients and specific time periods, however, this is meant to reflect long term average conditions, and some years will be wetter or more dry than others.



The hydraulic conductivity of the Newmarket Till is documented in a number of reference articles and we have some site-specific testing on a nearby property that exhibited consistent values. The use of the formula provides a relative indication and our conclusion is based on the relative proportion being small. If a different hydraulic conductivity is utilized, then the proportions remain the same, and we would reach the same conclusion. The key is that “the flux values are very small compared to surface runoff and that the discharge and infiltration essentially offset each other.”

TRCA Comment 24. Thank you for providing a breakdown for the infiltration factor (0.4) used in the water budget analysis. However, it was TRCA Hydrogeology staff's understanding that a complete water budget identifying monthly values for different parameters would be provided. Please provide a complete water budget for the site. In addition, please clarify why Table 7 of the report is considering 676mm of annual rainfall instead of the total precipitation of 898mm per year. The water budget should consider winter months in the analysis.

Azimuth Response: Table 7 and the water budget information is presented in Section 8 of our original Hydrogeologic Assessment Report (June 2017). As presented, the water budget is based on the Thornthwaite and Mather (1957) methodology. We have extrapolated this method to use it as a continuous monthly calculation for the period of record, in this case from 1969 to 2015.

The Thornthwaite and Mather method only considers runoff for the periods when the average monthly temperature is higher than -1°C. If the temperature is below -1°C, then snowfall is retained and is available to melt in a subsequent month when the temperature rises.

Table 7 is a summary table only and does not present the full calculations. Snow is utilized within the overall water budget, and is used in the runoff / infiltration calculations.

We have presented the precipitation data only because we do not consider accumulated snowfall on rooftops as being available for infiltration for mitigation purposes. Firstly, snow on rooftops may blow off, and secondly when rooftop snow initially melts, ground frost is present, and therefore infiltration of water from snowmelt is minor.

TRCA Comment 25. It is TRCA's experience that precipitation from small events is lost due to evaporation and it is a normal practice to incorporate evaporation losses (up to 10-15%) in the water budget. Construction activities also further reduce soil infiltration capacity. We recommend that the water budget reflect impacts due to these two factors. The 25% reduction factor in runoff mentioned in the TRCA/CVC Low Impact Development Stormwater Management Planning and Design Guide does not suggest that it will be infiltrated. Only a portion of the runoff is infiltrated and the remaining is lost due to evapotranspiration which occurs along the flow path.

Azimuth Response: The specific calculation for infiltration of water from rooftop runoff is provided at the top of page 29 in the Hydrogeologic Assessment Report (June 2017). We have incorporated evaporation and the compaction effect by simplifying to a 25% factor. We used $8 \text{ rooftops} * 350\text{m}^2 \text{ area} * 0.676\text{m rainfall} * 25\% \text{ infiltration} = 475\text{m}^3$. This is equal to 169mm



infiltration from rooftops, which is more conservative than the calculation provided in the Design Guide.

The Design Guide identifies that directing rooftop downspouts to grassed areas results in a 25 or 50% runoff reduction (Table 4.2.3)(first for C-D soils, second for A-B soils). We are utilizing a 60% runoff for the site, so rooftop infiltration would be 55% of rooftop surplus. As you note evaporation is 10-15% so (676mm-15% evaporation) * 55% infiltration = 316mm or 885m³.

TRCA Comment 27. Azimuth agrees that the potential for ground water contamination exists, although with a lower risk. Staff does not support infiltration of storm water runoff from the road into the bioretention facility as it is a risk to the property directly to the south (15586 Mount Pleasant Road). Please adjust the design of the bioretention area to provide for filtration prior to water entering the facility.

Azimuth Response: Azimuth does not have input to the design of the bioretention facility. The project's Engineering consultant (Calder Engineering Ltd.) will address the requirement for filtration prior to water entering the facility. The bioretention facility is not being designed to promote infiltration, although a small amount will likely occur. Water entering the bioretention facility has already passed through grassed swales or the grit separator so filtration will have occurred. By risk, we assume you are referring to road salt impacts to shallow ground water.

TRCA Comment 29. As a number of septic systems will be within 300 metres of wetland features, it is recommended that post construction monitoring should include ammonium monitoring. In addition, please clarify the receptor for Lot 3's septic discharge. It appears that it may be towards Wetland 6 and 7.

Azimuth Response: TRCA should be aware that tertiary treatment septic systems will be installed for each lot which creates a very low risk scenario for wetland contamination due to leaching beds. Typical wastewater has TKN of approximately 80mg/L total N (TKN, nitrate, nitrite, ammonia). Tertiary treatment systems are highly adept at nitrifying wastewater, and typically provide at least 50% denitrification. As an example, the BNQ testing for the Waterloo Biofilter system shows 65% removal of Total N and essentially complete nitrification of the remaining nitrogen. Median effluent ammonia concentration is 0.5mg/L. (<https://waterloo-biofilter.com/downloads/nitrogen-removal-with-the-waterloo-biofilter.pdf>) Total ammonia of 0.5 mg/L incorporates approximately 6.5µg/L unionized ammonia compared to the PWQO of 20µg/L. This is followed by further nitrification and denitrification within the leaching bed and dilution and attenuation during migration in the ground water regime. Ammonia impacts to a surface water feature ~100m downgradient of a tertiary treatment bed is likely only possible if the system malfunctions and/or has surface breakout. One of their requirements for tertiary treatment system approvals is an annual maintenance contract with the supplier / manufacturer that should address the issue of gross malfunction.

In addition, the Lot 3 septic bed is intended to be installed within the southeastern portion of the property which would allow for discharged septic effluent to mostly flow past Wetland 7 in a southerly direction rather than directly to the feature.



For these reasons, we do not believe that ammonium monitoring will provide cost-effective results.

TRCA Comment 30. Some of the wetlands on this site have been recognized as Kettle Lakes/Wetlands by the MNRF. As such, the applicant should address the original comment.

Azimuth Response: TRCA has raised the specific question about the proposed site plan in regard to Section 45(7) of the ORMCP, which prohibits the discharge of storm water to kettle lakes. The MECP has previously indicated that Section 45(7) refers to the 31 significant kettle lakes identified in the ORMCP, not kettle wetlands.

TRCA Comment 31. Table 4.1 of the SWM report should indicate the monitoring wells where the ground water levels and quality would be monitored along with the threshold values that will trigger mitigation measures and specific mitigation measures that would be implemented. Staff recommend that ground water quality monitoring during construction may not be necessary and instead monitoring in post construction be increased from three to four years.

Azimuth Response: Azimuth has prepared a monitoring program that will be incorporated into Calder Engineering Ltd's Stormwater Management Report. Table 4.1 of the Stormwater Management Report will be updated with the required ground water monitoring locations, thresholds and mitigation measures.

TRCA Comment 32. The response provided indicates additional ground water quality analyses were completed which have not been provided. The additional water quality analyses should be provided for review. The adaptive stormwater management plan (Table 4.1 of SWM report) does not include ground water quality monitoring. Staff have no concerns if water quality monitoring during construction is omitted. However, monitoring water quality should continue for five years after the subdivision has been assumed. Water quality parameters should be provided as part of the monitoring plan. As noted in response to Comment 29, ammonium monitoring is also recommended.

Azimuth Response: Azimuth has prepared a monitoring program that will be incorporated into Calder Engineering Ltd's Stormwater Management Report. Table 4.1 of the Stormwater Management Report will be updated with the required ground water monitoring parameters and duration.

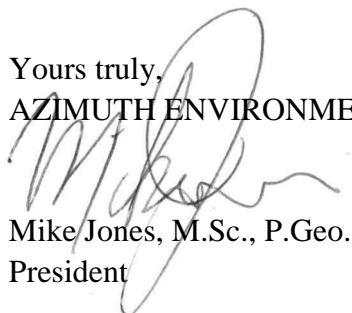
TRCA Comment 38. Further to Hydrogeology comment 18, please note that the Provincially Significant Wetland (PSW) to the south of lot 6 and 7 has not been included within the WWBRE. However, according to the drainage boundary maps submitted, the drainage area surrounding this wetland is expected to change from 2.58 ha (existing) to 1.61 ha (post development condition). TRCA staff have concerns that this will lead to negative impacts to the PSW. Please revise the WWBRE and EIS to assess potential impacts (and mitigation measures) to this wetland.




Azimuth Response: Wetland 10 was added to the revised WWBRE in April 2020. The catchment areas noted in Comment 38 refer to the on-site catchment areas. Wetland 10 is completely within the adjacent property to the south. An additional area of approximately 1ha of the Wetland 10 catchment is also off the Laurelpark property and has not been included with the catchment areas as noted in Comment 38. This offsite contribution includes the rear yard of the adjacent residence and a portion of the adjacent active farm field. On the basis of areas, the WWBRE determined that Wetland 10 has an Impervious Score of 12% and falls in the “Medium Magnitude” category for probability for hydrological change. However, Wetland 10 has been deepened by the adjacent property owner, and includes lawn areas to the edge of its permanent water line. During our studies since 2009, Wetland 10 has maintained a permanent pool. This suggests that the pre-existing changes to Wetland 10 may have enhanced its connection to the water table. The catchment on-site has been maintained to the extent possible and changes to the hydrology of Wetland 10 are expected to be minor.

We trust the information provided above will satisfy your concerns regarding Azimuth’s Hydrogeologic Assessment Report, WWBRE, EIS & MP, Headwater Drainage Feature Assessment and Tree Inventory and Assessment Report related to the proposed Laurelpark Subdivision. Should you require further information or have any questions, please contact the undersigned.

Yours truly,
AZIMUTH ENVIRONMENTAL CONSULTING, INC.



Mike Jones, M.Sc., P.Geo.
President



Lisa Moran, B.Sc.Env.
Terrestrial Ecologist

Attach:

Appendix A: Updated Figures and Hydrographs
Appendix B: Agency Consultation
Appendix C: TRCA Correspondence
Appendix D: Water Quality Data
Appendix E: Door-to-door Survey Information and Contingency Plan
Appendix F: MNRF Correspondence Regarding PSW
Appendix G: Curb Design and Road Cross-section
Appendix H: Azimuth Memo Regarding Wetland Unit No. 9

APPENDICES

- Appendix A: Updated Figures and Hydrographs**
 - Appendix B: Agency Consultation**
 - Appendix C: TRCA Correspondence**
 - Appendix D: Water Quality Data**
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APPENDIX A

Updated Figures and Hydrographs



- LEGEND:**
- Approx. Property Boundary
 - Permanent Stream
 - Intermittent Stream
 - 30m Minimum Vegetation Protection Zone
 - Mount Wolfe Provincially Significant Wetland (PSW)
 - MNR Identified Wetland



Environmental Protection
Components: Wetland

Pt. Lot 19, Con. 8
Town of Caledon

Date Issued:	January 2020
Created By:	JLM
Project No.	08-019
Reference:	First Base Solutions

Figure No.
3b



LEGEND:

- Approx. Property Boundary
- Permanent Stream
- Intermittent Stream
- Ephemeral Drainage
- 30m Minimum Vegetation Protection Zone (MVPZ)
- Environmental Policy Area/Palgrave Estates Environmental Zone 1 (Outermost limits of Minimum Vegetation Protection Zone)
- Environmental Zone 2 (High Ground Water)
- EZ2 Refined (2020)



Proposed Development Plan

Pt. Lot 19, Con. 8
Town of Caledon

Date Issued:	March 2020	Figure No. 5
Created By:	JLM	
Project No.	08-019	
Reference:	First Base Solutions	



LEGEND:

- Approx. Property Boundary
- Permanent Stream
- Intermittent Stream
- Ephemeral Drainage
- Woodland Dripline
- Mount Wolfe Provincially Significant Wetland (PSW)
- MNRF Identified Wetland (0.4ha)
- 30m Minimum Vegetation Protection Zone (MVPZ)
Total Area = (32,155m²)
- Proposed Butternut Compensation Area (2,240m²)
- Proposed Tree Compensation Area (1,571m²)
- Proposed Rehabilitation Planting (14,309m²)
Total Compensation Planting Area (18,120m²)
- Overseed Only (842m²)
- Proposed Diamondwood Severance Compensation Area (815m²)
- Currently Naturally Vegetated - trees (no restoration proposed) (1821m²)
- Currently Naturally Vegetated - meadow (no restoration proposed) (3875m²)

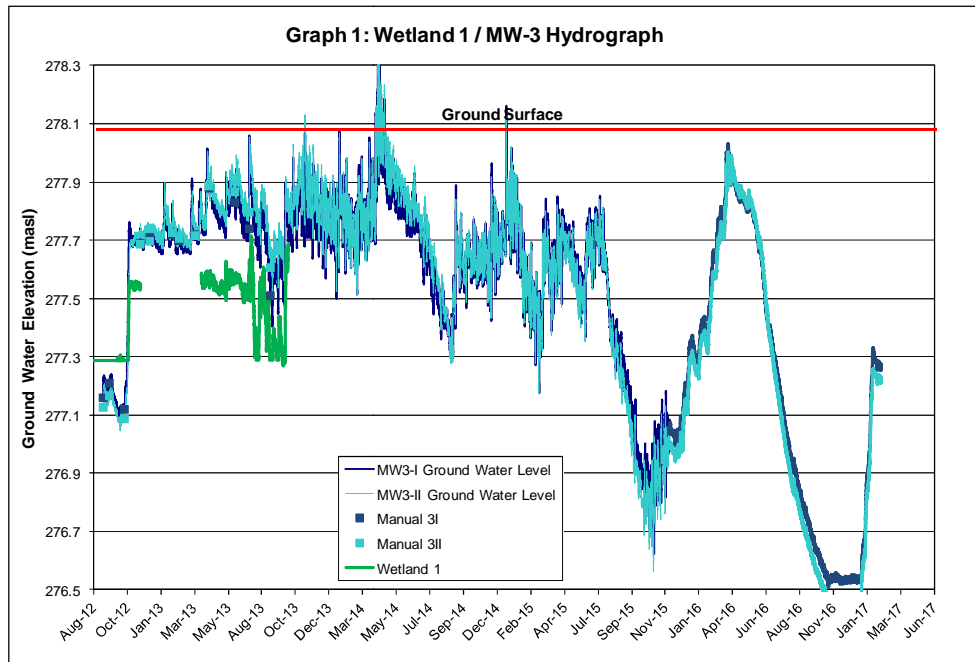
Note:
TRCA has requested at least 60% coverage of MVPZ (19,293m²). Total compensation planting area (17,472m²) and naturally vegetated-trees (1821m²) =19,293m²

DAYSTAMP: P:\08-019 Mount Pleasant\Drafting\dwg\08-019v3.dwg

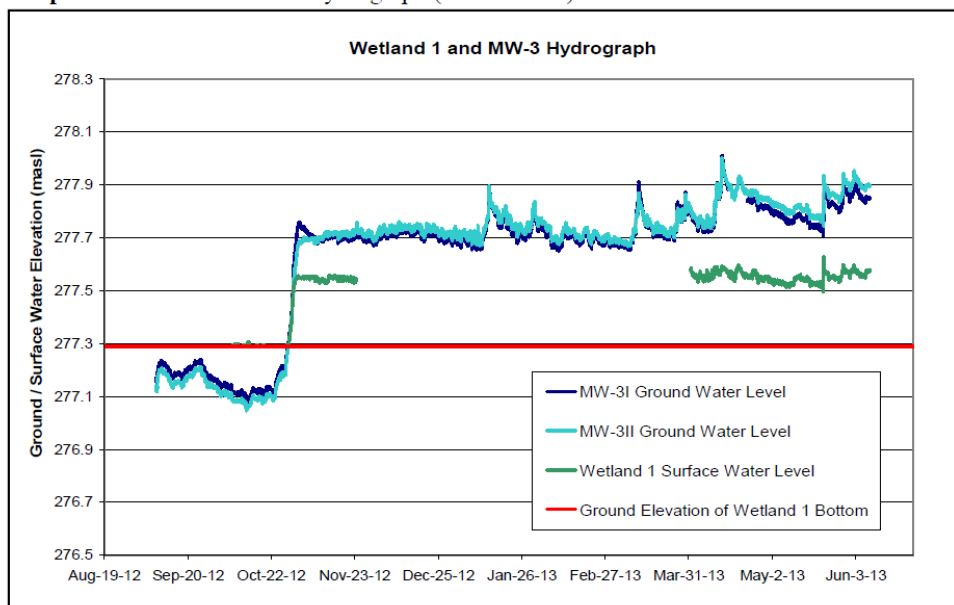
Proposed Compensation Areas

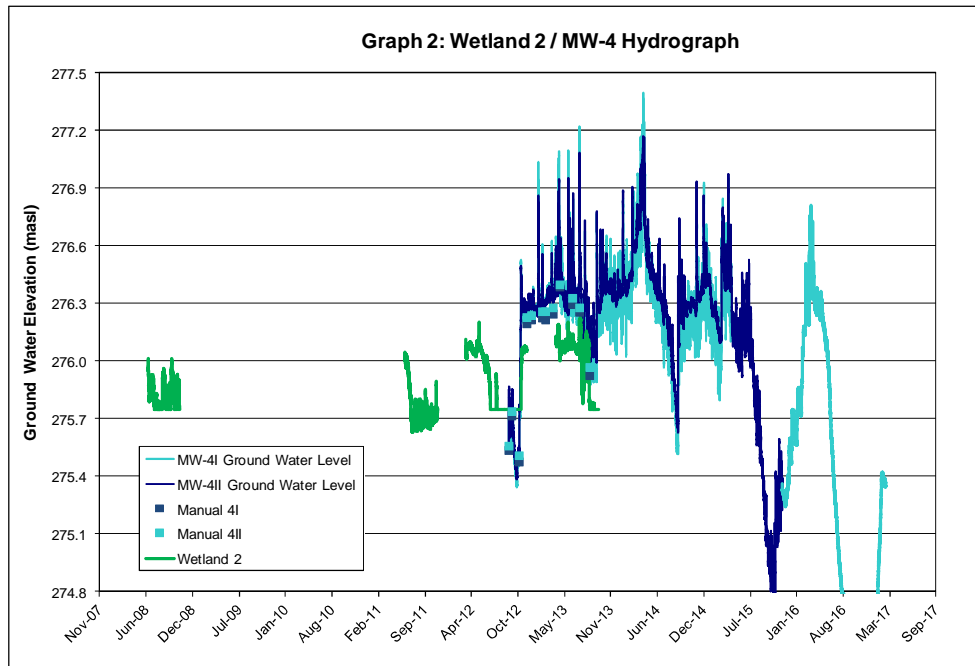
**Pt. Lot 19, Con. 8
Town of Caledon**

Date Issued:	March 2020	Figure No. 6
Created By:	JLM	
Project No.	08-019	
Reference:	First Base Solutions	

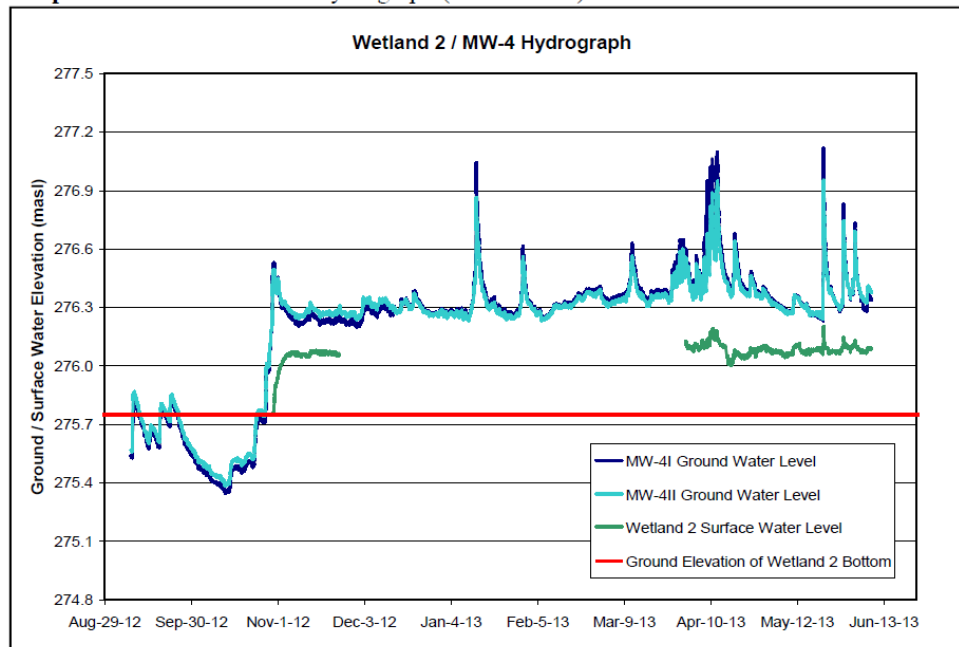


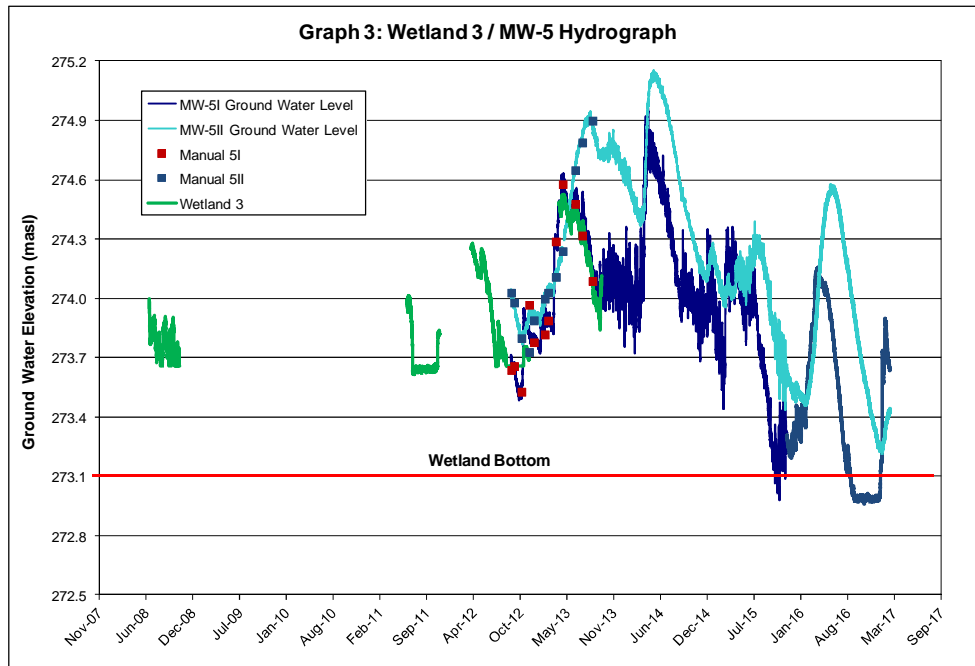
Graph 1: Wetland 1 / MW-3 Hydrograph (2012 – 2013)



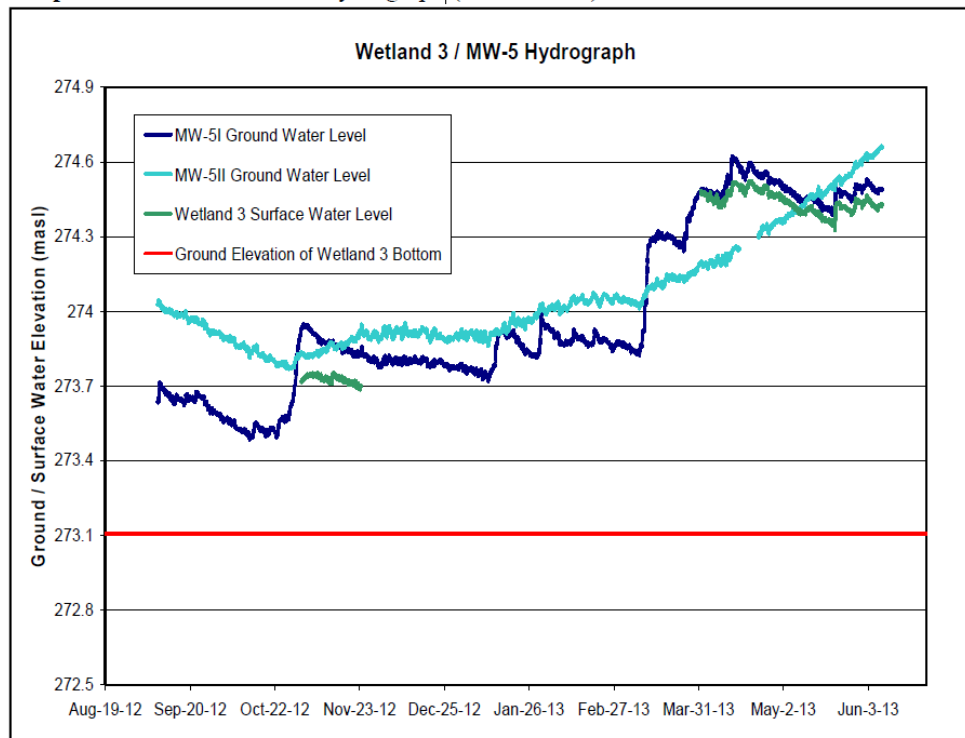


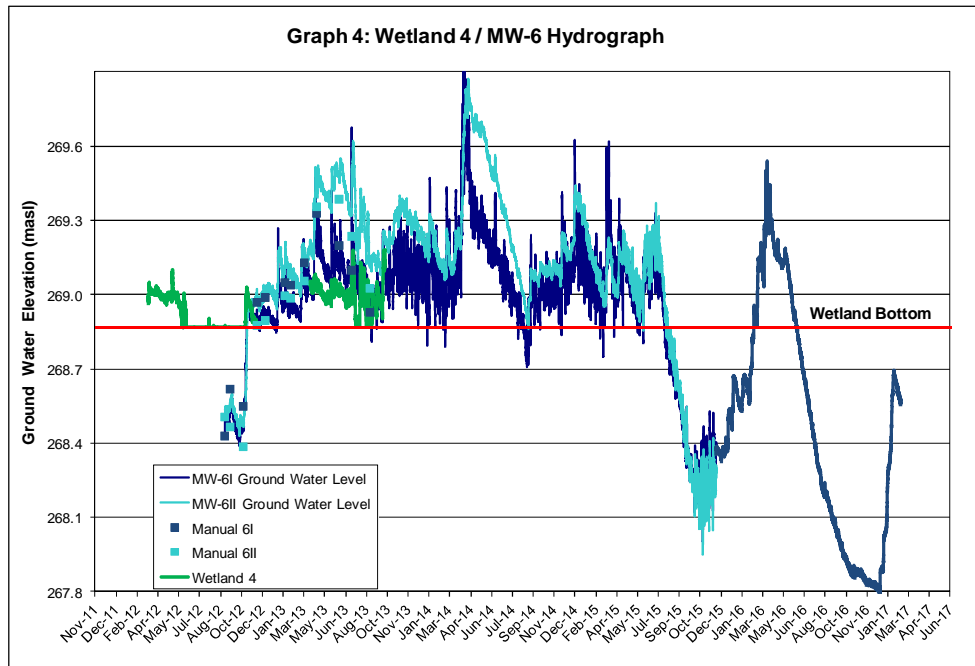
Graph 2: Wetland 2 / MW-4 Hydrograph (2012 – 2013)



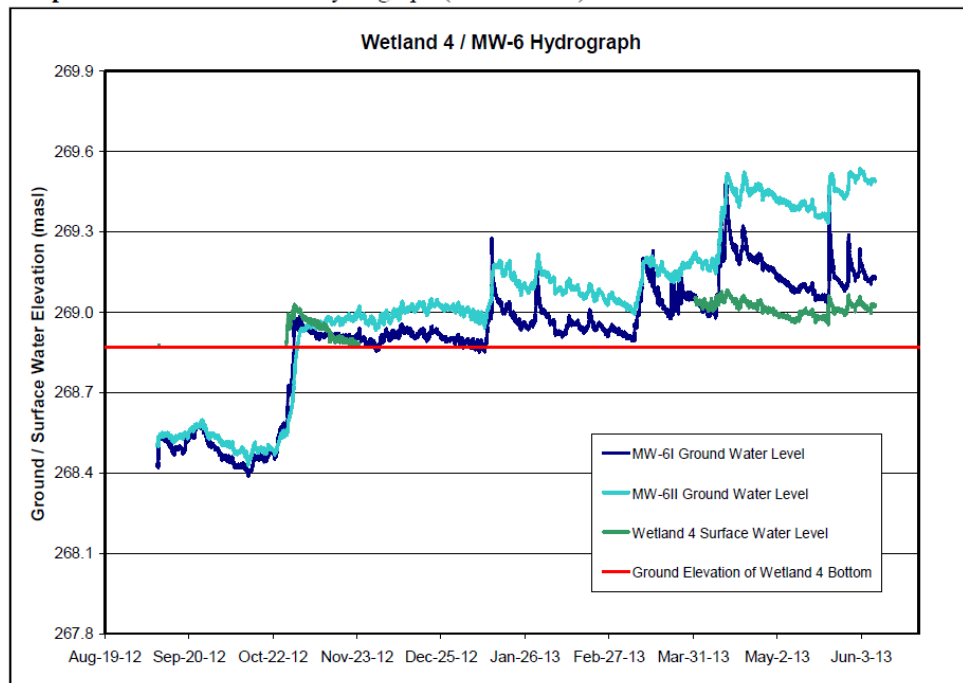


Graph 3: Wetland 3 / MW-5 Hydrograph (2012 – 2013)





Graph 4: Wetland 4 / MW-6 Hydrograph (2012 – 2013)



Wetland 5 only monitored in 2013

Graph 5: Wetland 5 / MW-8 Hydrograph (2013)

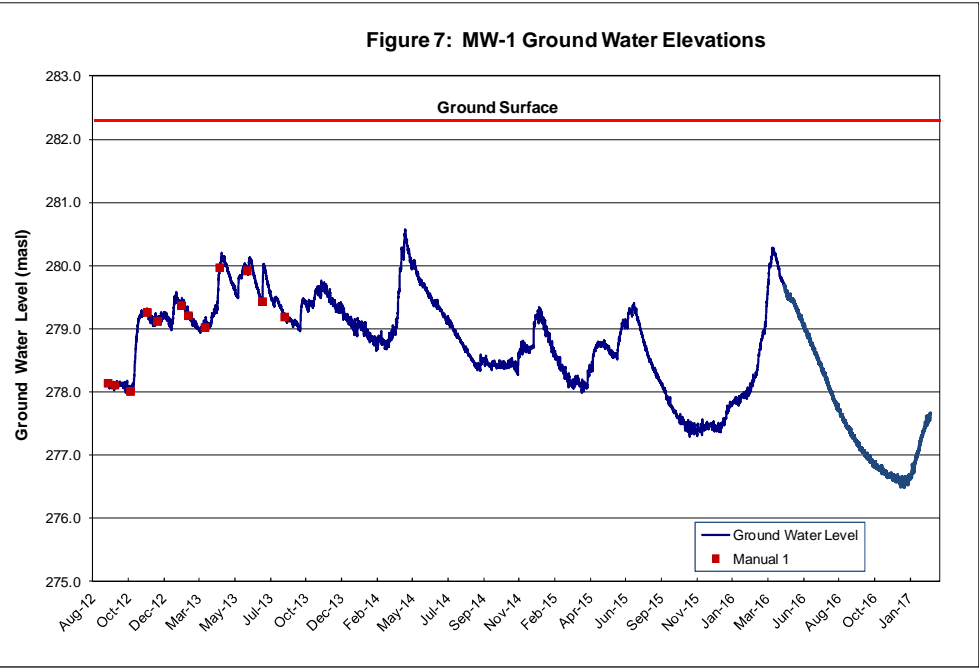
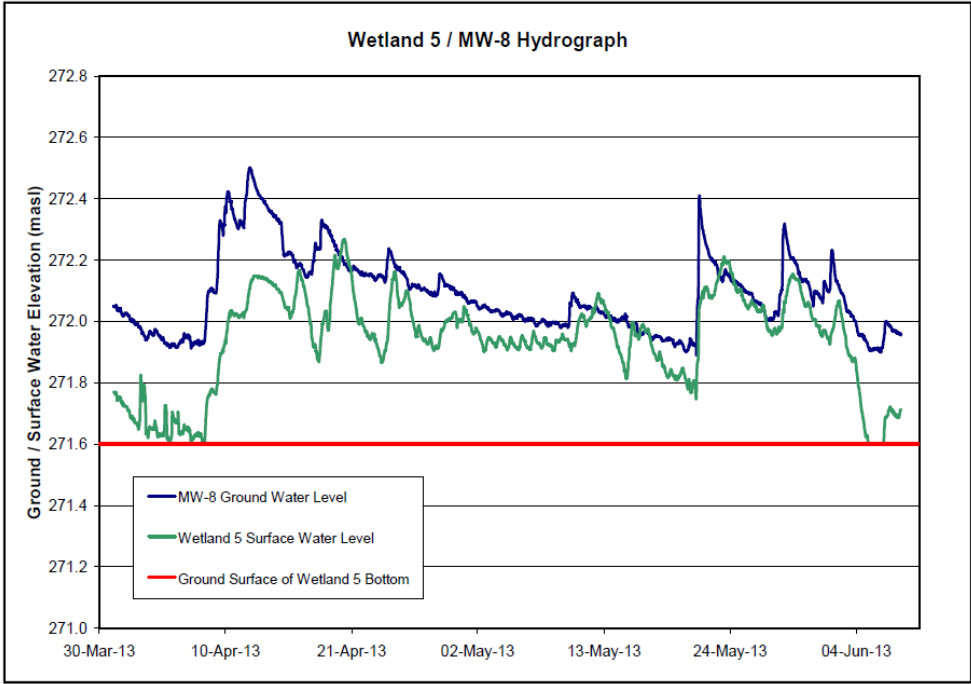


Figure 8: MW-2 Ground Water Elevations

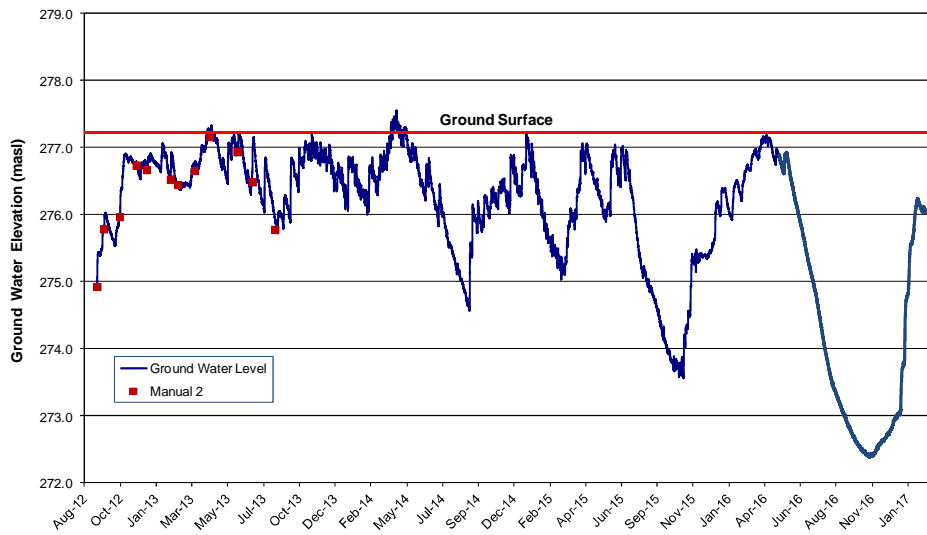


Figure 9: MW-3 Ground Water Elevations

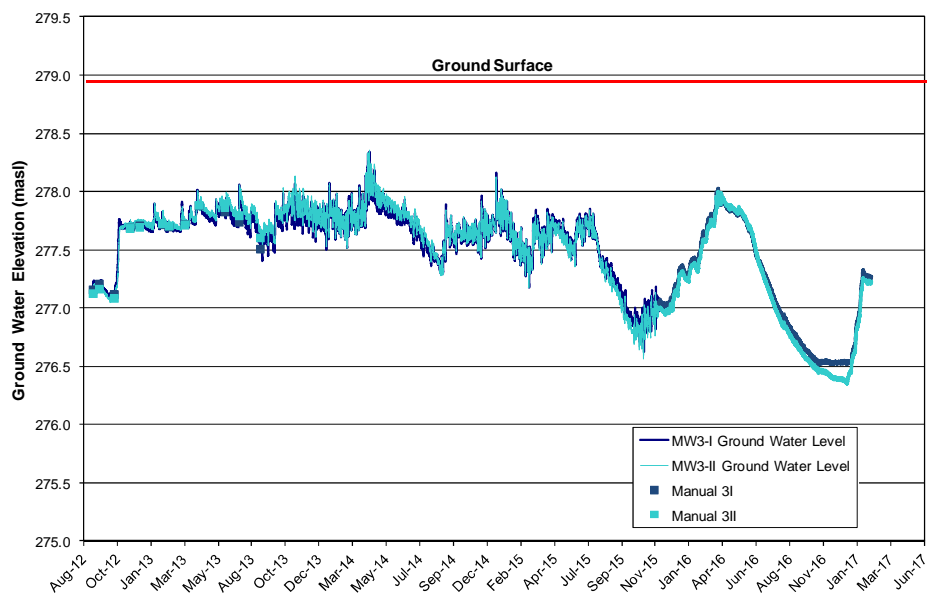


Figure 10: MW-4 Ground Water Elevations

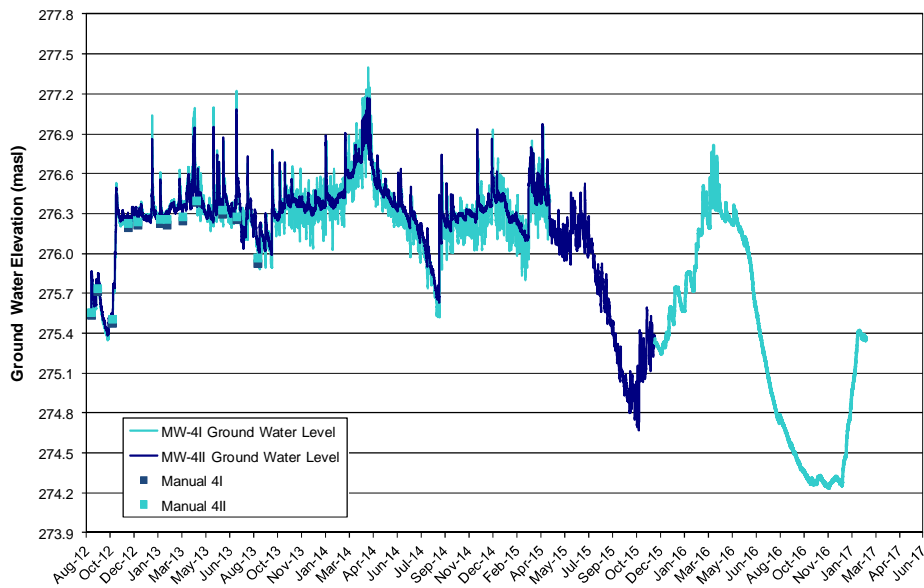


Figure 11: MW-5 Ground Water Elevations

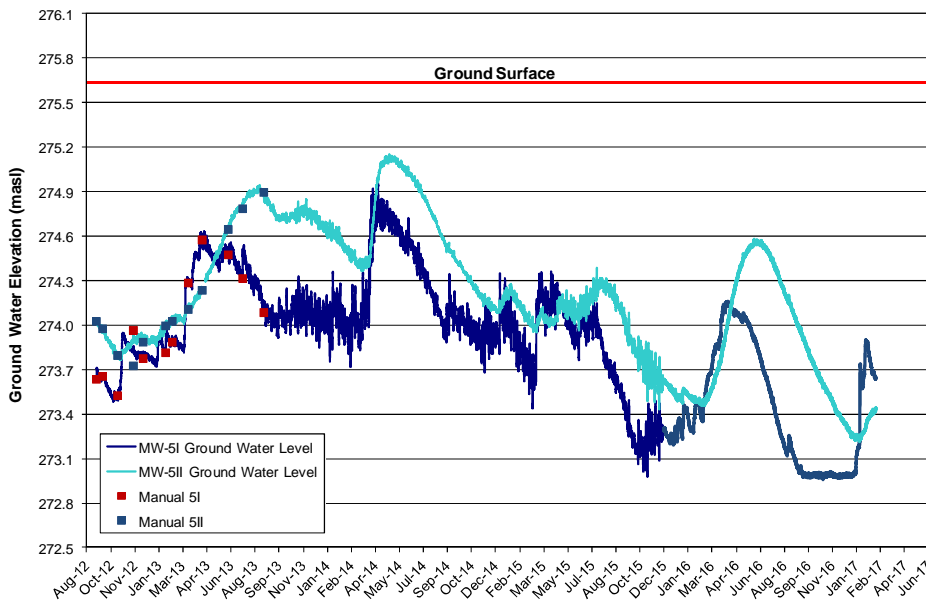


Figure 12: MW-6 Ground Water Elevations

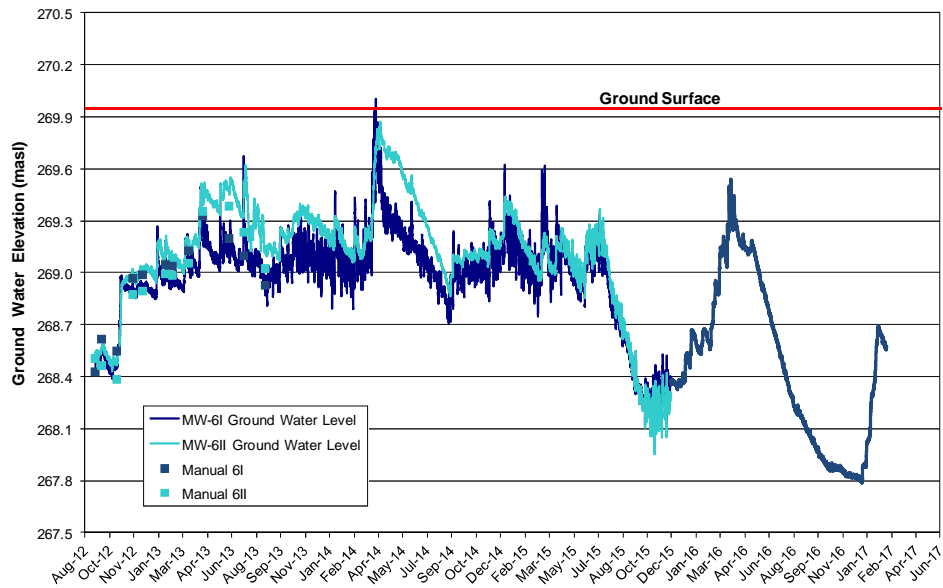
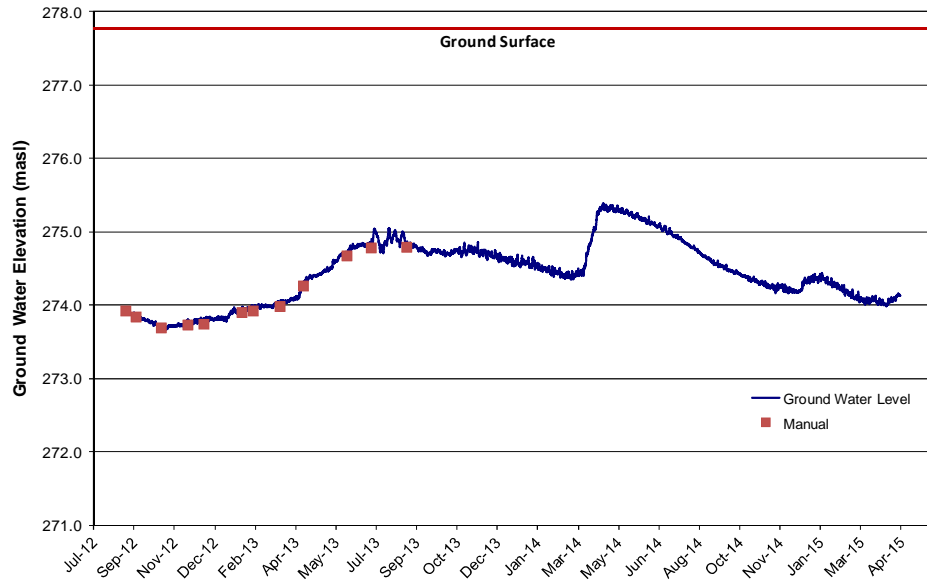


Figure 13: MW-7 Ground Water Elevations



APPENDIX B

Agency Consultation

TRCA Meeting

December 11, 2019 8:52 AM

In Attendance:

- Jason Wagler - Senior Planner (TRCA)
- Maria Parish - Ecologist (TRCA)
- Jairo Morelli - Engineer (TRCA)
- Carmen Jandu - Planner (Laurelpark)
- Jennifer Yong - Planner-in-Waiting (Laurelpark)
- Scott Arbuckle - Principle Planner (IBI Group)
- Julia Redfearn - Planner (IBI Group)
- Mike Jones - Hydrogeologist (Azimuth)
- Lisa Moran - Ecologist (Azimuth)
- Rob Whyte - Engineer/Project Manager (Calder)

Planning & Ecology

AGENDA ITEM	NOTES
Ecopassage under the road	<ul style="list-style-type: none">- TRCA concern: fences & other structures from residents on private property may block their path- Azimuth: can't control what residents do on their private property- TRCA will be okay with not including a passage as long as they have justification on file <p>ACTIONS:</p> <ul style="list-style-type: none">- Azimuth to find documentation of any amphibian movement between the roadside pond & the wetland- to include in next submission:<ul style="list-style-type: none">• Azimuth to clarify design justification on why we're not providing an amphibian culvert• Azimuth to provide clarify road design & how it wouldn't impede movement of amphibians• Azimuth to provide cross-section to be included to illustrate
MVPZ restoration requirements <ul style="list-style-type: none">• Reforestation & EMP - who is designing it?• Cost per acre?• Seeding?• Planting?• Density?	<ul style="list-style-type: none">- TRCA expectations:<ul style="list-style-type: none">• 30m buffer to wetland to be fully restored (i.e. Approx. Coverage of 60% - 70%)• Laurelpark's responsibility to provide restoration, not TRCA- Laurelpark's position: we're following policy --> if TRCA has no policy that states we need to provide restoration to all MVPZ areas, we shouldn't be responsible <p>ACTIONS:</p> <ul style="list-style-type: none">- Reforestation & Environmental Management Agreement (REMA)<ul style="list-style-type: none">• TRCA may not require an agreement as previously required --> TRCA to follow-up this• TRCA to follow up on the requirements for a REMA
Determine whether the 30m adjacent to the MNRF identified wetland should be restored	<ul style="list-style-type: none">- 30m buffer to wetland #9: <p>ACTIONS:</p> <ul style="list-style-type: none">- Azimuth to provide the following:<ul style="list-style-type: none">• documentation to state it does not have any significant ecological function• Assessment of Wetland #9 and MNRF reassessment report
Block 11	<ul style="list-style-type: none">- Block 11: small piece of land due to a mapping error but is still shown on plans (not included in area calculations) b/c the Town wanted it shown --> Town wants the TRCA to claim it- TRCA does NOT want it- IBI's suggestion: unfenced, left in private property, no natural heritage function, separate from Lot 1<ul style="list-style-type: none">• TRCA can support this in next submission- TRCA has no precedence for a situation like this

Hydrogeology

AGENDA ITEM	NOTES
Water budget	<ul style="list-style-type: none">- Azimuth noted that their calculations are more conservative than that of the TRCA's

<ul style="list-style-type: none"> • Rooftop evaporation calculation • Bio-retention swale recovery • Monthly data 	<ul style="list-style-type: none"> - Rooftop evaporation calculation <ul style="list-style-type: none"> • 9% surplus (using Azimuth's calculations) --> 2% deficit (using TRCA's preferred method) - 2% deficit is still acceptable - Bio-retention area <ul style="list-style-type: none"> • Oil-grit separator used for first cleaning • Azimuth's explanation noted by the TRCA <p>ACTIONS:</p> <ul style="list-style-type: none"> - Azimuth to touch base with Geon from the TRCA (will be back in January) regarding which rooftop evaporation calculation method the TRCA prefers - Azimuth agreed to provide both calculations for comparison in response letter
<p>Nitrate</p> <ul style="list-style-type: none"> • Background for RUP • Offsite well data & home construction 	<ul style="list-style-type: none"> - Azimuth's explanation noted by the TRCA <p>ACTIONS:</p> <ul style="list-style-type: none"> - Azimuth to provide the following: <ul style="list-style-type: none"> • Include explanation in response letter • Follow up with Golder regarding nitrate levels as per their peer review
<p>Kettle wetland</p> <ul style="list-style-type: none"> • Stormwater runoff • ORMCP 45(7) 	<ul style="list-style-type: none"> - TRCA: complex itself is known as the "kettle wetland complex" - Azimuth: Not on the list of kettle lakes from MNR - TRCA: agrees that they are not kettle wetlands, they are kettle features <p>ACTIONS:</p> <ul style="list-style-type: none"> - Azimuth to explain how stormwater that is going into the kettle features with no outlets will not lead to flooding
<p>Monitoring program</p> <ul style="list-style-type: none"> • Onsite wells & wetlands, private wells 	<ul style="list-style-type: none"> - TRCA: more interested in wetland monitoring, not the on-site & private wells - Azimuth: proposed 3 year long monitoring program - TRCA: as long as we meet requirements of the guidelines, we're fine - TRCA: wetlands sometimes take decades to respond depending on weather conditions <p>ACTIONS:</p> <ul style="list-style-type: none"> - Azimuth to prepare monitoring plan & contingency plan if the feature is getting too much water vs. getting too little water <ul style="list-style-type: none"> • Too much: change grading & build roadside ditches (Azimuth's suggestion) • Too little: ?
<p>Swale to be placed in public block between SWM ponds (?)</p>	<ul style="list-style-type: none"> - TRCA goal: to preserve function, not form - Azimuth: function of swale would be Overland flow route <ul style="list-style-type: none"> • no anticipated flow for small storm events <p>ACTIONS:</p> <ul style="list-style-type: none"> - Structure to maintain this function --> Calder can review LID guidelines to naturalize the proposed drainage channel (i.e. Riprap) - Calder to advise if drainage corridor can be shifted towards the lot line between 6 & 7

Stormwater Management / Bioretention Area

AGENDA ITEM	NOTES
Design criteria for erosion control (pg. 8 of FSR)	- TRCA: Don't need extended retention (current 5mm is okay)

Laurelpark: Proposed Draft Plan and Zoning By-Law Amendment Comment Review Meeting

February 6, 2020

2:00PM

Town of Caledon Palgrave Meeting Room

In Attendance:

IBI	Hamount	Azimuth Environmental	Calder Engineering	Caledon	TRCA
Julia Redfearn Scott Arbuckle Macarena Rojas	Carmen Jandu Marcus Greiner	Lisa Moran Mike Jones	Robert Whyte	Aidan Pereira Daniel Oh Leilani Lee-Yates Nick Pirzas Cindy Pillsworth Casey Blakely Rossana Favot	Jason Wagler

Planning

Agenda Item	Discussion	Actions
Lot 1 & 2 consolidation / proposed removal of common element condominium (TOC comment 11b and 28b)	We are proposing to consolidate lots 1 and 2, having them share a common driveway while lot 3 has its own separate access. Town wants to ensure driveway setbacks are met. -site specific zoning required.	No action at this time.
Official Plan policy interpretation (TOC comment 12, 19f, 28iii) Policy 7.1.9.11	IBI – Wording of policy 7.1.9.11. -The policy is not prescriptive and does not prohibit us from having a slope greater than 10 percent in certain circumstances.	The Town will review the engineering drawings and send us a response.
Policy 7.1.9.41	IBI - Policy 7.1.9.41 is also a prescriptive policy saying that cuts are normally restricted 1 to 2 meters. There is one area where the cut will need to be greater than 2 meters. Calder Engineering – a cut greater than 2 meters will be needed in order to facilitate the driveway grading for lots 1 and 2. The deepest cut to be made into the slope to facilitate the driveway will be about 2.5 m.	The issue of making cuts slightly greater than the 2.0-meter recommendation in Policy 7.1.9.41 was discussed. Town would like us to include an explanation as to why 2m cuts could not be achieved in our next submission. Town would like to see driveway slopes of 6% or less. Calder to include a cross section in their response demonstrating

		driveway slopes 6% or less.
Conveyance of Block 11	<p>TRCA indicated that they would not take ownership over the orphaned lands</p> <p>Town indicated that neither parks nor operations would want to take ownership of the land due to liability.</p>	The Town will provide a response prior to resubmission.

Civil

Agenda Item	Discussion	Actions
General – configuration, layout, grading, and servicing of lots 1, 2 and 3 (TOC comment 11b, 12)	The Town is concerned about the nature of the slope and if the vertical curb is being addressed.	Calder Engineering to demonstrate to the Town that the grading will meet requirements.
Lot 7 Revisions	Calder Engineering – outlined changes to be made to lot 7 which are; (remove drainage corridor from lot 7 and as a result the bio-retention pond increased in size and additional changes were made to the boulevard of the cul-de-sac.	Resubmission will be reflective of the new draft plan.
Bio retention facility design basis and design concept (TOC comment 15 and 25)	<p>Calder Engineering confirmed that a bio-retention facility was proposed and not an infiltration facility.</p> <p>Town is concerned with how water targets will be met and high groundwater level at the bio-retention facility area.</p>	<p>New information is required regarding groundwater levels.</p> <p>Calder Engineering to arrange a bore hole to be dug at this location and include findings in the next submission.</p> <p>Calder Engineering to provide a preliminary design for the bio-retention facility to the Town prior to finalization for submission.</p>
Golder Peer Review	Golder agrees with Azimuth's calculation for nitrates. Nitrates were from agricultural inputs prior to homes existing in adjacent subdivision.	<p>Azimuth to show D54 calculation in their addendum.</p> <p>Explanation of Nitrate calculation to be included in next submission.</p>

Natural heritage

Agenda Item	Discussion	Actions
Reforestation Agreement	<p>TRCA – Outlined that all planting done will be through the subdivision agreement.</p> <p>TRCA no longer requires a reforestation agreement.</p>	<p>TRCA requires that the developer will handle reforestation and provide security and monitoring prior to transferring lands to TRCA.</p> <p>To be included in the subdivision agreement.</p>
Need for eco passage	<p>Azimuth – Explained that there is no need for an eco passage under the road because the road is not a barrier to movement.</p>	<p>An eco passage is no longer required.</p>
Compensation and reforestation areas	<p>Azimuth has been using the Town of Caledon's compensation standard and states that it would be unreasonable to switch to TRCA guidelines.</p> <p>TRCA agreed that TRCA Post-Construction Restoration Guidelines do not need to be followed.</p> <p>The Town would like confirmation if compensation for the hedge row is acceptable to the TRCA.</p> <p>Azimuth states that the TRCA would like to see 70 percent coverage.</p> <p>TRCA needs to confirm if its guideline is applicable since we are not located in a NHS.</p>	<p>Coverage in the buffer areas needs more clarification in the next submission.</p> <p>Lisa to provide calculation of coverage we have to date and ensure that it meets the TRCA guidelines of 60 percent coverage.</p>
Transitional grading outside the structural envelope	<p>Any area within the MVPZ which is disturbed by transitional grading will be renaturalized.</p>	<p>The Town will assess the transitional grading and get back to us. They would like to see an additional design.</p>

General

Agenda Item	Discussion	Actions
Public meeting under the Planning Act	<p>IBI – brought up potential to schedule an open house.</p> <p>Town – would like to see changes made to the grading before scheduling an open house.</p> <p>IBI – In 2-3 weeks we should be ready for resubmitting.</p> <p>Town – If a submission is received by the end of February then maybe we can do an April public meeting. This will give us enough time to prepare comments. The public will like to see comments even if they are preliminary.</p>	<p>We should be ready to resubmit to the Town in 2-3 weeks.</p> <p>If the Town receives a submission by the end of February then it is possible for an April public meeting because this will give the Town enough time to prepare comments.</p>

APPENDIX C

TRCA Correspondence

Lisa Moran

From: Jason Wagler [Jason.Wagler@trca.ca]
Sent: February-05-20 9:54 AM
To: Lisa Moran
Subject: RE: Laurelpark - Town of Caledon

Good Morning Lisa,

The ORMCP policy specifies that the MVPZ is protected and, where possible, improved or restored with natural self-sustaining vegetation within it. While it is our preference that the entire MVPZs are restored with 60-70% coverage where it is possible, it is not required under current applicable policy if it is demonstrated that it is not possible to do so.

A reforestation agreement is not required and TRCA will not be involved in the restoration as part of the subdivision process. The required restoration plan would need to be implemented by the proponent. Securities and warranties for the restoration material and implementation would form part of the subdivision agreement.

Hope this helps,

Jason Wagler, MCIP RPP
Senior Planner
Development Planning and Permits | Development and Engineering Services

T: [416\) 661-6600](tel:416-661-6600) x5370
E: jason.wagler@trca.ca
A: [101 Exchange Avenue, Vaughan, ON, L4K 5R6](https://www.trca.ca) | [trca.ca](https://www.trca.ca)



From: Lisa Moran <Lisa@Azimuthenvironmental.Com>
Sent: Tuesday, February 04, 2020 3:30 PM
To: Jason Wagler <Jason.Wagler@trca.ca>
Subject: Laurelpark - Town of Caledon

Hi Jason,

Happy New Year!

This is a follow-up email to our meeting that was held in December (11th) last year related to the most recent TRCA comments for the Laurelpark Subdivision.

It is our understanding that it is TRCA's expectations that the 30m MVPZ are to be fully restored (approx. Coverage of 60-70%) and that it is Laurelpark's responsibility to provide restoration (design, installation), not TRCA [although for past project, TRCA did take on the restoration component (i.e. racetrack property) but it is our understanding that this is not typical nor preferred].

We have a couple outstanding questions that require resolution:

1. Have you had the opportunity to look into the MVPZ restoration requirements for this project? TRCA was going to look into the actual requirements based on policy. Laurelpark is happy to comply with existing policy.
2. Is a Reforestation and Environmental Management Agreement (REMA) required and if so what are the requirements of the REMA? (tied into the above)

Any clarification would be appreciated.

Regards,

Lisa Moran
Terrestrial Ecologist



Azimuth Environmental Consulting, Inc
642 Welham Road
Barrie, ON, L4N 9A1
ph: (705) 721-8451 ext 202
cell: (705) 331-1479
lisa@azimuthenvironmental.com
www.azimuthenvironmental.com

*Providing services in **hydrogeology, terrestrial and aquatic ecology & environmental engineering***

APPENDIX D

Water Quality Data

**CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,
642 WELHAM ROAD
BARRIE, ON L4N9A1
(705) 721-8451**

ATTENTION TO: Drew West

PROJECT: 08-019

AGAT WORK ORDER: 18T411590

MICROBIOLOGY ANALYSIS REVIEWED BY: Nivine Basily, Inorganics Report Writer

WATER ANALYSIS REVIEWED BY: Nivine Basily, Inorganics Report Writer

DATE REPORTED: Nov 26, 2018

PAGES (INCLUDING COVER): 10

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***NOTES**

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories (V1)

Page 1 of 10

Member of: Association of Professional Engineers and Geoscientists of Alberta (APEGA)
Western Enviro-Agricultural Laboratory Association (WEALA)
Environmental Services Association of Alberta (ESAA)

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*Results relate only to the items tested and to all the items tested
All reportable information as specified by ISO 17025:2005 is available from AGAT Laboratories upon request*



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T411590

PROJECT: 08-019

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE:

ATTENTION TO: Drew West

SAMPLED BY:

Microbiological Analysis (water)

DATE RECEIVED: 2018-11-20

DATE REPORTED: 2018-11-26

SAMPLE DESCRIPTION: 15535
SAMPLE TYPE: Water
DATE SAMPLED: 2018-11-19
G / S RDL 9721443

Parameter	Unit	G / S	RDL
Escherichia coli	CFU/100mL	1	NDOGT
Total Coliforms	CFU/100mL	1	NDOGT

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

9721443 NDOGT - No Data; Overgrown with Target, refers to over-crowding microbial growth;

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

Divine Basily



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T411590

PROJECT: 08-019

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
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TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE:

ATTENTION TO: Drew West

SAMPLED BY:

Water Quality Assessment - Drinking Water Samples

DATE RECEIVED: 2018-11-20

DATE REPORTED: 2018-11-26

		SAMPLE DESCRIPTION:		15535
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2018-11-19
Parameter	Unit	G / S	RDL	9721443
pH	pH Units		NA	7.91
Alkalinity (as CaCO ₃)	mg/L		5	383
Electrical Conductivity	µS/cm		2	998
Fluoride	mg/L	1.5	0.25	<0.25
Chloride	mg/L		0.50	44.6
Nitrate as N	mg/L	10.0	0.25	0.38
Nitrite as N	mg/L	1.0	0.25	<0.25
Bromide	mg/L		0.25	<0.25
Sulphate	mg/L		0.50	83.3
Calcium	mg/L		0.10	92.8
Magnesium	mg/L		0.10	25.2
Sodium	mg/L	20	0.10	23.6
Potassium	mg/L		0.10	76.5
Ammonia + Ammonium as N	mg/L		0.02	<0.02
Ortho Phosphate as P	mg/L		0.50	<0.50
Total Phosphorus	mg/L		0.02	<0.02
Reactive Silica	mg/L		0.10	16.3
Total Organic Carbon	mg/L		0.5	6.1
Colour	Apparent CU		5	19
Turbidity	NTU		0.5	5.6
Aluminum	mg/L		0.004	<0.004
Arsenic	mg/L	0.010	0.003	<0.003
Barium	mg/L	1	0.002	0.065
Boron	mg/L	5	0.010	0.020
Cadmium	mg/L	0.005	0.001	<0.001
Chromium	mg/L	0.05	0.003	<0.003
Copper	mg/L		0.003	<0.003
Iron	mg/L		0.010	0.558
Lead	mg/L	0.01	0.001	<0.001
Manganese	mg/L		0.002	0.046

Certified By:

Divine Basily



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T411590

PROJECT: 08-019

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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE:

ATTENTION TO: Drew West

SAMPLED BY:

Water Quality Assessment - Drinking Water Samples

DATE RECEIVED: 2018-11-20

DATE REPORTED: 2018-11-26

		SAMPLE DESCRIPTION: 15535	
		SAMPLE TYPE: Water	
		DATE SAMPLED: 2018-11-19	
Parameter	Unit	G / S	RDL 9721443
Molybdenum	mg/L		0.002 <0.002
Nickel	mg/L		0.003 <0.003
Selenium	mg/L	0.05	0.004 <0.004
Silver	mg/L		0.002 <0.002
Strontium	mg/L		0.005 0.357
Thallium	mg/L		0.006 <0.006
Tin	mg/L		0.002 <0.002
Titanium	mg/L		0.002 <0.002
Uranium	mg/L	0.02	0.002 <0.002
Vanadium	mg/L		0.002 <0.002
Zinc	mg/L		0.005 0.250
Total Dissolved Solids	mg/L		20 652
Total Hardness (as CaCO3)	mg/L		0.5 335

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Ontario Drinking Water Quality Standards. Na value is derived from O. Reg. 248
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9721443 Elevated RDLs indicate the degree of sample dilutions prior to the analysis to keep analytes within the calibration range, reduce matrix interference and/or to avoid contaminating the instrument.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

Divine Basily



AGAT Laboratories

Guideline Violation

AGAT WORK ORDER: 18T411590

PROJECT: 08-019

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
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<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

ATTENTION TO: Drew West

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
9721443	15535	O.Reg.169/03(mg/L)	Water Quality Assessment - Drinking Water Samples	Sodium	mg/L	20	23.6



Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T411590

PROJECT: 08-019

ATTENTION TO: Drew West

SAMPLING SITE:

SAMPLED BY:

Microbiology Analysis

RPT Date: Nov 26, 2018

DUPLICATE

REFERENCE MATERIAL

METHOD BLANK SPIKE

MATRIX SPIKE

PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Microbiological Analysis (water)

Escherichia coli	9721365	NDOGT	NDOGT	NA	< 1
Total Coliforms	9721365	NDOGT	NDOGT	NA	< 1

Comments: NDOGT - No Data; Overgrown with Target, refers to over-crowding microbial growth; NA - % RPD Not Applicable

Certified By:

Divine Basily

Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T411590

PROJECT: 08-019

ATTENTION TO: Drew West

SAMPLING SITE:

SAMPLED BY:

Water Analysis															
RPT Date: Nov 26, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Water Quality Assessment - Drinking Water Samples

pH	9717152		7.58	7.56	0.3%	NA	100%	90%	110%						
Alkalinity (as CaCO ₃)	9717152		95	96	0.5%	< 5	101%	80%	120%						
Electrical Conductivity	9708047		415	417	0.5%	< 2	101%	80%	120%						
Fluoride	9724612		<0.25	<0.25	NA	< 0.05	99%	90%	110%	107%	90%	110%	96%	80%	120%
Chloride	9724612		114	113	0.4%	< 0.10	92%	90%	110%	102%	90%	110%	103%	80%	120%
Nitrate as N	9724612		<0.25	<0.25	NA	< 0.05	94%	90%	110%	104%	90%	110%	105%	80%	120%
Nitrite as N	9724612		<0.25	<0.25	NA	< 0.05	NA	90%	110%	105%	90%	110%	99%	80%	120%
Bromide	9724612		<0.25	<0.25	NA	< 0.05	97%	90%	110%	103%	90%	110%	100%	80%	120%
Sulphate	9724612		28.1	28.1	0.0%	< 0.10	92%	90%	110%	99%	90%	110%	102%	80%	120%
Calcium	9710533		75.1	75.7	0.8%	< 0.05	94%	90%	110%	95%	90%	110%	93%	70%	130%
Magnesium	9710533		29.4	30.0	2.0%	< 0.05	94%	90%	110%	94%	90%	110%	95%	70%	130%
Sodium	9710533		10.7	10.9	1.3%	< 0.05	94%	90%	110%	94%	90%	110%	96%	70%	130%
Potassium	9710533		1.53	1.62	5.5%	< 0.05	98%	90%	110%	98%	90%	110%	98%	70%	130%
Ammonia + Ammonium as N	9723978		0.03	0.03	NA	< 0.02	105%	90%	110%	97%	90%	110%	100%	80%	120%
Ortho Phosphate as P	9724612		<0.50	<0.50	NA	< 0.10	103%	90%	110%	96%	90%	110%	103%	80%	120%
Total Phosphorus	9722590		0.04	0.04	NA	< 0.02	102%	80%	120%	103%	90%	110%	104%	70%	130%
Reactive Silica	9715653		10.3	10.3	0.4%	< 0.05	101%	90%	110%	102%	90%	110%	105%	80%	120%
Total Organic Carbon	9721443 9721443		6.1	5.8	6.1%	< 0.5	98%	90%	110%	98%	90%	110%	99%	80%	120%
Colour	9721443 9721443		19	19	NA	< 5	108%	90%	110%						
Turbidity	9721443 9721443		5.6	5.7	0.9%	< 0.5	101%	90%	110%						
Aluminum	9715602		0.006	0.007	NA	< 0.004	108%	90%	110%	94%	90%	110%	97%	70%	130%
Arsenic	9715602		0.005	0.005	NA	< 0.003	101%	90%	110%	105%	90%	110%	102%	70%	130%
Barium	9715602		0.159	0.158	0.6%	< 0.002	106%	90%	110%	101%	90%	110%	112%	70%	130%
Boron	9715602		0.035	0.040	NA	< 0.010	99%	90%	110%	92%	90%	110%	90%	70%	130%
Cadmium	9715602		<0.001	<0.001	NA	< 0.001	103%	90%	110%	103%	90%	110%	104%	70%	130%
Chromium	9715602		<0.003	<0.003	NA	< 0.003	97%	90%	110%	97%	90%	110%	92%	70%	130%
Copper	9715602		<0.003	<0.003	NA	< 0.003	91%	90%	110%	108%	90%	110%	96%	70%	130%
Iron	9715602		0.649	0.662	2.0%	< 0.010	92%	90%	110%	95%	90%	110%	107%	70%	130%
Lead	9715602		<0.001	<0.001	NA	< 0.001	102%	90%	110%	99%	90%	110%	98%	70%	130%
Manganese	9715602		0.149	0.161	7.4%	< 0.002	101%	90%	110%	101%	90%	110%	96%	70%	130%
Molybdenum	9715602		<0.002	<0.002	NA	< 0.002	108%	90%	110%	93%	90%	110%	100%	70%	130%
Nickel	9715602		<0.003	<0.003	NA	< 0.003	93%	90%	110%	103%	90%	110%	100%	70%	130%
Selenium	9715602		<0.004	<0.004	NA	< 0.004	105%	90%	110%	101%	90%	110%	100%	70%	130%
Silver	9715602		<0.002	<0.002	NA	< 0.002	107%	90%	110%	103%	90%	110%	97%	70%	130%
Strontium	9715602		0.226	0.236	4.2%	< 0.005	108%	90%	110%	99%	90%	110%	100%	70%	130%
Thallium	9715602		<0.006	<0.006	NA	< 0.006	106%	90%	110%	101%	90%	110%	99%	70%	130%
Tin	9715602		<0.002	<0.002	NA	< 0.002	101%	90%	110%	107%	90%	110%	107%	70%	130%
Titanium	9715602		<0.002	<0.002	NA	< 0.002	105%	90%	110%	100%	90%	110%	98%	70%	130%
Uranium	9715602		<0.002	<0.002	NA	< 0.002	106%	90%	110%	101%	90%	110%	106%	70%	130%

AGAT QUALITY ASSURANCE REPORT (V1)

Page 7 of 10

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Results relate only to the items tested and to all the items tested

Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T411590

PROJECT: 08-019

ATTENTION TO: Drew West

SAMPLING SITE:

SAMPLED BY:

Water Analysis (Continued)

RPT Date: Nov 26, 2018			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Vanadium	9715602		<0.002	<0.002	NA	< 0.002	103%	90%	110%	103%	90%	110%	102%	70%	130%
Zinc	9715602		<0.005	0.006	NA	< 0.005	92%	90%	110%	110%	90%	110%	107%	70%	130%
Total Dissolved Solids	9724612		534	530	0.8%	< 20	102%	80%	120%						

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By:


Method Summary

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T411590

PROJECT: 08-019

ATTENTION TO: Drew West

SAMPLING SITE:
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Microbiology Analysis			
Escherichia coli	MIC-93-7010	EPA 1604	Membrane Filtration
Total Coliforms	MIC-93-7010	EPA 1604	Membrane Filtration
Water Analysis			
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE
Alkalinity (as CaCO ₃)	INOR-93-6000	SM 2320 B	PC TITRATE
Electrical Conductivity	INOR-93-6016	SM 2510 B	EC METER
Fluoride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Bromide	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Calcium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Magnesium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Sodium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Potassium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Ammonia + Ammonium as N	INOR-93-6059	QuikChem 10-107-06-1-J & SM 4500 NH ₃ -F	LACHAT FIA
Ortho Phosphate as P	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Total Phosphorus	INOR-93-6057	QuikChem 10-115-01-3-A & SM 4500-P I	LACHAT FIA
Reactive Silica	INOR-93-6047	SmartChem Method SIL-001-A & SM 4500 Si-F 18 & 19th	DISCRETE ANALYZER
Total Organic Carbon	INOR-93-6049	EPA 415.1 & SM 5310	SHIMADZU CARBON ANALYZER
Colour	INOR-93-6046	SM 2120 C	SPECTROPHOTOMETER
Turbidity	INOR-93-6044	SM 2130 B	NEPHELOMETER
Aluminum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Iron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Manganese	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Strontium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Tin	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Titanium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Total Dissolved Solids	INOR-93-6028	SM 2540 C	BALANCE
Total Hardness (as CaCO ₃)	MET-93-6105	EPA SW-846 6010C & 200.7	CALCULATION



AGAT

Laboratories

Mibi

5835 Coopers Avenue
Mississauga, ON
L4Z 1Y2

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4.3.6-34

Laboratory Use Only

Arrival Condition: ☐ Good ☐ Poor (complete notes)

Arrival Temperature: 3.4-3.2

AGAT Job Number: 18T411590

Notes:

Drinking Water Chain of Custody Record

P: 905.712.5100 • F: 905.712.5122 • TF: 1.800.856.6261

Client Information

Company: Azimuth Environmental
Contact: Drew West
Address: 642 Welham Road
Barrie, ON
Phone: 705-721-8451 Fax: _____
PO #: _____
Client Project #: 08-019
AGAT Quotation #: _____

Report Information

1. Name: Drew West
Email: drew@azimuthenvironmental.com
2. Name: _____
Email: _____

Report Format

☒ Single Sample per page
☐ Multiple Samples per page

Facility Type (Check all that are applicable)

☐ Large OR ☐ Small
☒ Residential OR ☐ Non-Residential
☐ Municipal OR ☐ Non-Municipal

+ Water Type

(Specify in column below)
Raw (R), Treated (TR),
Distribution (D), Tap (TP)
Private Well (P)

Turnaround Time Required (TAT) *

Regular TAT 7 to 14 business days ☒

Rush TAT (Please provide prior notification)
5 to 7 business days ☐ Rush surcharges apply
3 to 5 business days ☐
1 to 3 business days ☐

Date Required (Rush surcharges may apply): _____

Requirements (Check one)

☐ O. Regulation 170 ☒ Not Applicable
☐ O. Regulation 243 ☐ Other (Please Specify)
☐ O. Regulation 318/319

IS THIS WATER BEING CONSUMED BY HUMANS? ☒ Yes ☐ No

DO THE RESULTS REQUIRE REPORTING TO THE MOECC'S DWIS OR MOH'S LRMA? ☐ Yes ☒ No

CLIENT IS RESPONSIBLE TO COMPLETE AND SUBMIT LAB SERVICE NOTIFICATION (LSN) FORM TO THE MOECC/PHU. FAILURE TO DO SO MAY DELAY REPORTING.

NOTIFICATION INFORMATION MUST BE COMPLETE BELOW UPON SUBMISSION OF SAMPLES. LABORATORY ANALYSIS WILL NOT COMMENCE UNTIL ALL INFORMATION HAS BEEN PROVIDED.

SAMPLE IDENTIFICATION/LOCATION	DATE SAMPLED	TIME SAMPLED	WATER TYPE *	# OF CONTAINERS	CHLORINE RESIDUAL (incl. Units)	STANDING	FLUSHED	COMMENTS/STANDING TIME (IN MINUTES)	Inorganics (Sch. 23)	Organics (Sch. 24)	Lead	Fluoride	Sodium	Turbidity	Nitrate, Nitrite	Trihalomethanes	E.coli, Total Coliforms	WQA (no mercury)
15535	Nov 19	14:15	R	5													X	X

Samples Taken By (Print Name and Sign):

Drew West *[Signature]*

* TAT is exclusive of weekends and statutory holidays. Prior arrangements must be made with the laboratory in order to submit Microbiology samples on Fridays

NOTIFICATION INFORMATION - (required to report adverse results as per the Safe Drinking Water Act) - Laboratory analysis will not commence until all information is received.

INFORMATION FOR ADVERSE REPORTING				MEDICAL OFFICER OF HEALTH (MOH)			
Waterworks Name:	Phone:	Fax:	Region:				
MOECC# (ie: Waterworks #):	After Hours Phone:		PHU Contact:				
Contact: <u>See Above</u>	Address/Location (if different from client above)		Phone:	Fax:			
Email:			Email:				
Samples Relinquished By (Print Name and Sign):	Date/Time:	Samples Received By (Print Name and Sign):	Date/Time:				
<u>Drew West</u> <i>[Signature]</i>	<u>Nov 20/18</u>	<u>Ricardo</u> <i>[Signature]</i>	<u>Nov 20/18</u>				
Samples Relinquished By (Print Name and Sign):	Date/Time:	Samples Received By (Print Name and Sign):	Date/Time:				
<u>Ricardo</u> <i>[Signature]</i>	<u>4.27</u>						
Samples Relinquished By (Print Name and Sign):	Date/Time:	Samples Received By (Print Name and Sign):	Date/Time:				

Pink Copy - Client
Yellow/Golden Copy - AGAT
White Copy- AGAT

Page 1 of 1

Nº: **DW 52629**

**CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,
642 WELHAM ROAD
BARRIE, ON L4N9A1
(705) 721-8451**

ATTENTION TO: Drew West

PROJECT: 08-019

AGAT WORK ORDER: 18T413981

MICROBIOLOGY ANALYSIS REVIEWED BY: Rocio Morales, Inorganics Lab Supervisor

WATER ANALYSIS REVIEWED BY: Nivine Basily, Inorganics Report Writer

DATE REPORTED: Dec 10, 2018

PAGES (INCLUDING COVER): 10

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***NOTES**

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories (V1)

Member of: Association of Professional Engineers and Geoscientists of Alberta (APEGA)
Western Enviro-Agricultural Laboratory Association (WEALA)
Environmental Services Association of Alberta (ESAA)

AGAT Laboratories is accredited to ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA) and/or Standards Council of Canada (SCC) for specific tests listed on the scope of accreditation. AGAT Laboratories (Mississauga) is also accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) for specific drinking water tests. Accreditations are location and parameter specific. A complete listing of parameters for each location is available from www.cala.ca and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation.

*Results relate only to the items tested and to all the items tested
All reportable information as specified by ISO 17025:2005 is available from AGAT Laboratories upon request*

Page 1 of 10



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T413981

PROJECT: 08-019

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE:

ATTENTION TO: Drew West

SAMPLED BY:

Microbiological Analysis (water)

DATE RECEIVED: 2018-11-27

DATE REPORTED: 2018-12-10

		SAMPLE DESCRIPTION:		15586	15609
		SAMPLE TYPE:		Water	Water
		DATE SAMPLED:		2018-11-26	2018-11-26
Parameter	Unit	G / S	RDL	9741763	9741772
Escherichia coli	CFU/100mL		1	NDOGT	NDOGT
Total Coliforms	CFU/100mL		1	NDOGT	NDOGT

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

9741763-9741772 NDOGT - No Data; Overgrown with Target, refers to over-crowding microbial growth;

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T413981

PROJECT: 08-019

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

ATTENTION TO: Drew West

SAMPLING SITE:

SAMPLED BY:

Water Quality Assessment - Drinking Water Samples

DATE RECEIVED: 2018-11-27

DATE REPORTED: 2018-12-10

		SAMPLE DESCRIPTION:		15586		15609
		SAMPLE TYPE:		Water		Water
		DATE SAMPLED:		2018-11-26		2018-11-26
Parameter	Unit	G / S	RDL	9741763	RDL	9741772
pH	pH Units		NA	7.78	NA	7.65
Alkalinity (as CaCO ₃)	mg/L		5	381	5	247
Electrical Conductivity	µS/cm		2	771	2	983
Fluoride	mg/L	1.5	0.10	<0.10	0.25	<0.25
Chloride	mg/L		0.20	10.4	0.50	132
Nitrate as N	mg/L	10.0	0.10	3.36	0.25	3.82
Nitrite as N	mg/L	1.0	0.10	<0.10	0.25	<0.25
Bromide	mg/L		0.10	<0.10	0.25	<0.25
Sulphate	mg/L		0.20	28.7	0.50	48.1
Calcium	mg/L		0.05	126	0.10	101
Magnesium	mg/L		0.05	17.8	0.10	24.7
Sodium	mg/L	20	0.05	4.57	0.10	37.3
Potassium	mg/L		0.05	1.43	0.10	1.05
Ammonia + Ammonium as N	mg/L		0.02	0.05	0.02	0.10
Ortho Phosphate as P	mg/L		0.20	<0.20	0.50	<0.50
Total Phosphorus	mg/L		0.02	<0.02	0.02	<0.02
Reactive Silica	mg/L		0.25	14.4	0.05	14.7
Total Organic Carbon	mg/L		0.5	3.5	0.5	2.7
Colour	Apparent CU		5	6	5	<5
Turbidity	NTU		0.5	1.6	0.5	1.3
Aluminum	mg/L		0.004	0.005	0.004	0.006
Arsenic	mg/L	0.010	0.003	<0.003	0.003	<0.003
Barium	mg/L	1	0.002	0.039	0.002	0.037
Boron	mg/L	5	0.010	<0.010	0.010	0.022
Cadmium	mg/L	0.005	0.001	<0.001	0.001	<0.001
Chromium	mg/L	0.05	0.003	<0.003	0.003	<0.003
Copper	mg/L		0.003	<0.003	0.003	<0.003
Iron	mg/L		0.010	<0.010	0.010	<0.010
Lead	mg/L	0.01	0.001	<0.001	0.001	<0.001
Manganese	mg/L		0.002	0.003	0.002	<0.002

Certified By:

Divine Basily



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T413981

PROJECT: 08-019

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE:

ATTENTION TO: Drew West

SAMPLED BY:

Water Quality Assessment - Drinking Water Samples

DATE RECEIVED: 2018-11-27

DATE REPORTED: 2018-12-10

		SAMPLE DESCRIPTION:		15586		15609
		SAMPLE TYPE:		Water		Water
		DATE SAMPLED:		2018-11-26		2018-11-26
Parameter	Unit	G / S	RDL	9741763	RDL	9741772
Molybdenum	mg/L		0.002	<0.002	0.002	<0.002
Nickel	mg/L		0.003	<0.003	0.003	<0.003
Selenium	mg/L	0.05	0.004	<0.004	0.004	<0.004
Silver	mg/L		0.002	<0.002	0.002	<0.002
Strontium	mg/L		0.005	0.263	0.005	0.210
Thallium	mg/L		0.006	<0.006	0.006	<0.006
Tin	mg/L		0.002	<0.002	0.002	<0.002
Titanium	mg/L		0.002	<0.002	0.002	<0.002
Uranium	mg/L	0.02	0.002	<0.002	0.002	<0.002
Vanadium	mg/L		0.002	<0.002	0.002	<0.002
Zinc	mg/L		0.005	0.182	0.005	<0.005
Total Dissolved Solids	mg/L		20	398	20	464
Total Hardness (as CaCO3)	mg/L		0.5	388	0.5	354

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Ontario Drinking Water Quality Standards. Na value is derived from O. Reg. 248
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.
9741763-9741772 Elevated RDLs indicate the degree of sample dilutions prior to the analysis to keep analytes within the calibration range, reduce matrix interference and/or to avoid contaminating the instrument.
Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

Divine Basily



AGAT Laboratories

Guideline Violation

AGAT WORK ORDER: 18T413981

PROJECT: 08-019

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
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<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

ATTENTION TO: Drew West

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
9741772	15609	O.Reg.169/03(mg/L)	Water Quality Assessment - Drinking Water Samples	Sodium	mg/L	20	37.3

Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T413981

PROJECT: 08-019

ATTENTION TO: Drew West

SAMPLING SITE:

SAMPLED BY:

Microbiology Analysis

RPT Date: Dec 10, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE	
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper

Microbiological Analysis (water)

Escherichia coli	9741763	9741763	NDOGT	NDOGT	NA	< 1
Total Coliforms	9741763	9741763	NDOGT	NDOGT	NA	< 1

Comments: NDOGT - No Data; Overgrown with Target, refers to over-crowding microbial growth; NA - % RPD Not Applicable

Certified By: _____



Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T413981

PROJECT: 08-019

ATTENTION TO: Drew West

SAMPLING SITE:

SAMPLED BY:

Water Analysis															
RPT Date: Dec 10, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Water Quality Assessment - Drinking Water Samples

pH	9746084		5.75	5.72	0.5%	NA	99%	90%	110%						
Alkalinity (as CaCO ₃)	9746084		<5	<5	NA	< 5	103%	80%	120%						
Electrical Conductivity	9745152		1219	1224	0.4%	< 2	103%	80%	120%						
Fluoride	9741772	9741772	<0.25	<0.25	NA	< 0.05	100%	90%	110%	103%	90%	110%	106%	80%	120%
Chloride	9741772	9741772	132	132	0.0%	< 0.10	95%	90%	110%	100%	90%	110%	101%	80%	120%
Nitrate as N	9741772	9741772	3.82	3.80	0.6%	< 0.05	93%	90%	110%	103%	90%	110%	108%	80%	120%
Nitrite as N	9741772	9741772	<0.25	<0.25	NA	< 0.05	NA	90%	110%	99%	90%	110%	103%	80%	120%
Bromide	9741772	9741772	<0.25	<0.25	NA	< 0.05	107%	90%	110%	98%	90%	110%	106%	80%	120%
Sulphate	9741772	9741772	48.1	47.9	0.4%	< 0.10	95%	90%	110%	99%	90%	110%	105%	80%	120%
Calcium	9742750		98.4	99.1	0.7%	< 0.05	99%	90%	110%	99%	90%	110%	94%	70%	130%
Magnesium	9742750		12.0	11.9	0.7%	< 0.05	93%	90%	110%	94%	90%	110%	93%	70%	130%
Sodium	9742750		4.51	4.50	0.2%	< 0.05	93%	90%	110%	93%	90%	110%	93%	70%	130%
Potassium	9742750		2.81	2.75	2.1%	< 0.05	92%	90%	110%	92%	90%	110%	94%	70%	130%
Ammonia + Ammonium as N	9739178		0.09	0.09	NA	< 0.02	102%	90%	110%	106%	90%	110%	96%	80%	120%
Ortho Phosphate as P	9741772	9741772	<0.50	<0.50	NA	< 0.10	109%	90%	110%	100%	90%	110%	100%	80%	120%
Total Phosphorus	9741763	9741763	<0.02	<0.02	NA	< 0.02	101%	80%	120%	95%	90%	110%	100%	70%	130%
Reactive Silica	9741763	9741763	14.4	14.6	1.5%	< 0.05	99%	90%	110%	101%	90%	110%	108%	80%	120%
Total Organic Carbon	9741763	9741763	3.5	3.3	5.6%	< 0.5	98%	90%	110%	96%	90%	110%	91%	80%	120%
Colour	9741763	9741763	6	6	NA	< 5	107%	90%	110%						
Turbidity	9737324		3180	3240	1.9%	< 0.5	98%	90%	110%						
Aluminum	9741763	9741763	0.005	0.005	NA	< 0.004	103%	90%	110%	95%	90%	110%	90%	70%	130%
Arsenic	9741763	9741763	<0.003	<0.003	NA	< 0.003	97%	90%	110%	94%	90%	110%	112%	70%	130%
Barium	9741763	9741763	0.039	0.035	10.8%	< 0.002	105%	90%	110%	100%	90%	110%	99%	70%	130%
Boron	9741763	9741763	<0.010	<0.010	NA	< 0.010	103%	90%	110%	100%	90%	110%	83%	70%	130%
Cadmium	9741763	9741763	<0.001	<0.001	NA	< 0.001	102%	90%	110%	99%	90%	110%	103%	70%	130%
Chromium	9741763	9741763	<0.003	<0.003	NA	< 0.003	100%	90%	110%	101%	90%	110%	88%	70%	130%
Copper	9741763	9741763	<0.003	<0.003	NA	< 0.003	99%	90%	110%	104%	90%	110%	91%	70%	130%
Iron	9741763	9741763	<0.010	<0.010	NA	< 0.010	90%	90%	110%	97%	90%	110%	97%	70%	130%
Lead	9741763	9741763	<0.001	<0.001	NA	< 0.001	103%	90%	110%	104%	90%	110%	95%	70%	130%
Manganese	9741763	9741763	0.003	0.003	NA	< 0.002	97%	90%	110%	96%	90%	110%	88%	70%	130%
Molybdenum	9741763	9741763	<0.002	<0.002	NA	< 0.002	98%	90%	110%	93%	90%	110%	110%	70%	130%
Nickel	9741763	9741763	<0.003	<0.003	NA	< 0.003	93%	90%	110%	94%	90%	110%	83%	70%	130%
Selenium	9741763	9741763	<0.004	<0.004	NA	< 0.004	107%	90%	110%	97%	90%	110%	115%	70%	130%
Silver	9741763	9741763	<0.002	<0.002	NA	< 0.002	100%	90%	110%	104%	90%	110%	98%	70%	130%
Strontium	9741763	9741763	0.263	0.247	6.3%	< 0.005	96%	90%	110%	92%	90%	110%	93%	70%	130%
Thallium	9741763	9741763	<0.006	<0.006	NA	< 0.006	102%	90%	110%	100%	90%	110%	93%	70%	130%
Tin	9741763	9741763	<0.002	<0.002	NA	< 0.002	104%	90%	110%	105%	90%	110%	103%	70%	130%
Titanium	9741763	9741763	<0.002	<0.002	NA	< 0.002	96%	90%	110%	96%	90%	110%	96%	70%	130%
Uranium	9741763	9741763	<0.002	<0.002	NA	< 0.002	93%	90%	110%	94%	90%	110%	94%	70%	130%

Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T413981

PROJECT: 08-019

ATTENTION TO: Drew West

SAMPLING SITE:

SAMPLED BY:

Water Analysis (Continued)

RPT Date: Dec 10, 2018			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Vanadium	9741763	9741763	<0.002	<0.002	NA	< 0.002	98%	90%	110%	97%	90%	110%	96%	70%	130%
Zinc	9741763	9741763	0.182	0.186	1.9%	< 0.005	99%	90%	110%	99%	90%	110%	95%	70%	130%
Total Dissolved Solids	9747778		348	356	2.3%	< 20	98%	80%	120%						

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By:


Method Summary

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T413981

PROJECT: 08-019

ATTENTION TO: Drew West

SAMPLING SITE:
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Microbiology Analysis			
Escherichia coli	MIC-93-7010	EPA 1604	Membrane Filtration
Total Coliforms	MIC-93-7010	EPA 1604	Membrane Filtration
Water Analysis			
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE
Alkalinity (as CaCO ₃)	INOR-93-6000	SM 2320 B	PC TITRATE
Electrical Conductivity	INOR-93-6016	SM 2510 B	EC METER
Fluoride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Bromide	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Calcium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Magnesium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Sodium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Potassium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Ammonia + Ammonium as N	INOR-93-6059	QuikChem 10-107-06-1-J & SM 4500 NH ₃ -F	LACHAT FIA
Ortho Phosphate as P	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Total Phosphorus	INOR-93-6057	QuikChem 10-115-01-3-A & SM 4500-P I	LACHAT FIA
Reactive Silica	INOR-93-6047	SmartChem Method SIL-001-A & SM 4500 Si-F 18 & 19th	DISCRETE ANALYZER
Total Organic Carbon	INOR-93-6049	EPA 415.1 & SM 5310	SHIMADZU CARBON ANALYZER
Colour	INOR-93-6046	SM 2120 C	SPECTROPHOTOMETER
Turbidity	INOR-93-6044	SM 2130 B	NEPHELOMETER
Aluminum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Iron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Manganese	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Strontium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Tin	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Titanium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Total Dissolved Solids	INOR-93-6028	SM 2540 C	BALANCE
Total Hardness (as CaCO ₃)	MET-93-6105	EPA SW-846 6010C & 200.7	CALCULATION



AGAT

Laboratories

Albi

5835 Coopers Avenue
Mississauga, ON
L4Z 1Y2

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Laboratory Use Only

Arrival Condition: ☐ Good ☐ Poor (complete notes)

Arrival Temperature: 3.5-5.1-28

AGAT Job Number: 18T413981

Notes:

Drinking Water Chain of Custody Record

P: 905.712.5100 • F: 905.712.5122 • TF: 1.800.856.6261

Client Information

Company: Azimuth Environmental
Contact: Drew West
Address: 642 Welham Road
Barrie, ON
Phone: 705-721-8451 Fax: _____
PO #: _____
Client Project #: 08-019
AGAT Quotation #: _____

Report Information

1. Name: Drew West
Email: drew@azimuthenvironmental.com
2. Name: _____
Email: _____

Report Format

☐ Single Sample per page
☒ Multiple Samples per page

Facility Type (Check all that are applicable)

☐ Large OR ☐ Small
☒ Residential OR ☐ Non-Residential
☐ Municipal OR ☐ Non-Municipal

+ Water Type

(Specify in column below)
Raw (R), Treated (TR),
Distribution (D), Tap (TP)
Private Well (P)

Turnaround Time Required (TAT) *

Regular TAT 7 to 14 business days ☒

Rush TAT 5 to 7 business days ☐ Rush surcharges apply
3 to 5 business days ☐
1 to 3 business days ☐

Date Required (Rush surcharges may apply): _____

Requirements (Check one)

☐ O. Regulation 170 ☒ Not Applicable
☐ O. Regulation 243 ☐ Other (Please Specify)
☐ O. Regulation 318/319

IS THIS WATER BEING CONSUMED BY HUMANS?

☒ Yes ☐ No

DO THE RESULTS REQUIRE REPORTING TO THE MOECC'S DWIS OR MOH'S LRMA?

☐ Yes ☒ No

CLIENT IS RESPONSIBLE TO COMPELLE AND SUBMIT LAB SERVICE NOTIFICATION (LSN) FORM TO THE MOECC/PHU. FAILURE TO DO SO MAY DELAY REPORTING.

NOTIFICATION INFORMATION MUST BE COMPLETE BELOW UPON SUBMISSION OF SAMPLES. LABORATORY ANALYSIS WILL NOT COMMENCE UNTIL ALL INFORMATION HAS BEEN PROVIDED.

SAMPLE IDENTIFICATION/LOCATION	DATE SAMPLED	TIME SAMPLED	WATER TYPE *	# OF CONTAINERS	CHLORINE RESIDUAL (incl. Units)	STANDING	FLUSHED	COMMENTS/STANDING TIME (IN MINUTES)	Inorganics (Sch. 23)	Organics (Sch. 24)	Lead	Fluoride	Sodium	Turbidity	Nitrate, Nitrite	Trihalomethanes	E.coli, Total Coliforms	WQA (mercury)
15586	Nov 26	12:00	R	5													X	X
15609	Nov 26	12:30	R	5													X	X

Samples Taken By (Print Name and Sign):

Drew West *[Signature]*

* TAT is exclusive of weekends and statutory holidays. Prior arrangements must be made with the laboratory in order to submit Microbiology samples on Fridays

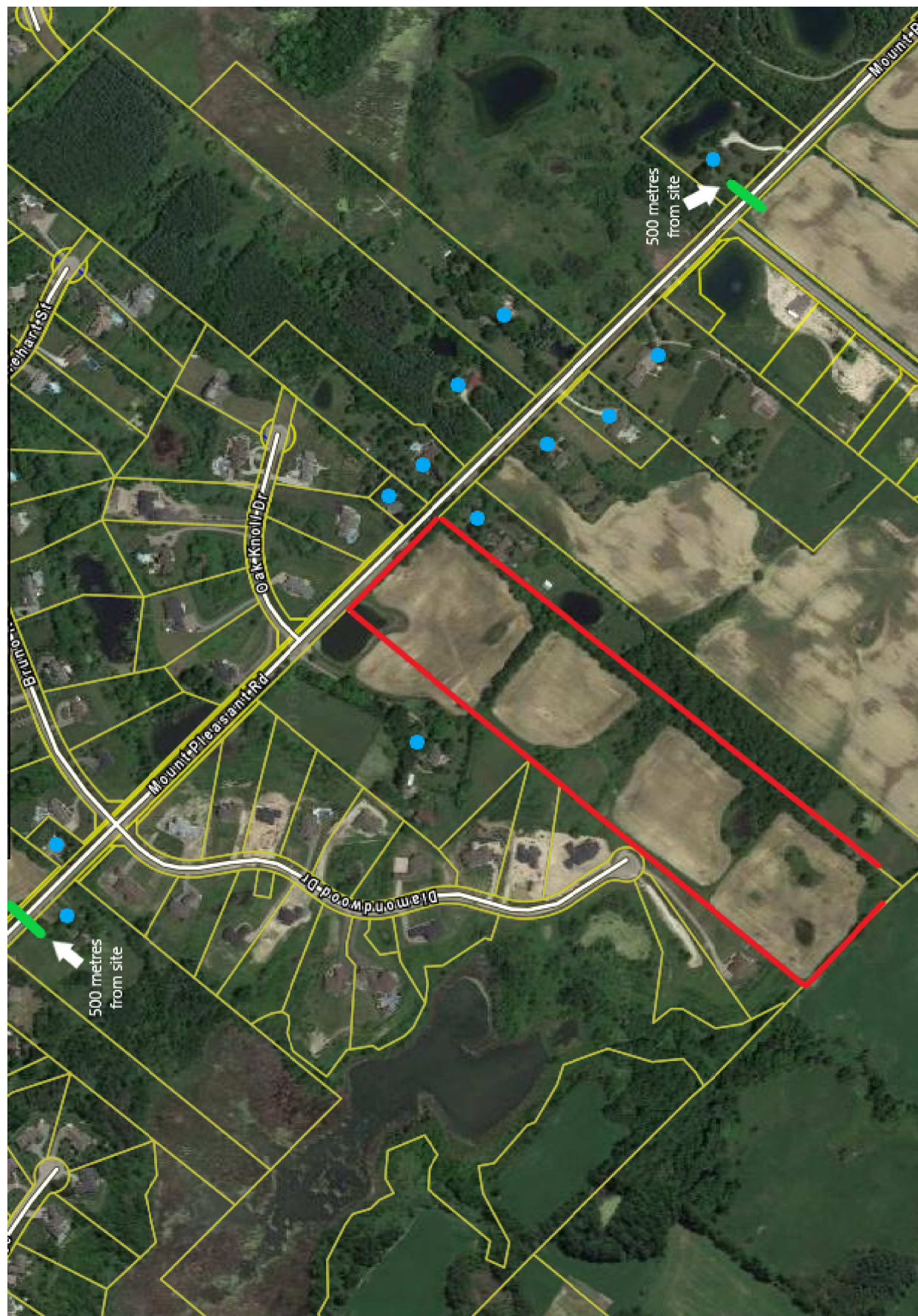
NOTIFICATION INFORMATION - (required to report adverse results as per the Safe Drinking Water Act) - Laboratory analysis will not commence until all information is received.

INFORMATION FOR ADVERSE REPORTING			MEDICAL OFFICER OF HEALTH (MOH)		
Waterworks Name:	Phone:	Fax:	Region:		
MOECCOF (ie. Waterworks #):	After Hours Phone:		PHU Contact:		
Contact: <u>See Above</u>	Address/Location (if different from client above)		Phone:		Fax:
Email:			Email:		

Samples Relinquished By (Print Name and Sign): <u>Drew West</u> <i>[Signature]</i>	Date/Time: <u>Nov 27/18</u>	Samples Received By (Print Name and Sign): <i>[Signature]</i>	Date/Time: <u>Nov 27/18 9:27</u>	Pink Copy - Client Yellow/Golden Copy - AGAT White Copy- AGAT	Page <u>1</u> of <u>1</u> Nº: DW 52630
Samples Relinquished By (Print Name and Sign): <i>[Signature]</i>	Date/Time: <u>Nov 27/18</u>	Samples Received By (Print Name and Sign):	Date/Time:		
Samples Relinquished By (Print Name and Sign):	Date/Time:	Samples Received By (Print Name and Sign):	Date/Time:		

APPENDIX E

Door-to-door Survey Information and Contingency Plan



WELL CONTINGENCY PLAN – LAURELPARK DEVELOPMENT

RESPONSE PLAN

When a complaint is received, a three-step action plan will be implemented. The initial steps are intended to confirm the veracity of the complaint and determine if the problem is related to site activities. If it is concluded that the problem is due to the site activities, then remedial steps are undertaken to return the facilities to their previous function. Because of the planned site activities and the types of wells used in the area, the focus will be on the reduction of well yields due to lowering of the water table.

Potable water will be immediately supplied to the property owner as an initial step to alleviate immediate issues due to lack of drinking water. This initial supply will consist of two 5 gallon bottles of water plus a case of bottled drinking water.

Post-Complaint Site Inspection

An inspection of the subject property will be undertaken to evaluate the problem, normally within 24 hours. There can be a number of potential causes for water shortage. In some cases, these can be simple physical conditions, such as pump failure or pressure tank malfunction. The initial site inspection will identify:

- Measure water levels in the well,
- Examine the integrity of the well casing and well construction,
- Confirm the pump function by surcharging the well and operating the pump,
- Inspect the plumbing system and water treatment equipment to ensure functionality,
- Evaluate the water use pattern at the property to determine if the use pattern has changed in a manner that would now exceed the well capacity,
- Examine the surrounding property to identify other water users and potential sources for interference,
- Examine activities on the subject property to document the extent of water-taking activities. Inspection should also examine along site water courses to identify ground water discharge areas and look for any unusual discharge amounts.
- Manual measurement of water levels in the monitoring well network, particularly in monitoring wells near the complainant's property. Wherever possible, wells on adjacent properties should also be evaluated.
- If there is reasonable cause to believe that the subject property may be the cause of the water shortage, a replacement supply will be made available immediately at the cost of the developer. Although other options may be available, the short term solution is expected to be the connection of a cistern or holding tank to the



plumbing system, and filled with trucked in water from the local municipal system.

Subsequent Evaluation

Subsequent evaluations are to be undertaken to confirm the cause of the water shortage for the well, and the liability for its replacement / mitigation. These evaluations will include:

- an assessment of natural climate conditions,
- hydraulic testing of the well to determine if its sustainable yield has been modified from that listed on the MECP well log. This will involve pump testing of the well and monitoring water levels during drawdown and recovery phases,
- consideration of water table trends, particularly for ground water monitors that are closest to the complainant's property. Interpretation of the trends should also include the all uses of ground water within 500m,
- consideration of the construction activities at the subject property and their potential impacts on the ground water table.

A summary report will be prepared for each separate property and provided to the Town/Region for review. Once finalized, the report will also be provided to the property owner. The report will address all information gathered during the evaluation as well as a discussion of responsibility and mitigation.

Remedial Options

If the subsequent evaluation confirms that activities on the subject property are responsible for the water shortage, then the remedial activities will be done under the responsibility of the developer. If the evaluation considers that the responsibility is both the proponent's and the property owner's, then the costs will be considered based on the proportion of responsibility. If the conclusion is reached that the developer activities are not responsible for water shortage, then the responsibility for all remedial works shall be borne by the property owner. The appropriate remedial option needs to be tailored to the specific cause of the water shortage problem. The remedial options could include:

- Installation of additional storage or pressure capacity,
- Cessation or modification to the on-site activities to reduce the drawdown, allowing the water table to recover, increasing well yield,
- Installation of water treatment equipment,
- Repairs to the existing well,
- Providing a temporary water tank filled with municipal water,
- Connection to the municipal drinking water system (if appropriate).

APPENDIX F

MNRF Correspondence Regarding PSW

August 22, 2017

Lisa Moran
Terrestrial Ecologist
Azimuth Environmental Consulting Inc.
642 Welham Road
Barrie ON L4N 9A1
lisa@azimuthenvironmental.com

Re: MNRF response to Azimuth Letter of September 21, 2016 concerning the recommended removal of two wetlands in the Provincially Significant Mount Wolfe Wetland Complex, Town of Caledon

In a separate letter, the Ministry of Natural Resources & Forestry (MNRF) Aurora District is sending Azimuth Environmental Consulting Inc. an update and expansion of the wetland evaluation for the provincially significant Mount Wolfe Wetland Complex in the Town of Caledon. The update is based on fieldwork carried out by MNRF Aurora District in 2013 to 2015 and 2017, and previous fieldwork in 2009 and 2012. The wetland complex has expanded from 9 wetlands in the 2012 evaluation to 122 wetlands in this latest version. The wetland complex is now bounded by the Cedar Mills community and Hunsden Sideroad to the north, Mount Pleasant Road to the east, Mount Hope Road/Humber Trail/Peel Regional Road 50 to the west and Castlederg Road to the south.

In regards to the two wetlands that Azimuth has requested be removed from the Mount Wolfe Wetland Complex, the Ministry has determined that Wetland No. 9 will be excluded, while Wetland No. 8 will remain in the complex. The former Wetland No. 9 is now an MNRF Identified Wetland.

This decision is based on Ministry site visits with Azimuth staff on April 5 and 19, 2017, the initial site visit on July 12, 2012, again with Azimuth staff, and amphibian records provided by Azimuth from 2008 and 2013. During the site visits, Wetland No. 9 was found to have no standing water and no amphibians were found to be breeding in the wetland or using it as habitat. As well, a considerable part of the western portion of the wetland had been plowed over and converted to agricultural crop during the 2017 site visits.

As required in the Ontario Wetland Evaluation System (OWES) Southern Manual, a rationale must be provided for the inclusion of wetland units that are under two hectares in size. It should be noted that the manual only provides a few examples of criteria that can be used to justify the inclusion of a smaller wetland in an evaluation. Wetland No. 8 is 0.06 hectares in size and so a rationale has been provided for its inclusion in the wetland complex. The rationale is summarized in the wetland evaluation which has been forwarded to you in a separate letter.

Wetland No. 8 is a natural kettle wetland that occurs on the Oak Ridges Moraine. Kettle wetlands are considered uncommon in southern Ontario because they are confined to moraines. On the Oak Ridges Moraine, wetlands are considered rare in OWES covering only six percent of the surface area. The majority of the wetlands on the Moraine consist of smaller kettle wetlands that are under two hectares in size. For example, in the Mount Wolfe Wetland

Complex of the 122 wetlands in the complex, 112 of them are less than two hectares in size. To represent the diversity of wetlands on this landscape it is critical to include these smaller wetlands.

Wetland No. 8 supports a cattail marsh dominated by native species of Broad-leaved Cattail (*Typha latifolia*), with secondary layers of Rice Cut-grass (*Leersia orzyoides*), Panicked Aster (*Symphyotrichum lanceolatum*) and Northern Willow-herb (*Epilobium ciliatum*), as well as a tree of Silver Maple (*Acer saccharinum*). Standing water was present both during the July 12, 2012 and the April 5 and 19, 2017 site visits, one Wood Frog was heard calling from the wetland in the April 19, 2017 site visit, and native invertebrates such as caddisfly larvae and pond snails were also present. Permission was not given to the Ministry for further site visits to determine if more Wood Frogs were calling, or other amphibian species were also breeding in the wetland. During the 2012 site visit, iron precipitates were also found in the wetland, which suggests there are groundwater inputs. As well, Wetland No. 8 is situated in the middle of a large cluster of kettle wetlands and headwater palustrine wetlands that make up the Mount Wolfe Wetland Complex. Its central location provides a stepping stone of habitat for movement of wildlife between wetlands. Ministry spring surveys in 2013 and 2015 along the road network that bisects the wetland complex demonstrate there is considerable movement of amphibians between wetlands where they breed and for some species winter or feed, and the surrounding woodland and field habitats.

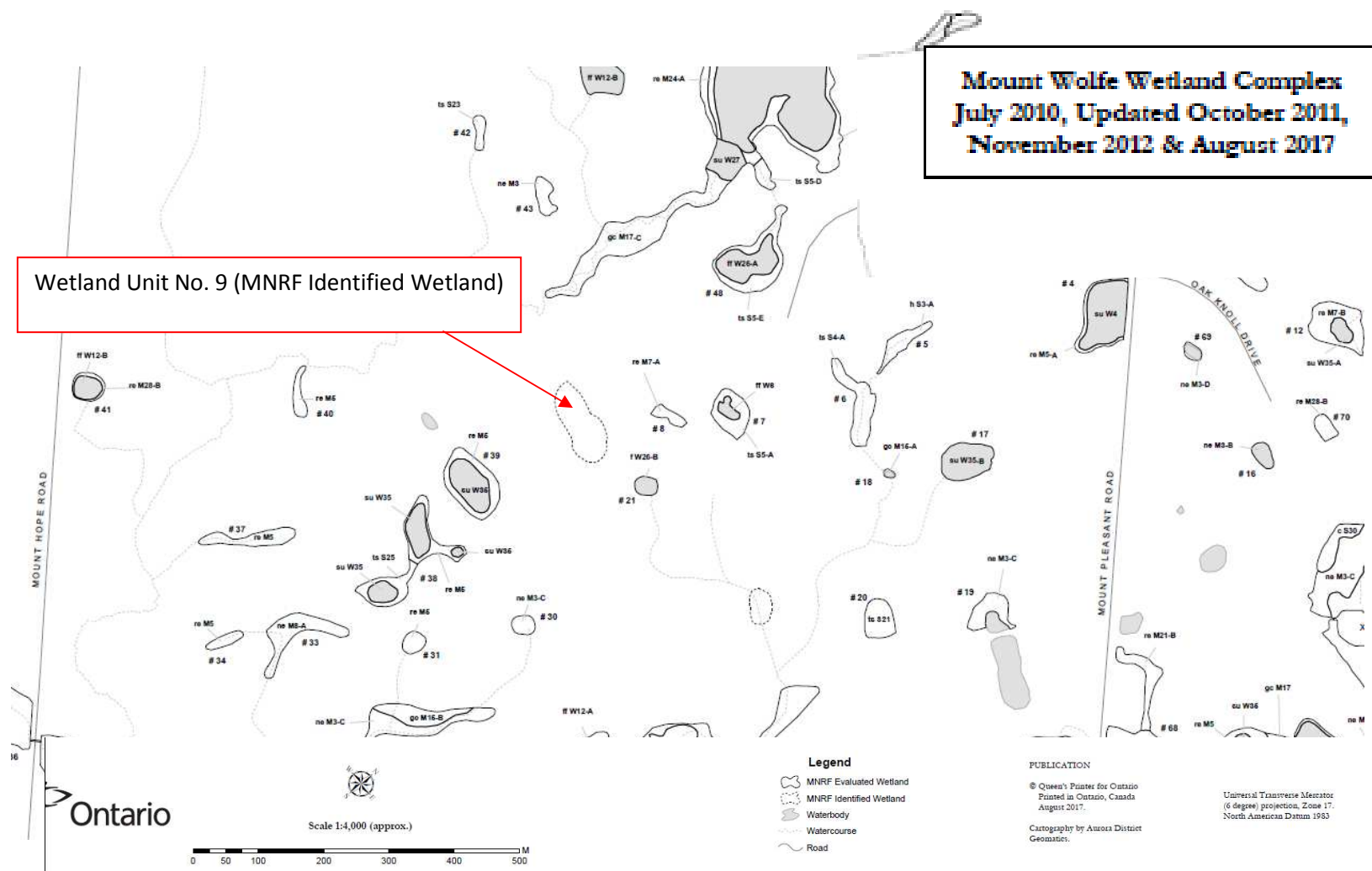
In conclusion, Wetland No. 8 has been retained in the wetland complex because; it is a natural kettle wetland dominated by native species, provides intervening habitat between larger wetlands in the complex, supports amphibian breeding of Wood Frog which is also noted as a sensitive species in the Greater Toronto Area due its declining numbers, and has evidence of groundwater inputs.

If you have any further questions regarding this wetland complex, please do not hesitate to contact Steve Varga, District Management Biologist, at 905-713-7370 or steve.varga@ontario.ca.

Sincerely,



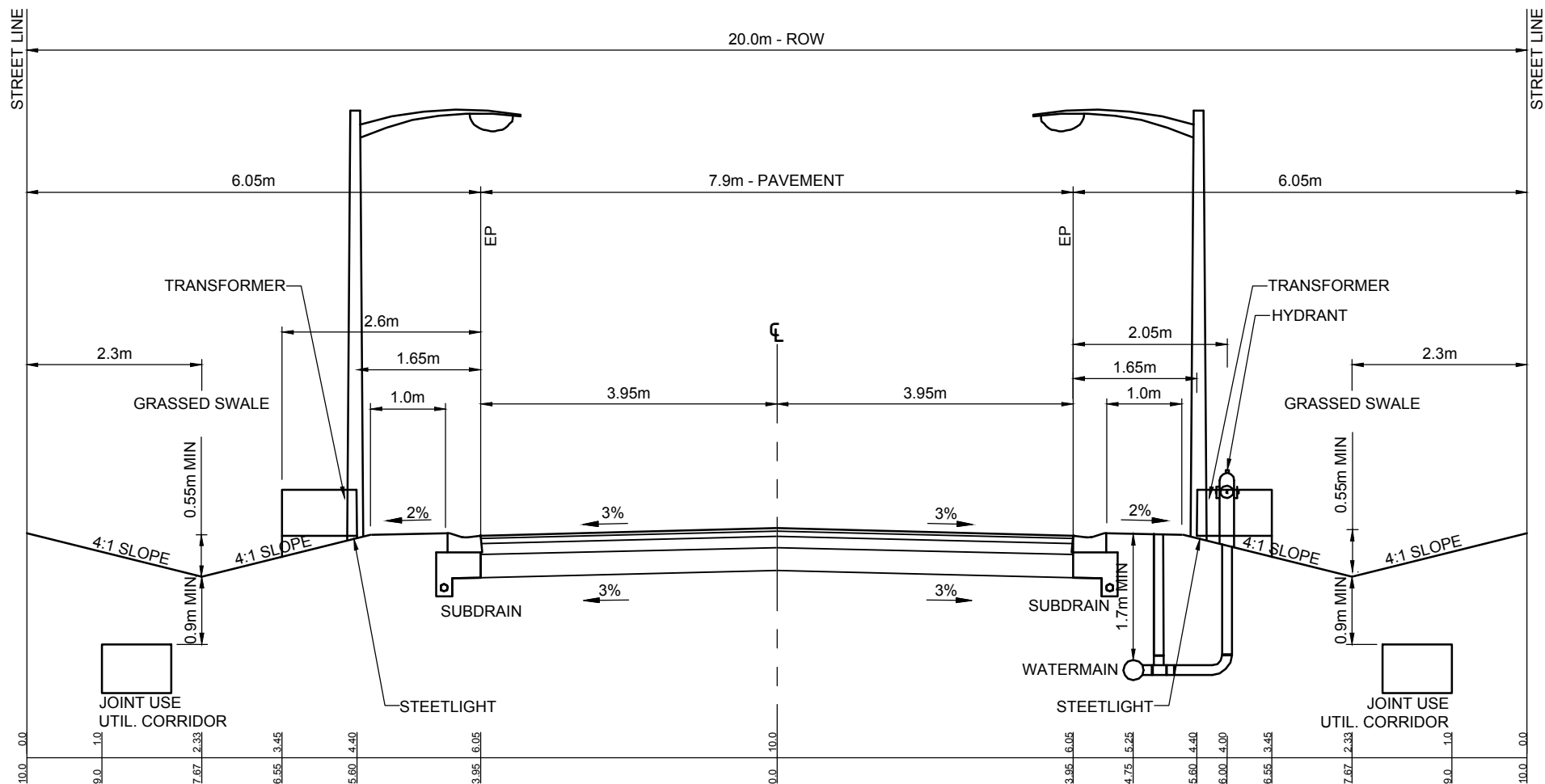
Emily Funnell
Resources Management Supervisor
Aurora District
Ministry of Natural Resources and Forestry



Excerpt of mapping created by MNR to depict the extent of the Mount Wolfe Wetland Complex.

APPENDIX G

Curb Design and Road Cross-Section



NOTES

1. CROSS SECTION ORIENTED LOOKING WEST INTO THE SUBDIVISION.
2. THE INFORMATION SHOWN HEREIN IS PRELIMINARY AND SUBJECT TO DETAILED DESIGN.

FIGURE 8.1
LAURELPARK SUBDIVISION - PROPOSED TYPICAL 20.0m ROW ROAD CROSS-SECTION
 SCALE: N.T.S.



APPENDIX H

Azimuth Memo Regarding Wetland Unit No. 9



Technical Memorandum

To: Carmen Jandu, Project Manager, Ventawood Management
Re: Update Regarding Mount Wolfe Provincially Significant Wetland and Wetland Unit #9)
From: Lisa Moran, Azimuth Environmental
Project: AEC08-019
Date: February 26, 2019

The purpose of this memo is to provide you with an update related to the Mount Wolfe Provincially Significant Wetland (PSW) and to provide an assessment of the wetland in the context of the Oak Ridges Moraine Conservation Plan (2017).

Mount Wolfe PSW Update

In 2012 the Ministry of Natural Resources and Forestry (MNRF) incorporated six wetland units (wetland Nos. 4-9) into the provincially significant Mount Wolfe PSW. In 2017 additional analysis was undertaken related to wetland units Nos. 8 and 9. The outcome of this investigation was that MNRF concluded Wetland No. 9 would be excluded from the PSW and Wetland No. 8 would remain as part of the PSW complex (MNRF letter and figure appended).

Assessment of Wetland Unit No. 9

As per the Oak Ridges Moraine Conservation Plan (ORMCP) Technical Paper 1 – Identification of Key Natural Heritage Features, wetlands are both Key Natural Heritage Features (KNHF) and Hydrologic Sensitive Features (HSF). The definition of a wetland includes areas that have been identified by MNRF or by any other person, according to evaluation procedures established by the MNRF. As indicated earlier and within MNRF's letter (appended), Wetland No. 9 is a wetland that has been identified by MNRF but is no longer considered PSW.

For the purposes of applying the policies of the ORMCP, wetlands shall be considered to be:

- All wetlands regardless of size, evaluated as provincially significant in accordance with the OWES and accepted by MNR;
- All other wetlands 0.5 hectares (ha) or greater in size; and
- All other identified wetlands less than 0.5 ha in size except where it can be demonstrated by a qualified person to the satisfaction of the approval authority that the wetland does not constitute or provide one or more of the following features or functions:
 - A wetland feature having one or more of the following characteristics:
 - Permanent or intermittent surface water connection between the wetland and an adjacent key hydrologic feature;



- Significant recharge to the underlying aquifer (generally considered to be any small wetland underlain by at least 3 metres of mineral soil having a hydraulic conductivity of 10-4cm/s or more); or
- Direct hydraulic connections between the wetland and an underlying aquifer (e.g. along fracture zones or granular soil conduits);
- A KNHF other than a wetland (e.g. significant wildlife habitat);
- Important ecological linkages to adjacent KNHFs or between two or more adjacent KNHFs; or
- Habitat for a diverse range of native plant and animal species with emphasis on moraine rare species.

Wetland Unit No.9 is a 0.41 hectare (ha) in size Reed Canary Grass marsh. Reed Canary Grass is a common grass that is known to form monocultures that out competes other wetland vegetation. Nonetheless, Reed Canary Grass is a common wetland species that is ranked G5 and S5 according to the OMNR. Wetland No. 9 does not contain a diversity of vegetation and has not been documented to contain any Toronto and Region Conservation Authority (TRCA), ORM or provincially rare species. Based on amphibian surveys conducted by Azimuth, there is no amphibian breeding function within this unit. It is a small isolated feature that does not provide any unique ecological function that is not found within the general area. As indicated above, Reed Canary Grass is a very common 'possibly introduced' plant which makes Wetland No. 9 a potential seed source for the species that is typically considered a wetland invasive plant.

In concert with the ORMCP Technical Paper 1, we offer the following analysis of Wetland No. 9. The intent of this analysis is to determine if this feature should be considered to be a wetland as per the ORMCP.

1. Not included as a part of the Mount Wolfe PSW. Confirmed by MNRF (letter appended)
2. Wetland No. 9 is 0.41ha in size.
3. There is no permanent or intermittent surface water connection between the wetland and an adjacent HSF.
4. Not a significant recharge area as the soils underlying Wetland No.9 consists primarily of silt which has medium to low hydraulic conductivity.
5. There is no direct hydraulic connection between the wetland and an underlying aquifer.
6. As per Azimuth's 2017 EIS & MP, Wetland No. 9 does not have any other KNHF function (*i.e.* Significant Wildlife Habitat).
7. There is no important ecological linkage to adjacent KNHF or between two or more KNHA. There is no wildlife connectivity/movement function associated with Wetland No. 9. Birds have the ability to fly and hence do not rely on small natural heritage features as a 'stepping stone' to larger features. Given its small size and open nature, it does not offer a refuge area for wildlife that may be moving through the landscape (*i.e.*, is not form a part of a potential wildlife movement corridor). Mammals will move through the landscape as required and are not reliant on these small isolated open wetland habitat



features to move across the landscape. As indicated earlier, Wetland No. 9 does not provide breeding function for amphibians and would not provide any predictable function as “stepping stones” for dispersing juvenile amphibians.

Furthermore, MNRF’s Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E define movement corridors for amphibians should have at least 15m of vegetation on both sides of a waterway or be up to 200m wide of woodland habitat and with gaps <20m. Wetland No. 9 does not conform to the above MNRF criteria.

8. Wetland No. 9 is a monoculture of Reed Canary Grass and does not contain a diversity of vegetation and has not been documented to contain any TRCA, ORM or provincially rare species.

Therefore, based on our analysis, MNRF identified Wetland No. 9 does not meet the definition of wetland for the purposes of applying the guidelines of the ORMCP.