Appendix A

Traffic Analysis and Mountain Road Bridge Memo

MEMORANDUM

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This Traffic analysis is prepared in conjunction with a Schedule C Municipal Class Environmental Assessment for Mountain Road between west of Old Mountain Road/Cambridge Street and Tenth Line, and Tenth Line between Mountain Road and Sixth Street.

In 2012, the Town completed a Transportation Study. The 2012 Transportation Study identified major road and intersection improvement needs for the Town's road network, including widening of the subject section of Mountain Road, and improvements to the intersections of Mountain Road/Tenth Line and Tenth Line/Sixth Street. However, to fulfill the requirements of this EA, more detailed road and intersection improvement needs are to be identified for the section of Mountain Road and Tenth Line. In addition, traffic volume projections need to be updated given the significant changes in development activities in the area.

The overall purpose of the **Traffic Analysis** is to assess the transportation needs of the subject lengths of roads under 2017 existing conditions and future traffic projections for the horizon years of 2022 (representing a 5-year horizon), 2030 (10-year horizon to align with the area development timing and phasing) and 2037 (20 year horizon). This analysis will be completed to address the project problem and/or opportunity statement and to evaluate alternative solutions to arrive at a preferred solution. Further to arriving at a preferred solution, an evaluation of alternative designs to arrive at a preferred design in conjunction with Phases 1, 2 and 3 of the Class EA will be completed.

1. Existing Traffic Volumes

Traffic Counts conducted in 2010 are available from the Town's 2012 Transportation Study for the following intersections:

- Tenth Line & Sixth Street, Tuesday, August 3, 2010
- Tenth Line & Mountain Road, Wednesday, August 4, 2010

Ontario Traffic Inc. conducted an intersection turning movement count on Thursday August 7, 2014 for the intersection of First Street extension with Old Mountain Road/Cambridge Street.

Additional traffic counts were conducted in 2012 and 2014 by Crozier & Associates for the Consar Tenth Line, and Linksview development Traffic Impact Studies respectively at the following intersections:

- Tenth Line & the Blue Mountain Golf & Country Club entrance, Tuesday, June 26, 2012
- Tenth Line & Georgian Meadows Drive, Tuesday, July 29, 2014

Intersection turning movement count data collected in August 2016 for the intersection of Mountain Road at the Side Launch Brewery Access by CC Tatham & Associates Inc. for the 185 Mountain Road development.

Town wide historic summer daily road section traffic count data was provided by the Town. The following locations and years are relevant to the study:

- Sixth Street between High Street and Stewart Road, 2010 – 2016
- First Street Extension between Old Mountain Road and Cambridge Street, 2010 - 2014

The County of Simcoe provided historic AADT data for all County Roads. Part of County Road 32 is within the study limits. The following locations and years are relevant to the study:

- Sixth Street between Tenth Line and County Road 34, 2009, 2012 and 2015
- Tenth Line between Poplar Sideroad and Sixth Street, 2013, 2015

A review of the traffic volumes in the area indicates:

- An annual growth rate of 3.87% per annum from 2010 to 2016 on Sixth Street between High Street and Stewart Road
- An annual growth rate of -1.14% per annum from 2010 to 2014 on First Street Extension between Old Mountain Road and Cambridge Street (probably due to daily variation i.e. only one day data was collected)
- An annual growth rate of 3.79% per annum from 2009 to 2015 on Sixth Street between Tenth Line and County Road 34
- An annual growth rate of 5.41% per annum from 2013 to 2015 on Tenth Line between Poplar Sideroad and Sixth Street

To ensure a conservative approach, an annual growth rate of 3.87% per annum has been applied for Mountain Road and Tenth Line (the average growth rate was calculated as 2.98% per annum). To reflect the existing 2017 traffic volumes, the 2010, 2012, 2014 and 2016 traffic volumes have increased by 30.4%, 20.9%, 12.1% and 3.87% respectively. To obtain lane balance (i.e. traffic volumes downstream should be comparable with the one upstream), some of the volumes have been adjusted.

The corresponding 2017 peak hour traffic volumes are shown in Figure 1. While it is recognized that there are a number of private commercial access points along the section of Mountain Road and Tenth Line, most are relatively minor and thus need not be explicitly addressed from an operational perspective.

With respect to pedestrian traffic, crossing volumes were observed during the traffic counts. The highest peak hour pedestrian volumes are in the order of 7 persons crossing Tenth Line at Sixth Street, and at the Blue Mountain Golf & Country Club entrance. Pedestrian traffic is in the order of 0 to 2 persons crossing Tenth Line and Mountain Road at the other intersections.

3. Projected Growth

In developing future traffic projections, consideration has been given to population and employment forecasts in addition to specific development growth information provided by the Town.

Population & Employment Trends

Traffic growth will depend largely on the population and employment growth of an area. The population and employment forecasts for the Town of Collingwood are documented in the *Growth Plan for the Greater Golden Horseshoe*. Future population and employment projections are provided in Table 1.

Table 1 - Population and Employment Forecasts

Community	Population			Employment		
	2011	2031	Annual Growth	2006	2031	Annual Growth
Town of Collingwood	19,243	33,400	2.8%	8,140	13,500	2.0%

Source: *Growth Plan for the Greater Golden Horseshoe,* Ministry of Infrastructure Ontario January 2012.

Growth from Specific Developments

A number of specific developments within and adjacent to the study area have been considered. These are illustrated in Figure 2 and are listed below:

1) 185 Mountain Road Industrial Development located on the north side of Mountain Road, east of Tenth Line and east of CRS Contractors Rental Supply – 4.2 hectare light industrial/warehouse;
2) Georgian Bay Biomedical Facility at the south side of Mountain Road (180 Mountain Road), east of Tenth Line and east of Side Launch Brewing Company Inc. – 8700 m^2 11 rooms medicinal marijuana grow up facility;
3) Bluewood Business Park on the south side of Mountain Road, east of Tenth Line and east of Georgian Bay Biomedical Facility – 9097 m^2 5 buildings;
4) Consar Tenth Line Residential Development on the east side of Tenth Line, south of Mountain Road – 164 single family detached units, 73 clustered Townhouse units;
5) Mair Mills Village at the southwest quadrant of Mountain Road with Tenth Line – a total of 302 units (99 single family detached units, 36 semi-detached units, 37 townhouse units and 130 mid-rise apartment units);
6) Linksview Residential Development on the west side of Tenth Line, south of Mountain Road, south of Blue Mountain Golf & Country Blub – 1000 units (300 single family detached units, 200 townhouse units and 376 mid-rise apartment units, 124 basement apartment units); and
7) Todco Residential development at the northwest quadrant of Mountain Road with Tenth Line – 700 units (assuming 30% single family detached units, 20% townhouse units and 37.6% mid-rise apartment units, 12.4% basement apartment units).

None of the above developments are currently completed. The Town has projected that none of the above developments will start before 2019. Therefore, the timing of the developments has been revised as follows:

- Development #1, original timing 2021, revised to 2022;
- Development #2, original timing 2016, revised to 2019;
- Development #3, original timing 2016, revised to 2019;
- Development #4, original timing from 2013 to 2020, revised to from 2019 to 2026;
- Development #5, original timing from 2012 to 2020, revised to from 2019 to 2027; and
- Development #6, original timing 33% 2020, 66% 2025, 100% 2030, revised to 33% 2024, 66% 2029, 100% 2034.

For Development #7, the developer's consultant indicated that the Owner is moving ahead with the necessary studies to submit a complete application for a zoning by-law amendment and draft plan of subdivision in 2017. The Owner is projecting 30% of the residential density to be completed by 2022 with the entire development completed before 2030.

Development phases are provided in detail in Table 2.

Table 2 – Development Phasing

No.	Development	Build Out Timing/Phasing		
		2022	2030	2037
1	185 Mountain Road Industrial Development	100%		
2	Georgian Bay Biomedical Facility	100%		
3	Bluewood Business Park	100%		
4	Consar Tenth Line Residential Development	43%	100%	
5	Mair Mills Village	38%	100%	
6	Linksview Residential Development	20%	73%	100%
7	Todco Residential Development	30%	100%	

Trips generated by the developments #1 – 6 have been derived from their respective traffic impact study reports. Trips generated by the Todco Residential Development have been estimated based on the combined trip rates and trip distribution for the Linksview Residential Development. For the Todco Development, the following has been assumed

- the site has one access on Tenth Line and one access on Mountain Road;
- 30% traffic to/from the east and south would use the access on Tenth Line;
- 70% traffic to/from the east and south would use the access on Mountain Road; and
- traffic to/from the west would use the access on Mountain Road.

The resulting traffic volumes attributed to the above noted developments are presented in Appendix B.

4. Future Traffic Volumes

Given that development growth has been considered specifically, an annual general background growth rate of 2% was applied for traffic volumes on the road network.

Estimates of future traffic volumes for the years 2022, 2030 and 2037 have been determined based on the following:

- 2017 traffic volumes;
- development specific volumes (as per volumes provided in Figures B1 to B7); and
- consideration for the 2022, 2030 and 2037 horizon year growth rates.

The resulting future traffic projections are provided in Figures 3 to 5 for the 2022, 2030 and 2037 horizon respectively. The AM and PM peak hour volumes are provided, reflective of weekday conditions.

During the analysis and forecasting of future traffic volumes the Grey County Transportation Master Plan (GCTMP) was reviewed to compare traffic volume predictions for Mountain Road. The GCTMP considered future developments in the Town of the Blue Mountains and predicted a traffic volume for Mountain Road in the 2036 planning year. The two-way peak hour volume approaching County Road 21 in the GCTMP is 1471 vph. The two-way peak hour volume predicted for the Mountain Road analysis for the year 2037 is 2013vph. The higher volumes reflect the added development within the study area as well as a conservative background growth in background traffic. Traffic volumes should be monitored to confirm needs as developments proceed and therefore consider phasing options.

5. Speed Limit & Existing 2017 Lane Configuration

The speed limits are as follows:

- Mountain Road 60 km/h, 50 km/h on the east end of the study area east of 100 Mountain Road;
- Tenth Line 50 km/h, 70 km/h south of Sixth Street; and
- Sixth Street 60 km/h.

Both Mountain Road and Tenth Line are two lane roads; provide a single lane per direction. The intersection of Mountain Road with Tenth Line is a signalized 4-leg intersection; whereas, the intersection of Tenth Line with Sixth Street is a 4-leg intersection with an all-way stop control. Both intersections have a single shared lane on each approach with no exclusive left/right turn lanes/tapers provided.

The intersections of Tenth Line at Georgian Meadows Drive, and at the Blue Mountain Golf & Country Club entrance, and Mountain Road at the Side Launch Brewing Company Inc. entrance are all "T" intersections with stop control on the minor street/entrances. Each approach has a single shared lane with no exclusive left/right turn lanes/tapers provided.

The intersection of First Street Extension with Cambridge Street/Old Mountain Road is a signalized 4-leg intersection with the following configuration:

- The eastbound approach (First Street Extension) has one left turn lane, one through lane, and one through-right shared lane;
- The westbound approach (First Street Extension) has one left turn lane, one through lane, and one right turn lane;
- The northbound approach (Cambridge Street) has one left turn lane, and one through-right shared lane;
- The southbound approach (Old Mountain Road) has one left turn lane, and one through-right shared lane.

6. Existing Intersection Operations in 2017

Based on the existing intersection lane configurations and control, analyses of the area intersections were conducted for the existing peak hour traffic volumes. The methodology applied was consistent with the 2010 *Highway Capacity Manual* method for unsignalized and signalized intersections as employed in the software program Synchro 8.

Table 3 summarizes the results of the analysis with level of service (LOS), estimated delays (measured in seconds) and volume to capacity (v/c) ratio provided. Level of service A, corresponding to minimal delays, is the best whereas level of service F, corresponding to high delays, is generally considered poor conditions. When volume is less than capacity, v/c ratio is less than 1. Otherwise, v/c ratio equals to 1 or more than 1, which means volume reaches capacity or is more than capacity.

For unsignalized intersections, the level of service corresponds to the minor street lane groups given that the major street movements proceed relatively unimpeded. For signalized intersections, the results pertain to the average intersection delay and assume optimal signal timing and phasing to achieve the most efficient overall network operations through signal coordination. If the actual situations are under expectations, adjustments to the signal timing and/or phasing can be readily implemented. Level of service definitions and the corresponding detailed worksheets are included in Appendix C.

As per the analyses, acceptable levels of service (C or better) occur at all intersections under existing conditions and thus no improvements related to intersection operations are required at this time on the basis of the intersection operational analysis.

Table 3 – 2017 Intersection Operations (Existing)

Intersection		Control	AM Peak Hour			PM Peak Hour		
			Delays(s)	LOS	v/c	Delays(s)	LOS	v/c
Mountain Rd & Tenth Line	all	signal	13.1	B		17.4	B	
	EB		13.6	B	0.52	13.9	B	0.63
	WB		14.1	B	0.58	21.4	C	0.83
	NB		10.7	B	0.22	15.5	B	0.26
	SB		9.8	A	0.11	14.5	B	0.17
First St. Ext. & Cambridge St.	all	signal	12.4	B		15.2	B	
	EBL		9.3	A	0.15	13.1	B	0.20
	EBT		9.5	A	0.21	13.8	B	0.37
	EBT-R		9.6	A	0.21	13.9	B	0.37
	WBL		6.0	A	0.15	8.9	A	0.30
	WBT		5.6	A	0.22	9.4	A	0.42
	WBR		4.6	A	0.03	6.5	A	0.05
	NBL		28.7	C	0.27	29.2	C	0.34
	NBT-R		25.2	C	0.35	25.0	C	0.50
	SBL		26.3	C	0.05	28.0	C	0.11
	SBT-R		25.9	C	0.44	24.5	C	0.44
Tenth Line & Sixth St	all	all-way stop	9.2	A		10.9	B	
	NB		8.9	A	0.17	10.0	A	0.21
	EB		9.2	A	0.25	10.9	B	0.37
	WB		9.6	A	0.28	11.6	B	0.43
	SB		8.8	A	0.13	10.0	A	0.20
Tenth Line & Georgian Meadows Dr.	WB	stop	9.1	A	0.07	9.3	A	0.04
Mountain Rd & SLB Entrance	NB	stop	13.0	B	0.04	24.0	C	0.08
Tenth Line & BMGCC Entrance	EB	stop	10.0	B	0.02	10.2	B	0.02

7. Future 2022, 2030 & 2037 Operations with Existing Road System

The operations of the key study area intersections were investigated based upon the existing configurations, and the proposed development entrances; and the 2022, 2030 and 2037 traffic projections previously presented. A single lane approach and stop control are assumed on all development entrances. The intent of this is to determine if improvements are required beyond the existing intersection configurations and to

gauge the appropriate timing. The results of the 2022, 2030 and 2037 analyses are presented in Tables 4 to 6 respectively whereas the corresponding worksheets are provided in Appendix C.

Table 4 – 2022 Intersection Operations (Background and Development on Existing Road Configuration)

Intersection		Control	AM Peak Hour			PM Peak Hour		
			Delays(s)	LOS	v/c	Delays(s)	LOS	v/c
Mountain Rd & Tenth Line	all	signal	15.9	B		35.2	D	
	EB		15.8	B	0.69	9.0	A	0.55
	WB		18.0	B	0.76	49.3	D	0.1.00
	NB		13.8	B	0.39	52.1	D	0.74
	SB		11.6	B	0.18	42.0	D	0.48
First St. Ext. & Cambridge St.	all	signal	16.7	B		17.7	B	
	EBL		20.7	C	0.28	21.9	C	0.33
	EBT		17.6	B	0.41	17.7	B	0.56
	EBT-R		17.6	B	0.42	17.7	B	0.56
	WBL		12.7	B	0.27	11.2	B	0.42
	WBT		13.6	B	0.53	13.4	B	0.64
	WBR		9.9	A	0.04	7.0	A	0.06
	NBL		22.8	C	0.16	29.8	C	0.38
	NBT-R		19.7	B	0.20	24.5	C	0.48
	SBL		20.5	C	0.03	27.6	C	0.11
	SBT-R		20.2	C	0.24	24.3	C	0.46
Tenth Line & Sixth St	all	all-way stop	11.0	B		15.9	C	
	NB		10.3	B	0.25	14.6	B	0.44
	EB		10.8	B	0.32	15.5	C	0.51
	WB		11.5	B	0.37	18.2	C	0.61
	SB		11.3	B	0.34	13.9	B	0.39
Tenth Line & Georgian Meadows Dr./Linksview	EB	stop	10.9	B	0.12	12.3	B	0.09
	WB		9.6	A	0.09	10.8	B	0.06
Mountain Rd & SLB Entrance/185 Mountain Road Industrial	NB	stop	20.2	C	0.07	**56.5**	**F**	0.21
	SB		26.7	D	0.09	**216.1**	**F**	**1.14**
Tenth Line & BMGCC Entrance/Consar	EB	stop	11.8	B	0.03	12.4	B	0.03
	WB		10.9	B	0.08	12.1	B	0.07
Mountain Rd & Biomed Entrance	NB	stop	16.7	C	0.04	15.2	C	0.02
Mountain Rd & Bluewood W Access	NB	stop	17.6	C	0.02	31.6	D	0.16

Intersection		Control	AM Peak Hour			PM Peak Hour		
			Delays(s)	LOS	v/c	Delays(s)	LOS	v/c
Mountain Rd & Bluewood E Access	NB	stop	14.3	B	0.04	18.8	C	0.19
Tenth Line & Mair Mills Entrance	EB	stop	10.7	B	0.06	12.2	B	0.06

Table 5 – 2030 Intersection Operations (Background and Development on Existing Road Configuration)

Intersection		Control	AM Peak Hour			PM Peak Hour		
			Delays(s)	LOS	v/c	Delays(s)	LOS	v/c
Mountain Rd & Tenth Line	all	signal	30.7	C		**345.7**	**F**	
	EB		15.0	B	0.72	15.3	B	0.70
	WB		31.4	C	0.90	**661.2**	**F**	**2.37**
	NB		52.3	D	0.93	**196.8**	**F**	**1.27**
	SB		33.6	C	0.62	62.3	E	0.69
First St. Ext. & Cambridge St.	all	signal	14.6	B		25.8	C	
	EBL		15.2	B	0.27	66.1	E	0.78
	EBT		14.5	B	0.51	17.5	B	0.60
	EBT-R		14.5	B	0.51	17.5	B	0.60
	WBL		8.7	A	0.30	16.6	B	0.59
	WBT		9.6	A	0.53	24.4	C	0.88
	WBR		5.5	A	0.03	7.8	A	0.06
	NBL		29.2	C	0.32	47.9	D	0.49
	NBT-R		24.6	C	0.38	38.4	D	0.57
	SBL		26.2	C	0.06	41.3	D	0.17
	SBT-R		25.3	C	0.45	36.5	D	0.50
Tenth Line & Sixth St	all	all-way stop	27.1	D		**74.8**	**F**	
	NB		16.4	C	0.47	**77.8**	**F**	**1.19**
	EB		17.2	C	0.49	**65.0**	**F**	0.94
	WB		19.9	C	0.59	**77.0**	**F**	**1.22**
	SB		41.7	E	0.89	**77.8**	**F**	0.99
Tenth Line & Georgian Meadows Dr./Linksview	EB	stop	23.5	C	0.62	49.0	E	0.70
	WB		11.0	B	0.12	17.3	C	0.13
Mountain Rd & SLB Entrance/185 Mountain Road Industrial	NB	stop	31.4	D	0.12	**298.7**	**F**	0.74
	SB		**53.3**	**F**	0.18	**1266.8**	**F**	**3.25**
Tenth Line & BMGCC Entrance/Consar	EB	stop	16.7	C	0.06	19.5	C	0.08
	WB		15.5	C	0.27	21.3	C	0.26

Intersection		Control	AM Peak Hour			PM Peak Hour		
			Delays(s)	LOS	v/c	Delays(s)	LOS	v/c
Mountain Rd & Biomed Entrance	NB	stop	25.4	D	0.07	19.7	C	0.03
Mountain Rd & Bluewood W Access	NB	stop	27.1	D	0.03	**84.7**	**F**	0.36
Mountain Rd & Bluewood E Access	NB	stop	20.1	C	0.05	30.4	D	0.30
Tenth Line & Mair Mills Entrance	EB	stop	15.0	C	0.24	20.9	C	0.25

Table 6 – 2037 Intersection Operations (Background and Development on Existing Road Configuration)

Intersection		Control	AM Peak Hour			PM Peak Hour		
			Delays(s)	LOS	v/c	Delays(s)	LOS	v/c
Mountain Rd & Tenth Line	all	signal	70.8	E		**569.2**	**F**	
	EB		17.8	B	0.79	22.3	A	0.81
	WB		**119.9**	**F**	**1.19**	**1155.2**	**F**	**3.45**
	NB		**93.3**	**F**	**1.08**	**223.9**	**F**	**1.33**
	SB		40.1	D	0.70	67.2	E	0.73
First St. Ext. & Cambridge St.	all	signal	36.0	D		35.1	D	
	EBL		78.6	E	0.77	**87.0**	**F**	0.83
	EBT		13.3	B	0.44	15.4	B	0.55
	EBT-R		13.3	B	0.44	15.4	B	0.55
	WBL		12.2	B	0.53	20.2	C	0.68
	WBT		21.6	C	0.85	22.3	C	0.86
	WBR		6.1	A	0.06	6.1	A	0.06
	NBL		**205.8**	**F**	**1.18**	**182.7**	**F**	**1.12**
	NBT-R		72.0	E	0.87	70.4	E	0.86
	SBL		67.3	E	0.46	66.5	E	0.44
	SBT-R		61.0	E	0.77	59.1	E	0.75
Tenth Line & Sixth St	all	all-way stop	41.8	E		**78.1**	**F**	
	NB		21.7	C	0.60	**78.4**	**F**	**1.37**
	EB		23.0	C	0.62	**78.0**	**F**	**1.06**
	WB		29.4	D	0.74	**77.6**	**F**	**1.45**
	SB		**68.0**	**F**	**1.16**	**78.5**	**F**	**1.16**
Tenth Line & Georgian Meadows Dr./Linksview	EB	stop	**60.1**	**F**	0.94	**269.8**	**F**	1.41
	WB		12.0	B	0.16	24.8	C	0.22
Mountain Rd & SLB Entrance/185	NB	stop	47.7	E	0.22	**870.9**	**F**	**1.65**

Intersection		Control	AM Peak Hour			PM Peak Hour		
			Delays(s)	LOS	v/c	Delays(s)	LOS	v/c
Mountain Road Industrial	SB		**80.3**	**F**	0.25	**2496.7**	**F**	**5.65**
Tenth Line & BMGCC Entrance/Consar	EB	stop	19.1	C	0.08	23.7	C	0.12
	WB		17.7	C	0.31	26.4	D	0.32
Mountain Rd & Biomed Entrance	NB	stop	31.6	D	0.09	22.9	C	0.04
Mountain Rd & Bluewood W Access	NB	stop	34.1	D	0.04	**154.8**	**F**	0.54
Mountain Rd & Bluewood E Access	NB	stop	24.0	C	0.07	43.3	E	0.39
Tenth Line & Mair Mills Entrance	EB	stop	16.6	C	0.26	25.4	D	0.31

Levels of service deteriorate at all area intersections as traffic volumes increase. Acceptable levels of service (E or better) will be provided at most of the intersections in the 2022 horizon with an exception of the intersection of Mountain Road at Side Launch Brewery/Industrial Entrance, where, a poor level of service (F) will be provided during the PM peak hour. Thus, improvements to the intersection should be considered.

For the 2030 horizon, a poor level of service (F) will also occur at the intersections of Mountain Road with Tenth Line, Tenth Line with Sixth Street, Mountain Road with Bluewood W Access during the PM peak hour. This is indicative of the need for future intersection improvements.

Similarly, in the 2037 horizon, intersection improvements should be considered at the intersections of Tenth Line with Georgian Meadows Drive and First Street Extension with Cambridge Street.

8. Mid-Block Capacity

While the capacity of a road system is effectively dictated by the capacity of its intersections, mid-block capacity has also been considered in the analysis for the need for additional through lanes in the sections of Mountain Road and Tenth Line.

Road Capacity

Mountain Road between Tenth Line and Cambridge Street is classified as an arterial road, whereas Tenth Line between Mountain Road and Sixth Street is classified as a collector road in the Town's *Official Plan*. The primary purpose of an arterial road is to carry high volumes of traffic and provide through travel routes across and within the Town. Collector roads are intended to carry moderate traffic volumes between arterial roads and local roads. Based on the Town's Transportation Study, Mountain Road had a capacity of 900 vehicles per hour lane; whereas, Tenth Line has a capacity of 700 vehicles per hour lane.

Volume to Capacity Ratio

To determine the adequacy of the existing road system and hence the need for additional through lanes, the existing and projected traffic volumes were compared to the assumed road capacity. The resulting volumes to capacity (v/c) ratios are provided in Table 7 for the critical peak hour volume (greatest of the AM and PM volumes by direction) and in considering the existing road configuration (1 lane per direction). Ratios of v/c in excess of 1.0 indicate that the volumes exceed the road capacity and thus additional capacity (e.g. additional lanes) is required. Ratios greater than or equal to 0.9 suggest that the road section will operate at or near capacity and operations will begin to breakdown (i.e. the road is operating at 90% or more of its capacity). The provision of additional through lanes should be considered at this point to ensure appropriate road capacity is provided.

Table 7 – Mid-Block v/c Ratios – Existing Road System with Existing & Future Volumes (Background and Development

Section of Road	2017		2022		2030		2037	
	vol.	v/c	vol.	v/c	vol.	v/c	vol.	v/c
Mountain Rd West of Tenth Line	530	0.59	690	0.77	960	**1.07**	1060	**1.18**
Mountain Rd from Tenth Line to Side Launch Brewery Entrance	640	0.71	830	0.92	1210	**1.34**	1360	**1.51**
Mountain Rd from Side Launch Brewery Entrance to Biomed Entrance	640	0.71	850	0.94	1220	**1.36**	1380	**1.53**
Mountain Rd from Biomed Entrance to Bluewood W. Entrance	640	0.71	870	0.97	1230	**1.37**	1390	**1.54**
Mountain Rd from Bluewood W. Entrance to Bluewood E. Entrance	640	0.71	860	0.96	1230	**1.37**	1390	**1.54**
Mountain Rd East of Bluewood E. Entrance	640	0.71	870	0.97	1230	**1.37**	1400	**1.56**
Tenth Line north of Mountain Rd	100	0.14	130	0.19	190	0.27	210	0.30
Tenth Line from Mountain Rd to Mair Mills Entrance	200	0.29	320	0.46	570	0.81	610	0.87
Tenth Line from Mair Mills Entrance to BMGCC Entrance	200	0.29	300	0.43	520	0.74	600	0.86
Tenth Line from BMGCC Entrance to Georgian Meadows Dr.	190	0.27	290	0.41	480	0.69	560	0.80
Tenth Line from Georgian Meadows Dr. to Sixth St.	120	0.17	250	0.34	540	0.77	620	0.89
Tenth Line south of Sixth St.	140	0.20	230	0.33	440	0.63	500	0.71

As indicated, the existing traffic volumes are approximately 30 % under the theoretical planning capacity of Mountain Road, and 70 to 85% under the theoretical planning capacity of Tenth Line. The 2022 projected volumes are approximately 3 to 8 % under the theoretical planning capacity of Mountain Road, and 55 to 65% under the theoretical planning capacity of Tenth Line. Tenth Line continues to operate under its capacity in the 2030 and 2037 horizons. However, the 2030 and 2037 projected volumes are over the road's capacity on Mountain Road from Tenth Line to First Street Extension.

Therefore, the mid-block capacity analysis suggests there may be a need for additional lanes in each direction for the section of Mountain Road between Tenth Line and First Street Extension in the 2030 horizon. This is based upon the mid-block capacity analysis. It is noted that the need for the additional through lanes is also investigated in the detailed intersection assessments (Section 11).

9. Current Left Turn Lane Requirements

Based on the existing 2017 traffic volumes indicated in Figure 1 and MTO left turn lane criteria, the following left turn lane is warranted on the sections of Mountain Road and Tenth Line in the study area:

- 25 metre westbound left turn lane on Mountain Road at the Side Launch Brewery entrance.

Based on a design speed of 70 km/h, this left turn lanes should include a 40 metre parallel length and a 115 metre taper.

No left turn lanes are warranted on Tenth Line or Sixth Street in the study area in the 2017 horizon.

10. Intersection Improvements – Signals

The need for a traffic signal at the intersections of Mountain Road at the Side Launch Brewery entrance, and at Bluewood W Access, Tenth Line at Sixth Street, and at Georgian Meadows Drive was reviewed based on MTO traffic signal warrants, hourly traffic variation of the Town, and the projected peak hour traffic volumes for the 2030 and 2037 planning horizons. A traffic signal is warranted at the intersection of Tenth Line with Sixth Street in 2030 horizon, and at the intersection of Tenth Line with Georgian Meadows Drive in the 2037 horizon. The completed signal warrants are provided in Appendix D.

11. Intersection Improvements – Operations

As identified in Section 7, intersection improvements are required in the 2022 horizon at the Mountain Road with the Side Launch Brewery Entrance/Industrial Entrance intersection, in the 2030 horizon at the Tenth Line with Sixth Street, Mountain Road with Bluewood W Access, and Mountain Road with Tenth Line intersections, and in the 2037 horizon at the Tenth Line with Georgian Meadows Drive intersection. Summaries of the operational assessments are provided below whereas detailed worksheets are provided in Appendix E.

Mountain Road & Side Launch Brewery Entrance/Industrial Entrance
The following improvements were considered:

- adding eastbound and westbound left turn lanes on Mountain Road in the 2022 horizon;
- adding a traffic signal along with an exclusive left turn lane on each approach in 2030 horizon; and
- adding additional through lane in each direction on Mountain Road in the 2030 horizon.

Based on the above improvements, the resulting intersection operations and levels of service are provided in Table 8.

Table 8 – Intersection Operations – Mountain Road & Side Launch Brewery Entrance/Industrial Entrance

Mountain Road Improvement			Control	AM Peak Hour			PM Peak Hour		
				Delays	LOS	v/c	Delays	LOS	v/c
1 lane per direction & an eastbound, a westbound left turn lanes	2022	NB	stop	15.2	C	0.05	22.9	C	0.08
		SB		16.9	C	0.05	35.9	E	0.50
2 lanes per direction & a traffic signal, a left turn lane on each approach	2030	all	signal	15.2	B		17.3	B	
		EBL		16.5	B	0.11	22.5	C	0.03
		EBT		16.8	B	0.70	14.7	B	0.68
		EBT-R		16.7	B	0.70	14.7	B	0.68
		WBL		19.7	B	0.06	19.8	B	0.06
		WBT		13.2	B	0.50	20.0	C	0.79
		WBT-R		13.2	B	0.50	19.8	B	0.79
		NBL		9.4	A	0.01	12.1	B	0.02
		NBT-R		9.4	A	0.02	11.4	B	0.01
		SBL		9.5	A	0.02	12.4	B	0.11
		SBT-R		9.3	A	0.01	11.8	B	0.06
2 lanes per direction & a traffic signal, a left turn lane on each approach	2037	all	signal	8.2	A		9.0	A	
		EBL		9.2	A	0.08	12.6	B	0.02
		EBT		8.8	A	0.62	7.4	A	0.60

		EBT-R		8.7	A	0.62	7.4	A	0.60
		WBL		11.5	B	0.05	10.9	B	0.05
		WBT		7.1	A	0.44	9.6	A	0.70
		WBT-R		7.1	A	0.44	9.5	A	0.70
		NBL		11.9	B	0.01	15.6	B	0.04
		NBT-R		11.9	B	0.04	14.7	B	0.02
		SBL		12.1	B	0.02	15.8	B	0.16
		SBT-R		11.8	B	0.01	15.1	B	0.11
2 lane roundabout & 2 lanes per direction	2037	all	2 lane round-about	8.6	A		11.9	B	
		EBL-T		9.0	A	0.49	10.3	B	0.54
		EBT-R		10.2	B	0.56	11.7	B	0.61
		WBL-T		6.9	A	0.34	11.3	B	0.62
		WBT-R		7.5	A	0.39	13.7	B	0.69
		NB		7.6	A	0.05	8.5	A	0.05
		SB		5.6	A	0.02	13.7	B	0.27

As the left turn lanes option provides a better level of service for the minor street approaches, however, it starts to fail in the 2030 horizon. Therefore, a traffic signal along with an exclusive left turn lane on each approach and two through lanes in each direction on Mountain Road are recommended in the 2030 horizon. A two-lane roundabout alternative is also considered for the 2037 horizon given the intersection is signalized and Mountain Road is widened to 4 lanes. No left turn lanes were assumed for the two-lane roundabout alternative. The results of the operational analysis are also provided in Table 8. As indicated in Table 8, the signal plus 4-lane on Mountain Road option or a two-lane roundabout is sufficient to achieve acceptable levels of service in the 2037 horizon.

Mountain Road & Tenth Line

Given that the intersection is signalized and that the significant westbound left turn traffic volume during the PM peak hour, the following improvements were considered in the 2030 horizon:

- adding a left turn lane on each approach;
- adding an additional through lane on Mountain Road; and
- adding a westbound advance green phase.

Table 9 – Intersection Operations – Mountain Road & Tenth Line

Mountain Road and Tenth Line Improvement			Control	AM Peak Hour			PM Peak Hour		
				Delays	LOS	v/c	Delays	LOS	v/c
2 lanes per direction & a left turn lane on each approach, a westbound advance green phase	2030	all	signal	16.6	B		22.5	C	
		EBL		13.9	B	0.05	16.8	B	0.03
		EBT		18.6	B	0.63	31.3	C	0.82
		EBT-R		18.6	B	0.63	31.3	C	0.83
		WBL		12.6	B	0.37	29.2	C	0.86
		WBT		10.8	B	0.32	11.3	B	0.52
		WBT-R		10.8	B	0.33	11.3	B	0.52

Mountain Road and Tenth Line Improvement			Control	AM Peak Hour			PM Peak Hour		
				Delays	LOS	v/c	Delays	LOS	v/c
		NBL		15.6	B	0.20	22.2	C	0.36
		NBT-R		20.9	C	0.63	23.2	C	0.55
		SBL		26.1	C	0.34	28.7	C	0.34
		SBT-R		13.4	B	0.14	17.1	B	0.16
2 lane per direction & a left turn lane on each approach, a westbound advance green phase	2037	all	signal	18.4	B		24.7	C	
		EBL		14.2	B	0.06	16.5	B	0.04
		EBT		20.5	C	0.70	33.2	C	0.85
		EBT-R		20.5	C	0.70	33.3	C	0.85
		WBL		13.4	B	0.44	32.8	C	0.89
		WBT		11.0	B	0.36	11.2	B	0.55
		WBT-R		11.0	B	0.37	11.2	B	0.55
		NBL		16.4	B	0.24	25.8	C	0.42
		NBT-R		24.9	C	0.74	28.8	C	0.67
		SBL		32.0	C	0.44	37.6	D	0.47
		SBT-R		13.8	B	0.16	19.2	B	0.19
2 lane roundabout & 2 lanes in each direction	2037	all	2 lane round-about	10.5	B	0.38	20.2	C	0.62
		EB		10.3	B	0.47	20.1	C	0.71
		WB		8.2	A	0.39	22.0	C	0.80
		NB		14.3	B	0.45	14.6	B	0.48
		SB		9.5	A	0.15	22.1	C	0.28

As the left turn lanes option provides a better level of service for the intersection, it was also applied to the 2037 horizon. A two-lane roundabout alternative is also considered for the 2037 horizon given the intersection is signalized and Mountain Road is widened to 4 lanes. No left turn lanes were assumed for the two-lane roundabout alternative. The results of the operational analysis are also provided in Table 9. As indicated in Table 9, the traffic signal with left turn lanes option or the two-lane roundabout alternative is sufficient to achieve acceptable levels of service in the 2037 horizon.

Tenth Line & Sixth Street

Given that a traffic signal is warranted at the intersection in 2030 and that the higher southbound left turn traffic volumes during the AM and PM peak hours, the following improvements were considered in both the 2030 and 2037 horizons:

- adding a traffic signal
- adding a left turn lane on each approach; and
- adding a southbound advance green phase.

Table 10 – Intersection Operations – Tenth Line & Sixth Street

Tenth Line and Sixth Street Improvement			Control	AM Peak Hour			PM Peak Hour		
				Delays	LOS	v/c	Delays	LOS	v/c
1 lane per direction & a traffic	2030	all	signal	13.0	B		17.6	B	

Tenth Line and Sixth Street Improvement			Control	AM Peak Hour			PM Peak Hour		
				Delays	LOS	v/c	Delays	LOS	v/c
signal, a left turn lane on each approach, a southbound advance green phase		EBL		20.5	C	0.08	25.4	C	0.26
		EBT-R		17.6	B	0.50	17.0	B	0.53
		WBL		20.0	C	0.13	20.7	C	0.18
		WBT-R		18.2	B	0.57	24.0	C	0.77
		NBL		10.5	B	0.07	12.5	B	0.07
		NBT-R		11.6	B	0.30	17.7	B	0.66
		SBL		7.6	A	0.19	11.0	B	0.28
		SBT-R		8.0	A	0.41	9.4	A	0.31
1 lane per direction & a traffic signal, a left turn lane on each approach, a southbound advance green phase	2037	all	signal	13.8	B		20.5	C	
		EBL		21.4	C	0.09	27.6	C	0.30
		EBT-R		17.7	B	0.53	16.7	B	0.54
		WBL		20.8	C	0.15	21.1	C	0.20
		WBT-R		18.5	B	0.61	25.1	C	0.80
		NBL		12.2	B	0.09	14.7	B	0.09
		NBT-R		13.0	B	0.36	25.5	C	0.81
		SBL		8.6	A	0.26	14.4	B	0.42
		SBT-R		9.2	A	0.47	11.5	B	0.38
1 lane roundabout & a single lane on each approach	2037	all	1 lane round-about	13.4	B		23.7	C	
		EB		13.6	B	0.47	15.3	C	0.59
		WB		8.7	A	0.40	35.4	E*	0.87
		NB		9.5	A	0.37	24.0	C	0.77
		SB		17.9	C	0.71	16.0	C	0.62

As the traffic signal with left turn lanes option provides a better level of service for the intersection. A roundabout alternative is also considered in the ultimate 2037 horizon given the intersection is signalized. No left turn lanes were assumed for the one lane roundabout alternative. The results of the operational analysis are also provided in Table 10. As indicated in Table 10, both the traffic signal with left turn lanes option and the one lane roundabout alternative is sufficient to achieve acceptable levels of service in the 2037 horizon.
*(Although the 2037 result is LOS E, based on growth rate sensitivity in 2036 the LOS is D)

Mountain Road & Bluewood W Access

Given that a traffic signal is not warranted for the intersection in the 2037 horizon, the following improvements were considered:

- adding a westbound left turn lane on Mountain Road in the 2030 horizon; and
- adding an additional through lane in each direction on Mountain Road in the 2030 horizon;

Based on the above improvements, the resulting intersection operations and levels of service are provided in Table 11.

Table 11 – Intersection Operations – Mountain Road & Bluewood W Access

Mountain Road Improvement			Control	AM Peak Hour			PM Peak Hour		
				Delays	LOS	v/c	Delays	LOS	v/c
2 lanes per direction & a westbound left turn lane	2030	NB	stop	14.9	B	0.01	18.6	C	0.08
2 lanes per direction & a westbound left turn lane	2037	NB	stop	16.2	C	0.02	21.0	C	0.10

As the left turn lane option provides a better level of service for the minor street approaches, it was also applied to the 2037 horizon. As indicated in Table 11, the left turn lane option is sufficient to achieve acceptable levels of service in the 2037 horizon.

Tenth Line & Georgian Meadows Drive

Given that a traffic signal is warranted at the intersection and that the higher northbound left turn traffic volumes during the PM peak hour, the following improvements were considered in the 2037 horizon:

- adding a traffic signal
- adding a left turn lane on each approach; and
- adding a northbound advance green phase.

Table 12 – Intersection Operations – Tenth Line & Georgian Meadows Drive

Tenth Line & Georgian Meadows Dr. Improvement			Control	AM Peak Hour			PM Peak Hour		
				Delays	LOS	v/c	Delays	LOS	v/c
1 lane per direction & a traffic signal, a left turn lane on each approach, a northbound advance green phase	2037	all	signal	13.8	B		11.3	B	
		EBL		18.9	B	0.40	19.7	B	0.28
		EBT-R		18.6	B	0.63	20.6	C	0.56
		WBL		20.3	C	0.04	20.6	C	0.04
		WBT-R		15.4	B	0.22	17.8	B	0.17
		NBL		8.0	A	0.14	8.2	A	0.48
		NBT-R		6.8	A	0.22	5.2	A	0.35
		SBL		9.4	A	0.03	8.8	A	0.13
		SBT-R		12.6	B	0.56	13.1	B	0.67
1 lane roundabout & a single lane on each approach	2037	all	1 lane round-about	9.9	A		14.2	B	
		EB		13.4	B	0.55	8.6	A	0.31
		WB		6.5	A	0.14	8.2	A	0.10
		NB		7.4	A	0.29	15.3	C	0.69
		SB		8.6	A	0.41	15.9	C	0.66

As the traffic signal with left turn lanes option provides a better level of service for the intersection. A roundabout alternative is also considered given the intersection is signalized. No left turn lanes were assumed for the one lane roundabout alternative. As indicated in Table 12, both the traffic signal with left

turn lanes option and the one lane roundabout alternative is sufficient to achieve acceptable levels of service in the 2037 horizon.

First Street Extension & Cambridge Street

Given that the intersection would run out of capacity in the 2037 horizon and that an additional through lane in each direction is suggested on Mountain Road in the 2030 horizon, the following improvements were considered in the 2037:

- change the existing westbound right turn lane to a westbound through-right shared lane
- widening the Mountain Road bridge to include an additional through lane in each direction; and
- change the eastbound left turn permitted phase to a protected-permitted phase.

Table 13 – Intersection Operations – First Street Extension & Cambridge Street

First Street Extension & Cambridge St. Improvement			Control	AM Peak Hour			PM Peak Hour		
				Delays	LOS	v/c	Delays	LOS	v/c
2 lane per direction & an eastbound/westbound left turn protected-permitted phase	2037	all	signal	21.0	C		33.7	C	
		EBL		14.3	B	0.35	22.1	C	0.59
		EBT		23.7	C	0.72	37.0	D	0.89
		EBT-R		23.6	C	0.72	37.2	D	0.90
		WBL		16.7	B	0.48	43.3	D	0.86
		WBT		18.7	B	0.49	33.7	C	0.87
		WBT-R		18.7	B	0.49	33.5	C	0.87
		NBL		25.9	C	0.24	33.3	C	0.43
		NBT-R		21.1	C	0.27	26.2	C	0.53
		SBL		22.3	C	0.05	29.1	C	0.14
		SBT-R		21.9	C	0.32	24.9	C	0.46

Based on the above improvements, the intersection would operate acceptably.

Given that the Mountain Road Bridge is located at approximately 100 m west of the intersection, the eastbound left turn queue lengths were reviewed. Based on five SimTraffic runs with a seeding time of 15 minutes and duration of 60 minutes, the average 95th percentile eastbound left turn queue lengths are 43 m and 66 m during the AM and PM peak hours respectively. Therefore, the space between the Bridge and the intersection can accommodate future eastbound left turn queues by 2037 horizon.

12. Future Left Turn Lane Requirements

Based on the future 2022, 2030 and 2037 traffic volumes indicated in Figure 3 to 5, existing intersection configurations and MTO left turn lane criteria, the following left turn lanes are warranted on the sections of Mountain Road and Tenth Line in the study area:

2022

- 30 metre westbound left turn lane and 15 m eastbound left turn lane on Mountain Road at Side Launch Brewery Entrance/Industrial Entrance;
- 30 metre westbound left turn lane on Mountain Road at Biomed Facility Entrance;
- 15 metre westbound left turn lane on Mountain Road at Bluewood West Entrance; and
- 30 metre westbound left turn lane on Mountain Road at Bluewood East Entrance.

2030

- 15 metre northbound left turn lane on Tenth Line at Mair Mills Entrance;25 metre southbound left turn lane on Tenth Line at Blue Mountain Golf Country Club Entrance/Consar; and
- 15 metre southbound left turn lane and 30 m northbound left turn lane on Tenth Line at Georgian Meadows Drive/Linksview.

2037

- 15 metre northbound left turn lane on Tenth Line at Mair Mills Entrance; and
- 25 metre southbound left turn lane and 15 m northbound left turn lane on Tenth Line at Blue Mountain Golf Country Club Entrance/Consar.

Given that an additional through lane in each direction on Mountain Road is recommended in 2030 horizon, the left turn lane criteria were not applicable for a 4-lane road.

Based on a design speed of 70 km/h, the left turn lanes on Mountain Road should include a 40 metre parallel length and a 115 metre taper.

Based on a design speed of 60 km/h, the left turn lanes on Tenth Line should include a 30 metre parallel length and a 100 metre taper.

Given the number of left turn lanes required along Mountain Road and the limited distance between the access points, a centre left turn lane should be considered on Mountain Road in the 2022 horizon.

The benefits of a centre left turn lane are as follows:

- provides left turn lanes at all intersecting roads and driveways, which will allow turning vehicles to leave the through lane and seek safe refuge in the centre lane while they complete their turn; and
- allows vehicles entering Mountain Road from the minor side streets and driveways to complete their manoeuvre in two steps – travel from the side street/driveway to the centre lane and then merge from the centre lane into the through lane – which provides improved service and reduces the potential for conflicts.

13. Accidents

Accident data received for 2013-2017 to date can be summarized as follows:

- Deer collisions: 12
- Run off road: 16
- Multi vehicle: 23
- Non-reportable: 3

Specific details of the accidents such as road condition, time of day and type of multi vehicle collision, were not available to determine if existing roadway elements were a contributing factor in any of the accidents.

14. West-East Collector

Some discussion on the future potential of a west-east collector connecting regions in the western edge of Collingwood and along Osler Bluff Road, through the Linksview and Red Maple developments to the High Street commercial areas was provided for the Linksview development. The Linksview development road network has been laid out and provides future connectivity to the areas to the west.

For the purpose of the Town's project a west-east collector is being considered only in that it would potentially reduce the demand on the intersections of Mountain Road/Tenth Line and Tenth Line/Sixth Street.

However, intersection configuration and design has not been reduced to include the potential demand reductions.

Intersection improvements from Linksview and Red Maple onto Tenth Line have already been accounted for to the
2037 horizon year with significant reserve capacity.

15. Recommendations

Based on the above intersection operations, mid-block capacity and the current and future left turn lane requirement analyses, and in consideration of the distances between driveway access points on the section of Mountain Road, the following improvements are recommended:

2022 horizon

- a centre left turn lane on Mountain Road from east of Tenth Line to First Street Extension.

2030 horizon

- an additional through lane to 2 lanes in each direction on Mountain Road from east of Tenth Line to First Street Extension to a total of 5 lanes (two lanes in each direction plus a centre left turn lane);
- widening of Mountain Road Bridge;
- an exclusive left turn lane on each approach at the intersection of Tenth Line with Mountain Road along with a westbound advance green phase or a two-lane roundabout;
- a traffic signal along with an exclusive left turn lane on each approach, and a southbound advance green phase at the intersection of Tenth Line with Sixth Street or a one lane roundabout;
- a traffic signal along with an exclusive left turn lane on each approach at the intersection of Mountain Road with the Side Launch Brewery entrance or a two-lane roundabout;
- a 25-metre southbound left turn lane on Tenth Line at Blue Mountain Golf & Country Club entrance/Consar;
- a 15-metre northbound left turn lane on Tenth Line at Mair Mills entrance;
- 15 metre southbound left turn lane and 30 m northbound left turn lane on Tenth Line at Georgian Meadows Drive/Linksview; and
- at the intersection of First Street Extension with Cambridge Street, change the westbound right turn lane to a westbound through-right shared lane, change the eastbound left turn permitted phase to a protected-permitted phase.

2037 Horizon

- a traffic signal along with an exclusive left turn lane on each approach, and a northbound advance green phase at the intersection of Tenth Line with Georgian Meadows Drive/Linksview or a one lane roundabout; and
- a 15-metre northbound left turn lane on Tenth Line at Blue Mountain Golf & Country Club entrance/Consar.

Beyond 2037 Horizon

If traffic volume projections are fulfilled to the 2037 level and beyond the intersections of Mountain Road at Tenth Line and Tenth Line at Sixth Street will approach LOS D at which time improvements and other network improvement will require considerations.

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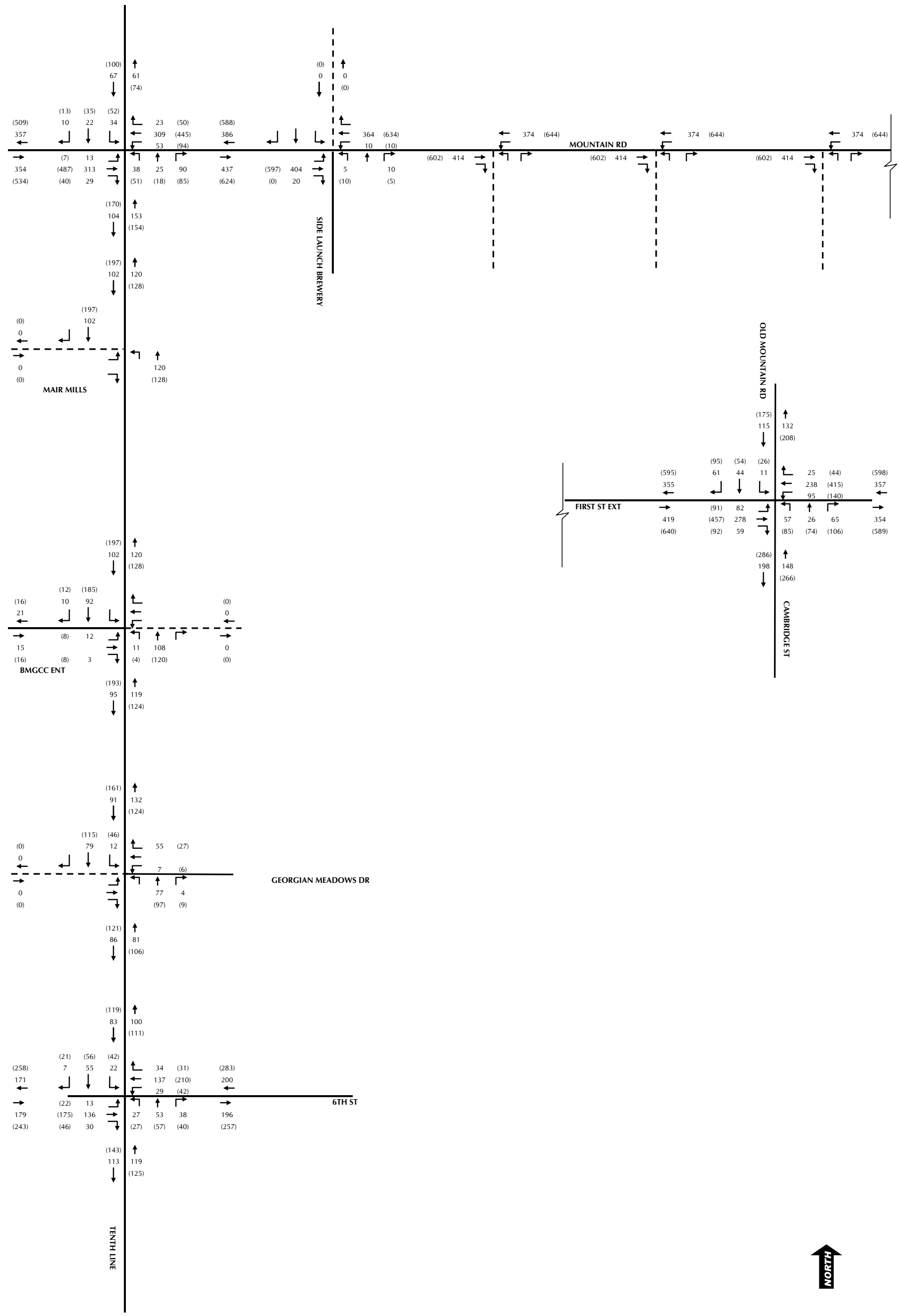
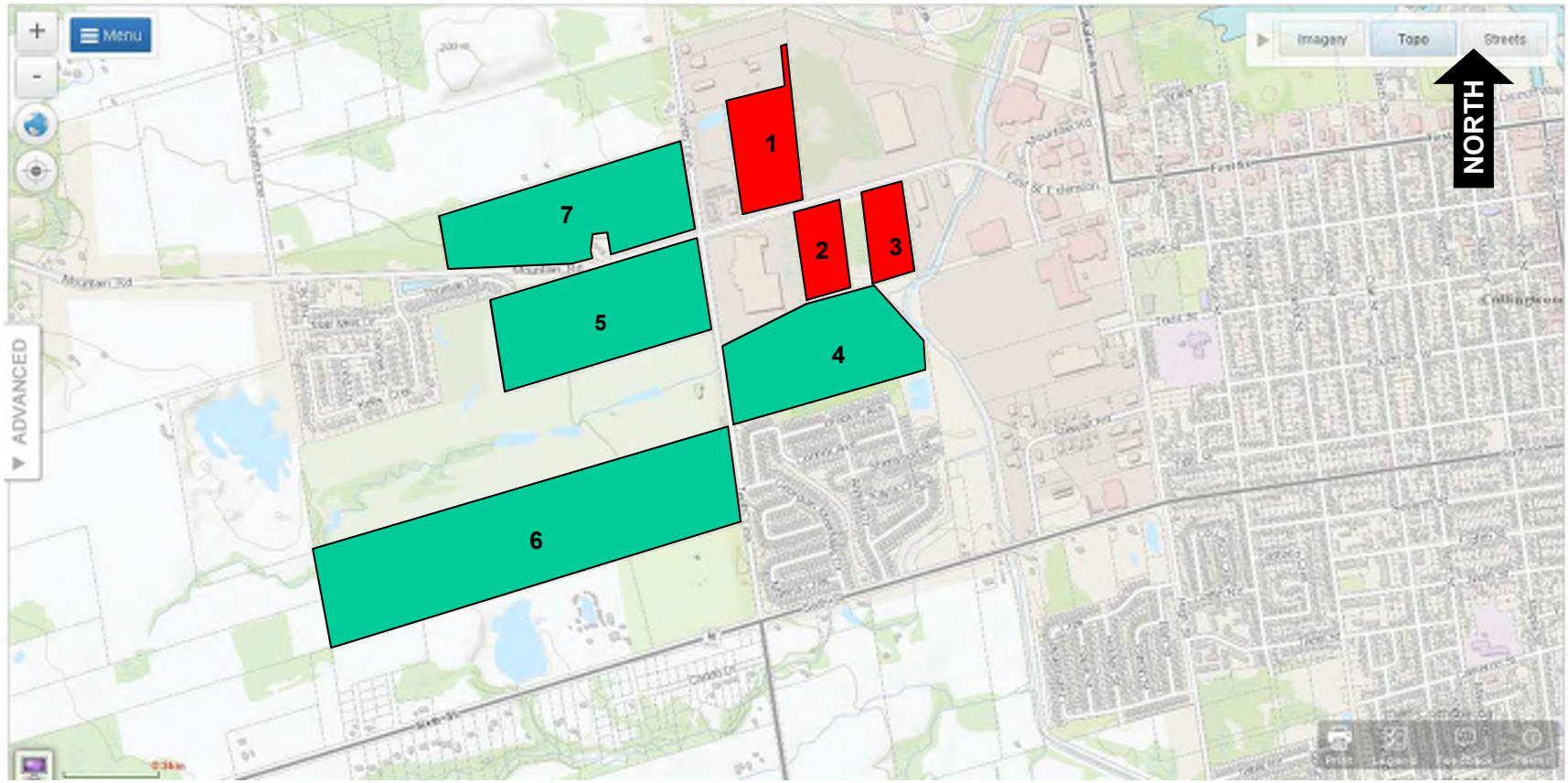


100 (100) AM (PM) Peak Hour

Figure 1
Existing 2017 Traffic Volumes
Maintain Road and Tenth Line EA
Town of Collingwood



1)185 Mountain Road Industrial Development
2) Georgian Bay Biomedical Facility
3) Bluewood Business Park
4) Consar Tenth Line Residential Development
5) Mair Mills Village
6) Linksview Residential Development
7) Todco Residential Development

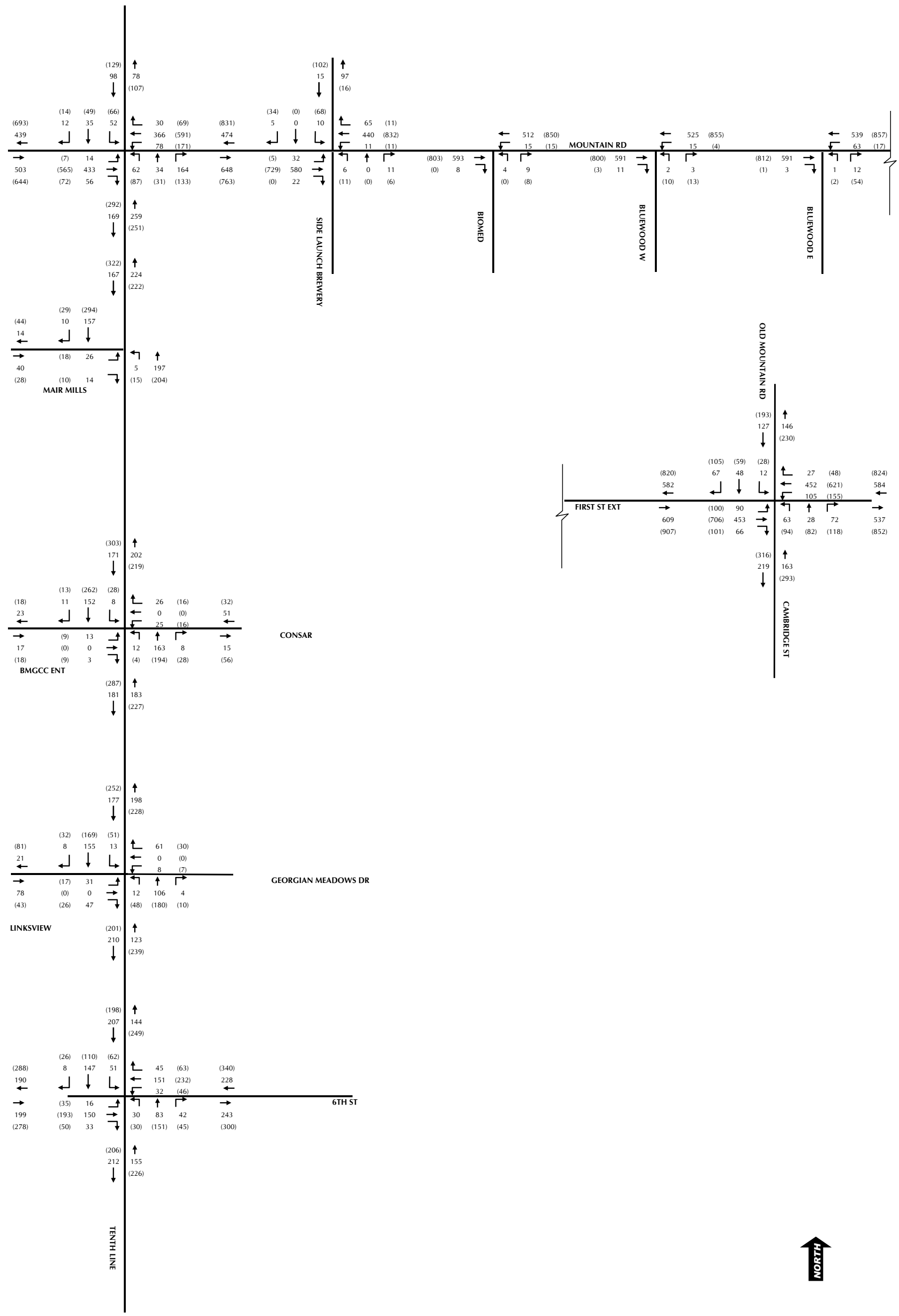
Source: Simcoe County Interactive Map

Ainley Group CONSULTING ENGINEERS PLANNERS

TOWN OF COLLINGWOOD

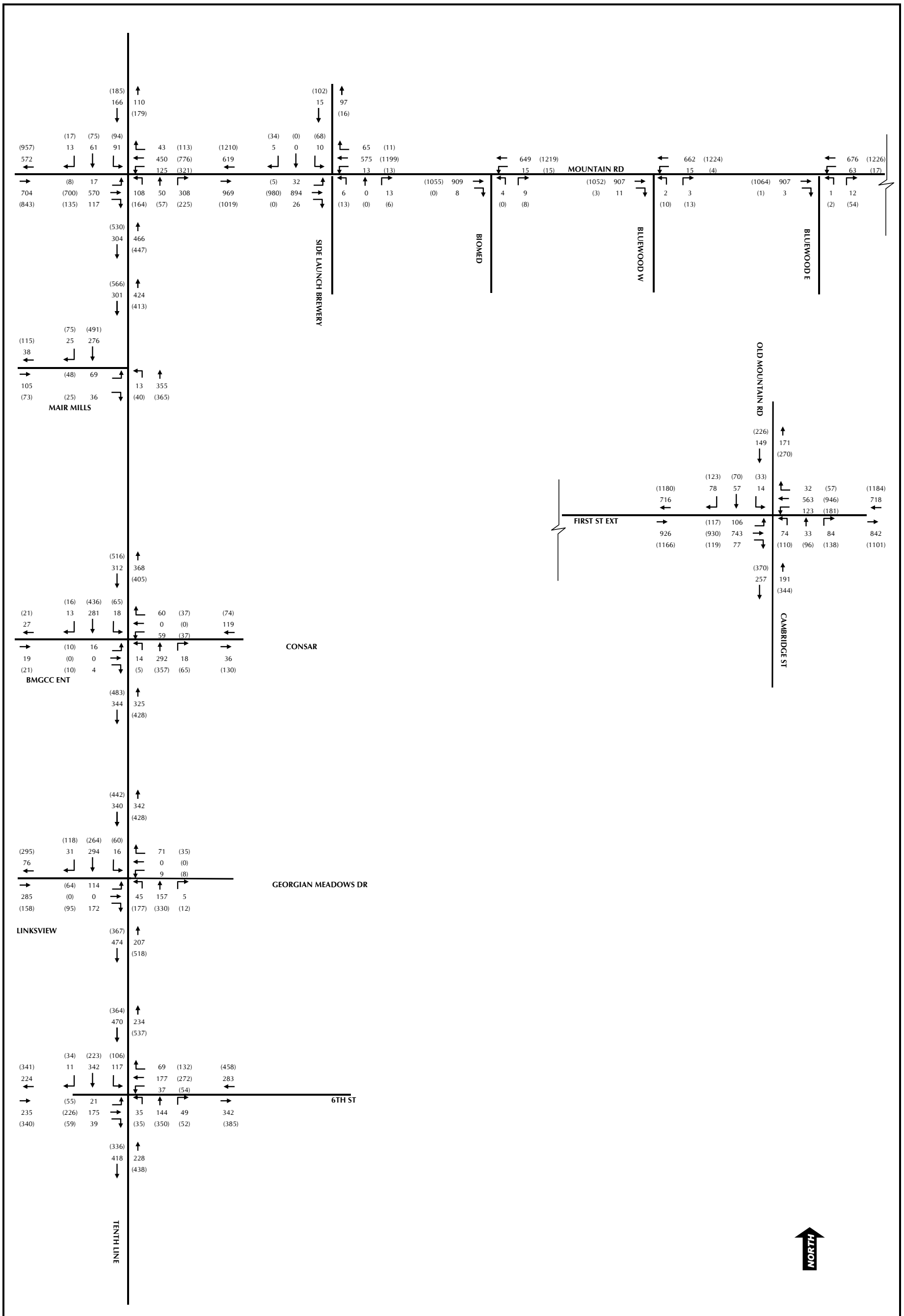
MOUNTAIN ROAD TENTH LINE EA

FIGURE 2 – DEVELOPMENT LOCATIONS



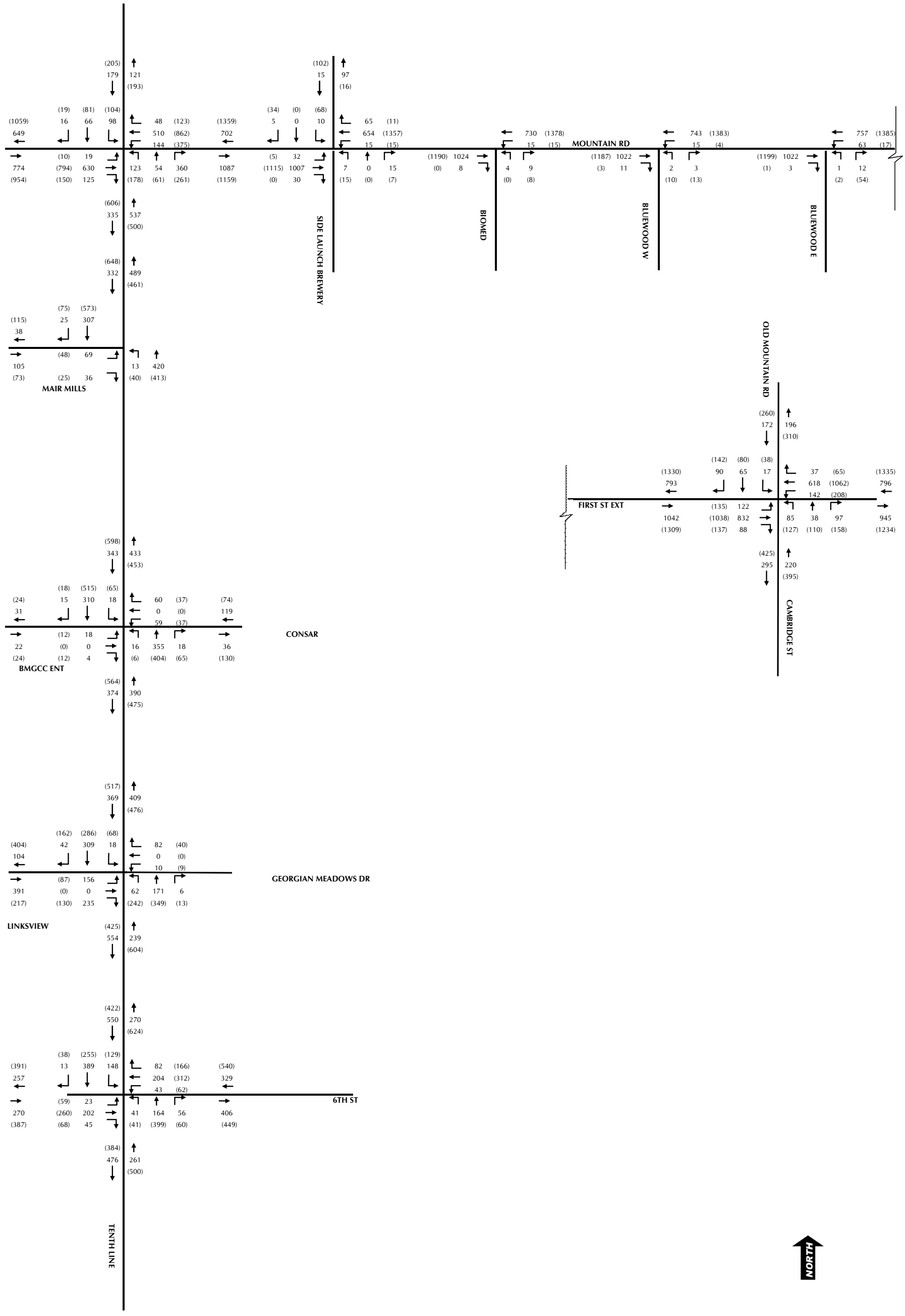
100 (100) AM (PM) Peak Hour

Figure 3
2022 Traffic Volumes
Maintain Road and Tenth Line EA
Town of Collingwood



100 (100) AM (PM) Peak Hour

Figure 4
2030 Traffic Volumes
Maintain Road and Tenth Line EA
Town of Collingwood



100 (100) AM (PM) Peak Hour

Figure 5

2037 Traffic Volumes

Maintain Road and Tenth Line EA

Town of Collingwood

APPENDIX A

Traffic Counts

Town of Collingwood
Traffic Data Summary – 2016
AADT (Average Annual Daily Traffic)

Location Code	Location	Description	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1994	1993	1992	1989	1988	1987	1986	1985
1	Cranberry Trail West	South of Hwy 26 West	977 S-W		1013 S-W	944 S-W	803 S-W	1021 F-D	1406 F-D	1685 S-D	824 S-D	1277 S-D	1451 S-D	broke	693 D	1072 S-D								300						
2	Cranberry Trail East	between Dawson Dr. and Hwy 26 West	1154 S-D		1045 S-D	1141 S-D	1042 S-D	472 F-D	944 S-D	622 S-D	396 S-D	367 S-D		689 S-D	487 D	961 S-D														
3	Harbour St.	between Dawson Dr. and Hwy 26 West	1665 S-D		2156 S-D	2215 S-D	2145 S-D	2077 F-D	1973 S-D	2124 S-D	977 S-D	1294 S-D	1432 S-D	2025 S-D	1330 D	2322 S-D														
4	Balsam St.	between Trott Blvd. and Harbour St.	984 S-D		1104 S-D	1302 S-D	1154 S-D	1023 F-D	1391 S-D	1318 S-D	943 S-D	1315 S-D	1221 S-D	1001 S-D	952 D	1452 S-D														
5	Sixth St.	between High St. and Stewart Rd.	7955 S-D	6120 S-W	7785 S-D	7448 S-D	7214 S-D	6554 F-D	6336 S-D	6039 F-D	5854 S-D	5217 S-D		4826 S-D	4461 D	4461 S-D														
6	High St.	between Campbell St. and Poplar Sideroad	7110 S-D		6216 S-D	6855 S-D	6659 S-D	5209 F-D	5119 S-D	4804 S-D	3624 S-D	4282 S-D		3778 S-D	3634 D	3305 S-D	3162 S	2680 S	2800 S	2400	2000	1700 S								
7	Tenth St.	between High St. and Spruce St.	1568 S-D		1418 S-D	1002 S-D	1322 S-D	1049 F-D		1242 S-D	1283 S-D	1209 S-D		1165 S-D	1267 D	1090 S-D														
8	Spruce St.	between First St. and Second St.	1256 S-D		996 S-D	913 S-D	1403 S-D	1549 F-D		1157 F-D	884 S-D	882 S-D				1002 S-D													900	
9	Cedar St.	between First St. and Second St.	2844 S-D		1626 S-D	2666 S-D	2569 S-D	2344 F-D		2166 F-D	1442 S-D	1322 S-D				1648 S-D														
10	Oak St.	between First St. and Second St.	501 S-D		479 S-D	601 S-D	587 S-D	508 F-D	604 F-D	633 F-D	593 S-D	526 S-D				702 S-D														
11	Campbell St.	between Oak St. and Maple St.	2844 S-D		2694 S-D	2445 S-D		2731 F-D	2648 S-D	2450 S-D	2799 S-D	2459 S-D		2375 S-D	2470 D	2282 S-D	2190 S	2151 S	2000 S	2200	2100 S	2400 S		2700	3000		2400	1900	1500	
12	Third St.	between Birch St. and Beech St.	3326 S-D		3970 S-D	4780 S-D	4652 S-D	3884 F-D	3440 F-D	4724 Const F-D	3114 S-D	3578 S-D		3232 S-D	3519 D	3346 S-D	2889	3063 S	3000	1700 S	2400 S						2200		2700	
13	Maple St.	between First St. and Second St.	1195 S-D		664 S-D	998 S-D	1455 S-D	909 F-D		1188 Const F-D	736 S-D	627 S-D		962 S-D	836 D	956 S-D														
14	Second St.	between Maple St. and Pine St.	3984 S-D		3261 S-D	6985 S-D	6221 S-D	4597 F-D		7580 Const F-D	3781 S-D	3724 S-D		3450 S-D	3728 D	3762 S-D	3232 S	3472 S	3700	3600 S	2600 S				2800 S		2600		2800	
15	Pine St.	between First St. and Second St.	6445 S-D		5823 S-D	8440 S-D	7999 S-D	6288 F-D		Broke Const F-D	5247 S-D			6541 S-D	4974 D	5041 S-D			3700	4200 S	4200						2800 S		2900 S	2500 S
16	Fifth St.	between Maple St. and Pine St.	2298 F-D		1944 F-D	2140 S-D	2252 S-D	2256 F-D		2144 F-D	2173 S-D	2008 S-D				1969 S-D														
17	Cameron St.	between Birch St. and Maple St.	2114 S-D		2221 S-D	2104 S-D	2241 S-D	2009 F-D		2170 S-D	2379 S-D	2335 S-D				1764 S-D										2400			1900	
18	Poplar Sideroad	between Saunders St. and Hurontario St.			7212 S-D	6967 S-D	6489 S-D	4128 F-D	6006 S-D	5934 F-D	5386 S-D	5641 S-D		4856 S-D	4647 D	3973 S-D	3905 S	3455 S	3500 S	3100	2800		1000							
19	Lockhart Rd.	between Hurontario St. and Brock Crs.			2166 F-D	2554 F-D	2054 F-D	2259 F-D	2102 F-D	1837 F-D	2375 S-D					1837 S-D													800	
20	Collins St.	between Hurontario St. and St. Marie St.			2309 S-D	3212 S-D	CONST	3110 F-D	3082 F-D	2414 F-D	3282 S-D	2894 S-D		2028 S-D	4231 D	1993 S-D					700			1300						
21	St. Marie St.	between Huron St. and Simcoe St.			2698 S-D	2590 S-D	2458 S-D	1989 F-D	2159 F-D	2089 F-D	2296 S-D	2227 S-D		4112 S-D	2040 D	2648 S-D	2425 S	2981 S	3000	3100 S	2800 S						2500		3200	
22	St. Marie St.	between Fourth St. and Hume St.			2864 S-W	3623 S-W	2870 S-W	3771 F-D	3444 F-D	3878 F-D	3274 S-D	4012 S-D		3811 S-D	4300 D	3769 S-D												3400 S		
23	Minnesota St.	between Huron St. and Simcoe St.			995 F-D	1103 F-D	921 F-D	1044 F-D	1126 F-D	904 S-D	1035 S-D					1487 S-D														
24	Ontario St.	between Minnesota St. and Napier St.			4634 S-W	4490 S-W	3022 S-W	5278 F-D	5150 F-D	5315 F-D	4800 S-D					4680 S-D	4585 S	4968 S	4100	4200 S	3700								2500	
25	Minnesota St.	between Hume St. and Dillon Dr.			941 F-D	993 F-D	771 F-D	894 F-D	977 F-D	1001 S-D	1159 S-D					1475 S-D									600 S					
26	Manning Ave.	between Sproule Ave. and Minnesota St.			1744 F-D	1887 F-D	1778 F-D	1947 F-D	2237 S-D	1826 S-D	2889 S-D	2485 S-D		2134 S-D	2317 D	1949 S-D														
27	Peel St.	between Moberly St. and Hume St.			1816 F-D	1795 F-D	1841 F-D	1929 S-D	1748 F-D	1513 S-D	1813 S-D	2030 S-D				1443 S-D														
28	Peel St.	between Hume St. and Harben Crt.			1648 F-D	1883 S-D	1795 S-D	1609 F-D	1521 F-D	1768 S-D	1752 S-D	1566 S-D				1731 S-D									800 S					
29	Raglan St.	between Connell St. and Poplar Sideroad			2644 S-D	2488 S-D	2322 S-D	CONST	2009 S-D	1761 F-D	1685 S-D	1520 S-D		2567 S-D	2301 D	1974 S-D														
30	Sixth Line	between Sanford Fleming Dr. and Hwy 26 East			1644 S-D	1511 S-D	1694 S-D	1589 F-D	1494 F-D	1155 F-D	2004 S-D	2046 S-D		1415 S-D	1299 D	1415 S-D														
31	Mountain Rd.	between Osler Bluff Rd. and Slalom Gate	5774 S-W	5283 S-W	6074 S-W	5553 S-W	5798 S-W	4882 F-W	5218 F-W	4708 F-W	4524 S-W		5700 S-W	5906 S-W	5261 W	5429 S-W	5862 S	5671 S	4500	2900	4300 S				2900					
32	Balsam St.	between Old Mountain Rd. and Harbour St.			19644 F-W	21885 S-W	22441 S-W	20175 F-W	19122 F-W	19113 F-W	18249 S-W			19545 S-W	15539 W	18198 S-W	5691 S	5068 S	15200	12100	6300 S								14200	
33	First St. Extension	between Old Mountain Rd. and Cambridge St.			11924 S-D	14820 S-D	13774 S-D	11222 F-D	12478 S-D	9738 F-W	10985 S-W				8231 W	8299 S-W				6600 S	5200					5800 S	5300 S	4400 S	3400	3300
34	High St.	between Tenth Street Griffen Rd.	5504 S-W		5612 S-W	5440 S-W	5186 S-W	5346 F-D	4953 S-D																		7300 S		7500 S	4700
35	First St.	between Hickory St. and Walnut St.			27833 S-W	24798 S-W	25873 S-W	19396 F-W		N/A	INC			25281 S-W	21042 W	24324 S-W	21236	20072	25700 S	20700	24400						19700 S	15400	17300 S	17400 S
36	Hurontario St.	between Fourth St. and Hume St.			15863 S-D	13889 S-D	14451 S-D	12994 F-D		8462 Const F-W	13476 S-W			12281 S-W	11108 W	12689 S-W	4530 S	2467 S										1200 S		10300 S
37	Hurontario St.	between Cameron St. and Campbell St.			14112 S-D	12224 S-D	14545 S-D	10254 F-D		7841 F-W	INC			9888 S-W	10313 W	9637 S-W	9934 S	9844 S	9800	8900	9700 S							9200	8900 S	
38	Hume St.	between St. Peter St. and Minnesota St.	S-W		11987 S-W	12434 S-W	11564 S-W	12976 F-D		11841 F-W	10664 S-W			12312 S-W	13228 W	12433 S-W	10857	12386 S	12250	2100 S	11700			11000	11200	12600 S	5100 S			10400 S
39	Huron St. / P.R. Pkwy	between Rodney St. and Niagara St.			18318 S-W	20012 S-W	17223 S-W	19494 F-D			INC			18345 S-W	13162 W	15258 S-W	15698 S	14796 S		14100 S	11300						13900 S	9900	11800 S	10600
40	Sixth St.	between Birch St. and Maple St.	8100 S-D		7455 S-D	7644 S-D	7226 S-D	6777 F-D	6018 F-W		5695 S-W		5593 S-W	3942 S-W	2737 W	5614 S-W	5906 S	6368 S	7765	5800 S	5400						5400 S		4800 S	5000 S
41	Highway 26 East	between Elliot Ave. and Huronia Pathway	19451 S-D		17102 S-D	20615 S-D	20942 S-D	22676 F-D	21489 S-D	16098 F-W	20797 F-W		20291 S-W	20711 S-W	18074 W	15564 S-W	7272 S	9266 S										12400		
42	Poplar Sideroad	between Sixth Line and Roundabout.			6212 S-W	6009 S-W	2438 F-D	CONST	2280 S-D	2223 F-W	2609 S-W			3778 S-W	1935 W	2863 S-W	2706 S	2547 S	2300 S	2300	1900		1000							
43	Tenth Line	North of Poplar Sideroad	4410 S-W		3666 S-W	3234 S-W	2268 S-W	CONST	2378 S-D	1680 S-D	1579 S-D	1654 S-D	1619 S-D	1837 S-D	1791 D		1531 S	1545 S	1300	1200										
44	Hwy 26 west	Outside Vacion Inn Dr.	15111 S-W		15876 S-W	13002 S-W	12736 S-W	10856 F-W	11234 F-D	11797 F-D	10621 S-D		10584 S-D														1200 S			
45	High St	Between Third and Stewart	15201 S-D		13899 S-D	11511 S-D	10987 S-D	11977 F-D	10268 F-D	10024 F-D	10626 S-D		9984 S-W																	

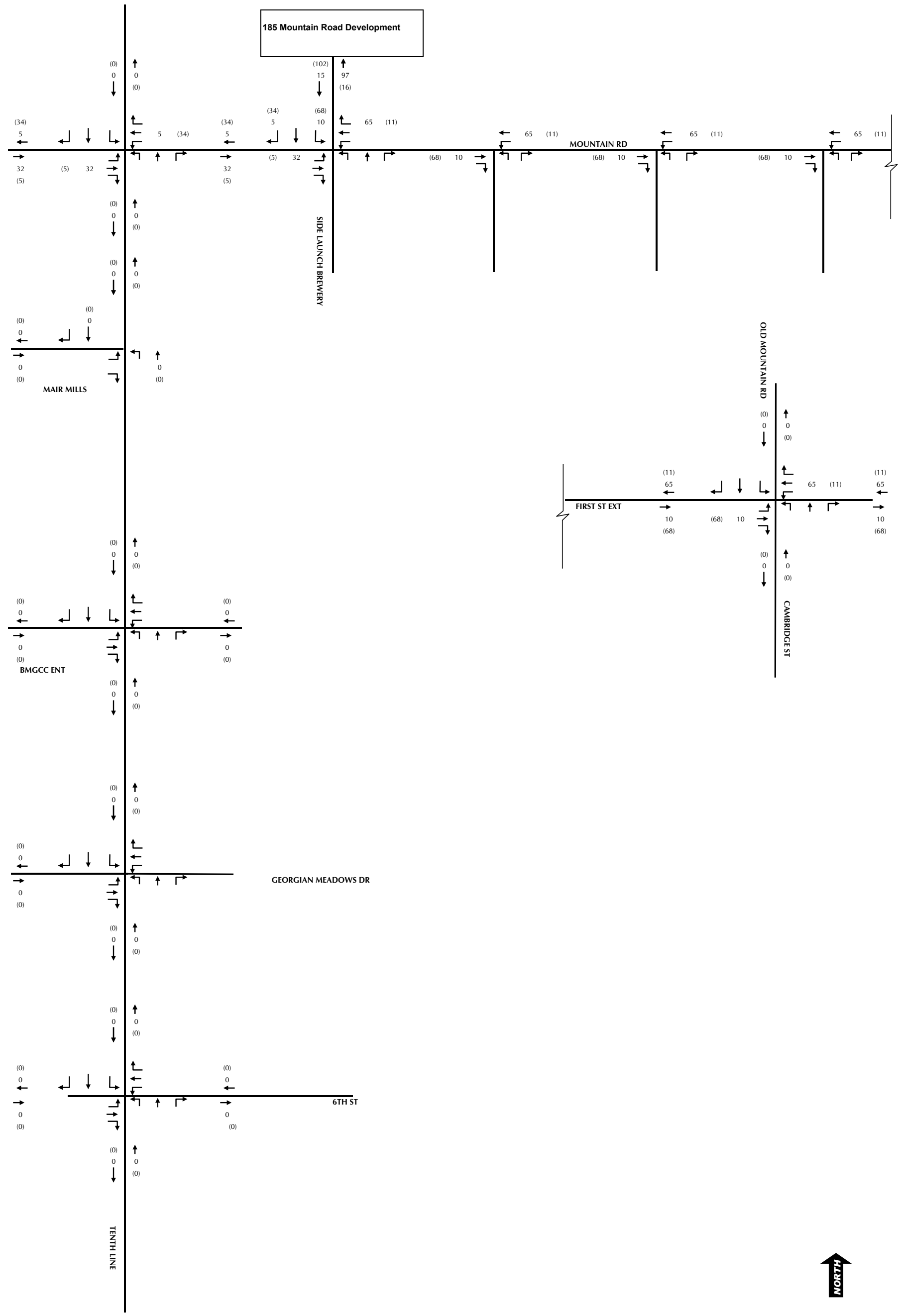
S-D	Sumn	S-D	Summ S-D Summer daily (24 hours)
S-W	Sumn	S-W	Summ S-W Summer weekly (7 days)
F-D	Fall d	F-D	Fall d F-D Fall daily (24 hours)

S - Summer Traffic Count
W - Weekly - AADT based on a 7 day count
D - Daily - AADT based on a one day count

Road# - Section #	Distance	Link Description	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
		Hwy 9										
027-01	9.7		5,800			6,100			6,700			8,300
		CR 88										
027-02	11.5		4,900			4,700			5,100			6,500
		Hwy 89										
027-03	9.8		6,600			6,300			5,500			6,700
		CR 21 / North Junction										
027-04	3.1		10,200			9,400			9,800			10,500
		Essa Road										
027-05	6.8	(old Hwy 131)	9,700			10,300			10,200			12,200
		CR 90										
		Hwy 26										
027-07	7.6				10,300			11,200			10,900	
		CR 22										
027-08	11.3				9,800			10,100			10,500	
		Elmvale South Limits										
027-09	2.2				8,300			9,000			8,700	
		CR 6										
027-10	7.6				3,100			4,000			4,100	
		Hwy 93 / Wyevale										
		CR 90										
028-01	1.9			N/A			5,200			4,600		
		CR 40										
028-02	4.7			N/A			4,700			5,100		
		CR 43										
028-03	5.1			N/A			4,600			5,200		
		Hwy 26										
		CR 22										
029-01	4.1				3,500			3,900			4,400	
		Flos Road 4										
029-02	6.8				3,100			4,000			4,000	
		CR 92										
029-03	7.8				2,400			2,500			2,400	
		Conc 4/ Tiny										
		CR 34										
032-01	2.7				3,200			3,200			4,000	
		10th Concession										
032-02	1.9								2,700		3,000	
		Poplar SR										
032-03	2.6										2,900	
		CR 124										
032-04	1.5										9,600	
		Raglan St										
032-05	1.5										7,700	
		Highway 26										
		Grey Cty Rd 19										
034-01	1.6				2,500			2,500			2,700	
		CR 32 / Sixth St										
034-02	2.0				2,900			2,900			3,600	
		Blue Mountain Road										
034-03	2.7				1,900			2,100			2,500	
		Highway 26										

APPENDIX B

Development Traffic Volumes



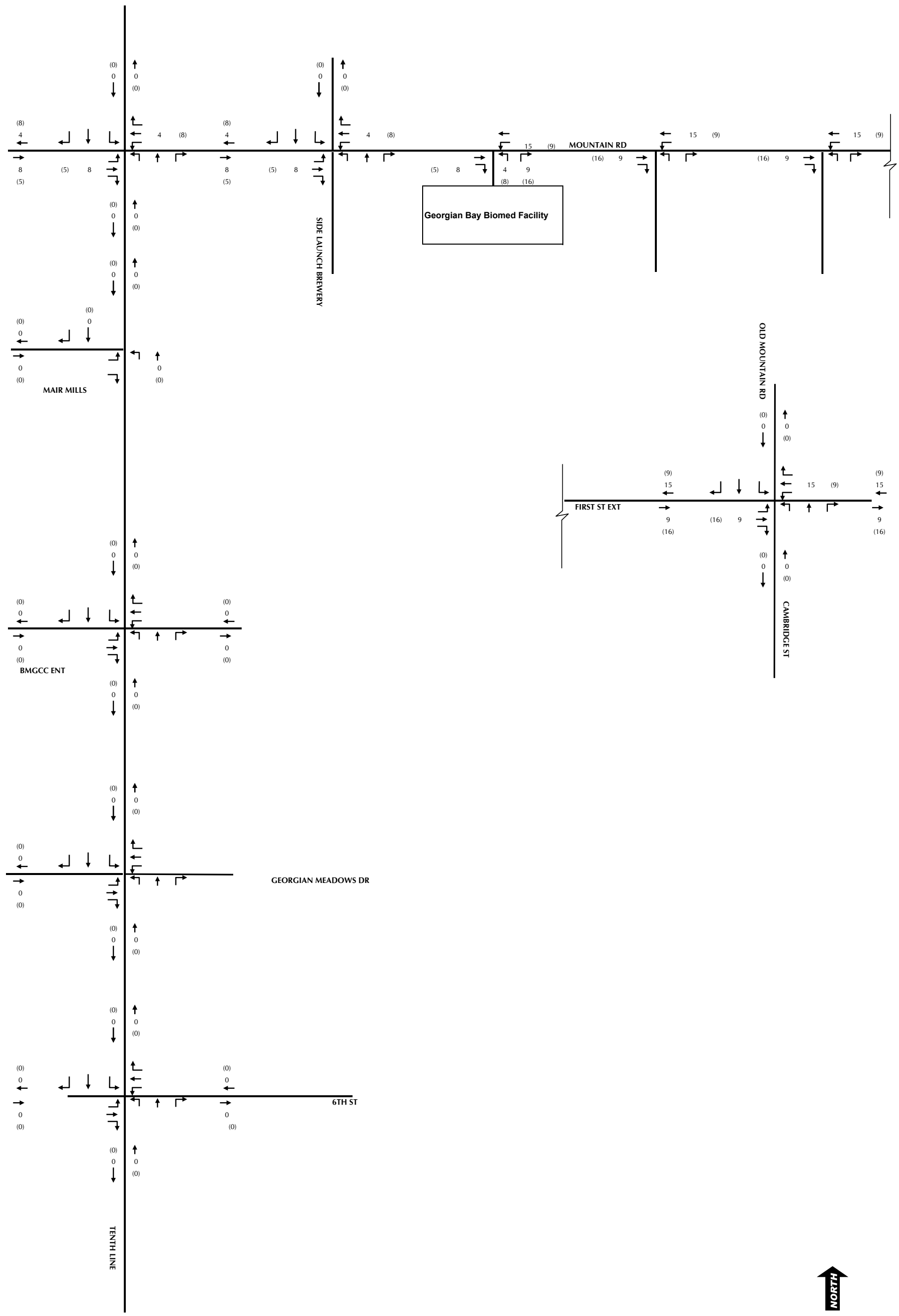
100 (100) AM (PM) Peak Hour

Figure B1

185 Mountain Road Development Gerenated Traffic Volumes

Maintain Road and Tenth Line EA

Town of Collingwood



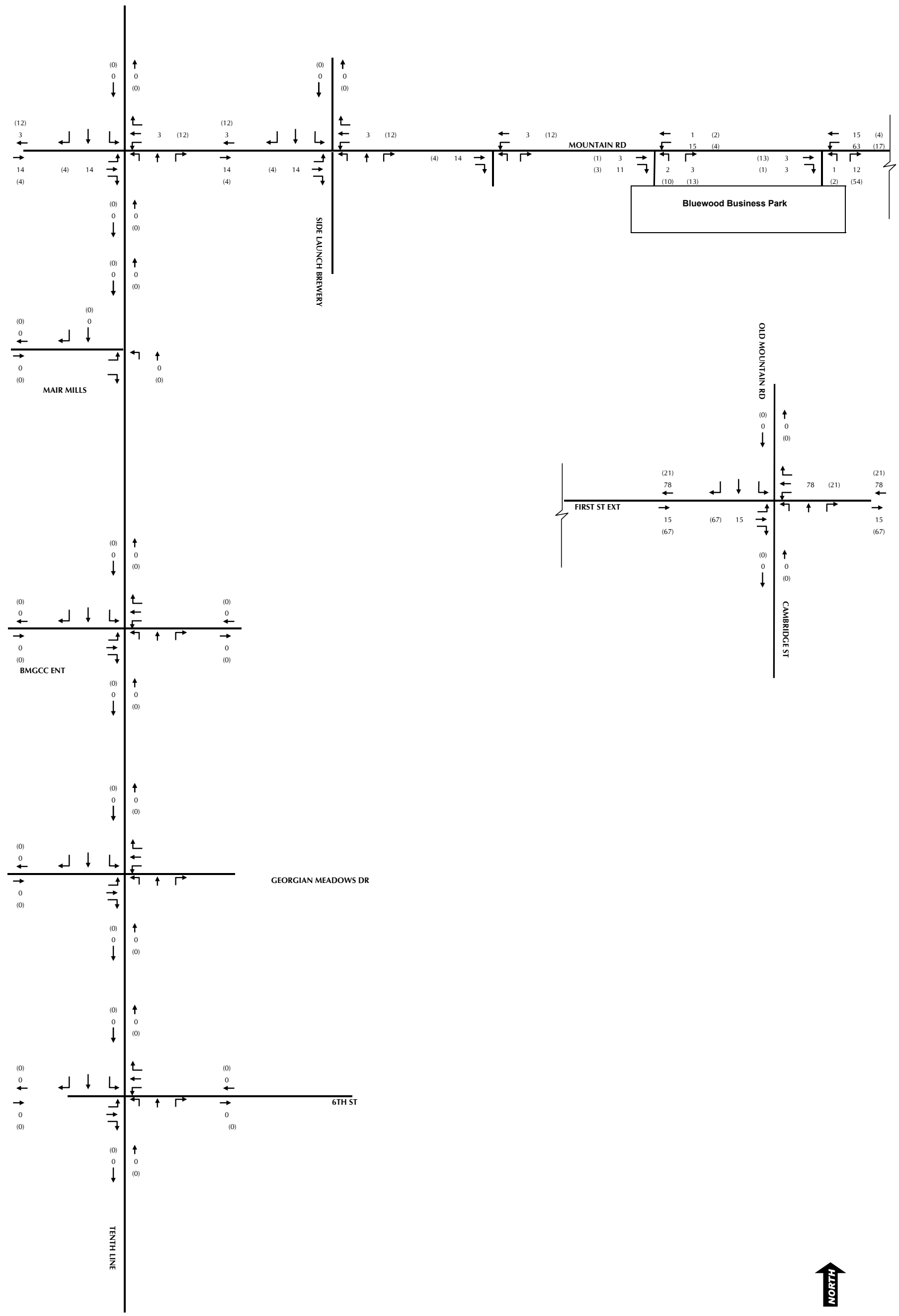
100 (100) AM (PM) Peak Hour

Figure B2

Georgian Bay Biomed Facility Gerenated Traffic Volumes

Maintain Road and Tenth Line EA

Town of Collingwood



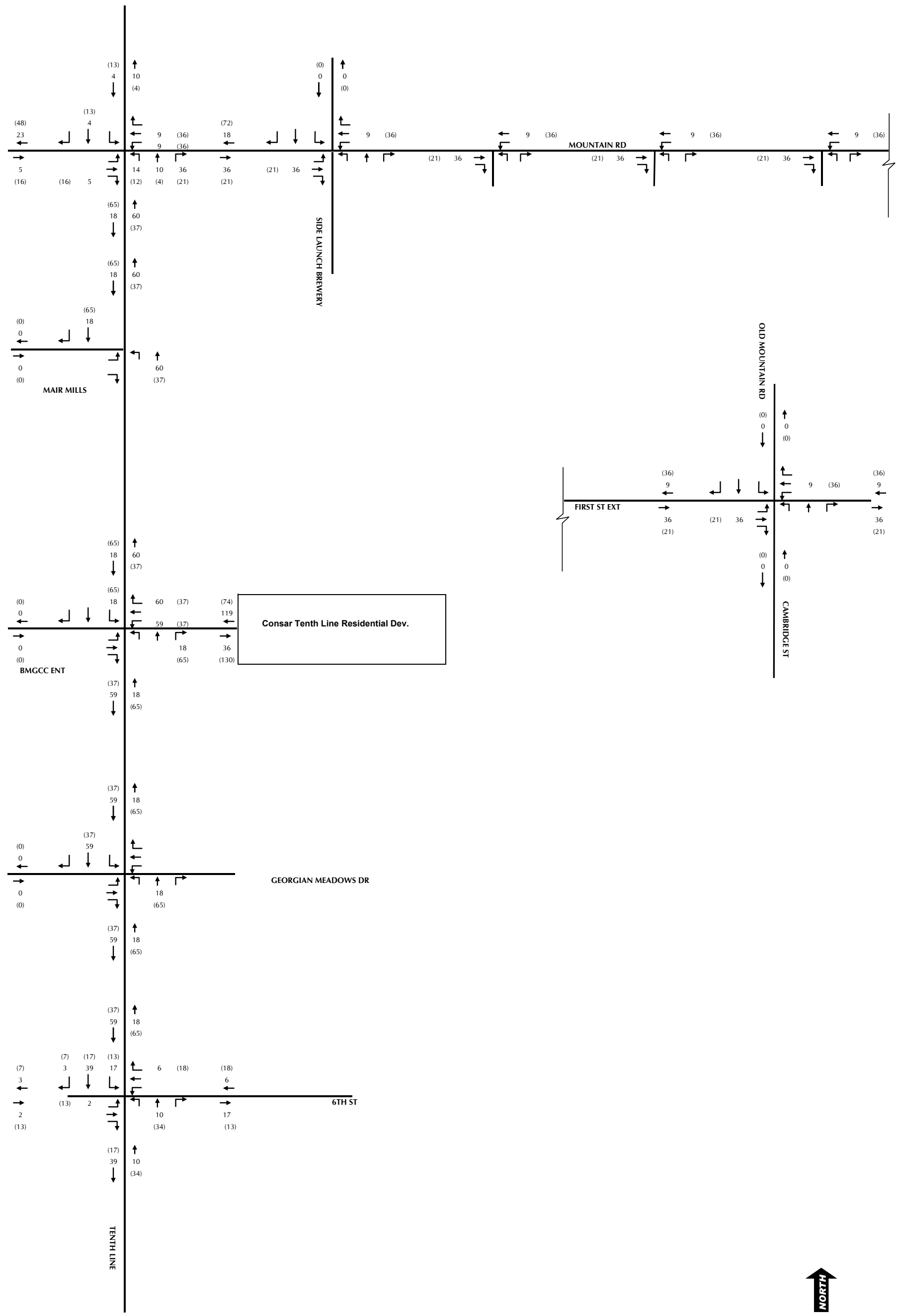
100 (100) AM (PM) Peak Hour

Figure B3

Bluewood Business Park Gerenated Traffic Volumes

Maintain Road and Tenth Line EA

Town of Collingwood



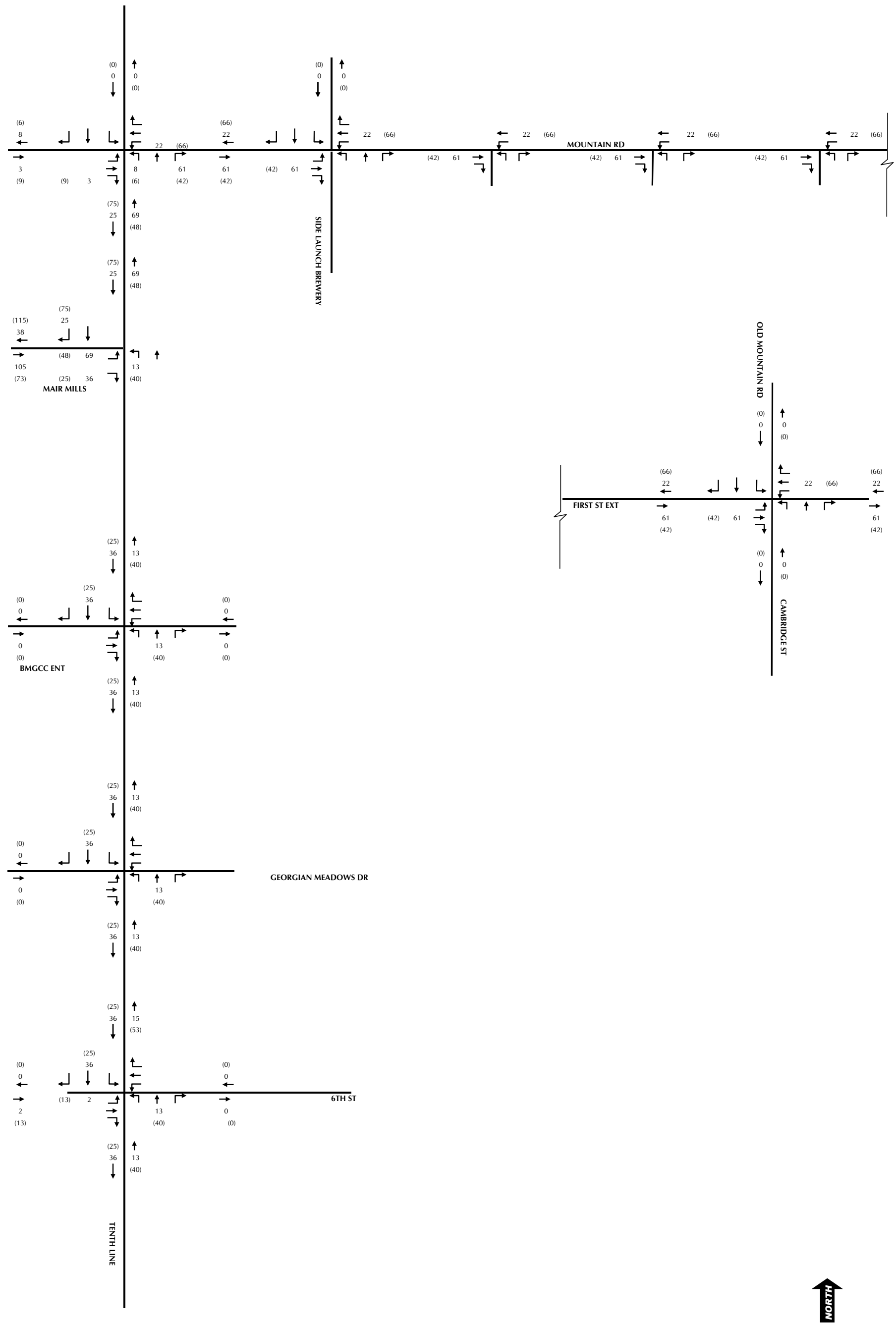
100 (100) AM (PM) Peak Hour

Figure B4

Consar Tenth Line Residential Development Gerenated Traffic Volumes

Maintain Road and Tenth Line EA

Town of Collingwood



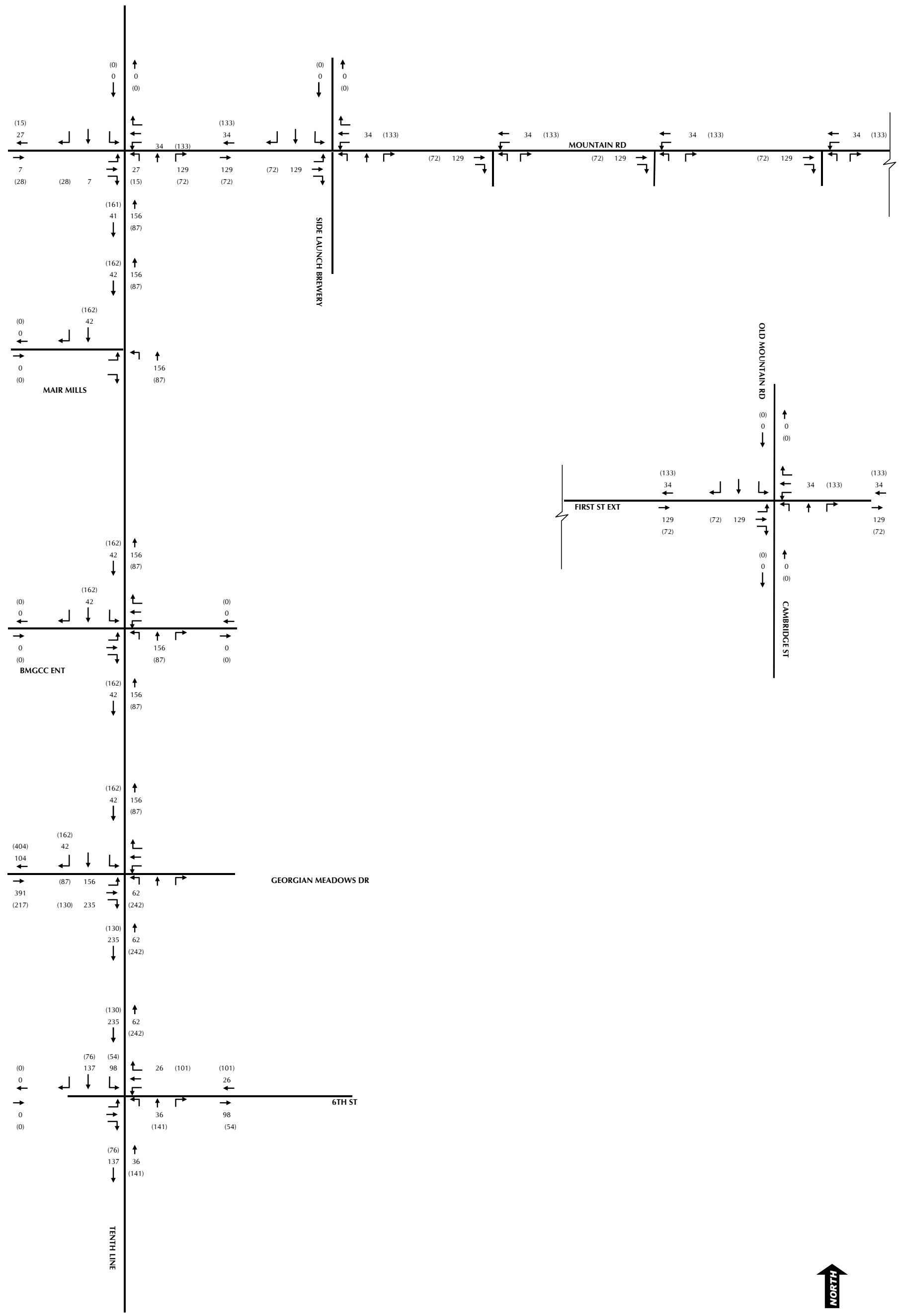
100 (100) AM (PM) Peak Hour

Figure B5

Mair Mills Village Residential Development Gerenated Traffic Volumes

Maintain Road and Tenth Line EA

Town of Collingwood



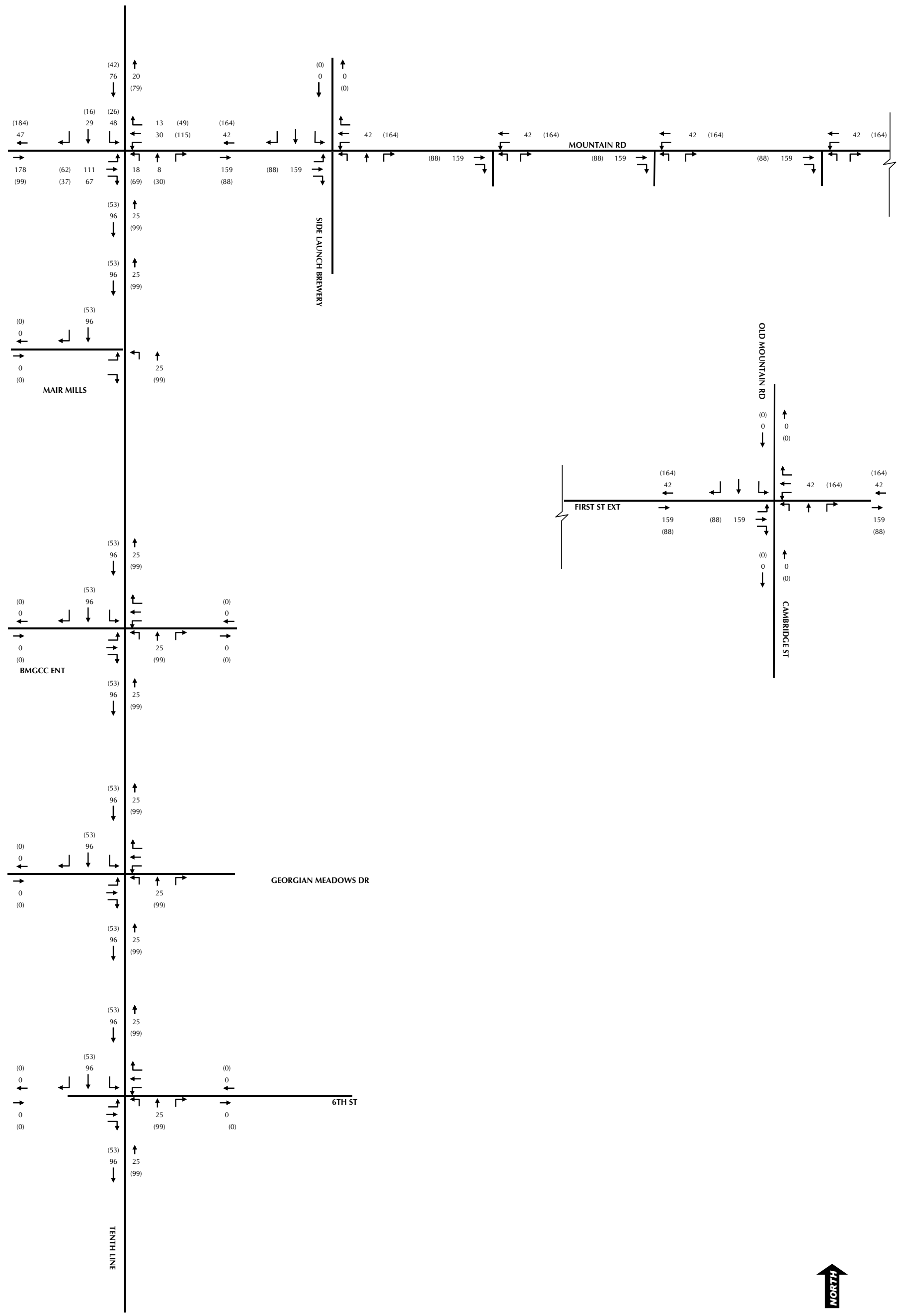
100 (100) AM (PM) Peak Hour

Figure B6

Linksview Residential Development Gerenated Traffic Volumes

Maintain Road and Tenth Line EA

Town of Collingwood



100 (100) AM (PM) Peak Hour

Figure B7

Todco Residential Development Gerenated Traffic Volumes

Maintain Road and Tenth Line EA

Town of Collingwood

APPENDIX C

Operational Analyses – Existing Road System

2017 Traffic Volumes

HCM 2010 Signalized Intersection Summary
3: Tenth Line & Mountain Rd

02/05/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	13	313	29	53	309	23	38	25	90	34	22	10
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1825	1900	1900	1822	1900	1900	1885	1900	1900	1670	1900
Adj Flow Rate, veh/h	14	340	32	58	336	25	41	27	98	37	24	11
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	4	4	4	5	5	5	23	23	23
Cap, veh/h	79	608	56	133	550	38	204	155	395	364	218	86
Arrive On Green	0.38	0.38	0.38	0.38	0.38	0.38	0.42	0.42	0.42	0.42	0.42	0.42
Sat Flow, veh/h	24	1608	147	146	1454	101	286	373	950	628	526	208
Grp Volume(v), veh/h	386	0	0	419	0	0	166	0	0	72	0	0
Grp Sat Flow(s),veh/h/ln	1779	0	0	1701	0	0	1610	0	0	1361	0	0
Q Serve(g_s), s	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	9.0	0.0	0.0	10.1	0.0	0.0	3.3	0.0	0.0	1.4	0.0	0.0
Prop In Lane	0.04		0.08	0.14		0.06	0.25		0.59	0.51		0.15
Lane Grp Cap(c), veh/h	744	0	0	721	0	0	754	0	0	669	0	0
V/C Ratio(X)	0.52	0.00	0.00	0.58	0.00	0.00	0.22	0.00	0.00	0.11	0.00	0.00
Avail Cap(c_a), veh/h	977	0	0	937	0	0	754	0	0	669	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	13.0	0.0	0.0	13.3	0.0	0.0	10.0	0.0	0.0	9.5	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.0	0.7	0.0	0.0	0.7	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.0	0.0	5.0	0.0	0.0	1.7	0.0	0.0	0.7	0.0	0.0
LnGrp Delay(d),s/veh	13.6	0.0	0.0	14.1	0.0	0.0	10.7	0.0	0.0	9.8	0.0	0.0
LnGrp LOS	B			B			B			A		
Approach Vol, veh/h		386			419			166			72	
Approach Delay, s/veh		13.6			14.1			10.7			9.8	
Approach LOS		B			B			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		25.7		27.2		25.7		27.2
Change Period (Y+Rc), s		* 5.7		* 5.2		* 5.7		* 5.2
Max Green Setting (Gmax), s		* 27		* 22		* 27		* 22
Max Q Clear Time (g_c+I1), s		11.0		3.4		12.1		5.3
Green Ext Time (p_c), s		3.4		1.2		3.3		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	13.1
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	9.2
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	13	136	30	0	29	137	34	0	27	53	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	0	4	0	2	5	1	0	2	0	2	3
Mvmt Flow	0	14	148	33	0	32	149	37	0	29	58	41
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	9.2	9.6	8.9
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	23%	7%	14%	26%
Vol Thru, %	45%	76%	69%	65%
Vol Right, %	32%	17%	17%	8%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	118	179	200	84
LT Vol	53	136	137	55
Through Vol	38	30	34	7
RT Vol	27	13	29	22
Lane Flow Rate	128	195	217	91
Geometry Grp	1	1	1	1
Degree of Util (X)	0.172	0.249	0.283	0.128
Departure Headway (Hd)	4.831	4.613	4.679	5.028
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	738	774	765	709
Service Time	2.89	2.665	2.73	3.091
HCM Lane V/C Ratio	0.173	0.252	0.284	0.128
HCM Control Delay	8.9	9.2	9.6	8.8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	1	1.2	0.4

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	22	55	7
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	0	7	0
Mvmt Flow	0	24	60	8
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	8.8
HCM LOS	A

Lane

Intersection	
Int Delay, s/veh	2.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	7	55	77	4	12	79
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	13	0	8	13
Mvmt Flow	8	60	84	4	13	86

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	198	86	0	0	88	0
Stage 1	86	-	-	-	-	-
Stage 2	112	-	-	-	-	-
Critical Hdwy	6.4	6.22	-	-	4.18	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.318	-	-	2.272	-
Pot Cap-1 Maneuver	795	973	-	-	1471	-
Stage 1	942	-	-	-	-	-
Stage 2	918	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	788	973	-	-	1471	-
Mov Cap-2 Maneuver	788	-	-	-	-	-
Stage 1	942	-	-	-	-	-
Stage 2	910	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	948	1471	-
HCM Lane V/C Ratio	-	-	0.071	0.009	-
HCM Control Delay (s)	-	-	9.1	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	404	20	10	364	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	439	22	11	396	5	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	461	0	867	450
Stage 1	-	-	-	-	450	-
Stage 2	-	-	-	-	417	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1100	-	323	609
Stage 1	-	-	-	-	642	-
Stage 2	-	-	-	-	665	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1100	-	319	609
Mov Cap-2 Maneuver	-	-	-	-	319	-
Stage 1	-	-	-	-	642	-
Stage 2	-	-	-	-	656	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	13
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	467	-	-	1100	-
HCM Lane V/C Ratio	0.035	-	-	0.01	-
HCM Control Delay (s)	13	-	-	8.3	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	12	3	11	108	92	10
Conflicting Peds, #/hr	7	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	8	33	0	12	8	20
Mvmt Flow	13	3	12	117	100	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	253	113	118	0	-	0
Stage 1	112	-	-	-	-	-
Stage 2	141	-	-	-	-	-
Critical Hdwy	6.48	6.53	4.1	-	-	-
Critical Hdwy Stg 1	5.48	-	-	-	-	-
Critical Hdwy Stg 2	5.48	-	-	-	-	-
Follow-up Hdwy	3.572	3.597	2.2	-	-	-
Pot Cap-1 Maneuver	723	862	1483	-	-	-
Stage 1	898	-	-	-	-	-
Stage 2	871	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	708	856	1482	-	-	-
Mov Cap-2 Maneuver	708	-	-	-	-	-
Stage 1	893	-	-	-	-	-
Stage 2	858	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1482	-	733	-	-
HCM Lane V/C Ratio	0.008	-	0.022	-	-
HCM Control Delay (s)	7.4	0	10	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 2010 Signalized Intersection Summary
3: Tenth Line & Mountain Rd

02/05/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	487	40	94	445	50	51	18	85	52	35	13
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1840	1900	1900	1840	1900	1900	1900	1900	1900	1871	1900
Adj Flow Rate, veh/h	8	529	43	102	484	54	55	20	92	57	38	14
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	0	0	0	0	0	0	0	0	0
Cap, veh/h	62	791	64	149	565	60	224	104	307	342	216	69
Arrive On Green	0.47	0.47	0.47	0.47	0.47	0.47	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	7	1671	134	173	1193	126	417	294	873	722	614	197
Grp Volume(v), veh/h	580	0	0	640	0	0	167	0	0	109	0	0
Grp Sat Flow(s),veh/h/ln	1813	0	0	1492	0	0	1584	0	0	1532	0	0
Q Serve(g_s), s	0.0	0.0	0.0	9.4	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	15.4	0.0	0.0	24.9	0.0	0.0	4.4	0.0	0.0	2.6	0.0	0.0
Prop In Lane	0.01		0.07	0.16		0.08	0.33		0.55	0.52		0.13
Lane Grp Cap(c), veh/h	916	0	0	773	0	0	634	0	0	627	0	0
V/C Ratio(X)	0.63	0.00	0.00	0.83	0.00	0.00	0.26	0.00	0.00	0.17	0.00	0.00
Avail Cap(c_a), veh/h	989	0	0	835	0	0	634	0	0	627	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	12.7	0.0	0.0	14.9	0.0	0.0	14.5	0.0	0.0	13.9	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	0.0	6.6	0.0	0.0	1.0	0.0	0.0	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.9	0.0	0.0	11.5	0.0	0.0	2.2	0.0	0.0	1.4	0.0	0.0
LnGrp Delay(d),s/veh	13.9	0.0	0.0	21.4	0.0	0.0	15.5	0.0	0.0	14.5	0.0	0.0
LnGrp LOS	B			C			B			B		
Approach Vol, veh/h		580			640			167			109	
Approach Delay, s/veh		13.9			21.4			15.5			14.5	
Approach LOS		B			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		35.3		27.2		35.3		27.2
Change Period (Y+Rc), s		* 5.7		* 5.2		* 5.7		* 5.2
Max Green Setting (Gmax), s		* 32		* 22		* 32		* 22
Max Q Clear Time (g_c+I1), s		17.4		4.6		26.9		6.4
Green Ext Time (p_c), s		5.2		1.4		2.7		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	17.4
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	10.9
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	22	175	46	0	42	210	31	0	27	57	40
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	0	1	3	2	0	0	4	2	5	2	0
Mvmt Flow	0	24	190	50	0	46	228	34	0	29	62	43
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	10.9	11.6	10
HCM LOS	B	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	9%	15%	35%
Vol Thru, %	46%	72%	74%	47%
Vol Right, %	32%	19%	11%	18%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	124	243	283	119
LT Vol	57	175	210	56
Through Vol	40	46	31	21
RT Vol	27	22	42	42
Lane Flow Rate	135	264	308	129
Geometry Grp	1	1	1	1
Degree of Util (X)	0.206	0.366	0.418	0.201
Departure Headway (Hd)	5.511	4.991	5.017	5.582
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	652	721	723	644
Service Time	3.531	3.011	3.017	3.602
HCM Lane V/C Ratio	0.207	0.366	0.426	0.2
HCM Control Delay	10	10.9	11.6	10
HCM Lane LOS	A	B	B	A
HCM 95th-tile Q	0.8	1.7	2.1	0.7

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	42	56	21
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	0
Mvmt Flow	0	46	61	23
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	10
HCM LOS	A

Lane

Intersection	
Int Delay, s/veh	2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	6	27	97	9	46	115
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	4	4	0	2	8
Mvmt Flow	7	29	105	10	50	125

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	335	110	0	0	115	0
Stage 1	110	-	-	-	-	-
Stage 2	225	-	-	-	-	-
Critical Hdwy	6.4	6.24	-	-	4.12	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.336	-	-	2.218	-
Pot Cap-1 Maneuver	664	938	-	-	1474	-
Stage 1	920	-	-	-	-	-
Stage 2	817	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	640	938	-	-	1474	-
Mov Cap-2 Maneuver	640	-	-	-	-	-
Stage 1	920	-	-	-	-	-
Stage 2	788	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	2.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	865	1474	-
HCM Lane V/C Ratio	-	-	0.041	0.034	-
HCM Control Delay (s)	-	-	9.3	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	597	0	10	634	10	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	649	0	11	689	11	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	649	0	1360	649
Stage 1	-	-	-	-	649	-
Stage 2	-	-	-	-	711	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	937	-	164	470
Stage 1	-	-	-	-	520	-
Stage 2	-	-	-	-	487	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	937	-	161	470
Mov Cap-2 Maneuver	-	-	-	-	161	-
Stage 1	-	-	-	-	520	-
Stage 2	-	-	-	-	478	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	24
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	206	-	-	937	-
HCM Lane V/C Ratio	0.079	-	-	0.012	-
HCM Control Delay (s)	24	-	-	8.9	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	8	8	4	120	185	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	13	0	0	3	7	0
Mvmt Flow	9	9	4	130	201	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	347	208	214	0	-	0
Stage 1	208	-	-	-	-	-
Stage 2	139	-	-	-	-	-
Critical Hdwy	6.53	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.53	-	-	-	-	-
Critical Hdwy Stg 2	5.53	-	-	-	-	-
Follow-up Hdwy	3.617	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	628	837	1368	-	-	-
Stage 1	801	-	-	-	-	-
Stage 2	861	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	626	837	1368	-	-	-
Mov Cap-2 Maneuver	626	-	-	-	-	-
Stage 1	801	-	-	-	-	-
Stage 2	858	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1368	-	716	-	-
HCM Lane V/C Ratio	0.003	-	0.024	-	-
HCM Control Delay (s)	7.6	0	10.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

2022 Traffic Volumes

HCM 2010 Signalized Intersection Summary
3: Tenth Line & Mountain Rd

06/09/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	14	433	56	78	366	30	62	34	164	52	35	12
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1825	1900	1900	1822	1900	1900	1888	1900	1900	1668	1900
Adj Flow Rate, veh/h	15	471	61	85	398	33	67	37	178	57	38	13
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	4	4	4	5	5	5	23	23	23
Cap, veh/h	74	637	81	142	500	39	187	127	401	330	200	59
Arrive On Green	0.41	0.41	0.41	0.41	0.41	0.41	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	18	1563	198	164	1227	95	269	322	1012	582	505	149
Grp Volume(v), veh/h	547	0	0	516	0	0	282	0	0	108	0	0
Grp Sat Flow(s),veh/h/ln	1780	0	0	1486	0	0	1603	0	0	1236	0	0
Q Serve(g_s), s	0.0	0.0	0.0	3.2	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	14.5	0.0	0.0	17.7	0.0	0.0	6.8	0.0	0.0	2.7	0.0	0.0
Prop In Lane	0.03		0.11	0.16		0.06	0.24		0.63	0.53		0.12
Lane Grp Cap(c), veh/h	792	0	0	681	0	0	715	0	0	588	0	0
V/C Ratio(X)	0.69	0.00	0.00	0.76	0.00	0.00	0.39	0.00	0.00	0.18	0.00	0.00
Avail Cap(c_a), veh/h	932	0	0	803	0	0	715	0	0	588	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.0	0.0	0.0	14.5	0.0	0.0	12.2	0.0	0.0	10.9	0.0	0.0
Incr Delay (d2), s/veh	1.8	0.0	0.0	3.5	0.0	0.0	1.6	0.0	0.0	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.4	0.0	0.0	7.8	0.0	0.0	3.5	0.0	0.0	1.2	0.0	0.0
LnGrp Delay(d),s/veh	15.8	0.0	0.0	18.0	0.0	0.0	13.8	0.0	0.0	11.6	0.0	0.0
LnGrp LOS	B			B			B			B		
Approach Vol, veh/h		547			516			282			108	
Approach Delay, s/veh		15.8			18.0			13.8			11.6	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		28.3		27.2		28.3		27.2
Change Period (Y+Rc), s		* 5.7		* 5.2		* 5.7		* 5.2
Max Green Setting (Gmax), s		* 27		* 22		* 27		* 22
Max Q Clear Time (g_c+I1), s		16.5		4.7		19.7		8.8
Green Ext Time (p_c), s		3.7		2.1		3.0		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	15.9
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	90	453	66	105	452	27	63	26	72	12	48	67
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1712	1836	1900	1881	1863	1900	1792	1859	1900	1727	1765	1900
Adj Flow Rate, veh/h	98	492	72	114	491	29	68	28	78	13	52	73
Adj No. of Lanes	1	2	0	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	11	4	4	1	2	0	6	0	0	10	3	3
Cap, veh/h	351	1187	173	429	931	801	417	141	392	423	216	303
Arrive On Green	0.39	0.39	0.39	0.06	0.50	0.50	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	804	3052	445	1792	1863	1604	1213	435	1211	1189	665	934
Grp Volume(v), veh/h	98	280	284	114	491	29	68	0	106	13	0	125
Grp Sat Flow(s),veh/h/ln	804	1744	1753	1792	1863	1604	1213	0	1645	1189	0	1600
Q Serve(g_s), s	7.3	9.0	9.1	2.8	13.8	0.7	3.4	0.0	3.6	0.6	0.0	4.4
Cycle Q Clear(g_c), s	12.5	9.0	9.1	2.8	13.8	0.7	7.8	0.0	3.6	4.2	0.0	4.4
Prop In Lane	1.00		0.25	1.00		1.00	1.00		0.74	1.00		0.58
Lane Grp Cap(c), veh/h	351	678	681	429	931	801	417	0	533	423	0	518
V/C Ratio(X)	0.28	0.41	0.42	0.27	0.53	0.04	0.16	0.00	0.20	0.03	0.00	0.24
Avail Cap(c_a), veh/h	376	732	736	439	999	860	417	0	533	423	0	518
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.3	17.2	17.2	12.3	13.1	9.8	22.0	0.0	18.8	20.4	0.0	19.1
Incr Delay (d2), s/veh	0.4	0.4	0.4	0.3	0.5	0.0	0.8	0.0	0.8	0.1	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	4.4	4.5	1.4	7.2	0.3	1.2	0.0	1.7	0.2	0.0	2.1
LnGrp Delay(d),s/veh	20.7	17.6	17.6	12.7	13.6	9.9	22.8	0.0	19.7	20.5	0.0	20.2
LnGrp LOS	C	B	B	B	B	A	C		B	C		C
Approach Vol, veh/h		662			634			174			138	
Approach Delay, s/veh		18.1			13.2			20.9			20.3	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	8.6	37.6		31.0		46.2		31.0
Change Period (Y+Rc), s	4.0	* 7.6		6.0		* 7.6		6.0
Max Green Setting (Gmax), s	5.0	* 32		25.0		* 41		25.0
Max Q Clear Time (g_c+I1), s	4.8	14.5		6.4		15.8		9.8
Green Ext Time (p_c), s	0.0	8.2		1.8		9.8		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	16.7
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	31	0	47	8	0	61	12	106	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	0	2	2	2	13	0
Mvmt Flow	34	0	51	9	0	66	13	115	4

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	378	347	173	370	348	117	177	0	0
Stage 1	201	201	-	143	143	-	-	-	-
Stage 2	177	146	-	227	205	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.1	6.52	6.22	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.1	5.52	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.1	5.52	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.318	2.218	-	-
Pot Cap-1 Maneuver	580	576	871	590	576	935	1399	-	-
Stage 1	801	735	-	865	779	-	-	-	-
Stage 2	825	776	-	780	732	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	530	564	871	547	564	935	1399	-	-
Mov Cap-2 Maneuver	530	564	-	547	564	-	-	-	-
Stage 1	793	727	-	856	771	-	-	-	-
Stage 2	759	768	-	726	724	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	10.9	9.6	0.7
HCM LOS	B	A	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1399	-	-	694	864	1431	-	-
HCM Lane V/C Ratio	0.009	-	-	0.122	0.087	0.01	-	-
HCM Control Delay (s)	7.6	0	-	10.9	9.6	7.5	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.3	0	-	-

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	13	155	8
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	8	13	2
Mvmt Flow	14	168	9

Major/Minor	Major2		
Conflicting Flow All	120	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.18	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.272	-	-
Pot Cap-1 Maneuver	1431	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1431	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.6
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	32	580	22	11	440	65	6	0	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	2	4	2	2	2	2
Mvmt Flow	35	630	24	12	478	71	7	0	12

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	549	0	0	654	0	0	1252	1285	642
Stage 1	-	-	-	-	-	-	712	712	-
Stage 2	-	-	-	-	-	-	540	573	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1021	-	-	933	-	-	149	165	474
Stage 1	-	-	-	-	-	-	423	436	-
Stage 2	-	-	-	-	-	-	526	504	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1021	-	-	933	-	-	139	153	474
Mov Cap-2 Maneuver	-	-	-	-	-	-	139	153	-
Stage 1	-	-	-	-	-	-	400	412	-
Stage 2	-	-	-	-	-	-	511	494	-

Approach	EB	WB	NB
HCM Control Delay, s	0.4	0.2	20.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	256	1021	-	-	933	-	-	182
HCM Lane V/C Ratio	0.072	0.034	-	-	0.013	-	-	0.09
HCM Control Delay (s)	20.2	8.7	0	-	8.9	0	-	26.7
HCM Lane LOS	C	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.3

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	10	0	5
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	11	0	5

Major/Minor	Minor2		
Conflicting Flow All	1256	1262	514
Stage 1	538	538	-
Stage 2	718	724	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	148	170	560
Stage 1	527	522	-
Stage 2	420	430	-
Platoon blocked, %			
Mov Cap-1 Maneuver	136	158	560
Mov Cap-2 Maneuver	136	158	-
Stage 1	499	512	-
Stage 2	387	407	-

Approach	SB
HCM Control Delay, s	26.7
HCM LOS	D

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	13	0	3	25	0	26	12	163	8
Conflicting Peds, #/hr	7	0	0	0	0	0	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	8	2	33	2	2	2	0	12	2
Mvmt Flow	14	0	3	27	0	28	13	177	9

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	418	408	179	405	410	183	184	0	0
Stage 1	196	196	-	208	208	-	-	-	-
Stage 2	222	212	-	197	202	-	-	-	-
Critical Hdwy	7.18	6.52	6.53	7.12	6.52	6.22	4.1	-	-
Critical Hdwy Stg 1	6.18	5.52	-	6.12	5.52	-	-	-	-
Critical Hdwy Stg 2	6.18	5.52	-	6.12	5.52	-	-	-	-
Follow-up Hdwy	3.572	4.018	3.597	3.518	4.018	3.318	2.2	-	-
Pot Cap-1 Maneuver	535	533	790	556	531	859	1403	-	-
Stage 1	792	739	-	794	730	-	-	-	-
Stage 2	767	727	-	805	734	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	507	521	785	546	519	858	1402	-	-
Mov Cap-2 Maneuver	507	521	-	546	519	-	-	-	-
Stage 1	779	729	-	786	723	-	-	-	-
Stage 2	734	720	-	795	725	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	11.8	10.9	0.5
HCM LOS	B	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1402	-	-	543	670	1387	-	-
HCM Lane V/C Ratio	0.009	-	-	0.032	0.083	0.006	-	-
HCM Control Delay (s)	7.6	0	-	11.8	10.9	7.6	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0	-	-

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	8	152	11
Conflicting Peds, #/hr	0	0	1
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	8	20
Mvmt Flow	9	165	12

Major/Minor	Major2		
Conflicting Flow All	186	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1388	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1387	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.4
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	593	8	15	512	4	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	2	2	4	2	2
Mvmt Flow	645	9	16	557	4	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	653	0	1238	649
Stage 1	-	-	-	-	649	-
Stage 2	-	-	-	-	589	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	934	-	194	470
Stage 1	-	-	-	-	520	-
Stage 2	-	-	-	-	554	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	934	-	189	470
Mov Cap-2 Maneuver	-	-	-	-	189	-
Stage 1	-	-	-	-	520	-
Stage 2	-	-	-	-	540	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	16.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	322	-	-	934	-
HCM Lane V/C Ratio	0.044	-	-	0.017	-
HCM Control Delay (s)	16.7	-	-	8.9	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	591	3	63	539	1	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	2	2	4	2	2
Mvmt Flow	642	3	68	586	1	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	646	0	1367	644
Stage 1	-	-	-	-	644	-
Stage 2	-	-	-	-	723	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	939	-	162	473
Stage 1	-	-	-	-	523	-
Stage 2	-	-	-	-	481	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	939	-	145	473
Mov Cap-2 Maneuver	-	-	-	-	281	-
Stage 1	-	-	-	-	523	-
Stage 2	-	-	-	-	430	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	13.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	449	-	-	939	-
HCM Lane V/C Ratio	0.031	-	-	0.073	-
HCM Control Delay (s)	13.3	-	-	9.1	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	591	11	15	525	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	2	2	4	2	2
Mvmt Flow	642	12	16	571	2	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	654	0	1251	648
Stage 1	-	-	-	-	648	-
Stage 2	-	-	-	-	603	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	933	-	190	470
Stage 1	-	-	-	-	521	-
Stage 2	-	-	-	-	546	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	933	-	185	470
Mov Cap-2 Maneuver	-	-	-	-	185	-
Stage 1	-	-	-	-	521	-
Stage 2	-	-	-	-	532	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	17.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	291	-	-	933	-
HCM Lane V/C Ratio	0.019	-	-	0.017	-
HCM Control Delay (s)	17.6	-	-	8.9	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	26	14	5	197	157	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	12	8	2
Mvmt Flow	28	15	5	214	171	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	401	176	182	0	-	0
Stage 1	176	-	-	-	-	-
Stage 2	225	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	605	867	1393	-	-	-
Stage 1	855	-	-	-	-	-
Stage 2	812	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	603	867	1393	-	-	-
Mov Cap-2 Maneuver	603	-	-	-	-	-
Stage 1	855	-	-	-	-	-
Stage 2	809	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.7	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1393	-	675	-	-
HCM Lane V/C Ratio	0.004	-	0.064	-	-
HCM Control Delay (s)	7.6	0	10.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Intersection Delay, s/veh	11
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	16	150	33	0	32	151	45	0	30	83	42
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	0	4	0	2	5	1	0	2	0	2	3
Mvmt Flow	0	17	163	36	0	35	164	49	0	33	90	46
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	10.8	11.5	10.3
HCM LOS	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	19%	8%	14%	25%
Vol Thru, %	54%	75%	66%	71%
Vol Right, %	27%	17%	20%	4%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	155	199	228	206
LT Vol	83	150	151	147
Through Vol	42	33	45	8
RT Vol	30	16	32	51
Lane Flow Rate	168	216	248	224
Geometry Grp	1	1	1	1
Degree of Util (X)	0.253	0.319	0.367	0.34
Departure Headway (Hd)	5.414	5.306	5.33	5.462
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	662	677	674	658
Service Time	3.461	3.349	3.372	3.505
HCM Lane V/C Ratio	0.254	0.319	0.368	0.34
HCM Control Delay	10.3	10.8	11.5	11.3
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	1	1.4	1.7	1.5

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	51	147	8
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	0	7	0
Mvmt Flow	0	55	160	9
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	11.3
HCM LOS	B

Lane

HCM 2010 Signalized Intersection Summary
3: Tenth Line & Mountain Rd

06/09/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	565	72	171	591	69	87	31	133	66	49	14
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1841	1900	1900	1840	1900	1900	1900	1900	1900	1871	1900
Adj Flow Rate, veh/h	8	614	78	186	642	75	95	34	145	72	53	15
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	0	0	0	0	0	0	0	0	0
Cap, veh/h	39	1086	137	205	628	72	145	54	170	158	108	26
Arrive On Green	0.68	0.68	0.68	0.68	0.68	0.68	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	6	1588	200	239	919	105	464	253	806	500	509	121
Grp Volume(v), veh/h	700	0	0	903	0	0	274	0	0	140	0	0
Grp Sat Flow(s),veh/h/ln	1794	0	0	1263	0	0	1523	0	0	1130	0	0
Q Serve(g_s), s	0.0	0.0	0.0	50.3	0.0	0.0	6.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	20.8	0.0	0.0	71.1	0.0	0.0	18.0	0.0	0.0	11.8	0.0	0.0
Prop In Lane	0.01		0.11	0.21		0.08	0.35		0.53	0.51		0.11
Lane Grp Cap(c), veh/h	1262	0	0	905	0	0	369	0	0	292	0	0
V/C Ratio(X)	0.55	0.00	0.00	1.00	0.00	0.00	0.74	0.00	0.00	0.48	0.00	0.00
Avail Cap(c_a), veh/h	1262	0	0	905	0	0	369	0	0	292	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.5	0.0	0.0	20.1	0.0	0.0	39.4	0.0	0.0	36.4	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.0	29.2	0.0	0.0	12.7	0.0	0.0	5.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.5	0.0	0.0	33.2	0.0	0.0	8.8	0.0	0.0	4.1	0.0	0.0
LnGrp Delay(d),s/veh	9.0	0.0	0.0	49.3	0.0	0.0	52.1	0.0	0.0	42.0	0.0	0.0
LnGrp LOS	A			D			D			D		
Approach Vol, veh/h		700			903			274			140	
Approach Delay, s/veh		9.0			49.3			52.1			42.0	
Approach LOS		A			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		76.8		27.2		76.8		27.2
Change Period (Y+Rc), s		* 5.7		* 5.2		* 5.7		* 5.2
Max Green Setting (Gmax), s		* 71		* 22		* 71		* 22
Max Q Clear Time (g_c+I1), s		22.8		13.8		73.1		20.0
Green Ext Time (p_c), s		12.2		1.5		0.0		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	35.2
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	100	706	101	155	621	48	94	62	118	28	59	105
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.99		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1849	1900	1900	1845	1845	1845	1900	1900	1827	1824	1900
Adj Flow Rate, veh/h	109	767	110	168	675	52	102	67	128	30	64	114
Adj No. of Lanes	1	2	0	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	3	3	0	3	3	3	0	0	4	8	8
Cap, veh/h	335	1371	197	398	1056	892	271	139	266	261	140	249
Arrive On Green	0.45	0.45	0.45	0.07	0.57	0.57	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	723	3081	442	1810	1845	1557	1179	581	1111	1154	583	1039
Grp Volume(v), veh/h	109	437	440	168	675	52	102	0	195	30	0	178
Grp Sat Flow(s),veh/h/ln	723	1757	1766	1810	1845	1557	1179	0	1692	1154	0	1623
Q Serve(g_s), s	8.7	13.3	13.3	3.4	17.8	1.1	5.9	0.0	7.2	1.7	0.0	6.8
Cycle Q Clear(g_c), s	17.3	13.3	13.3	3.4	17.8	1.1	12.6	0.0	7.2	8.8	0.0	6.8
Prop In Lane	1.00		0.25	1.00		1.00	1.00		0.66	1.00		0.64
Lane Grp Cap(c), veh/h	335	782	786	398	1056	892	271	0	405	261	0	388
V/C Ratio(X)	0.33	0.56	0.56	0.42	0.64	0.06	0.38	0.00	0.48	0.11	0.00	0.46
Avail Cap(c_a), veh/h	335	782	786	417	1056	892	397	0	585	384	0	561
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.3	14.8	14.8	10.4	10.4	6.8	28.9	0.0	23.6	27.4	0.0	23.5
Incr Delay (d2), s/veh	2.6	2.9	2.9	0.7	3.0	0.1	0.9	0.0	0.9	0.2	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	7.1	7.1	1.7	9.9	0.5	2.0	0.0	3.5	0.5	0.0	3.1
LnGrp Delay(d),s/veh	21.9	17.7	17.7	11.2	13.4	7.0	29.8	0.0	24.5	27.6	0.0	24.3
LnGrp LOS	C	B	B	B	B	A	C		C	C		C
Approach Vol, veh/h		986			895			297			208	
Approach Delay, s/veh		18.2			12.6			26.3			24.8	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	9.2	39.8		23.3		49.0		23.3
Change Period (Y+Rc), s	4.0	* 7.6		6.0		* 7.6		6.0
Max Green Setting (Gmax), s	6.0	* 31		25.0		* 41		25.0
Max Q Clear Time (g_c+I1), s	5.4	19.3		10.8		19.8		14.6
Green Ext Time (p_c), s	0.0	8.9		2.9		13.7		2.4

Intersection Summary	
HCM 2010 Ctrl Delay	17.7
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	17	0	26	7	0	30	48	180	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	0	2	4	2	4	0
Mvmt Flow	18	0	28	8	0	33	52	196	11

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	634	623	201	631	634	201	218	0	0
Stage 1	312	312	-	305	305	-	-	-	-
Stage 2	322	311	-	326	329	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.1	6.52	6.24	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.1	5.52	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.1	5.52	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.336	2.218	-	-
Pot Cap-1 Maneuver	392	402	840	396	397	835	1352	-	-
Stage 1	699	658	-	709	662	-	-	-	-
Stage 2	690	658	-	691	646	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	351	367	840	357	362	835	1352	-	-
Mov Cap-2 Maneuver	351	367	-	357	362	-	-	-	-
Stage 1	668	628	-	678	633	-	-	-	-
Stage 2	634	629	-	637	616	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	12.3	10.8	1.6
HCM LOS	B	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1352	-	-	542	666	1364	-	-
HCM Lane V/C Ratio	0.039	-	-	0.086	0.06	0.041	-	-
HCM Control Delay (s)	7.8	0	-	12.3	10.8	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.2	0.1	-	-

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	51	169	32
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	8	2
Mvmt Flow	55	184	35

Major/Minor	Major2		
Conflicting Flow All	207	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1364	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1364	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	1.6
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	14

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	5	729	0	11	832	11	11	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	95	92	92	95	92	92	92	92
Heavy Vehicles, %	2	3	2	2	0	2	2	2	2
Mvmt Flow	5	767	0	12	876	12	12	0	7

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	888	0	0	767	0	0	1702	1690	767
Stage 1	-	-	-	-	-	-	778	778	-
Stage 2	-	-	-	-	-	-	924	912	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	763	-	-	847	-	-	72	93	402
Stage 1	-	-	-	-	-	-	389	407	-
Stage 2	-	-	-	-	-	-	323	353	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	763	-	-	847	-	-	62	89	402
Mov Cap-2 Maneuver	-	-	-	-	-	-	62	89	-
Stage 1	-	-	-	-	-	-	385	403	-
Stage 2	-	-	-	-	-	-	280	343	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	0.1	56.5
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	88	763	-	-	847	-	-	97
HCM Lane V/C Ratio	0.21	0.007	-	-	0.014	-	-	1.143
HCM Control Delay (s)	56.5	9.8	0	-	9.3	0	-	216.1
HCM Lane LOS	F	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	0.7	0	-	-	0	-	-	7.4

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	68	0	34
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	74	0	37

Major/Minor	Minor2		
Conflicting Flow All	1687	1684	882
Stage 1	906	906	-
Stage 2	781	778	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	74	94	345
Stage 1	331	355	-
Stage 2	388	407	-
Platoon blocked, %			
Mov Cap-1 Maneuver	~ 71	90	345
Mov Cap-2 Maneuver	~ 71	90	-
Stage 1	327	345	-
Stage 2	378	403	-

Approach	SB
HCM Control Delay, s	216.1
HCM LOS	F

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	8	0	8	16	0	16	4	194	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	13	2	0	2	2	2	0	3	2
Mvmt Flow	9	0	9	17	0	17	4	211	30

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	595	602	291	592	594	226	298	0	0
Stage 1	352	352	-	235	235	-	-	-	-
Stage 2	243	250	-	357	359	-	-	-	-
Critical Hdwy	7.23	6.52	6.2	7.12	6.52	6.22	4.1	-	-
Critical Hdwy Stg 1	6.23	5.52	-	6.12	5.52	-	-	-	-
Critical Hdwy Stg 2	6.23	5.52	-	6.12	5.52	-	-	-	-
Follow-up Hdwy	3.617	4.018	3.3	3.518	4.018	3.318	2.2	-	-
Pot Cap-1 Maneuver	400	414	753	418	418	813	1275	-	-
Stage 1	643	632	-	768	710	-	-	-	-
Stage 2	737	700	-	661	627	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	382	401	753	403	405	813	1275	-	-
Mov Cap-2 Maneuver	382	401	-	403	405	-	-	-	-
Stage 1	640	615	-	765	707	-	-	-	-
Stage 2	718	697	-	636	610	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	12.4	12.1	0.1
HCM LOS	B	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1275	-	-	507	539	1326	-	-
HCM Lane V/C Ratio	0.003	-	-	0.034	0.065	0.023	-	-
HCM Control Delay (s)	7.8	0	-	12.4	12.1	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0.1	-	-

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	28	262	12
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	7	0
Mvmt Flow	30	285	13

Major/Minor	Major2		
Conflicting Flow All	241	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1326	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1326	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.7
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	18	10	15	204	294	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	3	7	2
Mvmt Flow	20	11	16	222	320	32

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	589	335	351	0	-	0
Stage 1	335	-	-	-	-	-
Stage 2	254	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	471	707	1208	-	-	-
Stage 1	725	-	-	-	-	-
Stage 2	788	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	464	707	1208	-	-	-
Mov Cap-2 Maneuver	464	-	-	-	-	-
Stage 1	725	-	-	-	-	-
Stage 2	776	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.2	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1208	-	529	-	-
HCM Lane V/C Ratio	0.013	-	0.058	-	-
HCM Control Delay (s)	8	0	12.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	803	0	15	850	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	92	92	95	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	845	0	16	895	0	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	845	0	1772	845
Stage 1	-	-	-	-	845	-
Stage 2	-	-	-	-	927	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	792	-	91	363
Stage 1	-	-	-	-	421	-
Stage 2	-	-	-	-	385	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	792	-	87	363
Mov Cap-2 Maneuver	-	-	-	-	87	-
Stage 1	-	-	-	-	421	-
Stage 2	-	-	-	-	370	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	15.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	363	-	-	792	-
HCM Lane V/C Ratio	0.024	-	-	0.021	-
HCM Control Delay (s)	15.2	-	-	9.6	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	800	3	4	855	10	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	92	92	95	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	842	3	4	900	11	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	845	0	1753	844
Stage 1	-	-	-	-	844	-
Stage 2	-	-	-	-	909	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	792	-	94	363
Stage 1	-	-	-	-	422	-
Stage 2	-	-	-	-	393	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	792	-	93	363
Mov Cap-2 Maneuver	-	-	-	-	93	-
Stage 1	-	-	-	-	422	-
Stage 2	-	-	-	-	389	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	31.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	160	-	-	792	-
HCM Lane V/C Ratio	0.156	-	-	0.005	-
HCM Control Delay (s)	31.6	-	-	9.6	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	812	1	17	857	2	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	92	92	95	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	855	1	18	902	2	59

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	856	0	1794	855
Stage 1	-	-	-	-	855	-
Stage 2	-	-	-	-	939	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	784	-	89	358
Stage 1	-	-	-	-	417	-
Stage 2	-	-	-	-	380	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	784	-	85	358
Mov Cap-2 Maneuver	-	-	-	-	216	-
Stage 1	-	-	-	-	417	-
Stage 2	-	-	-	-	363	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	17.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	350	-	-	784	-
HCM Lane V/C Ratio	0.174	-	-	0.024	-
HCM Control Delay (s)	17.4	-	-	9.7	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0.1	-

Intersection	
Intersection Delay, s/veh	15.9
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	35	193	50	0	46	232	63	0	30	151	45
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	0	1	3	2	0	0	4	2	5	2	0
Mvmt Flow	0	38	210	54	0	50	252	68	0	33	164	49
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	15.5	18.2	14.6
HCM LOS	C	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	13%	13%	13%	31%
Vol Thru, %	67%	69%	68%	56%
Vol Right, %	20%	18%	18%	13%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	226	278	341	198
LT Vol	151	193	232	110
Through Vol	45	50	63	26
RT Vol	30	35	46	62
Lane Flow Rate	246	302	371	215
Geometry Grp	1	1	1	1
Degree of Util (X)	0.441	0.513	0.615	0.393
Departure Headway (Hd)	6.465	6.113	5.976	6.568
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	555	589	604	547
Service Time	4.524	4.169	4.028	4.629
HCM Lane V/C Ratio	0.443	0.513	0.614	0.393
HCM Control Delay	14.6	15.5	18.2	13.9
HCM Lane LOS	B	C	C	B
HCM 95th-tile Q	2.2	2.9	4.2	1.9

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	62	110	26
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	0
Mvmt Flow	0	67	120	28
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	13.9
HCM LOS	B

Lane

2030 Traffic Volumes

HCM 2010 Signalized Intersection Summary
3: Tenth Line & Mountain Rd

06/09/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	570	117	125	450	43	108	50	308	91	61	13
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1820	1900	1900	1821	1900	1900	1890	1900	1900	1668	1900
Adj Flow Rate, veh/h	18	600	123	132	474	45	114	53	324	96	64	14
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	4	4	4	5	5	5	23	23	23
Cap, veh/h	59	803	162	161	513	46	152	66	309	168	95	17
Arrive On Green	0.56	0.56	0.56	0.56	0.56	0.56	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	17	1431	288	185	913	82	317	226	1053	320	325	56
Grp Volume(v), veh/h	741	0	0	651	0	0	491	0	0	174	0	0
Grp Sat Flow(s),veh/h/ln	1736	0	0	1180	0	0	1595	0	0	701	0	0
Q Serve(g_s), s	0.0	0.0	0.0	17.2	0.0	0.0	5.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	23.7	0.0	0.0	40.9	0.0	0.0	22.0	0.0	0.0	16.8	0.0	0.0
Prop In Lane	0.02		0.17	0.20		0.07	0.23		0.66	0.55		0.08
Lane Grp Cap(c), veh/h	1024	0	0	720	0	0	527	0	0	280	0	0
V/C Ratio(X)	0.72	0.00	0.00	0.90	0.00	0.00	0.93	0.00	0.00	0.62	0.00	0.00
Avail Cap(c_a), veh/h	1024	0	0	720	0	0	527	0	0	280	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	12.4	0.0	0.0	16.4	0.0	0.0	26.9	0.0	0.0	23.7	0.0	0.0
Incr Delay (d2), s/veh	2.6	0.0	0.0	14.9	0.0	0.0	25.4	0.0	0.0	10.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.3	0.0	0.0	16.2	0.0	0.0	13.8	0.0	0.0	4.1	0.0	0.0
LnGrp Delay(d),s/veh	15.0	0.0	0.0	31.4	0.0	0.0	52.3	0.0	0.0	33.6	0.0	0.0
LnGrp LOS	B			C			D			C		
Approach Vol, veh/h		741			651			491			174	
Approach Delay, s/veh		15.0			31.4			52.3			33.6	
Approach LOS		B			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		47.8		27.2		47.8		27.2
Change Period (Y+Rc), s		* 5.7		* 5.2		* 5.7		* 5.2
Max Green Setting (Gmax), s		* 42		* 22		* 42		* 22
Max Q Clear Time (g_c+I1), s		25.7		18.8		42.9		24.0
Green Ext Time (p_c), s		6.7		1.3		0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	30.7
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	106	743	77	123	563	32	74	33	84	14	57	78
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1712	1834	1900	1881	1863	1900	1792	1860	1900	1727	1765	1900
Adj Flow Rate, veh/h	112	782	81	129	593	34	78	35	88	15	60	82
Adj No. of Lanes	1	2	0	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	11	4	4	1	2	0	6	0	0	10	3	3
Cap, veh/h	412	1528	158	425	1127	972	246	92	232	259	133	181
Arrive On Green	0.48	0.48	0.48	0.07	0.61	0.61	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	729	3185	330	1792	1863	1606	1195	470	1182	1171	677	925
Grp Volume(v), veh/h	112	428	435	129	593	34	78	0	123	15	0	142
Grp Sat Flow(s),veh/h/ln	729	1742	1772	1792	1863	1606	1195	0	1652	1171	0	1602
Q Serve(g_s), s	7.2	11.6	11.6	2.3	12.6	0.6	4.2	0.0	4.4	0.8	0.0	5.3
Cycle Q Clear(g_c), s	11.2	11.6	11.6	2.3	12.6	0.6	9.6	0.0	4.4	5.2	0.0	5.3
Prop In Lane	1.00		0.19	1.00		1.00	1.00		0.72	1.00		0.58
Lane Grp Cap(c), veh/h	412	836	851	425	1127	972	246	0	324	259	0	314
V/C Ratio(X)	0.27	0.51	0.51	0.30	0.53	0.03	0.32	0.00	0.38	0.06	0.00	0.45
Avail Cap(c_a), veh/h	412	836	851	462	1127	972	448	0	603	457	0	585
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.6	12.3	12.3	8.3	7.8	5.5	28.5	0.0	23.9	26.1	0.0	24.3
Incr Delay (d2), s/veh	1.6	2.2	2.2	0.4	1.8	0.1	0.7	0.0	0.7	0.1	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	6.0	6.1	1.2	7.0	0.3	1.4	0.0	2.1	0.3	0.0	2.5
LnGrp Delay(d),s/veh	15.2	14.5	14.5	8.7	9.6	5.5	29.2	0.0	24.6	26.2	0.0	25.3
LnGrp LOS	B	B	B	A	A	A	C		C	C		C
Approach Vol, veh/h		975			756			201			157	
Approach Delay, s/veh		14.6			9.3			26.4			25.4	
Approach LOS		B			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	8.6	40.4		19.4		49.0		19.4
Change Period (Y+Rc), s	4.0	* 7.6		6.0		* 7.6		6.0
Max Green Setting (Gmax), s	6.0	* 31		25.0		* 41		25.0
Max Q Clear Time (g_c+I1), s	4.3	13.6		7.3		14.6		11.6
Green Ext Time (p_c), s	0.1	11.2		2.1		14.5		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	14.6
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	8.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	114	0	172	9	0	71	45	157	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	0	2	2	2	13	0
Mvmt Flow	120	0	181	9	0	75	47	165	5

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	659	624	326	713	639	168	342	0	0
Stage 1	359	359	-	263	263	-	-	-	-
Stage 2	300	265	-	450	376	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.1	6.52	6.22	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.1	5.52	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.1	5.52	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.318	2.218	-	-
Pot Cap-1 Maneuver	377	402	715	349	394	876	1217	-	-
Stage 1	659	627	-	747	691	-	-	-	-
Stage 2	709	689	-	592	616	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	330	379	715	249	371	876	1217	-	-
Mov Cap-2 Maneuver	330	379	-	249	371	-	-	-	-
Stage 1	631	618	-	715	661	-	-	-	-
Stage 2	621	659	-	435	607	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	23.5	11	1.8
HCM LOS	C	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1217	-	-	488	683	1371	-	-
HCM Lane V/C Ratio	0.039	-	-	0.617	0.123	0.012	-	-
HCM Control Delay (s)	8.1	0	-	23.5	11	7.7	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	4.1	0.4	0	-	-

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	16	294	31
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	8	13	2
Mvmt Flow	17	309	33

Major/Minor	Major2		
Conflicting Flow All	171	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.18	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.272	-	-
Pot Cap-1 Maneuver	1371	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1371	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.4
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	32	894	26	13	575	65	5	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	3	2	2	4	2	2	2	2
Mvmt Flow	34	941	27	14	605	68	5	0	14

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	674	0	0	968	0	0	1691	1723	955
Stage 1	-	-	-	-	-	-	1022	1022	-
Stage 2	-	-	-	-	-	-	669	701	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	917	-	-	712	-	-	74	89	313
Stage 1	-	-	-	-	-	-	285	313	-
Stage 2	-	-	-	-	-	-	447	441	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	917	-	-	712	-	-	67	79	313
Mov Cap-2 Maneuver	-	-	-	-	-	-	67	79	-
Stage 1	-	-	-	-	-	-	262	288	-
Stage 2	-	-	-	-	-	-	428	427	-

Approach	EB	WB	NB
HCM Control Delay, s	0.3	0.2	31.4
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	155	917	-	-	712	-	-	90
HCM Lane V/C Ratio	0.122	0.037	-	-	0.019	-	-	0.175
HCM Control Delay (s)	31.4	9.1	0	-	10.2	0	-	53.3
HCM Lane LOS	D	A	A	-	B	A	-	F
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0.1	-	-	0.6

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	10	0	5
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	11	0	5

Major/Minor	Minor2		
Conflicting Flow All	1696	1703	639
Stage 1	667	667	-
Stage 2	1029	1036	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	73	92	476
Stage 1	448	457	-
Stage 2	282	309	-
Platoon blocked, %			
Mov Cap-1 Maneuver	64	82	476
Mov Cap-2 Maneuver	64	82	-
Stage 1	412	442	-
Stage 2	248	284	-

Approach	SB
HCM Control Delay, s	53.3
HCM LOS	F

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	16	0	4	59	0	60	14	292	18
Conflicting Peds, #/hr	7	0	0	0	0	0	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	8	2	33	2	2	2	0	12	2
Mvmt Flow	17	0	4	62	0	63	15	307	19

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	726	704	311	696	700	318	316	0	0
Stage 1	348	348	-	346	346	-	-	-	-
Stage 2	378	356	-	350	354	-	-	-	-
Critical Hdwy	7.18	6.52	6.53	7.12	6.52	6.22	4.1	-	-
Critical Hdwy Stg 1	6.18	5.52	-	6.12	5.52	-	-	-	-
Critical Hdwy Stg 2	6.18	5.52	-	6.12	5.52	-	-	-	-
Follow-up Hdwy	3.572	4.018	3.597	3.518	4.018	3.318	2.2	-	-
Pot Cap-1 Maneuver	332	361	662	356	363	723	1256	-	-
Stage 1	656	634	-	670	635	-	-	-	-
Stage 2	632	629	-	666	630	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	293	347	658	344	349	722	1255	-	-
Mov Cap-2 Maneuver	293	347	-	344	349	-	-	-	-
Stage 1	642	618	-	660	625	-	-	-	-
Stage 2	568	620	-	649	614	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	16.7	15.5	0.3
HCM LOS	C	C	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1255	-	-	330	467	1233	-	-
HCM Lane V/C Ratio	0.012	-	-	0.064	0.268	0.015	-	-
HCM Control Delay (s)	7.9	0	-	16.7	15.5	8	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	1.1	0	-	-

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	18	281	13
Conflicting Peds, #/hr	0	0	1
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	8	20
Mvmt Flow	19	296	14

Major/Minor	Major2		
Conflicting Flow All	326	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1234	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1233	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.5
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	909	8	15	649	4	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	2	2	4	2	2
Mvmt Flow	957	8	16	683	4	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	965	0	1676	961
Stage 1	-	-	-	-	961	-
Stage 2	-	-	-	-	715	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	714	-	105	311
Stage 1	-	-	-	-	371	-
Stage 2	-	-	-	-	485	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	714	-	101	311
Mov Cap-2 Maneuver	-	-	-	-	101	-
Stage 1	-	-	-	-	371	-
Stage 2	-	-	-	-	468	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	25.4
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	190	-	-	714	-
HCM Lane V/C Ratio	0.072	-	-	0.022	-
HCM Control Delay (s)	25.4	-	-	10.2	0
HCM Lane LOS	D	-	-	B	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	907	3	63	676	1	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	2	2	4	2	2
Mvmt Flow	955	3	66	712	1	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	958	0	1800	956
Stage 1	-	-	-	-	956	-
Stage 2	-	-	-	-	844	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	718	-	88	313
Stage 1	-	-	-	-	373	-
Stage 2	-	-	-	-	422	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	718	-	75	313
Mov Cap-2 Maneuver	-	-	-	-	201	-
Stage 1	-	-	-	-	373	-
Stage 2	-	-	-	-	358	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	17.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	300	-	-	718	-
HCM Lane V/C Ratio	0.046	-	-	0.092	-
HCM Control Delay (s)	17.6	-	-	10.5	0
HCM Lane LOS	C	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	0.3	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	907	11	15	662	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	2	2	4	2	2
Mvmt Flow	955	12	16	697	2	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	966	0	1689	961
Stage 1	-	-	-	-	961	-
Stage 2	-	-	-	-	728	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	713	-	103	311
Stage 1	-	-	-	-	371	-
Stage 2	-	-	-	-	478	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	713	-	99	311
Mov Cap-2 Maneuver	-	-	-	-	99	-
Stage 1	-	-	-	-	371	-
Stage 2	-	-	-	-	460	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	27.1
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	168	-	-	713	-
HCM Lane V/C Ratio	0.031	-	-	0.022	-
HCM Control Delay (s)	27.1	-	-	10.2	0
HCM Lane LOS	D	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	69	36	13	355	276	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	12	8	2
Mvmt Flow	73	38	14	374	291	26

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	705	304	317	0	-	0
Stage 1	304	-	-	-	-	-
Stage 2	401	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	403	736	1243	-	-	-
Stage 1	748	-	-	-	-	-
Stage 2	676	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	397	736	1243	-	-	-
Mov Cap-2 Maneuver	397	-	-	-	-	-
Stage 1	748	-	-	-	-	-
Stage 2	667	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1243	-	471	-	-
HCM Lane V/C Ratio	0.011	-	0.235	-	-
HCM Control Delay (s)	7.9	0	15	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.9	-	-

Intersection	
Intersection Delay, s/veh	27.1
Intersection LOS	D

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	21	175	39	0	37	177	69	0	35	144	49
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	0	4	0	2	5	1	0	2	0	2	3
Mvmt Flow	0	22	184	41	0	39	186	73	0	37	152	52
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	17.2	19.9	16.4
HCM LOS	C	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	15%	9%	13%	25%
Vol Thru, %	63%	74%	63%	73%
Vol Right, %	21%	17%	24%	2%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	228	235	283	470
LT Vol	144	175	177	342
Through Vol	49	39	69	11
RT Vol	35	21	37	117
Lane Flow Rate	240	247	298	495
Geometry Grp	1	1	1	1
Degree of Util (X)	0.473	0.497	0.589	0.888
Departure Headway (Hd)	7.088	7.233	7.116	6.614
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	509	500	509	554
Service Time	5.134	5.271	5.15	4.614
HCM Lane V/C Ratio	0.472	0.494	0.585	0.894
HCM Control Delay	16.4	17.2	19.9	41.7
HCM Lane LOS	C	C	C	E
HCM 95th-tile Q	2.5	2.7	3.8	10.2

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	117	342	11
Peak Hour Factor	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	0	7	0
Mvmt Flow	0	123	360	12
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	41.7
HCM LOS	E

Lane

HCM 2010 Signalized Intersection Summary
3: Tenth Line & Mountain Rd

06/09/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	700	135	371	776	113	164	57	225	94	75	17
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1842	1900	1900	1834	1900	1900	1900	1900	1900	1872	1900
Adj Flow Rate, veh/h	8	737	142	391	817	119	173	60	237	99	79	18
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	0	0	0	0	0	0	0	0	0
Cap, veh/h	30	1033	198	188	324	47	158	43	169	150	112	23
Arrive On Green	0.69	0.69	0.69	0.69	0.69	0.69	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	6	1502	287	225	471	69	526	182	721	476	480	97
Grp Volume(v), veh/h	887	0	0	1327	0	0	470	0	0	196	0	0
Grp Sat Flow(s),veh/h/ln	1795	0	0	764	0	0	1429	0	0	1053	0	0
Q Serve(g_s), s	0.0	0.0	0.0	53.4	0.0	0.0	8.8	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	42.9	0.0	0.0	96.3	0.0	0.0	32.8	0.0	0.0	24.0	0.0	0.0
Prop In Lane	0.01		0.16	0.29		0.09	0.37		0.50	0.51		0.09
Lane Grp Cap(c), veh/h	1261	0	0	559	0	0	370	0	0	285	0	0
V/C Ratio(X)	0.70	0.00	0.00	2.37	0.00	0.00	1.27	0.00	0.00	0.69	0.00	0.00
Avail Cap(c_a), veh/h	1261	0	0	559	0	0	370	0	0	285	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	13.5	0.0	0.0	37.4	0.0	0.0	55.4	0.0	0.0	49.6	0.0	0.0
Incr Delay (d2), s/veh	1.8	0.0	0.0	623.8	0.0	0.0	141.4	0.0	0.0	12.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	21.6	0.0	0.0	118.4	0.0	0.0	28.8	0.0	0.0	8.1	0.0	0.0
LnGrp Delay(d),s/veh	15.3	0.0	0.0	661.2	0.0	0.0	196.8	0.0	0.0	62.3	0.0	0.0
LnGrp LOS	B			F			F			E		
Approach Vol, veh/h		887			1327			470			196	
Approach Delay, s/veh		15.3			661.2			196.8			62.3	
Approach LOS		B			F			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		102.0		38.0		102.0		38.0
Change Period (Y+Rc), s		* 5.7		* 5.2		* 5.7		* 5.2
Max Green Setting (Gmax), s		* 96		* 33		* 96		* 33
Max Q Clear Time (g_c+I1), s		44.9		26.0		98.3		34.8
Green Ext Time (p_c), s		31.9		2.4		0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	345.7
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	117	930	119	181	946	57	110	96	138	33	70	123
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1849	1900	1900	1845	1845	1845	1900	1900	1827	1824	1900
Adj Flow Rate, veh/h	123	979	125	191	996	60	116	101	145	35	74	129
Adj No. of Lanes	1	2	0	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	3	3	0	3	3	3	0	0	4	8	8
Cap, veh/h	158	1641	209	322	1133	956	237	176	252	209	148	258
Arrive On Green	0.52	0.52	0.52	0.05	0.61	0.61	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	532	3131	400	1810	1845	1558	1156	703	1009	1105	592	1032
Grp Volume(v), veh/h	123	549	555	191	996	60	116	0	246	35	0	203
Grp Sat Flow(s),veh/h/ln	532	1756	1775	1810	1845	1558	1156	0	1712	1105	0	1624
Q Serve(g_s), s	16.1	21.6	21.7	4.8	45.3	1.5	9.6	0.0	12.6	2.9	0.0	10.7
Cycle Q Clear(g_c), s	52.4	21.6	21.7	4.8	45.3	1.5	20.3	0.0	12.6	15.5	0.0	10.7
Prop In Lane	1.00		0.23	1.00		1.00	1.00		0.59	1.00		0.64
Lane Grp Cap(c), veh/h	158	920	930	322	1133	956	237	0	428	209	0	406
V/C Ratio(X)	0.78	0.60	0.60	0.59	0.88	0.06	0.49	0.00	0.57	0.17	0.00	0.50
Avail Cap(c_a), veh/h	158	920	930	322	1133	956	237	0	428	209	0	406
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	44.4	16.5	16.5	13.6	16.2	7.7	40.8	0.0	32.8	39.6	0.0	32.1
Incr Delay (d2), s/veh	21.8	1.1	1.0	2.9	8.2	0.0	7.0	0.0	5.5	1.7	0.0	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	10.6	10.8	2.6	25.3	0.7	3.5	0.0	6.6	1.0	0.0	5.3
LnGrp Delay(d),s/veh	66.1	17.5	17.5	16.6	24.4	7.8	47.9	0.0	38.4	41.3	0.0	36.5
LnGrp LOS	E	B	B	B	C	A	D		D	D		D
Approach Vol, veh/h		1227			1247			362			238	
Approach Delay, s/veh		22.4			22.4			41.4			37.2	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	9.0	60.0		31.0		69.0		31.0
Change Period (Y+Rc), s	4.0	* 7.6		6.0		* 7.6		6.0
Max Green Setting (Gmax), s	5.0	* 52		25.0		* 61		25.0
Max Q Clear Time (g_c+I1), s	6.8	54.4		17.5		47.3		22.3
Green Ext Time (p_c), s	0.0	0.0		2.4		12.4		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	25.8
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	9.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	64	0	95	8	0	35	177	330	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	0	2	4	2	4	0
Mvmt Flow	67	0	100	8	0	37	186	347	13

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	1211	1199	340	1242	1254	354	402	0	0
Stage 1	466	466	-	726	726	-	-	-	-
Stage 2	745	733	-	516	528	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.1	6.52	6.24	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.1	5.52	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.1	5.52	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.336	2.218	-	-
Pot Cap-1 Maneuver	159	185	702	153	172	685	1157	-	-
Stage 1	577	562	-	419	430	-	-	-	-
Stage 2	406	426	-	546	528	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	121	138	702	105	128	685	1157	-	-
Mov Cap-2 Maneuver	121	138	-	105	128	-	-	-	-
Stage 1	461	523	-	335	344	-	-	-	-
Stage 2	307	340	-	436	492	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	49	17.3	3
HCM LOS	E	C	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1157	-	-	239	338	1199	-	-
HCM Lane V/C Ratio	0.161	-	-	0.7	0.134	0.053	-	-
HCM Control Delay (s)	8.7	0	-	49	17.3	8.2	0	-
HCM Lane LOS	A	A	-	E	C	A	A	-
HCM 95th %tile Q(veh)	0.6	-	-	4.6	0.5	0.2	-	-

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	60	264	118
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	8	2
Mvmt Flow	63	278	124

Major/Minor	Major2		
Conflicting Flow All	360	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1199	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1199	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	1.1
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	58

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	5	980	0	13	1199	11	13	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	3	2	2	0	2	2	2	2
Mvmt Flow	5	1032	0	14	1262	12	14	0	6

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	1274	0	0	1032	0	0	2355	2343	1032
Stage 1	-	-	-	-	-	-	1042	1042	-
Stage 2	-	-	-	-	-	-	1313	1301	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	545	-	-	673	-	-	25	36	283
Stage 1	-	-	-	-	-	-	277	307	-
Stage 2	-	-	-	-	-	-	195	231	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	545	-	-	673	-	-	19	33	283
Mov Cap-2 Maneuver	-	-	-	-	-	-	19	33	-
Stage 1	-	-	-	-	-	-	271	301	-
Stage 2	-	-	-	-	-	-	150	215	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	0.1	298.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	27	545	-	-	673	-	-	33
HCM Lane V/C Ratio	0.741	0.01	-	-	0.02	-	-	3.254
HCM Control Delay (s)	298.7	11.7	0	-	10.5	0	-	$ 1266.8
HCM Lane LOS	F	B	A	-	B	A	-	F
HCM 95th %tile Q(veh)	2.3	0	-	-	0.1	-	-	12.5

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	68	0	34
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	72	0	36

Major/Minor	Minor2		
Conflicting Flow All	2340	2337	1268
Stage 1	1295	1295	-
Stage 2	1045	1042	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	~ 25	37	206
Stage 1	200	233	-
Stage 2	276	307	-
Platoon blocked, %			
Mov Cap-1 Maneuver	~ 23	34	206
Mov Cap-2 Maneuver	~ 23	34	-
Stage 1	196	216	-
Stage 2	264	301	-

Approach	SB
HCM Control Delay, s	$ 1266.8
HCM LOS	F

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	0	10	37	0	37	5	357	65
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	13	2	0	2	2	2	0	3	2
Mvmt Flow	11	0	11	39	0	39	5	376	68

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	1044	1059	467	1030	1034	410	476	0	0
Stage 1	604	604	-	421	421	-	-	-	-
Stage 2	440	455	-	609	613	-	-	-	-
Critical Hdwy	7.23	6.52	6.2	7.12	6.52	6.22	4.1	-	-
Critical Hdwy Stg 1	6.23	5.52	-	6.12	5.52	-	-	-	-
Critical Hdwy Stg 2	6.23	5.52	-	6.12	5.52	-	-	-	-
Follow-up Hdwy	3.617	4.018	3.3	3.518	4.018	3.318	2.2	-	-
Pot Cap-1 Maneuver	197	224	600	212	232	642	1097	-	-
Stage 1	467	488	-	610	589	-	-	-	-
Stage 2	575	569	-	482	483	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	173	204	600	194	211	642	1097	-	-
Mov Cap-2 Maneuver	173	204	-	194	211	-	-	-	-
Stage 1	464	447	-	606	585	-	-	-	-
Stage 2	537	566	-	434	443	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	19.5	21.3	0.1
HCM LOS	C	C	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1097	-	-	269	298	1116	-	-
HCM Lane V/C Ratio	0.005	-	-	0.078	0.261	0.061	-	-
HCM Control Delay (s)	8.3	0	-	19.5	21.3	8.4	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	1	0.2	-	-

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	65	436	16
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	7	0
Mvmt Flow	68	459	17

Major/Minor	Major2		
Conflicting Flow All	444	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1116	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1116	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	1.1
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	48	25	40	365	491	75
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	3	7	2
Mvmt Flow	51	26	42	384	517	79

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1024	556	596	0	-	0
Stage 1	556	-	-	-	-	-
Stage 2	468	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	261	531	980	-	-	-
Stage 1	574	-	-	-	-	-
Stage 2	630	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	247	531	980	-	-	-
Mov Cap-2 Maneuver	247	-	-	-	-	-
Stage 1	574	-	-	-	-	-
Stage 2	596	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.9	0.9	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	980	-	302	-	-
HCM Lane V/C Ratio	0.043	-	0.254	-	-
HCM Control Delay (s)	8.8	0	20.9	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	1	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1055	0	15	1219	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1111	0	16	1283	0	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1111	0	2426	1111
Stage 1	-	-	-	-	1111	-
Stage 2	-	-	-	-	1315	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	629	-	35	254
Stage 1	-	-	-	-	315	-
Stage 2	-	-	-	-	251	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	629	-	32	254
Mov Cap-2 Maneuver	-	-	-	-	32	-
Stage 1	-	-	-	-	315	-
Stage 2	-	-	-	-	229	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	19.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	254	-	-	629	-
HCM Lane V/C Ratio	0.033	-	-	0.025	-
HCM Control Delay (s)	19.7	-	-	10.9	0
HCM Lane LOS	C	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1052	3	4	1224	10	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1107	3	4	1288	11	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1111	0	2406	1109
Stage 1	-	-	-	-	1109	-
Stage 2	-	-	-	-	1297	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	629	-	36	255
Stage 1	-	-	-	-	316	-
Stage 2	-	-	-	-	256	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	629	-	35	255
Mov Cap-2 Maneuver	-	-	-	-	35	-
Stage 1	-	-	-	-	316	-
Stage 2	-	-	-	-	250	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	84.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	68	-	-	629	-
HCM Lane V/C Ratio	0.356	-	-	0.007	-
HCM Control Delay (s)	84.7	-	-	10.8	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	1.3	-	-	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1064	1	17	1226	2	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1120	1	18	1291	2	57

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1121	0	2447	1121
Stage 1	-	-	-	-	1121	-
Stage 2	-	-	-	-	1326	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	623	-	34	251
Stage 1	-	-	-	-	311	-
Stage 2	-	-	-	-	248	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	623	-	31	251
Mov Cap-2 Maneuver	-	-	-	-	132	-
Stage 1	-	-	-	-	311	-
Stage 2	-	-	-	-	223	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	24.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	243	-	-	623	-
HCM Lane V/C Ratio	0.243	-	-	0.029	-
HCM Control Delay (s)	24.5	-	-	10.9	0
HCM Lane LOS	C	-	-	B	A
HCM 95th %tile Q(veh)	0.9	-	-	0.1	-

Intersection	
Intersection Delay, s/veh	74.8
Intersection LOS	F

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	55	226	59	0	54	272	132	0	35	350	52
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	0	1	3	2	0	0	4	2	5	2	0
Mvmt Flow	0	58	238	62	0	57	286	139	0	37	368	55
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	65	77	77.8
HCM LOS	F	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	16%	12%	29%
Vol Thru, %	80%	66%	59%	61%
Vol Right, %	12%	17%	29%	9%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	437	340	458	363
LT Vol	350	226	272	223
Through Vol	52	59	132	34
RT Vol	35	55	54	106
Lane Flow Rate	460	358	482	382
Geometry Grp	1	1	1	1
Degree of Util (X)	1	0.945	1	1
Departure Headway (Hd)	9.439	9.503	9.26	9.46
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	386	383	395	386
Service Time	7.484	7.525	7.305	7.491
HCM Lane V/C Ratio	1.192	0.935	1.22	0.99
HCM Control Delay	77.8	65	77	77.8
HCM Lane LOS	F	F	F	F
HCM 95th-tile Q	11.9	10.3	12	11.9

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	106	223	34
Peak Hour Factor	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	0
Mvmt Flow	0	112	235	36
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	77.8
HCM LOS	F

Lane

2037 Traffic Volumes

HCM 2010 Signalized Intersection Summary
3: Tenth Line & Mountain Rd

06/09/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	19	630	125	144	510	48	123	54	360	98	66	16
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1820	1900	1900	1821	1900	1900	1890	1900	1900	1668	1900
Adj Flow Rate, veh/h	20	663	132	152	537	51	129	57	379	103	69	17
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	4	4	4	5	5	5	23	23	23
Cap, veh/h	57	817	160	147	437	39	150	59	313	161	92	18
Arrive On Green	0.57	0.57	0.57	0.57	0.57	0.57	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	18	1431	280	163	765	69	324	201	1069	313	316	62
Grp Volume(v), veh/h	815	0	0	740	0	0	565	0	0	189	0	0
Grp Sat Flow(s),veh/h/ln	1729	0	0	996	0	0	1594	0	0	691	0	0
Q Serve(g_s), s	0.0	0.0	0.0	16.0	0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	29.7	0.0	0.0	45.7	0.0	0.0	23.4	0.0	0.0	21.0	0.0	0.0
Prop In Lane	0.02		0.16	0.21		0.07	0.23		0.67	0.54		0.09
Lane Grp Cap(c), veh/h	1034	0	0	623	0	0	522	0	0	272	0	0
V/C Ratio(X)	0.79	0.00	0.00	1.19	0.00	0.00	1.08	0.00	0.00	0.70	0.00	0.00
Avail Cap(c_a), veh/h	1034	0	0	623	0	0	522	0	0	272	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	13.6	0.0	0.0	20.1	0.0	0.0	29.5	0.0	0.0	26.3	0.0	0.0
Incr Delay (d2), s/veh	4.1	0.0	0.0	99.8	0.0	0.0	63.8	0.0	0.0	13.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.5	0.0	0.0	31.0	0.0	0.0	20.7	0.0	0.0	5.1	0.0	0.0
LnGrp Delay(d),s/veh	17.8	0.0	0.0	119.9	0.0	0.0	93.3	0.0	0.0	40.1	0.0	0.0
LnGrp LOS	B			F			F			D		
Approach Vol, veh/h		815			740			565			189	
Approach Delay, s/veh		17.8			119.9			93.3			40.1	
Approach LOS		B			F			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		51.4		28.6		51.4		28.6
Change Period (Y+Rc), s		* 5.7		* 5.2		* 5.7		* 5.2
Max Green Setting (Gmax), s		* 46		* 23		* 46		* 23
Max Q Clear Time (g_c+I1), s		31.7		23.0		47.7		25.4
Green Ext Time (p_c), s		7.2		0.2		0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	70.8
HCM 2010 LOS	E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	122	832	88	208	1062	65	127	110	158	38	80	142
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1712	1834	1900	1881	1863	1900	1792	1867	1900	1727	1757	1900
Adj Flow Rate, veh/h	128	876	93	219	1118	68	134	116	166	40	84	149
Adj No. of Lanes	1	2	0	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	11	4	4	1	2	0	6	0	0	10	3	3
Cap, veh/h	167	2014	214	413	1310	1130	113	134	191	86	109	194
Arrive On Green	0.63	0.63	0.63	0.04	0.70	0.70	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	432	3177	337	1792	1863	1607	1100	696	996	1013	569	1010
Grp Volume(v), veh/h	128	480	489	219	1118	68	134	0	282	40	0	233
Grp Sat Flow(s),veh/h/ln	432	1742	1772	1792	1863	1607	1100	0	1691	1013	0	1579
Q Serve(g_s), s	33.5	18.1	18.1	5.0	57.9	1.7	6.8	0.0	21.0	4.0	0.0	18.2
Cycle Q Clear(g_c), s	82.4	18.1	18.1	5.0	57.9	1.7	25.0	0.0	21.0	25.0	0.0	18.2
Prop In Lane	1.00		0.19	1.00		1.00	1.00		0.59	1.00		0.64
Lane Grp Cap(c), veh/h	167	1104	1123	413	1310	1130	113	0	325	86	0	304
V/C Ratio(X)	0.77	0.44	0.44	0.53	0.85	0.06	1.18	0.00	0.87	0.46	0.00	0.77
Avail Cap(c_a), veh/h	167	1104	1123	413	1310	1130	113	0	325	86	0	304
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.5	12.0	12.0	10.9	14.3	6.0	63.3	0.0	50.9	63.4	0.0	49.7
Incr Delay (d2), s/veh	28.2	1.2	1.2	1.3	7.2	0.1	142.6	0.0	21.1	3.8	0.0	11.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	9.1	9.2	2.5	32.1	0.8	8.5	0.0	11.7	1.5	0.0	8.9
LnGrp Delay(d),s/veh	78.6	13.3	13.3	12.2	21.6	6.1	205.8	0.0	72.0	67.3	0.0	61.0
LnGrp LOS	E	B	B	B	C	A	F		E	E		E
Approach Vol, veh/h		1097			1405			416			273	
Approach Delay, s/veh		20.9			19.4			115.1			61.9	
Approach LOS		C			B			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	9.0	90.0		31.0		99.0		31.0
Change Period (Y+Rc), s	4.0	* 7.6		6.0		* 7.6		6.0
Max Green Setting (Gmax), s	5.0	* 82		25.0		* 91		25.0
Max Q Clear Time (g_c+I1), s	7.0	84.4		27.0		59.9		27.0
Green Ext Time (p_c), s	0.0	0.0		0.0		25.7		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	36.0
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	23.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	156	0	235	10	0	82	62	171	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	0	2	2	2	13	0
Mvmt Flow	164	0	247	11	0	86	65	180	6

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	742	702	347	823	721	183	369	0	0
Stage 1	385	385	-	314	314	-	-	-	-
Stage 2	357	317	-	509	407	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.1	6.52	6.22	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.1	5.52	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.1	5.52	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.318	2.218	-	-
Pot Cap-1 Maneuver	332	362	696	295	353	859	1190	-	-
Stage 1	638	611	-	701	656	-	-	-	-
Stage 2	661	654	-	550	597	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	281	334	696	179	326	859	1190	-	-
Mov Cap-2 Maneuver	281	334	-	179	326	-	-	-	-
Stage 1	599	600	-	658	616	-	-	-	-
Stage 2	558	614	-	348	586	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	60.1	12	2.1
HCM LOS	F	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1190	-	-	438	608	1353	-	-
HCM Lane V/C Ratio	0.055	-	-	0.94	0.159	0.014	-	-
HCM Control Delay (s)	8.2	0	-	60.1	12	7.7	0	-
HCM Lane LOS	A	A	-	F	B	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	10.9	0.6	0	-	-

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	18	309	42
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	8	13	2
Mvmt Flow	19	325	44

Major/Minor	Major2		
Conflicting Flow All	186	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.18	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.272	-	-
Pot Cap-1 Maneuver	1353	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1353	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.4
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	32	1007	30	15	654	65	7	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	3	2	2	4	2	2	2	2
Mvmt Flow	34	1060	32	16	688	68	7	0	16

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	757	0	0	1092	0	0	1900	1931	1076
Stage 1	-	-	-	-	-	-	1143	1143	-
Stage 2	-	-	-	-	-	-	757	788	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	854	-	-	639	-	-	53	66	267
Stage 1	-	-	-	-	-	-	243	275	-
Stage 2	-	-	-	-	-	-	400	402	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	854	-	-	639	-	-	47	57	267
Mov Cap-2 Maneuver	-	-	-	-	-	-	47	57	-
Stage 1	-	-	-	-	-	-	218	247	-
Stage 2	-	-	-	-	-	-	378	384	-

Approach	EB	WB	NB
HCM Control Delay, s	0.3	0.2	47.7
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	107	854	-	-	639	-	-	63
HCM Lane V/C Ratio	0.216	0.039	-	-	0.025	-	-	0.251
HCM Control Delay (s)	47.7	9.4	0	-	10.8	0	-	80.3
HCM Lane LOS	E	A	A	-	B	A	-	F
HCM 95th %tile Q(veh)	0.8	0.1	-	-	0.1	-	-	0.9

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	10	0	5
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	11	0	5

Major/Minor	Minor2		
Conflicting Flow All	1905	1913	723
Stage 1	754	754	-
Stage 2	1151	1159	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	52	68	426
Stage 1	401	417	-
Stage 2	241	270	-
Platoon blocked, %			
Mov Cap-1 Maneuver	44	58	426
Mov Cap-2 Maneuver	44	58	-
Stage 1	360	399	-
Stage 2	204	242	-

Approach	SB
HCM Control Delay, s	80.3
HCM LOS	F

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	18	0	4	59	0	60	16	355	18
Conflicting Peds, #/hr	7	0	0	0	0	0	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	8	2	33	2	2	2	0	12	2
Mvmt Flow	19	0	4	62	0	63	17	374	19

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	827	805	342	798	804	384	349	0	0
Stage 1	379	379	-	417	417	-	-	-	-
Stage 2	448	426	-	381	387	-	-	-	-
Critical Hdwy	7.18	6.52	6.53	7.12	6.52	6.22	4.1	-	-
Critical Hdwy Stg 1	6.18	5.52	-	6.12	5.52	-	-	-	-
Critical Hdwy Stg 2	6.18	5.52	-	6.12	5.52	-	-	-	-
Follow-up Hdwy	3.572	4.018	3.597	3.518	4.018	3.318	2.2	-	-
Pot Cap-1 Maneuver	284	316	635	304	316	664	1221	-	-
Stage 1	631	615	-	613	591	-	-	-	-
Stage 2	579	586	-	641	610	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	248	302	631	293	302	663	1220	-	-
Mov Cap-2 Maneuver	248	302	-	293	302	-	-	-	-
Stage 1	616	599	-	602	580	-	-	-	-
Stage 2	514	575	-	623	594	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	19.1	17.7	0.3
HCM LOS	C	C	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1220	-	-	279	408	1165	-	-
HCM Lane V/C Ratio	0.014	-	-	0.083	0.307	0.016	-	-
HCM Control Delay (s)	8	0	-	19.1	17.7	8.1	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	1.3	0.1	-	-

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	18	310	15
Conflicting Peds, #/hr	0	0	1
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	8	20
Mvmt Flow	19	326	16

Major/Minor	Major2		
Conflicting Flow All	393	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1166	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1165	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.4
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1024	8	15	730	4	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	2	2	4	2	2
Mvmt Flow	1078	8	16	768	4	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1086	0	1882	1082
Stage 1	-	-	-	-	1082	-
Stage 2	-	-	-	-	800	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	642	-	78	264
Stage 1	-	-	-	-	325	-
Stage 2	-	-	-	-	442	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	642	-	75	264
Mov Cap-2 Maneuver	-	-	-	-	75	-
Stage 1	-	-	-	-	325	-
Stage 2	-	-	-	-	423	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	31.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	149	-	-	642	-
HCM Lane V/C Ratio	0.092	-	-	0.025	-
HCM Control Delay (s)	31.6	-	-	10.7	0
HCM Lane LOS	D	-	-	B	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1022	3	63	757	1	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	2	2	4	2	2
Mvmt Flow	1076	3	66	797	1	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1079	0	2006	1077
Stage 1	-	-	-	-	1077	-
Stage 2	-	-	-	-	929	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	646	-	65	266
Stage 1	-	-	-	-	327	-
Stage 2	-	-	-	-	385	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	646	-	53	266
Mov Cap-2 Maneuver	-	-	-	-	171	-
Stage 1	-	-	-	-	327	-
Stage 2	-	-	-	-	315	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	19.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	255	-	-	646	-
HCM Lane V/C Ratio	0.054	-	-	0.103	-
HCM Control Delay (s)	19.9	-	-	11.2	0
HCM Lane LOS	C	-	-	B	A
HCM 95th %tile Q(veh)	0.2	-	-	0.3	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1022	11	15	743	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	2	2	4	2	2
Mvmt Flow	1076	12	16	782	2	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1087	0	1896	1082
Stage 1	-	-	-	-	1082	-
Stage 2	-	-	-	-	814	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	642	-	76	264
Stage 1	-	-	-	-	325	-
Stage 2	-	-	-	-	436	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	642	-	73	264
Mov Cap-2 Maneuver	-	-	-	-	73	-
Stage 1	-	-	-	-	325	-
Stage 2	-	-	-	-	417	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	34.1
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	129	-	-	642	-
HCM Lane V/C Ratio	0.041	-	-	0.025	-
HCM Control Delay (s)	34.1	-	-	10.7	0
HCM Lane LOS	D	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	69	36	13	420	307	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	12	8	2
Mvmt Flow	73	38	14	442	323	26

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	805	336	349	0	-	0
Stage 1	336	-	-	-	-	-
Stage 2	469	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	352	706	1210	-	-	-
Stage 1	724	-	-	-	-	-
Stage 2	630	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	347	706	1210	-	-	-
Mov Cap-2 Maneuver	347	-	-	-	-	-
Stage 1	724	-	-	-	-	-
Stage 2	621	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.6	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1210	-	420	-	-
HCM Lane V/C Ratio	0.011	-	0.263	-	-
HCM Control Delay (s)	8	0	16.6	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	1	-	-

Intersection	
Intersection Delay, s/veh	41.8
Intersection LOS	E

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	23	202	45	0	43	204	82	0	41	164	56
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	0	4	0	2	5	1	0	2	0	2	3
Mvmt Flow	0	24	213	47	0	45	215	86	0	43	173	59
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	23	29.4	21.7
HCM LOS	C	D	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	16%	9%	13%	27%
Vol Thru, %	63%	75%	62%	71%
Vol Right, %	21%	17%	25%	2%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	261	270	329	550
LT Vol	164	202	204	389
Through Vol	56	45	82	13
RT Vol	41	23	43	148
Lane Flow Rate	275	284	346	579
Geometry Grp	1	1	1	1
Degree of Util (X)	0.593	0.619	0.736	1
Departure Headway (Hd)	7.771	7.836	7.65	7.385
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	462	458	471	498
Service Time	5.867	5.924	5.73	5.385
HCM Lane V/C Ratio	0.595	0.62	0.735	1.163
HCM Control Delay	21.7	23	29.4	68
HCM Lane LOS	C	C	D	F
HCM 95th-tile Q	3.8	4.1	6	13.5

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	148	389	13
Peak Hour Factor	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	0	7	0
Mvmt Flow	0	156	409	14
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	68
HCM LOS	F

Lane

HCM 2010 Signalized Intersection Summary
3: Tenth Line & Mountain Rd

06/09/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	794	150	375	862	123	178	61	261	104	81	19
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1841	1900	1900	1834	1900	1900	1900	1900	1900	1871	1900
Adj Flow Rate, veh/h	11	836	158	395	907	129	187	64	275	109	85	20
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	0	0	0	0	0	0	0	0	0
Cap, veh/h	30	1014	190	137	243	35	161	44	189	155	114	24
Arrive On Green	0.68	0.68	0.68	0.68	0.68	0.68	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	8	1501	282	157	360	51	511	175	752	470	452	95
Grp Volume(v), veh/h	1005	0	0	1431	0	0	526	0	0	214	0	0
Grp Sat Flow(s),veh/h/ln	1791	0	0	568	0	0	1438	0	0	1017	0	0
Q Serve(g_s), s	0.0	0.0	0.0	39.1	0.0	0.0	8.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	62.2	0.0	0.0	101.3	0.0	0.0	37.8	0.0	0.0	29.4	0.0	0.0
Prop In Lane	0.01		0.16	0.28		0.09	0.36		0.52	0.51		0.09
Lane Grp Cap(c), veh/h	1234	0	0	414	0	0	395	0	0	293	0	0
V/C Ratio(X)	0.81	0.00	0.00	3.45	0.00	0.00	1.33	0.00	0.00	0.73	0.00	0.00
Avail Cap(c_a), veh/h	1234	0	0	414	0	0	395	0	0	293	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	18.0	0.0	0.0	45.3	0.0	0.0	57.9	0.0	0.0	52.3	0.0	0.0
Incr Delay (d2), s/veh	4.3	0.0	0.0	1109.9	0.0	0.0	166.0	0.0	0.0	14.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	31.9	0.0	0.0	144.9	0.0	0.0	34.5	0.0	0.0	9.6	0.0	0.0
LnGrp Delay(d),s/veh	22.3	0.0	0.0	1155.2	0.0	0.0	223.9	0.0	0.0	67.2	0.0	0.0
LnGrp LOS	C			F			F			E		
Approach Vol, veh/h		1005			1431			526			214	
Approach Delay, s/veh		22.3			1155.2			223.9			67.2	
Approach LOS		C			F			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		107.0		43.0		107.0		43.0
Change Period (Y+Rc), s		* 5.7		* 5.2		* 5.7		* 5.2
Max Green Setting (Gmax), s		* 1E2		* 38		* 1E2		* 38
Max Q Clear Time (g_c+I1), s		64.2		31.4		103.3		39.8
Green Ext Time (p_c), s		30.1		2.6		0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	569.2
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	135	1038	137	208	1062	65	127	110	158	38	80	142
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1849	1900	1900	1845	1845	1845	1900	1900	1827	1824	1900
Adj Flow Rate, veh/h	142	1093	144	219	1118	68	134	116	166	40	84	149
Adj No. of Lanes	1	2	0	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	3	3	0	3	3	3	0	0	4	8	8
Cap, veh/h	171	1977	260	324	1297	1096	119	135	194	90	112	199
Arrive On Green	0.63	0.63	0.63	0.04	0.70	0.70	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	470	3119	410	1810	1845	1559	1130	703	1006	1072	584	1035
Grp Volume(v), veh/h	142	615	622	219	1118	68	134	0	282	40	0	233
Grp Sat Flow(s),veh/h/ln	470	1756	1773	1810	1845	1559	1130	0	1709	1072	0	1619
Q Serve(g_s), s	32.0	25.6	25.7	5.0	59.4	1.8	7.3	0.0	20.7	4.3	0.0	17.7
Cycle Q Clear(g_c), s	82.4	25.6	25.7	5.0	59.4	1.8	25.0	0.0	20.7	25.0	0.0	17.7
Prop In Lane	1.00		0.23	1.00		1.00	1.00		0.59	1.00		0.64
Lane Grp Cap(c), veh/h	171	1113	1124	324	1297	1096	119	0	329	90	0	311
V/C Ratio(X)	0.83	0.55	0.55	0.68	0.86	0.06	1.12	0.00	0.86	0.44	0.00	0.75
Avail Cap(c_a), veh/h	171	1113	1124	324	1297	1096	119	0	329	90	0	311
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	51.9	13.4	13.4	14.7	14.5	6.0	63.0	0.0	50.8	63.1	0.0	49.5
Incr Delay (d2), s/veh	35.1	2.0	2.0	5.5	7.7	0.1	119.6	0.0	19.6	3.4	0.0	9.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.8	12.9	13.1	4.2	32.6	0.8	8.2	0.0	11.6	1.5	0.0	8.7
LnGrp Delay(d),s/veh	87.0	15.4	15.4	20.2	22.3	6.1	182.7	0.0	70.4	66.5	0.0	59.1
LnGrp LOS	F	B	B	C	C	A	F		E	E		E
Approach Vol, veh/h		1379			1405			416			273	
Approach Delay, s/veh		22.8			21.2			106.6			60.2	
Approach LOS		C			C			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	9.0	90.0		31.0		99.0		31.0
Change Period (Y+Rc), s	4.0	* 7.6		6.0		* 7.6		6.0
Max Green Setting (Gmax), s	5.0	* 82		25.0		* 91		25.0
Max Q Clear Time (g_c+I1), s	7.0	84.4		27.0		61.4		27.0
Green Ext Time (p_c), s	0.0	0.0		0.0		26.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	35.1
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	45.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	87	0	130	9	0	40	242	349	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	0	2	4	2	4	0
Mvmt Flow	92	0	137	9	0	42	255	367	14

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	1434	1420	386	1482	1499	374	472	0	0
Stage 1	529	529	-	884	884	-	-	-	-
Stage 2	905	891	-	598	615	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.1	6.52	6.24	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.1	5.52	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.1	5.52	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.336	2.218	-	-
Pot Cap-1 Maneuver	112	136	662	104	122	668	1090	-	-
Stage 1	533	527	-	343	363	-	-	-	-
Stage 2	331	361	-	492	482	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	~ 76	87	662	60	78	668	1090	-	-
Mov Cap-2 Maneuver	~ 76	87	-	60	78	-	-	-	-
Stage 1	375	482	-	241	255	-	-	-	-
Stage 2	218	254	-	357	441	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	269.8	24.8	3.7
HCM LOS	F	C	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1090	-	-	162	233	1177	-	-
HCM Lane V/C Ratio	0.234	-	-	1.41	0.221	0.061	-	-
HCM Control Delay (s)	9.3	0	-	269.8	24.8	8.3	0	-
HCM Lane LOS	A	A	-	F	C	A	A	-
HCM 95th %tile Q(veh)	0.9	-	-	14.3	0.8	0.2	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	68	286	162
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	8	2
Mvmt Flow	72	301	171

Major/Minor	Major2		
Conflicting Flow All	381	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1177	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1177	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	1.1
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	104.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	5	1115	0	15	1357	11	15	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	3	2	2	0	2	2	2	2
Mvmt Flow	5	1174	0	16	1428	12	16	0	7

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	1440	0	0	1174	0	0	2668	2656	1174
Stage 1	-	-	-	-	-	-	1184	1184	-
Stage 2	-	-	-	-	-	-	1484	1472	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	471	-	-	595	-	-	~ 15	23	234
Stage 1	-	-	-	-	-	-	231	263	-
Stage 2	-	-	-	-	-	-	156	191	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	471	-	-	595	-	-	~ 10	19	234
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 10	19	-
Stage 1	-	-	-	-	-	-	224	255	-
Stage 2	-	-	-	-	-	-	105	165	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	0.1	$ 870.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	14	471	-	-	595	-	-	19
HCM Lane V/C Ratio	1.654	0.011	-	-	0.027	-	-	5.651
HCM Control Delay (s)	$ 870.9	12.7	0	-	11.2	0	-	$ 2496.7
HCM Lane LOS	F	B	A	-	B	A	-	F
HCM 95th %tile Q(veh)	3.6	0	-	-	0.1	-	-	13.9

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	68	0	34
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	2	2
Mvmt Flow	72	0	36

Major/Minor	Minor2		
Conflicting Flow All	2654	2650	1434
Stage 1	1466	1466	-
Stage 2	1188	1184	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	~ 15	23	164
Stage 1	159	192	-
Stage 2	230	263	-
Platoon blocked, %			
Mov Cap-1 Maneuver	~ 13	19	164
Mov Cap-2 Maneuver	~ 13	19	-
Stage 1	154	166	-
Stage 2	216	255	-

Approach	SB
HCM Control Delay, s	$ 2496.7
HCM LOS	F

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	12	0	12	37	0	37	6	404	65
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	13	2	0	2	2	2	0	3	2
Mvmt Flow	13	0	13	39	0	39	6	425	68

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	1180	1194	552	1167	1170	459	561	0	0
Stage 1	688	688	-	472	472	-	-	-	-
Stage 2	492	506	-	695	698	-	-	-	-
Critical Hdwy	7.23	6.52	6.2	7.12	6.52	6.22	4.1	-	-
Critical Hdwy Stg 1	6.23	5.52	-	6.12	5.52	-	-	-	-
Critical Hdwy Stg 2	6.23	5.52	-	6.12	5.52	-	-	-	-
Follow-up Hdwy	3.617	4.018	3.3	3.518	4.018	3.318	2.2	-	-
Pot Cap-1 Maneuver	159	187	537	171	193	602	1020	-	-
Stage 1	419	447	-	573	559	-	-	-	-
Stage 2	538	540	-	433	442	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	137	168	537	154	174	602	1020	-	-
Mov Cap-2 Maneuver	137	168	-	154	174	-	-	-	-
Stage 1	416	405	-	568	555	-	-	-	-
Stage 2	499	536	-	383	401	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	23.7	26.4	0.1
HCM LOS	C	D	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1020	-	-	218	245	1070	-	-
HCM Lane V/C Ratio	0.006	-	-	0.116	0.318	0.064	-	-
HCM Control Delay (s)	8.6	0	-	23.7	26.4	8.6	0	-
HCM Lane LOS	A	A	-	C	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	1.3	0.2	-	-

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	65	515	18
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	2	7	0
Mvmt Flow	68	542	19

Major/Minor	Major2		
Conflicting Flow All	494	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1070	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1070	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.9
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	48	25	40	413	573	75
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	3	7	2
Mvmt Flow	51	26	42	435	603	79

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1162	643	682	0	-	0
Stage 1	643	-	-	-	-	-
Stage 2	519	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	216	473	911	-	-	-
Stage 1	523	-	-	-	-	-
Stage 2	597	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	203	473	911	-	-	-
Mov Cap-2 Maneuver	203	-	-	-	-	-
Stage 1	523	-	-	-	-	-
Stage 2	561	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	25.4	0.8	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	911	-	252	-	-
HCM Lane V/C Ratio	0.046	-	0.305	-	-
HCM Control Delay (s)	9.1	0	25.4	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0.1	-	1.2	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1190	0	15	1378	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1253	0	16	1451	0	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1253	0	2735	1253
Stage 1	-	-	-	-	1253	-
Stage 2	-	-	-	-	1482	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	555	-	22	210
Stage 1	-	-	-	-	269	-
Stage 2	-	-	-	-	208	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	555	-	19	210
Mov Cap-2 Maneuver	-	-	-	-	19	-
Stage 1	-	-	-	-	269	-
Stage 2	-	-	-	-	177	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	22.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	210	-	-	555	-
HCM Lane V/C Ratio	0.04	-	-	0.028	-
HCM Control Delay (s)	22.9	-	-	11.7	0
HCM Lane LOS	C	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1181	3	4	1383	10	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1243	3	4	1456	11	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1246	0	2709	1245
Stage 1	-	-	-	-	1245	-
Stage 2	-	-	-	-	1464	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	559	-	23	212
Stage 1	-	-	-	-	271	-
Stage 2	-	-	-	-	212	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	559	-	22	212
Mov Cap-2 Maneuver	-	-	-	-	22	-
Stage 1	-	-	-	-	271	-
Stage 2	-	-	-	-	204	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	154.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	45	-	-	559	-
HCM Lane V/C Ratio	0.538	-	-	0.008	-
HCM Control Delay (s)	154.8	-	-	11.5	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	2	-	-	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1199	1	17	1385	2	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1262	1	18	1458	2	57

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1263	0	2757	1263
Stage 1	-	-	-	-	1263	-
Stage 2	-	-	-	-	1494	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	550	-	22	207
Stage 1	-	-	-	-	266	-
Stage 2	-	-	-	-	205	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	550	-	18	207
Mov Cap-2 Maneuver	-	-	-	-	102	-
Stage 1	-	-	-	-	266	-
Stage 2	-	-	-	-	170	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	30.4
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	200	-	-	550	-
HCM Lane V/C Ratio	0.295	-	-	0.033	-
HCM Control Delay (s)	30.4	-	-	11.8	0
HCM Lane LOS	D	-	-	B	A
HCM 95th %tile Q(veh)	1.2	-	-	0.1	-

Intersection	
Intersection Delay, s/veh	78.1
Intersection LOS	F

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	59	260	68	0	62	312	166	0	41	399	60
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	0	1	3	2	0	0	4	2	5	2	0
Mvmt Flow	0	62	274	72	0	65	328	175	0	43	420	63
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	78	77.6	78.4
HCM LOS	F	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	15%	11%	31%
Vol Thru, %	80%	67%	58%	60%
Vol Right, %	12%	18%	31%	9%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	500	387	540	422
LT Vol	399	260	312	255
Through Vol	60	68	166	38
RT Vol	41	59	62	129
Lane Flow Rate	526	407	568	444
Geometry Grp	1	1	1	1
Degree of Util (X)	1	1	1	1
Departure Headway (Hd)	9.554	9.522	9.363	9.566
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	384	383	392	382
Service Time	7.627	7.522	7.436	7.638
HCM Lane V/C Ratio	1.37	1.063	1.449	1.162
HCM Control Delay	78.4	78	77.6	78.5
HCM Lane LOS	F	F	F	F
HCM 95th-tile Q	11.8	11.9	12	11.8

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	129	255	38
Peak Hour Factor	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	0
Mvmt Flow	0	136	268	40
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	78.5
HCM LOS	F

Lane

APPENDIX D

Signal Warrants

TRAFFIC SIGNAL WARRANT

Analyst	Lilly Chen	**Jurisdiction/Date**	Town of Collingwood	25 July 2017
Agency or Company	Ainley Group	**East-West Street**	Mountain Rd	
Analysis Period	2030	**North-South Street**	SLB Entrance/Industrial Entrance	
Flow Conditions	Restricted flow (urban)	**Major Street**	East-West	
T Intersection	No	**Approach Lanes per Direction**	1	
		Hours of Traffic Volume Data	AM & PM peaks only	
Additional Comments	existing road configuration			

TRAFFIC & PEDESTRIAN VOLUMES

Hour Ending		Hour 1 AM peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8 PM peak	AM + PM 2.5
MAJOR STREET										
Eastbound	right	26							0	10
	thru	894							980	750
	left	32							5	15
Westbound	right	65							11	30
	thru	575							1199	710
	left	13							13	10
MINOR STREET										
Northbound	right	13							6	8
	thru	0							0	0
	left	6							13	8
Southbound	right	5							34	16
	thru	0							0	0
	left	10							68	31
PEDESTRIANS										
crossing MAJOR street										0
delayed pedestrians										0
crossing MINOR street										0
APPROACH VOLUMES										
major		1605							2208	1525
minor		34							121	62
TOTAL		1639							2329	1587
CROSSING VOLUMES										
TOTAL		16							81	39
note 1		16							81	
note 2		0							0	
note 3		0							0	
3a		no							no	
3b		no							yes	
note 4		0							0	0
note 5		0							0	0

NOTES

Traffic crossing MAJOR street defined as:

note 1: Left turns from both minor street approaches
note 2: The heaviest through volume from the minor street
note 3: 50% of the heavier left turn movement from the major street when both of the following are met:
3a: the left turn volume > 120
3b: the left turn volume + opposing volume > 720
note 4: Pedestrians crossing the major street
note 5: Pedestrians experiencing delays of 10 seconds or more in crossing the major street

ACCIDENT HISTORY

Reportable accidents over the past 36 months susceptible to correction by a traffic signal.	-

TRAFFIC SIGNAL WARRANT

JUSTIFICATION 1 - MINIMUM VEHICLE VOLUME

JUSTIFICATION	GUIDANCE	HOUR ENDING: AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	PM Peak	No. of hours with compliance		
1A	TOTAL TRAFFIC VOLUME ENTERING INTERSECTION (vph) (2 way Total)	1587	1587	1587	1587	1587	1587	1587	1587	100%	80% +	Average Compliance
	COMPLIANCE % VOL x 100 / 720 (1 lane approach on main road) OR VOL x 100 / 900 (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
1B	TRAFFIC VOLUME ON MINOR STREET (vph) (2 way Total)	62	62	62	62	62	62	62	62	100%	80% +	Average Compliance
	COMPLIANCE % VOL x 100 / 170 (full intersection) OR VOL x 100 / 255 (tee intersection)	36%	36%	36%	36%	36%	36%	36%	36%	0	0	36%
(RESTRICTED FLOW)		**BOTH 1A AND 1B 100% FULFILLED EACH OF 8 HOURS**										**NO**
SIGNAL JUSTIFICATION 1:		**LESSER OF 1A OR 1B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**NO**

JUSTIFICATION 2 - DELAY TO CROSS TRAFFIC

JUSTIFICATION	GUIDANCE	HOUR ENDING: Hour 1	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8	No. of hours with compliance		
2A	MAIN ROAD TRAFFIC VOLUME (vph) (2 way Total)	1525	1525	1525	1525	1525	1525	1525	1525	100%	80% +	Average Compliance
	COMPLIANCE % VOL x 100 / 720 (1 lane approach on main road) OR VOL x 100 / 900 (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
2B	CROSSING TRAFFIC VOLUME (vph) (2 way Total)	39	39	39	39	39	39	39	39	100%	80% +	Average Compliance
	COMPLIANCE % VOL x 100 / 75	52%	52%	52%	52%	52%	52%	52%	52%	0	0	52%
(RESTRICTED FLOW)		**BOTH 2A AND 2B 100% FULFILLED EACH OF 8 HOURS**										**NO**
SIGNAL JUSTIFICATION 2:		**LESSER OF 2A OR 2B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**NO**

JUSTIFICATION 3 - VOLUME/DELAY COMBINATION JUSTIFICATION

JUSTIFICATION SATISFIED 80% OR MORE				**Two Justifications Satisfied 80% or more**
Justification 1	-	Minimum Vehicle Volume	NO	**NO**
Justification 2	-	Delay to Cross Traffic	NO	

JUSTIFICATION 4 - MINIMUM FOUR-HOUR VEHICLE VOLUME

JUSTIFICATION 5 - COLLISION EXPERIENCE

	Warrant Value	Number of Collisions	% Fulfillment
A. Reportable collisions over 36 consecutive months susceptible to correction by a traffic signal.	15	-	-
B. Adequate trial of less restrictive remedies has failed to reduce collision frequency.	☐ YES	☑ NO	0%
SIGNAL JUSTIFICATION 5: BOTH OF 3A, 3B FULFILLED TO 100%?	☐	☐ **NO**	
BOTH OF 3A, 3B FULFILLED TO 80%?	**NO**		

JUSTIFICATION 6 - PEDESTRIAN VOLUME AND DELAY

JUSTIFICATION 5A PEDESTRIAN VOLUME	NET 8 HOUR PEDESTRIAN VOLUME AT CROSSING		0	NET 8 HOUR VEHICULAR VOLUME ON STREET BEING CROSSED		12698
	8 Hour Vehicular Volume V_8	**Net 8 Hour Pedestrian Volume**				
		< 200	**200 - 275**	**276 - 475**	**476 - 1000**	**> 1000**
	< 1440					
	1440 - 2600					
	2601 - 7000					
	> 7000	Not Justified				
JUSTIFICATION 5B PEDESTRIAN DELAY	NET 8 HOUR VOLUME OF TOTAL PEDESTRIANS		0	NET 8 HOUR VOLUME OF DELAYED PEDESTRIANS		0
	Net Total 8 Hour Vol. of Total Pedestrians	**Net Total 8 Hour Volume of Delayed Pedestrians**				
		< 75		**75 - 130**	**> 130**	
	< 200	Not Justified				
	200 - 300					
	> 300					
SIGNAL JUSTIFICATION 6:			BOTH JUSTIFICATION 5A AND JUSTIFICATION 5B MET?		**NO**	

JUSTIFCATION SUMMARY

OVERALL	AT LEAST ONE JUSTIFICATION (1 - 5) MET?	**NO**

TRAFFIC SIGNAL WARRANT

Analyst	Lilly Chen	**Jurisdiction/Date**	Town of Collingwood	25 July 2017
Agency or Company	Ainley Group	**East-West Street**	Mountain Rd	
Analysis Period	2037	**North-South Street**	SLB Entrance/Industrial Entrance	
Flow Conditions	Restricted flow (urban)	**Major Street**	East-West	
T Intersection	No	**Approach Lanes per Direction**	1	
		Hours of Traffic Volume Data	AM & PM peaks only	
Additional Comments	existing road configuration			

TRAFFIC & PEDESTRIAN VOLUMES

Hour Ending		Hour 1 AM peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8 PM peak	AM + PM 2.5
MAJOR STREET										
Eastbound	right	30							0	12
	thru	1007							1115	849
	left	32							5	15
Westbound	right	65							11	30
	thru	654							1357	804
	left	15							15	12
MINOR STREET										
Northbound	right	15							7	9
	thru	0							0	0
	left	7							15	9
Southbound	right	5							34	16
	thru	0							0	0
	left	10							68	31
PEDESTRIANS										
crossing MAJOR street										0
delayed pedestrians										0
crossing MINOR street										0
APPROACH VOLUMES										
major		1803							2503	1722
minor		37							124	64
TOTAL		1840							2627	1787
CROSSING VOLUMES										
TOTAL		17							83	40
note 1		17							83	
note 2		0							0	
note 3		0							0	
3a		no							no	
3b		no							yes	
note 4		0							0	0
note 5		0							0	0

NOTES

Traffic crossing MAJOR street defined as:

note 1: Left turns from both minor street approaches
note 2: The heaviest through volume from the minor street
note 3: 50% of the heavier left turn movement from the major street when both of the following are met:
3a: the left turn volume > 120
3b: the left turn volume + opposing volume > 720
note 4: Pedestrians crossing the major street
note 5: Pedestrians experiencing delays of 10 seconds or more in crossing the major street

ACCIDENT HISTORY

Reportable accidents over the past 36 months susceptible to correction by a traffic signal.	-

TRAFFIC SIGNAL WARRANT

JUSTIFICATION 1 - MINIMUM VEHICLE VOLUME

JUSTIFICATION	GUIDANCE	HOUR ENDING: AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	PM Peak	No. of hours with compliance		
1A	TOTAL TRAFFIC VOLUME ENTERING INTERSECTION (vph) (2 way Total)	1787	1787	1787	1787	1787	1787	1787	1787	100%	80% +	Average Compliance
	COMPLIANCE % VOL x 100 / 720 (1 lane approach on main road) OR VOL x 100 / 900 (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
1B	TRAFFIC VOLUME ON MINOR STREET (vph) (2 way Total)	64	64	64	64	64	64	64	64	100%	80% +	Average Compliance
	COMPLIANCE % VOL x 100 / 170 (full intersection) OR VOL x 100 / 255 (tee intersection)	38%	38%	38%	38%	38%	38%	38%	38%	0	0	38%
(RESTRICTED FLOW)		**BOTH 1A AND 1B 100% FULFILLED EACH OF 8 HOURS**										**NO**
SIGNAL JUSTIFICATION 1:		**LESSER OF 1A OR 1B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**NO**

JUSTIFICATION 2 - DELAY TO CROSS TRAFFIC

JUSTIFICATION	GUIDANCE	HOUR ENDING: Hour 1	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8	No. of hours with compliance		
2A	MAIN ROAD TRAFFIC VOLUME (vph) (2 way Total)	1722	1722	1722	1722	1722	1722	1722	1722	100%	80% +	Average Compliance
	COMPLIANCE % VOL x 100 / 720 (1 lane approach on main road) OR VOL x 100 / 900 (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
2B	CROSSING TRAFFIC VOLUME (vph) (2 way Total)	40	40	40	40	40	40	40	40	100%	80% +	Average Compliance
	COMPLIANCE % VOL x 100 / 75	53%	53%	53%	53%	53%	53%	53%	53%	0	0	53%
(RESTRICTED FLOW)		**BOTH 2A AND 2B 100% FULFILLED EACH OF 8 HOURS**										**NO**
SIGNAL JUSTIFICATION 2:		**LESSER OF 2A OR 2B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**NO**

JUSTIFICATION 3 - VOLUME/DELAY COMBINATION JUSTIFICATION

JUSTIFICATION SATISFIED 80% OR MORE				**Two Justifications Satisfied 80% or more**
Justification 1	-	Minimum Vehicle Volume	NO	**NO**
Justification 2	-	Delay to Cross Traffic	NO	

JUSTIFICATION 4 - MINIMUM FOUR-HOUR VEHICLE VOLUME

JUSTIFICATION 5 - COLLISION EXPERIENCE

	Warrant Value	Number of Collisions	% Fulfillment
A. Reportable collisions over 36 consecutive months susceptible to correction by a traffic signal.	15	-	-
B. Adequate trial of less restrictive remedies has failed to reduce collision frequency.	☐ YES	☑ NO	0%

SIGNAL JUSTIFICATION 5:	BOTH OF 3A, 3B FULFILLED TO 100%?	☐ ☐ **NO**
	BOTH OF 3A, 3B FULFILLED TO 80%?	**NO**

JUSTIFICATION 6 - PEDESTRIAN VOLUME AND DELAY

JUSTIFICATION 5A PEDESTRIAN VOLUME	NET 8 HOUR PEDESTRIAN VOLUME AT CROSSING		0	NET 8 HOUR VEHICULAR VOLUME ON STREET BEING CROSSED		14294
	8 Hour Vehicular Volume V_8	**Net 8 Hour Pedestrian Volume**				
		< 200	**200 - 275**	**276 - 475**	**476 - 1000**	**> 1000**
	< 1440					
	1440 - 2600					
	2601 - 7000					
	> 7000	Not Justified				
JUSTIFICATION 5B PEDESTRIAN DELAY	NET 8 HOUR VOLUME OF TOTAL PEDESTRIANS		0	NET 8 HOUR VOLUME OF DELAYED PEDESTRIANS		0
	Net Total 8 Hour Vol. of Total Pedestrians	**Net Total 8 Hour Volume of Delayed Pedestrians**				
		< 75		**75 - 130**	**> 130**	
	< 200	Not Justified				
	200 - 300					
	> 300					
SIGNAL JUSTIFICATION 6:			BOTH JUSTIFICATION 5A AND JUSTIFICATION 5B MET?		**NO**	

JUSTIFCATION SUMMARY

OVERALL	AT LEAST ONE JUSTIFICATION (1 - 5) MET?	**NO**

TRAFFIC SIGNAL WARRANT

Analyst	Lilly Chen	**Jurisdiction/Date**	Town of Collingwood	25 July 2017
Agency or Company	Ainley Group	**East-West Street**	Sixth Street	
Analysis Period	2030	**North-South Street**	Tenth Line	
Flow Conditions	Restricted flow (urban)	**Major Street**	East-West	
T Intersection	No	**Approach Lanes per Direction**	1	
		Hours of Traffic Volume Data	AM & PM peaks only	
Additional Comments	existing road configuration			

TRAFFIC & PEDESTRIAN VOLUMES

Hour Ending		Hour 1 AM peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8 PM peak	AM + PM 2.5
MAJOR STREET										
Eastbound	right	39							59	39
	thru	175							226	160
	left	21							59	32
Westbound	right	69							132	80
	thru	177							272	180
	left	37							54	36
MINOR STREET										
Northbound	right	49							52	40
	thru	144							350	198
	left	35							35	28
Southbound	right	11							34	18
	thru	342							223	226
	left	117							106	89
PEDESTRIANS										
crossing MAJOR street									7	3
delayed pedestrians									7	3
crossing MINOR street		7							2	4
APPROACH VOLUMES										
major		518							802	528
minor		698							800	599
TOTAL		1216							1602	1127
CROSSING VOLUMES										
TOTAL		494							498	397
note 1		152							141	
note 2		342							350	
note 3		0							0	
3a		no							no	
3b		no							no	
note 4		0							7	3
note 5		0							7	3

NOTES

Traffic crossing MAJOR street defined as:

note 1: Left turns from both minor street approaches
note 2: The heaviest through volume from the minor street
note 3: 50% of the heavier left turn movement from the major street when both of the following are met:
3a: the left turn volume > 120
3b: the left turn volume + opposing volume > 720
note 4: Pedestrians crossing the major street
note 5: Pedestrians experiencing delays of 10 seconds or more in crossing the major street

ACCIDENT HISTORY

Reportable accidents over the past 36 months susceptible to correction by a traffic signal.	-

TRAFFIC SIGNAL WARRANT

JUSTIFICATION 1 - MINIMUM VEHICLE VOLUME

JUSTIFICATION	GUIDANCE	HOUR ENDING: AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	PM Peak	No. of hours with compliance		
1A	TOTAL TRAFFIC VOLUME ENTERING INTERSECTION (vph) (2 way Total)	1127	1127	1127	1127	1127	1127	1127	1127	100%	80% +	Average Compliance
	COMPLIANCE % VOL x 100 / 720 (1 lane approach on main road) OR VOL x 100 / 900 (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
1B	TRAFFIC VOLUME ON MINOR STREET (vph) (2 way Total)	599	599	599	599	599	599	599	599	100%	80% +	Average Compliance
	COMPLIANCE % VOL x 100 / 170 (full intersection) OR VOL x 100 / 255 (tee intersection)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
(RESTRICTED FLOW)		BOTH 1A AND 1B 100% FULFILLED EACH OF 8 HOURS										YES
SIGNAL JUSTIFICATION 1:		LESSER OF 1A OR 1B AT LEAST 80% FULFILLED EACH OF 8 HOURS										YES

JUSTIFICATION 2 - DELAY TO CROSS TRAFFIC

JUSTIFICATION	GUIDANCE	HOUR ENDING: Hour 1	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8	No. of hours with compliance		
2A	MAIN ROAD TRAFFIC VOLUME (vph) (2 way Total)	528	528	528	528	528	528	528	528	100%	80% +	Average Compliance
	COMPLIANCE % VOL x 100 / 720 (1 lane approach on main road) OR VOL x 100 / 900 (2 or more lane approach on main road)	73%	73%	73%	73%	73%	73%	73%	73%	0	0	73%
2B	CROSSING TRAFFIC VOLUME (vph) (2 way Total)	397	397	397	397	397	397	397	397	100%	80% +	Average Compliance
	COMPLIANCE % VOL x 100 / 75	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
(RESTRICTED FLOW)		BOTH 2A AND 2B 100% FULFILLED EACH OF 8 HOURS										NO
SIGNAL JUSTIFICATION 2:		LESSER OF 2A OR 2B AT LEAST 80% FULFILLED EACH OF 8 HOURS										NO

JUSTIFICATION 3 - VOLUME/DELAY COMBINATION JUSTIFICATION

JUSTIFICATION SATISFIED 80% OR MORE				Two Justifications Satisfied 80% or more
Justification 1	-	Minimum Vehicle Volume	YES	NO
Justification 2	-	Delay to Cross Traffic	NO	

JUSTIFICATION 4 - MINIMUM FOUR-HOUR VEHICLE VOLUME

JUSTIFICATION 5 - COLLISION EXPERIENCE

	Warrant Value	Number of Collisions	% Fulfillment
A. Reportable collisions over 36 consecutive months susceptible to correction by a traffic signal.	15	-	-
B. Adequate trial of less restrictive remedies has failed to reduce collision frequency.	☐ YES	☑ NO	0%
SIGNAL JUSTIFICATION 5: BOTH OF 3A, 3B FULFILLED TO 100%?	☐	☐ NO	
BOTH OF 3A, 3B FULFILLED TO 80%?	NO		

JUSTIFICATION 6 - PEDESTRIAN VOLUME AND DELAY

JUSTIFICATION 5A PEDESTRIAN VOLUME

NET 8 HOUR PEDESTRIAN VOLUME AT CROSSING: 7

NET 8 HOUR VEHICULAR VOLUME ON STREET BEING CROSSED: 9018

8 Hour Vehicular Volume V_8	Net 8 Hour Pedestrian Volume: < 200	200 - 275	276 - 475	476 - 1000	> 1000
< 1440					
1440 - 2600					
2601 - 7000					
> 7000	Not Justified				

JUSTIFICATION 5B PEDESTRIAN DELAY

NET 8 HOUR VOLUME OF TOTAL PEDESTRIANS: 7

NET 8 HOUR VOLUME OF DELAYED PEDESTRIANS: 7

Net Total 8 Hour Vol. of Total Pedestrians	Net Total 8 Hour Volume of Delayed Pedestrians: < 75	75 - 130	> 130
< 200	Not Justified		
200 - 300			
> 300			

SIGNAL JUSTIFICATION 6:	BOTH JUSTIFICATION 5A AND JUSTIFICATION 5B MET?	NO

JUSTIFCATION SUMMARY

OVERALL	AT LEAST ONE JUSTIFICATION (1 - 5) MET?	YES

TRAFFIC SIGNAL WARRANT

Analyst	Lilly Chen	**Jurisdiction/Date**	Town of Collingwood	25 July 2017
Agency or Company	Ainley Group	**East-West Street**	Georgian Meadows Drive	
Analysis Period	2037	**North-South Street**	Tenth Line	
Flow Conditions	Restricted flow (urban)	**Major Street**	North-South	
T Intersection	No	**Approach Lanes per Direction**	1	
		Hours of Traffic Volume Data	AM & PM peaks only	
Additional Comments	existing road configuration			

TRAFFIC & PEDESTRIAN VOLUMES

Hour Ending		Hour 1 AM peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8 PM peak	AM + PM 2.5
MAJOR STREET										
Northbound	right	6							13	8
	thru	171							349	208
	left	62							242	122
Southbound	right	42							162	82
	thru	309							286	238
	left	18							68	34
MINOR STREET										
Eastbound	right	235							130	146
	thru	0							0	0
	left	156							87	97
Westbound	right	82							40	49
	thru	0							0	0
	left	10							9	8
PEDESTRIANS										
crossing MAJOR street										0
delayed pedestrians										0
crossing MINOR street		2								1
APPROACH VOLUMES										
major		608							1120	691
minor		483							266	300
TOTAL		1091							1386	991
CROSSING VOLUMES										
TOTAL		166							96	105
note 1		166							96	
note 2		0							0	
note 3		0							0	
3a		no							yes	
3b		no							no	
note 4		0							0	0
note 5		0							0	0

NOTES

Traffic crossing MAJOR street defined as:

note 1: Left turns from both minor street approaches
note 2: The heaviest through volume from the minor street
note 3: 50% of the heavier left turn movement from the major street when both of the following are met:
3a: the left turn volume > 120
3b: the left turn volume + opposing volume > 720
note 4: Pedestrians crossing the major street
note 5: Pedestrians experiencing delays of 10 seconds or more in crossing the major street

ACCIDENT HISTORY

Reportable accidents over the past 36 months susceptible to correction by a traffic signal.	-

TRAFFIC SIGNAL WARRANT

JUSTIFICATION 1 - MINIMUM VEHICLE VOLUME

JUSTIFICATION	GUIDANCE	HOUR ENDING: AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	PM Peak	No. of hours with compliance		
1A	TOTAL TRAFFIC VOLUME ENTERING INTERSECTION (vph) (2 way Total)	991	991	991	991	991	991	991	991	100%	80% +	Average Compliance
	COMPLIANCE % VOL x 100 / 720 (1 lane approach on main road) OR VOL x 100 / 900 (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
1B	TRAFFIC VOLUME ON MINOR STREET (vph) (2 way Total)	300	300	300	300	300	300	300	300	100%	80% +	Average Compliance
	COMPLIANCE % VOL x 100 / 170 (full intersection) OR VOL x 100 / 255 (tee intersection)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
(RESTRICTED FLOW)		**BOTH 1A AND 1B 100% FULFILLED EACH OF 8 HOURS**										**YES**
SIGNAL JUSTIFICATION 1:		**LESSER OF 1A OR 1B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**YES**

JUSTIFICATION 2 - DELAY TO CROSS TRAFFIC

JUSTIFICATION	GUIDANCE	HOUR ENDING: Hour 1	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8	No. of hours with compliance		
2A	MAIN ROAD TRAFFIC VOLUME (vph) (2 way Total)	691	691	691	691	691	691	691	691	100%	80% +	Average Compliance
	COMPLIANCE % VOL x 100 / 720 (1 lane approach on main road) OR VOL x 100 / 900 (2 or more lane approach on main road)	96%	96%	96%	96%	96%	96%	96%	96%	0	8	96%
2B	CROSSING TRAFFIC VOLUME (vph) (2 way Total)	105	105	105	105	105	105	105	105	100%	80% +	Average Compliance
	COMPLIANCE % VOL x 100 / 75	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
(RESTRICTED FLOW)		**BOTH 2A AND 2B 100% FULFILLED EACH OF 8 HOURS**										**NO**
SIGNAL JUSTIFICATION 2:		**LESSER OF 2A OR 2B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**YES**

JUSTIFICATION 3 - VOLUME/DELAY COMBINATION JUSTIFICATION

JUSTIFICATION SATISFIED 80% OR MORE				**Two Justifications Satisfied 80% or more**
Justification 1	-	Minimum Vehicle Volume	YES	**YES**
Justification 2	-	Delay to Cross Traffic	YES	

JUSTIFICATION 4 - MINIMUM FOUR-HOUR VEHICLE VOLUME

JUSTIFICATION 5 - COLLISION EXPERIENCE

	Warrant Value	Number of Collisions	% Fulfillment
A. Reportable collisions over 36 consecutive months susceptible to correction by a traffic signal.	15	-	-
B. Adequate trial of less restrictive remedies has failed to reduce collision frequency.	☐ YES	☑ NO	0%

SIGNAL JUSTIFICATION 5:	BOTH OF 3A, 3B FULFILLED TO 100%?	☐ ☐ **NO**
	BOTH OF 3A, 3B FULFILLED TO 80%?	**NO**

JUSTIFICATION 6 - PEDESTRIAN VOLUME AND DELAY

JUSTIFICATION 5A PEDESTRIAN VOLUME	NET 8 HOUR PEDESTRIAN VOLUME AT CROSSING		0	NET 8 HOUR VEHICULAR VOLUME ON STREET BEING CROSSED		7926
	8 Hour Vehicular Volume V_8	**Net 8 Hour Pedestrian Volume**				
		< 200	**200 - 275**	**276 - 475**	**476 - 1000**	**> 1000**
	< 1440					
	1440 - 2600					
	2601 - 7000					
	> 7000	Not Justified				
JUSTIFICATION 5B PEDESTRIAN DELAY	NET 8 HOUR VOLUME OF TOTAL PEDESTRIANS		0	NET 8 HOUR VOLUME OF DELAYED PEDESTRIANS		0
	Net Total 8 Hour Vol. of Total Pedestrians	**Net Total 8 Hour Volume of Delayed Pedestrians**				
		< 75		**75 - 130**	**> 130**	
	< 200	Not Justified				
	200 - 300					
	> 300					
SIGNAL JUSTIFICATION 6:			BOTH JUSTIFICATION 5A AND JUSTIFICATION 5B MET?		**NO**	

JUSTIFCATION SUMMARY

OVERALL	AT LEAST ONE JUSTIFICATION (1 - 5) MET?	**YES**

TRAFFIC SIGNAL WARRANT

Analyst	Lilly Chen	**Jurisdiction/Date**	Town of Collingwood	25 July 2017
Agency or Company	Ainley Group	**East-West Street**	Mountain Rd	
Analysis Period	2037	**North-South Street**	Bluewood W Access	
Flow Conditions	Restricted flow (urban)	**Major Street**	East-West	
T Intersection	Yes	**Approach Lanes per Direction**	1	
		Hours of Traffic Volume Data	AM & PM peaks only	
Additional Comments	existing road configuration			

TRAFFIC & PEDESTRIAN VOLUMES

Hour Ending		Hour 1 AM peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8 PM peak	AM + PM 2.5
MAJOR STREET										
Eastbound	right	11							3	6
	thru	1022							1181	881
	left									0
Westbound	right									0
	thru	743							1383	850
	left	15							4	8
MINOR STREET										
Northbound	right	3							13	6
	thru									0
	left	2							10	5
Southbound	right									0
	thru									0
	left									0
PEDESTRIANS										
crossing MAJOR street										0
delayed pedestrians										0
crossing MINOR street										0
APPROACH VOLUMES										
major		1791							2571	1745
minor		5							23	11
TOTAL		1796							2594	1756
CROSSING VOLUMES										
TOTAL		2							10	5
note 1		2							10	
note 2		0							0	
note 3		0							0	
3a		no							no	
3b		yes							yes	
note 4		0							0	0
note 5		0							0	0

NOTES

Traffic crossing MAJOR street defined as:

note 1: Left turns from both minor street approaches
note 2: The heaviest through volume from the minor street
note 3: 50% of the heavier left turn movement from the major street when both of the following are met:
3a: the left turn volume > 120
3b: the left turn volume + opposing volume > 720
note 4: Pedestrians crossing the major street
note 5: Pedestrians experiencing delays of 10 seconds or more in crossing the major street

ACCIDENT HISTORY

Reportable accidents over the past 36 months susceptible to correction by a traffic signal.	-

TRAFFIC SIGNAL WARRANT

JUSTIFICATION 1 - MINIMUM VEHICLE VOLUME

JUSTIFICATION	GUIDANCE	HOUR ENDING: AM Peak	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	PM Peak	No. of hours with compliance		
1A	TOTAL TRAFFIC VOLUME ENTERING INTERSECTION (vph) (2 way Total)	1756	1756	1756	1756	1756	1756	1756	1756	100%	80% +	Average Compliance
	COMPLIANCE % VOL x 100 / 720 (1 lane approach on main road) OR VOL x 100 / 900 (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
1B	TRAFFIC VOLUME ON MINOR STREET (vph) (2 way Total)	11	11	11	11	11	11	11	11	100%	80% +	Average Compliance
	COMPLIANCE % VOL x 100 / 170 (full intersection) OR VOL x 100 / 255 (tee intersection)	4%	4%	4%	4%	4%	4%	4%	4%	0	0	4%
(RESTRICTED FLOW)		**BOTH 1A AND 1B 100% FULFILLED EACH OF 8 HOURS**										**NO**
SIGNAL JUSTIFICATION 1:		**LESSER OF 1A OR 1B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**NO**

JUSTIFICATION 2 - DELAY TO CROSS TRAFFIC

JUSTIFICATION	GUIDANCE	HOUR ENDING: Hour 1	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8	No. of hours with compliance		
2A	MAIN ROAD TRAFFIC VOLUME (vph) (2 way Total)	1745	1745	1745	1745	1745	1745	1745	1745	100%	80% +	Average Compliance
	COMPLIANCE % VOL x 100 / 720 (1 lane approach on main road) OR VOL x 100 / 900 (2 or more lane approach on main road)	100%	100%	100%	100%	100%	100%	100%	100%	8	8	100%
2B	CROSSING TRAFFIC VOLUME (vph) (2 way Total)	5	5	5	5	5	5	5	5	100%	80% +	Average Compliance
	COMPLIANCE % VOL x 100 / 75	6%	6%	6%	6%	6%	6%	6%	6%	0	0	6%
(RESTRICTED FLOW)		**BOTH 2A AND 2B 100% FULFILLED EACH OF 8 HOURS**										**NO**
SIGNAL JUSTIFICATION 2:		**LESSER OF 2A OR 2B AT LEAST 80% FULFILLED EACH OF 8 HOURS**										**NO**

JUSTIFICATION 3 - VOLUME/DELAY COMBINATION JUSTIFICATION

JUSTIFICATION SATISFIED 80% OR MORE				**Two Justifications Satisfied 80% or more**
Justification 1	-	Minimum Vehicle Volume	NO	**NO**
Justification 2	-	Delay to Cross Traffic	NO	

JUSTIFICATION 4 - MINIMUM FOUR-HOUR VEHICLE VOLUME

JUSTIFICATION 5 - COLLISION EXPERIENCE

	Warrant Value	Number of Collisions	% Fulfillment
A. Reportable collisions over 36 consecutive months susceptible to correction by a traffic signal.	15	-	-
B. Adequate trial of less restrictive remedies has failed to reduce collision frequency.	☐ YES	☑ NO	0%

SIGNAL JUSTIFICATION 5:	BOTH OF 3A, 3B FULFILLED TO 100%?	☐	☐ **NO**
	BOTH OF 3A, 3B FULFILLED TO 80%?	**NO**	

JUSTIFICATION 6 - PEDESTRIAN VOLUME AND DELAY

JUSTIFICATION 5A PEDESTRIAN VOLUME	NET 8 HOUR PEDESTRIAN VOLUME AT CROSSING	0	NET 8 HOUR VEHICULAR VOLUME ON STREET BEING CROSSED			14048
	8 Hour Vehicular Volume V_8	**Net 8 Hour Pedestrian Volume**				
		< 200	**200 - 275**	**276 - 475**	**476 - 1000**	**> 1000**
	< 1440					
	1440 - 2600					
	2601 - 7000					
	> 7000	Not Justified				

JUSTIFICATION 5B PEDESTRIAN DELAY	NET 8 HOUR VOLUME OF TOTAL PEDESTRIANS	0	NET 8 HOUR VOLUME OF DELAYED PEDESTRIANS		0
	Net Total 8 Hour Vol. of Total Pedestrians	**Net Total 8 Hour Volume of Delayed Pedestrians**			
		< 75	**75 - 130**	**> 130**	
	< 200	Not Justified			
	200 - 300				
	> 300				

SIGNAL JUSTIFICATION 6:	BOTH JUSTIFICATION 5A AND JUSTIFICATION 5B MET?	**NO**

JUSTIFCATION SUMMARY

OVERALL	AT LEAST ONE JUSTIFICATION (1 - 5) MET?	**NO**

APPENDIX E

Operational Analyses – Improvements

2022 Traffic Volumes

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	32	580	22	11	440	65	6	0	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	150	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	2	4	2	2	2	2
Mvmt Flow	35	630	24	12	478	71	7	0	12

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	549	0	0	654	0	0	1252	1285	642
Stage 1	-	-	-	-	-	-	712	712	-
Stage 2	-	-	-	-	-	-	540	573	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1021	-	-	933	-	-	149	165	474
Stage 1	-	-	-	-	-	-	423	436	-
Stage 2	-	-	-	-	-	-	526	504	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1021	-	-	933	-	-	142	157	474
Mov Cap-2 Maneuver	-	-	-	-	-	-	265	273	-
Stage 1	-	-	-	-	-	-	408	421	-
Stage 2	-	-	-	-	-	-	514	498	-

Approach	EB	WB	NB
HCM Control Delay, s	0.4	0.2	15.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	371	1021	-	-	933	-	-	318
HCM Lane V/C Ratio	0.05	0.034	-	-	0.013	-	-	0.051
HCM Control Delay (s)	15.2	8.6	-	-	8.9	-	-	16.9
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.2

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	10	0	5
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	1	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	11	0	5

Major/Minor	Minor2		
Conflicting Flow All	1256	1262	514
Stage 1	538	538	-
Stage 2	718	724	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	148	170	560
Stage 1	527	522	-
Stage 2	420	430	-
Platoon blocked, %			
Mov Cap-1 Maneuver	139	162	560
Mov Cap-2 Maneuver	261	279	-
Stage 1	509	515	-
Stage 2	395	415	-

Approach	SB
HCM Control Delay, s	16.9
HCM LOS	C

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	5	729	0	11	832	11	11	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	95	92	92	95	92	92	92	92
Heavy Vehicles, %	2	3	2	2	0	2	2	2	2
Mvmt Flow	5	767	0	12	876	12	12	0	7

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	888	0	0	767	0	0	1702	1690	767
Stage 1	-	-	-	-	-	-	778	778	-
Stage 2	-	-	-	-	-	-	924	912	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	763	-	-	847	-	-	72	93	402
Stage 1	-	-	-	-	-	-	389	407	-
Stage 2	-	-	-	-	-	-	323	353	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	763	-	-	847	-	-	63	91	402
Mov Cap-2 Maneuver	-	-	-	-	-	-	176	210	-
Stage 1	-	-	-	-	-	-	386	404	-
Stage 2	-	-	-	-	-	-	284	348	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	0.1	22.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	220	763	-	-	847	-	-	224
HCM Lane V/C Ratio	0.084	0.007	-	-	0.014	-	-	0.495
HCM Control Delay (s)	22.9	9.8	-	-	9.3	-	-	35.9
HCM Lane LOS	C	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	2.5

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	68	0	34
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	1	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	74	0	37

Major/Minor	Minor2		
Conflicting Flow All	1687	1684	882
Stage 1	906	906	-
Stage 2	781	778	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	74	94	345
Stage 1	331	355	-
Stage 2	388	407	-
Platoon blocked, %			
Mov Cap-1 Maneuver	~ 72	92	345
Mov Cap-2 Maneuver	191	211	-
Stage 1	329	350	-
Stage 2	379	404	-

Approach	SB
HCM Control Delay, s	35.9
HCM LOS	E

Minor Lane/Major Mvmt

2030 Traffic Volumes

HCM 2010 Signalized Intersection Summary
3: Tenth Line & Mountain Rd

07/09/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	570	117	125	450	43	108	50	308	91	61	13
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1583	1827	1900	1810	1824	1900	1900	1887	1900	1759	1568	1900
Adj Flow Rate, veh/h	18	600	123	132	474	45	114	53	324	96	64	14
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	20	3	3	5	4	4	0	5	5	8	23	23
Cap, veh/h	367	952	195	356	1457	138	561	84	512	284	454	99
Arrive On Green	0.33	0.33	0.33	0.07	0.46	0.46	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	746	2870	587	1723	3200	303	1340	230	1406	945	1246	273
Grp Volume(v), veh/h	18	362	361	132	256	263	114	0	377	96	0	78
Grp Sat Flow(s),veh/h/ln	746	1735	1722	1723	1733	1770	1340	0	1636	945	0	1519
Q Serve(g_s), s	1.0	10.6	10.7	2.8	5.7	5.7	3.8	0.0	11.5	5.6	0.0	2.1
Cycle Q Clear(g_c), s	1.0	10.6	10.7	2.8	5.7	5.7	5.8	0.0	11.5	17.1	0.0	2.1
Prop In Lane	1.00		0.34	1.00		0.17	1.00		0.86	1.00		0.18
Lane Grp Cap(c), veh/h	367	576	571	356	789	806	561	0	596	284	0	553
V/C Ratio(X)	0.05	0.63	0.63	0.37	0.32	0.33	0.20	0.00	0.63	0.34	0.00	0.14
Avail Cap(c_a), veh/h	405	664	659	400	921	941	561	0	596	284	0	553
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.8	17.0	17.1	11.9	10.5	10.5	14.8	0.0	15.9	22.9	0.0	12.9
Incr Delay (d2), s/veh	0.1	1.5	1.6	0.6	0.2	0.2	0.8	0.0	5.0	3.2	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	5.3	5.3	1.3	2.8	2.8	1.5	0.0	6.0	1.7	0.0	0.9
LnGrp Delay(d),s/veh	13.9	18.6	18.6	12.6	10.8	10.8	15.6	0.0	20.9	26.1	0.0	13.4
LnGrp LOS	B	B	B	B	B	B	B		C	C		B
Approach Vol, veh/h		741			651			491			174	
Approach Delay, s/veh		18.5			11.1			19.7			20.4	
Approach LOS		B			B			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	7.5	25.7		27.2		33.2		27.2
Change Period (Y+Rc), s	3.0	* 5.7		* 5.2		* 5.7		* 5.2
Max Green Setting (Gmax), s	6.0	* 23		* 22		* 32		* 22
Max Q Clear Time (g_c+I1), s	4.8	12.7		19.1		7.7		13.5
Green Ext Time (p_c), s	0.0	3.9		1.1		5.4		2.6

Intersection Summary	
HCM 2010 Ctrl Delay	16.6
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
6: Tenth Line & Sixth St

07/09/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	21	175	39	37	177	69	35	144	49	117	342	11
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1840	1900	1810	1886	1900	1900	1858	1900	1900	1779	1900
Adj Flow Rate, veh/h	22	184	41	39	186	73	37	152	52	123	360	12
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	4	4	5	1	1	0	2	2	0	7	7
Cap, veh/h	282	370	82	299	327	128	528	504	173	640	886	30
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.38	0.38	0.38	0.08	0.52	0.52
Sat Flow, veh/h	1130	1453	324	1109	1285	504	1026	1325	453	1810	1712	57
Grp Volume(v), veh/h	22	0	225	39	0	259	37	0	204	123	0	372
Grp Sat Flow(s),veh/h/ln	1130	0	1777	1109	0	1789	1026	0	1778	1810	0	1769
Q Serve(g_s), s	0.9	0.0	5.7	1.6	0.0	6.6	1.2	0.0	4.2	1.9	0.0	6.7
Cycle Q Clear(g_c), s	7.5	0.0	5.7	7.3	0.0	6.6	1.2	0.0	4.2	1.9	0.0	6.7
Prop In Lane	1.00		0.18	1.00		0.28	1.00		0.25	1.00		0.03
Lane Grp Cap(c), veh/h	282	0	452	299	0	455	528	0	677	640	0	915
V/C Ratio(X)	0.08	0.00	0.50	0.13	0.00	0.57	0.07	0.00	0.30	0.19	0.00	0.41
Avail Cap(c_a), veh/h	468	0	744	482	0	749	587	0	779	669	0	1044
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.4	0.0	16.7	19.8	0.0	17.1	10.4	0.0	11.4	7.5	0.0	7.7
Incr Delay (d2), s/veh	0.1	0.0	0.9	0.2	0.0	1.1	0.1	0.0	0.2	0.1	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	2.9	0.5	0.0	3.4	0.3	0.0	2.1	0.9	0.0	3.3
LnGrp Delay(d),s/veh	20.5	0.0	17.6	20.0	0.0	18.2	10.5	0.0	11.6	7.6	0.0	8.0
LnGrp LOS	C		B	C		B	B		B	A		A
Approach Vol, veh/h		247			298			241			495	
Approach Delay, s/veh		17.8			18.4			11.4			7.9	
Approach LOS		B			B			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	7.2	26.0		19.4		33.2		19.4
Change Period (Y+Rc), s	3.0	* 6		6.0		* 6		6.0
Max Green Setting (Gmax), s	5.0	* 23		22.0		* 31		22.0
Max Q Clear Time (g_c+I1), s	3.9	6.2		9.5		8.7		9.3
Green Ext Time (p_c), s	0.0	3.9		2.9		4.3		2.9

Intersection Summary	
HCM 2010 Ctrl Delay	13.0
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
11: SLB Entrance/Industrial Entrance & Mountain Rd

07/09/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	32	894	26	13	575	65	5	0	13	10	0	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1845	1900	1863	1830	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	34	941	27	14	605	68	5	0	14	11	0	5
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	3	3	2	4	4	2	2	2	2	2	2
Cap, veh/h	315	1337	38	224	1211	136	712	0	653	702	0	653
Arrive On Green	0.38	0.38	0.38	0.38	0.38	0.38	0.41	0.00	0.41	0.41	0.00	0.41
Sat Flow, veh/h	762	3481	100	578	3153	354	1405	0	1583	1394	0	1583
Grp Volume(v), veh/h	34	474	494	14	333	340	5	0	14	11	0	5
Grp Sat Flow(s),veh/h/ln	762	1753	1828	578	1739	1768	1405	0	1583	1394	0	1583
Q Serve(g_s), s	1.9	12.2	12.2	1.1	7.8	7.9	0.1	0.0	0.3	0.3	0.0	0.1
Cycle Q Clear(g_c), s	9.8	12.2	12.2	13.3	7.8	7.9	0.2	0.0	0.3	0.5	0.0	0.1
Prop In Lane	1.00		0.05	1.00		0.20	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	315	673	702	224	668	679	712	0	653	702	0	653
V/C Ratio(X)	0.11	0.70	0.70	0.06	0.50	0.50	0.01	0.00	0.02	0.02	0.00	0.01
Avail Cap(c_a), veh/h	336	720	751	240	714	726	712	0	653	702	0	653
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.3	13.9	13.9	19.6	12.6	12.6	9.3	0.0	9.3	9.5	0.0	9.3
Incr Delay (d2), s/veh	0.1	2.9	2.8	0.1	0.6	0.6	0.0	0.0	0.1	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	6.3	6.6	0.2	3.8	3.9	0.0	0.0	0.1	0.1	0.0	0.0
LnGrp Delay(d),s/veh	16.5	16.8	16.7	19.7	13.2	13.2	9.4	0.0	9.4	9.5	0.0	9.3
LnGrp LOS	B	B	B	B	B	B	A		A	A		A
Approach Vol, veh/h		1002			687			19			16	
Approach Delay, s/veh		16.8			13.3			9.4			9.5	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		27.3		26.3		27.3		26.3
Change Period (Y+Rc), s		* 5.2		* 5.7		* 5.2		* 5.7
Max Green Setting (Gmax), s		* 22		* 22		* 22		* 22
Max Q Clear Time (g_c+I1), s		2.3		14.2		2.5		15.3
Green Ext Time (p_c), s		0.1		6.0		0.1		5.2

Intersection Summary	
HCM 2010 Ctrl Delay	15.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	907	11	15	662	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	2	2	4	2	2
Mvmt Flow	955	12	16	697	2	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	966	0	1341	483
Stage 1	-	-	-	-	961	-
Stage 2	-	-	-	-	380	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	709	-	144	530
Stage 1	-	-	-	-	332	-
Stage 2	-	-	-	-	661	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	709	-	141	530
Mov Cap-2 Maneuver	-	-	-	-	255	-
Stage 1	-	-	-	-	332	-
Stage 2	-	-	-	-	646	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	14.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	370	-	-	709	-
HCM Lane V/C Ratio	0.014	-	-	0.022	-
HCM Control Delay (s)	14.9	-	-	10.2	-
HCM Lane LOS	B	-	-	B	-
HCM 95th %tile Q(veh)	0	-	-	0.1	-

HCM 2010 Signalized Intersection Summary
3: Tenth Line & Mountain Rd

07/09/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	700	135	371	776	113	164	57	225	94	75	17
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1583	1845	1900	1881	1815	1900	1900	1900	1900	1845	1900	1900
Adj Flow Rate, veh/h	8	737	142	391	817	119	173	60	237	99	79	18
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	20	3	3	1	0	0	0	0	0	3	0	0
Cap, veh/h	260	893	172	454	1565	228	480	108	428	292	483	110
Arrive On Green	0.30	0.30	0.30	0.17	0.52	0.52	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	506	2932	565	1792	3020	440	1318	336	1328	1067	1498	341
Grp Volume(v), veh/h	8	440	439	391	466	470	173	0	297	99	0	97
Grp Sat Flow(s),veh/h/ln	506	1752	1744	1792	1724	1737	1318	0	1664	1067	0	1839
Q Serve(g_s), s	0.8	15.9	15.9	9.5	12.2	12.2	7.4	0.0	10.1	5.8	0.0	2.6
Cycle Q Clear(g_c), s	0.8	15.9	15.9	9.5	12.2	12.2	10.0	0.0	10.1	15.8	0.0	2.6
Prop In Lane	1.00		0.32	1.00		0.25	1.00		0.80	1.00		0.19
Lane Grp Cap(c), veh/h	260	534	531	454	893	900	480	0	536	292	0	593
V/C Ratio(X)	0.03	0.82	0.83	0.86	0.52	0.52	0.36	0.00	0.55	0.34	0.00	0.16
Avail Cap(c_a), veh/h	269	567	565	466	937	944	480	0	536	292	0	593
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.8	22.0	22.0	14.3	10.9	10.9	20.1	0.0	19.1	25.6	0.0	16.6
Incr Delay (d2), s/veh	0.0	9.2	9.3	14.9	0.5	0.5	2.1	0.0	4.1	3.1	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	9.1	9.0	6.4	5.8	5.9	3.0	0.0	5.2	2.0	0.0	1.4
LnGrp Delay(d),s/veh	16.8	31.3	31.3	29.2	11.3	11.3	22.2	0.0	23.2	28.7	0.0	17.1
LnGrp LOS	B	C	C	C	B	B	C		C	C		B
Approach Vol, veh/h		887			1327			470			196	
Approach Delay, s/veh		31.2			16.6			22.8			23.0	
Approach LOS		C			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	14.6	26.5		27.2		41.1		27.2
Change Period (Y+Rc), s	3.0	* 5.7		* 5.2		* 5.7		* 5.2
Max Green Setting (Gmax), s	12.0	* 22		* 22		* 37		* 22
Max Q Clear Time (g_c+I1), s	11.5	17.9		17.8		14.2		12.1
Green Ext Time (p_c), s	0.1	2.8		1.5		8.6		2.7

Intersection Summary	
HCM 2010 Ctrl Delay	22.5
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	55	226	59	54	272	132	35	350	52	106	223	34
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1874	1900	1900	1875	1900	1810	1868	1900	1863	1868	1900
Adj Flow Rate, veh/h	58	238	62	57	286	139	37	368	55	112	235	36
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	1	1	0	0	0	5	2	2	2	2	2
Cap, veh/h	220	449	117	319	373	181	501	557	83	404	753	115
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	0.35	0.35	0.35	0.07	0.48	0.48
Sat Flow, veh/h	977	1433	373	1095	1192	579	1067	1587	237	1774	1581	242
Grp Volume(v), veh/h	58	0	300	57	0	425	37	0	423	112	0	271
Grp Sat Flow(s),veh/h/ln	977	0	1806	1095	0	1771	1067	0	1824	1774	0	1823
Q Serve(g_s), s	3.3	0.0	7.8	2.6	0.0	12.4	1.3	0.0	11.2	2.1	0.0	5.2
Cycle Q Clear(g_c), s	15.6	0.0	7.8	10.4	0.0	12.4	1.3	0.0	11.2	2.1	0.0	5.2
Prop In Lane	1.00		0.21	1.00		0.33	1.00		0.13	1.00		0.13
Lane Grp Cap(c), veh/h	220	0	565	319	0	554	501	0	640	404	0	869
V/C Ratio(X)	0.26	0.00	0.53	0.18	0.00	0.77	0.07	0.00	0.66	0.28	0.00	0.31
Avail Cap(c_a), veh/h	223	0	570	322	0	559	538	0	704	431	0	960
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.8	0.0	16.1	20.4	0.0	17.7	12.4	0.0	15.6	10.6	0.0	9.2
Incr Delay (d2), s/veh	0.6	0.0	0.9	0.3	0.0	6.3	0.1	0.0	2.0	0.4	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	4.0	0.8	0.0	7.0	0.4	0.0	5.9	1.0	0.0	2.6
LnGrp Delay(d),s/veh	25.4	0.0	17.0	20.7	0.0	24.0	12.5	0.0	17.7	11.0	0.0	9.4
LnGrp LOS	C		B	C		C	B		B	B		A
Approach Vol, veh/h		358			482			460			383	
Approach Delay, s/veh		18.4			23.6			17.2			9.9	
Approach LOS		B			C			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	7.2	26.0		23.8		33.2		23.8
Change Period (Y+Rc), s	3.0	* 6		6.0		* 6		6.0
Max Green Setting (Gmax), s	5.0	* 22		18.0		* 30		18.0
Max Q Clear Time (g_c+I1), s	4.1	13.2		17.6		7.2		14.4
Green Ext Time (p_c), s	0.0	3.3		0.2		5.4		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	17.6
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	980	0	13	1199	11	13	0	6	68	0	34
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1845	1900	1863	1900	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	5	1032	0	14	1262	12	14	0	6	72	0	36
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	3	3	2	0	0	2	2	2	2	2	2
Cap, veh/h	180	1521	0	229	1589	15	625	0	606	655	0	606
Arrive On Green	0.43	0.43	0.00	0.43	0.43	0.43	0.38	0.00	0.38	0.38	0.00	0.38
Sat Flow, veh/h	433	3597	0	544	3663	35	1367	0	1583	1404	0	1583
Grp Volume(v), veh/h	5	1032	0	14	622	652	14	0	6	72	0	36
Grp Sat Flow(s),veh/h/ln	433	1752	0	544	1805	1893	1367	0	1583	1404	0	1583
Q Serve(g_s), s	0.6	14.1	0.0	1.3	17.7	17.7	0.4	0.0	0.1	2.0	0.0	0.9
Cycle Q Clear(g_c), s	18.3	14.1	0.0	15.3	17.7	17.7	1.2	0.0	0.1	2.1	0.0	0.9
Prop In Lane	1.00		0.00	1.00		0.02	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	180	1521	0	229	783	822	625	0	606	655	0	606
V/C Ratio(X)	0.03	0.68	0.00	0.06	0.79	0.79	0.02	0.00	0.01	0.11	0.00	0.06
Avail Cap(c_a), veh/h	183	1548	0	233	797	837	625	0	606	655	0	606
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.5	13.5	0.0	19.7	14.6	14.6	12.0	0.0	11.4	12.0	0.0	11.6
Incr Delay (d2), s/veh	0.1	1.2	0.0	0.1	5.5	5.2	0.1	0.0	0.0	0.3	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	7.0	0.0	0.2	9.8	10.3	0.2	0.0	0.1	0.8	0.0	0.4
LnGrp Delay(d),s/veh	22.5	14.7	0.0	19.8	20.0	19.8	12.1	0.0	11.4	12.4	0.0	11.8
LnGrp LOS	C	B		B	C	B	B		B	B		B
Approach Vol, veh/h		1037			1288			20			108	
Approach Delay, s/veh		14.7			19.9			11.9			12.2	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		28.0		31.5		28.0		31.5
Change Period (Y+Rc), s		* 5.2		* 5.7		* 5.2		* 5.7
Max Green Setting (Gmax), s		* 23		* 26		* 23		* 26
Max Q Clear Time (g_c+I1), s		3.2		20.3		4.1		19.7
Green Ext Time (p_c), s		0.5		5.5		0.5		6.0

Intersection Summary	
HCM 2010 Ctrl Delay	17.3
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1052	3	4	1224	10	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1107	3	4	1288	11	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1111	0	1762	555
Stage 1	-	-	-	-	1109	-
Stage 2	-	-	-	-	653	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	624	-	75	475
Stage 1	-	-	-	-	277	-
Stage 2	-	-	-	-	480	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	624	-	75	475
Mov Cap-2 Maneuver	-	-	-	-	191	-
Stage 1	-	-	-	-	277	-
Stage 2	-	-	-	-	477	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	18.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	288	-	-	624	-
HCM Lane V/C Ratio	0.084	-	-	0.007	-
HCM Control Delay (s)	18.6	-	-	10.8	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

2037 Traffic Volumes

HCM 2010 Signalized Intersection Summary
3: Tenth Line & Mountain Rd

07/09/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	19	630	125	144	510	48	123	54	360	98	66	16
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1583	1827	1900	1810	1824	1900	1900	1888	1900	1759	1570	1900
Adj Flow Rate, veh/h	20	663	132	152	537	51	129	57	379	103	69	17
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	20	3	3	5	4	4	0	5	5	8	23	23
Cap, veh/h	349	950	189	343	1469	139	548	77	514	234	440	108
Arrive On Green	0.33	0.33	0.33	0.08	0.46	0.46	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	700	2886	574	1723	3200	303	1330	214	1421	896	1217	300
Grp Volume(v), veh/h	20	398	397	152	290	298	129	0	436	103	0	86
Grp Sat Flow(s),veh/h/ln	700	1736	1725	1723	1733	1770	1330	0	1634	896	0	1516
Q Serve(g_s), s	1.2	12.2	12.2	3.3	6.6	6.7	4.4	0.0	14.1	6.9	0.0	2.3
Cycle Q Clear(g_c), s	1.2	12.2	12.2	3.3	6.6	6.7	6.8	0.0	14.1	21.0	0.0	2.3
Prop In Lane	1.00		0.33	1.00		0.17	1.00		0.87	1.00		0.20
Lane Grp Cap(c), veh/h	349	572	568	343	796	813	548	0	591	234	0	548
V/C Ratio(X)	0.06	0.70	0.70	0.44	0.36	0.37	0.24	0.00	0.74	0.44	0.00	0.16
Avail Cap(c_a), veh/h	384	659	655	373	914	934	548	0	591	234	0	548
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.1	17.8	17.8	12.5	10.7	10.7	15.4	0.0	16.9	26.1	0.0	13.1
Incr Delay (d2), s/veh	0.1	2.7	2.7	0.9	0.3	0.3	1.0	0.0	8.0	5.9	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	6.2	6.2	1.6	3.2	3.3	1.8	0.0	7.6	2.1	0.0	1.1
LnGrp Delay(d),s/veh	14.2	20.5	20.5	13.4	11.0	11.0	16.4	0.0	24.9	32.0	0.0	13.8
LnGrp LOS	B	C	C	B	B	B	B		C	C		B
Approach Vol, veh/h		815			740			565			189	
Approach Delay, s/veh		20.3			11.5			23.0			23.7	
Approach LOS		C			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	7.9	25.7		27.2		33.6		27.2
Change Period (Y+Rc), s	3.0	* 5.7		* 5.2		* 5.7		* 5.2
Max Green Setting (Gmax), s	6.0	* 23		* 22		* 32		* 22
Max Q Clear Time (g_c+I1), s	5.3	14.2		23.0		8.7		16.1
Green Ext Time (p_c), s	0.0	4.0		0.0		6.1		2.3

Intersection Summary	
HCM 2010 Ctrl Delay	18.4
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	23	202	45	43	204	82	41	164	56	148	389	13
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1840	1900	1810	1887	1900	1900	1858	1900	1900	1780	1900
Adj Flow Rate, veh/h	24	213	47	45	215	86	43	173	59	156	409	14
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	4	4	5	1	1	0	2	2	0	7	7
Cap, veh/h	271	400	88	294	351	140	475	485	165	602	865	30
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.37	0.37	0.37	0.09	0.51	0.51
Sat Flow, veh/h	1089	1457	321	1076	1278	511	979	1326	452	1810	1711	59
Grp Volume(v), veh/h	24	0	260	45	0	301	43	0	232	156	0	423
Grp Sat Flow(s),veh/h/ln	1089	0	1778	1076	0	1789	979	0	1778	1810	0	1769
Q Serve(g_s), s	1.1	0.0	6.8	2.0	0.0	8.0	1.6	0.0	5.2	2.6	0.0	8.5
Cycle Q Clear(g_c), s	9.1	0.0	6.8	8.8	0.0	8.0	2.5	0.0	5.2	2.6	0.0	8.5
Prop In Lane	1.00		0.18	1.00		0.29	1.00		0.25	1.00		0.03
Lane Grp Cap(c), veh/h	271	0	489	294	0	492	475	0	650	602	0	895
V/C Ratio(X)	0.09	0.00	0.53	0.15	0.00	0.61	0.09	0.00	0.36	0.26	0.00	0.47
Avail Cap(c_a), veh/h	410	0	715	431	0	719	511	0	715	1142	0	1488
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.3	0.0	16.8	20.6	0.0	17.3	12.1	0.0	12.7	8.4	0.0	8.8
Incr Delay (d2), s/veh	0.1	0.0	0.9	0.2	0.0	1.2	0.1	0.0	0.3	0.2	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	3.4	0.6	0.0	4.1	0.5	0.0	2.6	1.3	0.0	4.2
LnGrp Delay(d),s/veh	21.4	0.0	17.7	20.8	0.0	18.5	12.2	0.0	13.0	8.6	0.0	9.2
LnGrp LOS	C		B	C		B	B		B	A		A
Approach Vol, veh/h		284			346			275			579	
Approach Delay, s/veh		18.1			18.8			12.9			9.0	
Approach LOS		B			B			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	7.7	26.0		21.0		33.7		21.0
Change Period (Y+Rc), s	3.0	* 6		6.0		* 6		6.0
Max Green Setting (Gmax), s	21.0	* 22		22.0		* 46		22.0
Max Q Clear Time (g_c+I1), s	4.6	7.2		11.1		10.5		10.8
Green Ext Time (p_c), s	0.5	4.3		3.1		5.7		3.2

Intersection Summary	
HCM 2010 Ctrl Delay	13.8
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	156	0	235	10	0	82	62	171	6	18	309	42
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	1863	1688	1900	1759	1701	1900
Adj Flow Rate, veh/h	164	0	247	11	0	86	65	180	6	19	325	44
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	0	2	2	2	13	13	8	13	13
Cap, veh/h	410	0	393	268	0	393	474	836	28	588	581	79
Arrive On Green	0.25	0.00	0.25	0.25	0.00	0.25	0.06	0.51	0.51	0.40	0.40	0.40
Sat Flow, veh/h	1306	0	1583	1151	0	1583	1774	1624	54	1126	1467	199
Grp Volume(v), veh/h	164	0	247	11	0	86	65	0	186	19	0	369
Grp Sat Flow(s),veh/h/ln	1306	0	1583	1151	0	1583	1774	0	1678	1126	0	1666
Q Serve(g_s), s	5.8	0.0	7.0	0.4	0.0	2.2	1.0	0.0	3.1	0.5	0.0	8.7
Cycle Q Clear(g_c), s	8.0	0.0	7.0	7.5	0.0	2.2	1.0	0.0	3.1	0.5	0.0	8.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.03	1.00		0.12
Lane Grp Cap(c), veh/h	410	0	393	268	0	393	474	0	863	588	0	660
V/C Ratio(X)	0.40	0.00	0.63	0.04	0.00	0.22	0.14	0.00	0.22	0.03	0.00	0.56
Avail Cap(c_a), veh/h	655	0	690	484	0	690	544	0	1030	655	0	759
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.3	0.0	16.9	20.2	0.0	15.1	7.9	0.0	6.7	9.4	0.0	11.8
Incr Delay (d2), s/veh	0.6	0.0	1.7	0.1	0.0	0.3	0.1	0.0	0.1	0.0	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	3.2	0.1	0.0	1.0	0.5	0.0	1.4	0.2	0.0	4.1
LnGrp Delay(d),s/veh	18.9	0.0	18.6	20.3	0.0	15.4	8.0	0.0	6.8	9.4	0.0	12.6
LnGrp LOS	B		B	C		B	A		A	A		B
Approach Vol, veh/h		411			97			251			388	
Approach Delay, s/veh		18.7			15.9			7.1			12.4	
Approach LOS		B			B			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		32.0		18.5	6.0	26.0		18.5
Change Period (Y+Rc), s		* 6		* 6	3.0	* 6		* 6
Max Green Setting (Gmax), s		* 31		* 22	5.0	* 23		* 22
Max Q Clear Time (g_c+I1), s		5.1		10.0	3.0	10.7		9.5
Green Ext Time (p_c), s		4.2		2.6	0.0	3.1		2.6

Intersection Summary	
HCM 2010 Ctrl Delay	13.8
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	32	1007	30	15	654	65	7	0	15	10	0	5
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1845	1900	1863	1830	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	34	1060	32	16	688	68	7	0	16	11	0	5
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	3	3	2	4	4	2	2	2	2	2	2
Cap, veh/h	423	1703	51	313	1567	155	515	0	386	504	0	386
Arrive On Green	0.49	0.49	0.49	0.49	0.49	0.49	0.24	0.00	0.24	0.24	0.00	0.24
Sat Flow, veh/h	705	3475	105	514	3197	316	1405	0	1583	1392	0	1583
Grp Volume(v), veh/h	34	535	557	16	374	382	7	0	16	11	0	5
Grp Sat Flow(s),veh/h/ln	705	1753	1827	514	1739	1774	1405	0	1583	1392	0	1583
Q Serve(g_s), s	1.3	9.2	9.2	1.0	5.7	5.7	0.2	0.0	0.3	0.2	0.0	0.1
Cycle Q Clear(g_c), s	7.1	9.2	9.2	10.1	5.7	5.7	0.3	0.0	0.3	0.6	0.0	0.1
Prop In Lane	1.00		0.06	1.00		0.18	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	423	859	896	313	852	870	515	0	386	504	0	386
V/C Ratio(X)	0.08	0.62	0.62	0.05	0.44	0.44	0.01	0.00	0.04	0.02	0.00	0.01
Avail Cap(c_a), veh/h	457	945	985	338	937	956	926	0	850	912	0	850
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.1	7.7	7.7	11.4	6.8	6.8	11.9	0.0	11.8	12.1	0.0	11.8
Incr Delay (d2), s/veh	0.1	1.1	1.1	0.1	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	4.6	4.8	0.1	2.8	2.8	0.1	0.0	0.1	0.1	0.0	0.0
LnGrp Delay(d),s/veh	9.2	8.8	8.7	11.5	7.1	7.1	11.9	0.0	11.9	12.1	0.0	11.8
LnGrp LOS	A	A	A	B	A	A	B		B	B		B
Approach Vol, veh/h		1126			772			23			16	
Approach Delay, s/veh		8.8			7.2			11.9			12.0	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		25.8		15.2		25.8		15.2
Change Period (Y+Rc), s		* 5.7		* 5.2		* 5.7		* 5.2
Max Green Setting (Gmax), s		* 22		* 22		* 22		* 22
Max Q Clear Time (g_c+I1), s		11.2		2.6		12.1		2.3
Green Ext Time (p_c), s		8.6		0.1		8.0		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	8.2
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	122	832	88	142	618	37	85	38	97	17	65	90
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1712	1834	1900	1881	1865	1900	1792	1860	1900	1727	1765	1900
Adj Flow Rate, veh/h	128	876	93	149	651	39	89	40	102	18	68	95
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	11	4	4	1	2	2	6	0	0	10	3	3
Cap, veh/h	370	1216	129	310	1319	79	375	148	378	385	213	297
Arrive On Green	0.07	0.38	0.38	0.07	0.39	0.39	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1630	3175	337	1792	3395	203	1172	465	1186	1151	668	933
Grp Volume(v), veh/h	128	481	488	149	339	351	89	0	142	18	0	163
Grp Sat Flow(s),veh/h/ln	1630	1742	1771	1792	1772	1827	1172	0	1651	1151	0	1600
Q Serve(g_s), s	3.7	18.4	18.4	3.9	11.4	11.4	4.9	0.0	5.0	0.9	0.0	6.1
Cycle Q Clear(g_c), s	3.7	18.4	18.4	3.9	11.4	11.4	10.9	0.0	5.0	6.0	0.0	6.1
Prop In Lane	1.00		0.19	1.00		0.11	1.00		0.72	1.00		0.58
Lane Grp Cap(c), veh/h	370	667	678	310	688	710	375	0	527	385	0	510
V/C Ratio(X)	0.35	0.72	0.72	0.48	0.49	0.49	0.24	0.00	0.27	0.05	0.00	0.32
Avail Cap(c_a), veh/h	384	742	755	384	823	848	375	0	527	385	0	510
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.8	20.6	20.6	15.5	18.1	18.1	24.4	0.0	19.9	22.1	0.0	20.2
Incr Delay (d2), s/veh	0.6	3.0	3.0	1.2	0.5	0.5	1.5	0.0	1.3	0.2	0.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	9.4	9.5	2.0	5.7	5.9	1.7	0.0	2.5	0.3	0.0	2.9
LnGrp Delay(d),s/veh	14.3	23.7	23.6	16.7	18.7	18.7	25.9	0.0	21.1	22.3	0.0	21.9
LnGrp LOS	B	C	C	B	B	B	C		C	C		C
Approach Vol, veh/h		1097			839			231			181	
Approach Delay, s/veh		22.5			18.3			23.0			21.9	
Approach LOS		C			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.8	37.6		31.0	9.3	38.0		31.0
Change Period (Y+Rc), s	4.0	* 7.6		6.0	4.0	* 7.6		6.0
Max Green Setting (Gmax), s	9.0	* 33		25.0	6.0	* 36		25.0
Max Q Clear Time (g_c+I1), s	5.9	20.4		8.1	5.7	13.4		12.9
Green Ext Time (p_c), s	0.1	9.0		2.5	0.0	13.4		2.1

Intersection Summary	
HCM 2010 Ctrl Delay	21.0
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1022	11	15	743	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	2	2	4	2	2
Mvmt Flow	1076	12	16	782	2	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1087	0	1505	544
Stage 1	-	-	-	-	1082	-
Stage 2	-	-	-	-	423	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	638	-	112	483
Stage 1	-	-	-	-	287	-
Stage 2	-	-	-	-	629	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	638	-	109	483
Mov Cap-2 Maneuver	-	-	-	-	220	-
Stage 1	-	-	-	-	287	-
Stage 2	-	-	-	-	613	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	16.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	327	-	-	638	-
HCM Lane V/C Ratio	0.016	-	-	0.025	-
HCM Control Delay (s)	16.2	-	-	10.8	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0	-	-	0.1	-

HCM 2010 Signalized Intersection Summary
3: Tenth Line & Mountain Rd

07/09/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	794	150	375	862	123	178	61	261	104	81	19
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1583	1845	1900	1881	1816	1900	1900	1900	1900	1845	1900	1900
Adj Flow Rate, veh/h	11	836	158	395	907	129	187	64	275	109	85	20
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	20	3	3	1	0	0	0	0	0	3	0	0
Cap, veh/h	254	981	185	442	1650	235	444	96	411	230	454	107
Arrive On Green	0.33	0.33	0.33	0.17	0.54	0.54	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	461	2942	556	1792	3034	431	1308	314	1347	1027	1488	350
Grp Volume(v), veh/h	11	498	496	395	516	520	187	0	339	109	0	105
Grp Sat Flow(s),veh/h/ln	461	1752	1746	1792	1726	1740	1308	0	1661	1027	0	1838
Q Serve(g_s), s	1.2	19.1	19.1	9.8	14.0	14.0	8.9	0.0	12.9	7.5	0.0	3.0
Cycle Q Clear(g_c), s	1.2	19.1	19.1	9.8	14.0	14.0	11.9	0.0	12.9	20.3	0.0	3.0
Prop In Lane	1.00		0.32	1.00		0.25	1.00		0.81	1.00		0.19
Lane Grp Cap(c), veh/h	254	585	582	442	939	946	444	0	506	230	0	560
V/C Ratio(X)	0.04	0.85	0.85	0.89	0.55	0.55	0.42	0.00	0.67	0.47	0.00	0.19
Avail Cap(c_a), veh/h	260	610	607	487	1007	1015	444	0	506	230	0	560
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.4	22.4	22.4	15.1	10.7	10.7	22.9	0.0	21.9	30.8	0.0	18.5
Incr Delay (d2), s/veh	0.1	10.9	10.9	17.7	0.5	0.5	2.9	0.0	6.9	6.9	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	10.9	10.9	9.7	6.7	6.8	3.5	0.0	6.8	2.6	0.0	1.7
LnGrp Delay(d),s/veh	16.5	33.2	33.3	32.8	11.2	11.2	25.8	0.0	28.8	37.6	0.0	19.2
LnGrp LOS	B	C	C	C	B	B	C		C	D		B
Approach Vol, veh/h		1005			1431			526			214	
Approach Delay, s/veh		33.1			17.2			27.7			28.6	
Approach LOS		C			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	15.2	29.8		27.2		44.9		27.2
Change Period (Y+Rc), s	3.0	* 5.7		* 5.2		* 5.7		* 5.2
Max Green Setting (Gmax), s	14.0	* 25		* 22		* 42		* 22
Max Q Clear Time (g_c+I1), s	11.8	21.1		22.3		16.0		14.9
Green Ext Time (p_c), s	0.4	3.0		0.0		10.6		2.5

Intersection Summary	
HCM 2010 Ctrl Delay	24.7
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	59	260	68	62	312	166	41	399	60	129	255	38
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1873	1900	1900	1874	1900	1810	1868	1900	1863	1868	1900
Adj Flow Rate, veh/h	62	274	72	65	328	175	43	420	63	136	268	40
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	1	1	0	0	0	5	2	2	2	2	2
Cap, veh/h	207	510	134	331	410	219	454	519	78	323	713	106
Arrive On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.33	0.33	0.33	0.07	0.45	0.45
Sat Flow, veh/h	909	1430	376	1050	1150	614	1031	1586	238	1774	1587	237
Grp Volume(v), veh/h	62	0	346	65	0	503	43	0	483	136	0	308
Grp Sat Flow(s),veh/h/ln	909	0	1806	1050	0	1764	1031	0	1823	1774	0	1824
Q Serve(g_s), s	4.1	0.0	9.4	3.2	0.0	15.8	1.8	0.0	14.9	2.9	0.0	6.9
Cycle Q Clear(g_c), s	19.9	0.0	9.4	12.6	0.0	15.8	1.8	0.0	14.9	2.9	0.0	6.9
Prop In Lane	1.00		0.21	1.00		0.35	1.00		0.13	1.00		0.13
Lane Grp Cap(c), veh/h	207	0	644	331	0	628	454	0	597	323	0	819
V/C Ratio(X)	0.30	0.00	0.54	0.20	0.00	0.80	0.09	0.00	0.81	0.42	0.00	0.38
Avail Cap(c_a), veh/h	208	0	644	331	0	629	502	0	680	337	0	917
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.8	0.0	15.8	20.8	0.0	17.9	14.6	0.0	19.0	13.5	0.0	11.3
Incr Delay (d2), s/veh	0.8	0.0	0.9	0.3	0.0	7.3	0.1	0.0	6.5	0.9	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	4.8	1.0	0.0	9.0	0.5	0.0	8.6	1.5	0.0	3.5
LnGrp Delay(d),s/veh	27.6	0.0	16.7	21.1	0.0	25.1	14.7	0.0	25.5	14.4	0.0	11.5
LnGrp LOS	C		B	C		C	B		C	B		B
Approach Vol, veh/h		408			568			526			444	
Approach Delay, s/veh		18.3			24.7			24.6			12.4	
Approach LOS		B			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	7.5	26.2		28.0		33.7		28.0
Change Period (Y+Rc), s	3.0	* 6		6.0		* 6		6.0
Max Green Setting (Gmax), s	5.0	* 23		22.0		* 31		22.0
Max Q Clear Time (g_c+I1), s	4.9	16.9		21.9		8.9		17.8
Green Ext Time (p_c), s	0.0	2.9		0.1		6.2		2.4

Intersection Summary	
HCM 2010 Ctrl Delay	20.5
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	87	0	130	9	0	40	242	349	13	68	286	162
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1827	1900	1863	1830	1900	1863	1795	1900
Adj Flow Rate, veh/h	92	0	137	9	0	42	255	367	14	72	301	171
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	0	2	2	2	4	4	2	8	8
Cap, veh/h	330	0	246	247	0	241	526	1039	40	569	451	256
Arrive On Green	0.16	0.00	0.16	0.16	0.00	0.16	0.11	0.59	0.59	0.42	0.42	0.42
Sat Flow, veh/h	1359	0	1583	1272	0	1553	1774	1751	67	998	1076	611
Grp Volume(v), veh/h	92	0	137	9	0	42	255	0	381	72	0	472
Grp Sat Flow(s),veh/h/ln	1359	0	1583	1272	0	1553	1774	0	1818	998	0	1688
Q Serve(g_s), s	3.0	0.0	3.8	0.3	0.0	1.1	3.4	0.0	5.1	2.2	0.0	10.8
Cycle Q Clear(g_c), s	4.1	0.0	3.8	4.1	0.0	1.1	3.4	0.0	5.1	2.2	0.0	10.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		0.36
Lane Grp Cap(c), veh/h	330	0	246	247	0	241	526	0	1078	569	0	707
V/C Ratio(X)	0.28	0.00	0.56	0.04	0.00	0.17	0.48	0.00	0.35	0.13	0.00	0.67
Avail Cap(c_a), veh/h	746	0	730	636	0	716	552	0	1181	611	0	778
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.3	0.0	18.6	20.5	0.0	17.5	7.5	0.0	5.0	8.7	0.0	11.2
Incr Delay (d2), s/veh	0.5	0.0	2.0	0.1	0.0	0.3	0.7	0.0	0.2	0.1	0.0	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	1.8	0.1	0.0	0.5	1.7	0.0	2.6	0.6	0.0	5.4
LnGrp Delay(d),s/veh	19.7	0.0	20.6	20.6	0.0	17.8	8.2	0.0	5.2	8.8	0.0	13.1
LnGrp LOS	B		C	C		B	A		A	A		B
Approach Vol, veh/h		229			51			636			544	
Approach Delay, s/veh		20.3			18.3			6.4			12.5	
Approach LOS		C			B			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		34.3		13.4	8.3	26.0		13.4
Change Period (Y+Rc), s		* 6		* 6	3.0	* 6		* 6
Max Green Setting (Gmax), s		* 31		* 22	6.0	* 22		* 22
Max Q Clear Time (g_c+I1), s		7.1		6.1	5.4	12.8		6.1
Green Ext Time (p_c), s		7.4		1.5	0.1	4.4		1.5

Intersection Summary	
HCM 2010 Ctrl Delay	11.3
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	1115	0	15	1357	11	15	0	7	68	0	34
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1845	1900	1863	1900	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	5	1174	0	16	1428	12	16	0	7	72	0	36
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	3	3	2	0	0	2	2	2	2	2	2
Cap, veh/h	254	1953	0	312	2044	17	417	0	336	445	0	336
Arrive On Green	0.56	0.56	0.00	0.56	0.56	0.56	0.21	0.00	0.21	0.21	0.00	0.21
Sat Flow, veh/h	369	3597	0	476	3668	31	1367	0	1583	1403	0	1583
Grp Volume(v), veh/h	5	1174	0	16	702	738	16	0	7	72	0	36
Grp Sat Flow(s),veh/h/ln	369	1752	0	476	1805	1894	1367	0	1583	1403	0	1583
Q Serve(g_s), s	0.5	10.5	0.0	1.1	13.3	13.3	0.5	0.0	0.2	2.0	0.0	0.9
Cycle Q Clear(g_c), s	13.8	10.5	0.0	11.6	13.3	13.3	1.3	0.0	0.2	2.2	0.0	0.9
Prop In Lane	1.00		0.00	1.00		0.02	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	254	1953	0	312	1005	1055	417	0	336	445	0	336
V/C Ratio(X)	0.02	0.60	0.00	0.05	0.70	0.70	0.04	0.00	0.02	0.16	0.00	0.11
Avail Cap(c_a), veh/h	260	2013	0	320	1036	1088	765	0	738	802	0	738
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.6	7.0	0.0	10.8	7.6	7.6	15.5	0.0	14.7	15.6	0.0	15.0
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.1	2.0	1.9	0.0	0.0	0.0	0.2	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.2	0.0	0.1	7.0	7.3	0.2	0.0	0.1	0.8	0.0	0.4
LnGrp Delay(d),s/veh	12.6	7.4	0.0	10.9	9.6	9.5	15.6	0.0	14.7	15.8	0.0	15.1
LnGrp LOS	B	A		B	A	A	B		B	B		B
Approach Vol, veh/h		1179			1456			23			108	
Approach Delay, s/veh		7.5			9.6			15.3			15.5	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		32.0		15.2		32.0		15.2
Change Period (Y+Rc), s		* 5.7		* 5.2		* 5.7		* 5.2
Max Green Setting (Gmax), s		* 27		* 22		* 27		* 22
Max Q Clear Time (g_c+I1), s		15.8		4.2		15.3		3.3
Green Ext Time (p_c), s		10.5		0.5		10.9		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	9.0
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	135	1038	137	208	1062	65	127	110	158	38	80	142
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1849	1900	1900	1749	1900	1845	1900	1900	1827	1824	1900
Adj Flow Rate, veh/h	142	1093	144	219	1118	68	134	116	166	40	84	149
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	3	3	0	9	9	3	0	0	4	8	8
Cap, veh/h	239	1220	160	254	1284	78	314	221	316	280	184	327
Arrive On Green	0.06	0.39	0.39	0.08	0.40	0.40	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	1774	3118	410	1810	3180	193	1128	705	1009	1069	588	1043
Grp Volume(v), veh/h	142	615	622	219	584	602	134	0	282	40	0	233
Grp Sat Flow(s),veh/h/ln	1774	1756	1771	1810	1661	1712	1128	0	1714	1069	0	1632
Q Serve(g_s), s	3.8	26.2	26.3	5.9	25.8	25.8	8.6	0.0	10.8	2.6	0.0	9.1
Cycle Q Clear(g_c), s	3.8	26.2	26.3	5.9	25.8	25.8	17.8	0.0	10.8	13.3	0.0	9.1
Prop In Lane	1.00		0.23	1.00		0.11	1.00		0.59	1.00		0.64
Lane Grp Cap(c), veh/h	239	687	693	254	671	691	314	0	537	280	0	511
V/C Ratio(X)	0.59	0.89	0.90	0.86	0.87	0.87	0.43	0.00	0.53	0.14	0.00	0.46
Avail Cap(c_a), veh/h	239	691	697	254	674	695	314	0	537	280	0	511
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.2	22.8	22.8	18.7	21.9	21.9	29.1	0.0	22.5	28.0	0.0	22.0
Incr Delay (d2), s/veh	3.9	14.2	14.4	24.6	11.8	11.6	4.2	0.0	3.6	1.1	0.0	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	15.3	15.6	4.5	13.9	14.3	3.0	0.0	5.6	0.8	0.0	4.5
LnGrp Delay(d),s/veh	22.1	37.0	37.2	43.3	33.7	33.5	33.3	0.0	26.2	29.1	0.0	24.9
LnGrp LOS	C	D	D	D	C	C	C		C	C		C
Approach Vol, veh/h		1379			1405			416			273	
Approach Delay, s/veh		35.6			35.1			28.5			25.5	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.0	38.8		31.0	9.0	39.8		31.0
Change Period (Y+Rc), s	4.0	* 7.6		6.0	4.0	* 7.6		6.0
Max Green Setting (Gmax), s	6.0	* 31		25.0	5.0	* 32		25.0
Max Q Clear Time (g_c+I1), s	7.9	28.3		15.3	5.8	27.8		19.8
Green Ext Time (p_c), s	0.0	2.9		3.3	0.0	4.3		2.1

Intersection Summary	
HCM 2010 Ctrl Delay	33.7
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1181	3	4	1383	10	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1243	3	4	1456	11	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1246	0	1981	623
Stage 1	-	-	-	-	1245	-
Stage 2	-	-	-	-	736	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	554	-	54	429
Stage 1	-	-	-	-	235	-
Stage 2	-	-	-	-	435	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	554	-	54	429
Mov Cap-2 Maneuver	-	-	-	-	161	-
Stage 1	-	-	-	-	235	-
Stage 2	-	-	-	-	432	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	21
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	249	-	-	554	-
HCM Lane V/C Ratio	0.097	-	-	0.008	-
HCM Control Delay (s)	21	-	-	11.5	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Intersection Delay, s/veh	10.5
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	2	2	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	815	740	565	189
Demand Flow Rate, veh/h	843	761	565	192
Vehicles Circulating, veh/h	329	210	813	820
Vehicles Exiting, veh/h	683	1168	359	151
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	1	0	1	0
Ped Cap Adj	0.999	1.000	1.000	1.000
Approach Delay, s/veh	10.3	8.2	14.3	9.5
Approach LOS	B	A	B	A

Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	R	LT	R
Assumed Moves	LT	TR	LT	TR	LT	R	LT	R
RT Channelized								
Lane Util	0.470	0.530	0.470	0.530	0.329	0.671	0.911	0.089
Critical Headway, s	4.293	4.113	4.293	4.113	4.293	4.113	4.293	4.113
Entry Flow, veh/h	396	447	358	403	186	379	175	17
Cap Entry Lane, veh/h	883	898	965	975	614	640	611	636
Entry HV Adj Factor	0.967	0.966	0.972	0.973	1.000	1.000	0.983	1.000
Flow Entry, veh/h	383	432	348	392	186	379	172	17
Cap Entry, veh/h	853	867	938	949	614	639	600	636
V/C Ratio	0.449	0.498	0.371	0.413	0.303	0.593	0.286	0.027
Control Delay, s/veh	9.9	10.7	7.9	8.5	9.9	16.4	9.8	5.9
LOS	A	B	A	A	A	C	A	A
95th %tile Queue, veh	2	3	2	2	1	4	1	0

Intersection	
Intersection Delay, s/veh	13.4
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	284	346	275	579
Demand Flow Rate, veh/h	287	349	280	590
Vehicles Circulating, veh/h	621	245	398	305
Vehicles Exiting, veh/h	274	433	510	289
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	2	5	0	2
Ped Cap Adj	1.000	0.999	1.000	1.000
Approach Delay, s/veh	13.6	8.7	9.5	17.9
Approach LOS	B	A	A	C

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	287	349	280	590
Cap Entry Lane, veh/h	607	884	759	833
Entry HV Adj Factor	0.989	0.991	0.981	0.981
Flow Entry, veh/h	284	346	275	579
Cap Entry, veh/h	600	876	744	817
V/C Ratio	0.473	0.395	0.369	0.709
Control Delay, s/veh	13.6	8.7	9.5	17.9
LOS	B	A	A	C
95th %tile Queue, veh	3	2	2	6

Intersection	
Intersection Delay, s/veh	9.9
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	411	97	251	388
Demand Flow Rate, veh/h	419	99	275	433
Vehicles Circulating, veh/h	399	436	188	77
Vehicles Exiting, veh/h	111	27	630	458
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	13.4	6.5	7.4	8.6
Approach LOS	B	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	419	99	275	433
Cap Entry Lane, veh/h	758	731	936	1046
Entry HV Adj Factor	0.981	0.980	0.911	0.896
Flow Entry, veh/h	411	97	251	388
Cap Entry, veh/h	744	716	853	937
V/C Ratio	0.553	0.135	0.294	0.414
Control Delay, s/veh	13.4	6.5	7.4	8.6
LOS	B	A	A	A
95th %tile Queue, veh	3	0	1	2

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	1	1
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	1126	772	23	16
Demand Flow Rate, veh/h	1160	801	23	16
Vehicles Circulating, veh/h	27	42	1138	739
Vehicles Exiting, veh/h	728	1119	49	104
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	9.6	7.2	7.6	5.6
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Left
Designated Moves	LT	TR	LT	TR	LTR	LTR
Assumed Moves	LT	TR	LT	TR	LTR	LTR
RT Channelized						
Lane Util	0.470	0.530	0.469	0.531	1.000	1.000
Critical Headway, s	4.293	4.113	4.293	4.113	4.113	4.113
Entry Flow, veh/h	545	615	376	425	23	16
Cap Entry Lane, veh/h	1107	1109	1095	1097	509	674
Entry HV Adj Factor	0.971	0.971	0.966	0.963	1.000	1.000
Flow Entry, veh/h	529	597	363	409	23	16
Cap Entry, veh/h	1075	1076	1057	1057	509	674
V/C Ratio	0.492	0.555	0.343	0.387	0.045	0.024
Control Delay, s/veh	9.0	10.2	6.9	7.5	7.6	5.6
LOS	A	B	A	A	A	A
95th %tile Queue, veh	3	4	2	2	0	0

Intersection	
Intersection Delay, s/veh	20.2
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	2	2	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	1005	1431	526	214
Demand Flow Rate, veh/h	1037	1483	526	217
Vehicles Circulating, veh/h	596	264	986	1493
Vehicles Exiting, veh/h	1114	1248	647	254
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	1	0	1	0
Ped Cap Adj	0.999	1.000	1.000	1.000
Approach Delay, s/veh	20.1	22.0	14.6	22.1
Approach LOS	C	C	B	C

Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	R	LT	R
Assumed Moves	LT	TR	LT	TR	LT	R	LT	R
RT Channelized								
Lane Util	0.470	0.530	0.470	0.530	0.477	0.523	0.908	0.092
Critical Headway, s	4.293	4.113	4.293	4.113	4.293	4.113	4.293	4.113
Entry Flow, veh/h	487	550	697	786	251	275	197	20
Cap Entry Lane, veh/h	723	745	927	939	539	567	369	397
Entry HV Adj Factor	0.970	0.968	0.965	0.965	1.000	1.000	0.985	1.000
Flow Entry, veh/h	472	533	673	758	251	275	194	20
Cap Entry, veh/h	700	721	894	906	539	567	363	397
V/C Ratio	0.674	0.739	0.752	0.837	0.465	0.485	0.534	0.050
Control Delay, s/veh	18.5	21.5	18.9	24.8	14.7	14.6	23.4	9.8
LOS	C	C	C	C	B	B	C	A
95th %tile Queue, veh	5	7	7	10	2	3	3	0

Intersection	
Intersection Delay, s/veh	23.7
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	408	568	526	444
Demand Flow Rate, veh/h	413	575	536	452
Vehicles Circulating, veh/h	477	535	478	438
Vehicles Exiting, veh/h	413	479	412	672
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	2	5	0	2
Ped Cap Adj	1.000	0.999	1.000	1.000
Approach Delay, s/veh	15.3	35.4	24.0	16.0
Approach LOS	C	E	C	C

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	413	575	536	452
Cap Entry Lane, veh/h	701	662	701	729
Entry HV Adj Factor	0.989	0.988	0.981	0.982
Flow Entry, veh/h	408	568	526	444
Cap Entry, veh/h	693	653	687	716
V/C Ratio	0.589	0.869	0.765	0.620
Control Delay, s/veh	15.3	35.4	24.0	16.0
LOS	C	E	C	C
95th %tile Queue, veh	4	10	7	4

Intersection	
Intersection Delay, s/veh	14.2
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	229	51	636	544
Demand Flow Rate, veh/h	234	53	656	572
Vehicles Circulating, veh/h	407	736	167	269
Vehicles Exiting, veh/h	434	87	474	520
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	8.6	8.2	15.3	15.9
Approach LOS	A	A	C	C

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	234	53	656	572
Cap Entry Lane, veh/h	752	541	956	863
Entry HV Adj Factor	0.979	0.962	0.970	0.951
Flow Entry, veh/h	229	51	636	544
Cap Entry, veh/h	736	521	927	821
V/C Ratio	0.311	0.098	0.686	0.662
Control Delay, s/veh	8.6	8.2	15.3	15.9
LOS	A	A	C	C
95th %tile Queue, veh	1	0	6	5

Intersection	
Intersection Delay, s/veh	11.9
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	2	2	1	1
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	1179	1456	23	108
Demand Flow Rate, veh/h	1214	1456	23	110
Vehicles Circulating, veh/h	89	21	1287	1460
Vehicles Exiting, veh/h	1481	1289	16	17
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	11.0	12.6	8.5	13.7
Approach LOS	B	B	A	B

Lane	Left	Right	Left	Right	Left	Left
Designated Moves	LT	TR	LT	TR	LTR	LTR
Assumed Moves	LT	TR	LT	TR	LTR	LTR
RT Channelized						
Lane Util	0.470	0.530	0.470	0.530	1.000	1.000
Critical Headway, s	4.293	4.113	4.293	4.113	4.113	4.113
Entry Flow, veh/h	571	643	684	772	23	110
Cap Entry Lane, veh/h	1057	1062	1112	1113	459	407
Entry HV Adj Factor	0.970	0.972	1.000	1.000	1.000	0.982
Flow Entry, veh/h	554	625	684	772	23	108
Cap Entry, veh/h	1026	1032	1113	1113	459	399
V/C Ratio	0.540	0.606	0.615	0.693	0.050	0.271
Control Delay, s/veh	10.3	11.7	11.3	13.7	8.5	13.7
LOS	B	B	B	B	A	B
95th %tile Queue, veh	3	4	4	6	0	1

MEMORANDUM

Ainley & Associates Limited
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Email: barrie@ainleygroup.com

To: **File** Copies to: **Brian Wickenheiser**

From: **Steve Empey**

Date: **April 13, 2017**

Ref: **Town of Collingwood**
Mountain Road Bridge over Black Ash Creek

File: **116110**

General Observations

The Mountain Road Bridge over Black Ash Creek was field reviewed by the undersigned on April 3, 2017. The bridge, constructed circa 1978 in an east-west orientation, consists of a superelevated single span, cast-in-place concrete rigid frame structure with a parabolic soffit which provides two lanes of traffic and a sidewalk on the north side. The bridge exhibits a number of deteriorations including spalling, delamination, cracking and staining on the wingwalls, fascia and soffit due to unsealed construction joints. Also noted were cracking, staining, abrasion, delamination and exposed reinforcing on the sidewalks and curbs. The concrete end posts of the barriers show medium deterioration. The bridge deck wearing surface has a large amount of cracking.

Overall the bridge is in fair to good condition and our observations are generally consistent with those identified in the 2016 OSIM inspection completed by R.J. Burnside and Associates.

Widening Options

In general, there are four (4) widening options for this structure. These options are outlined as follows.

Option 1 - Rehabilitate and Widen on North Side Only

Under this option, the existing bridge structure would be widened only on the north side and rehabilitated to address all currently identified deficiencies (deterioration). The scope of work for this option would most likely entail the following:

- full removal of curbs/sidewalk and barriers from both sides of the bridge;
- removal of the top portion of the wingwalls on the north side of the bridge;
- localized concrete removals from deteriorated areas of the deck, fascia, soffit, abutments and wingwalls;
- extension of the footings, abutments and deck to the north;
- construction of new wingwalls on the north side of the bridge and barriers on both sides of the bridge;
- patching of all localized concrete removals;
- replacement of bridge deck waterproofing and asphalt;
- replacement/upgrade of steel beam guide rail on approaches; and
- restoration including scour protection and bank stabilization measures

Given that the existing bridge structure is superelevated (sloping north to south), the proposed alignment and superelevation of the reconstructed road would need to match that of the existing bridge. However, as all widening would occur on the high side of the bridge, there would be no loss in hydraulic clearance associated with this widening option.

It should also be noted that the existing bridge contains fibre reinforced epoxy (FRE) ducts in both the curb and sidewalk on the south and north sides of the bridge, respectively. Although the south ducts do not appear to be occupied, it is suspected that the ducts on the north contain a substantial amount of Bell communications plant which would most likely require relocation in the event the bridge is widened to the north, the cost of which could be very significant. This will need to be investigated further to confirm.

Option 2 - Rehabilitate and Widen on South Side Only

Under this option, the existing bridge structure would be widened only on the south side and rehabilitated to address all currently identified deficiencies (deterioration). The scope of work for this option would be similar to the previous option except all widening of elements would occur entirely on the south side of the bridge.

As for the previous option, the proposed alignment and superelevation of the reconstructed road would need to match that of the existing bridge structure. In addition, given that the widening would occur on the low side of the superelevation, the widening would result in reduced hydraulic clearance which may impact the hydraulic capacity of the bridge structure. This would need to be confirmed through completion of the preliminary design of the bridge structure and hydraulic modelling (or comparison against existing modelling).

Given the presence of fibre reinforced epoxy (FRE) ducts in the south curb of the existing bridge, the presence or absence of utility cables in these ducts will need to be confirmed (despite the fact that the ducts currently appear to be empty) prior to proceeding with this option so as to determine any utility relocation requirements and the cost associated with such.

Option 3 - Rehabilitate and Widen on Both Sides

Under this option, the existing bridge structure would be widened on both sides and would be rehabilitated to address all currently identified deficiencies (deterioration). The scope of work for this option would most likely entail the following:

- full removal of curbs/sidewalk and barriers from both sides of the bridge;
- removal of the top portion of all wingwalls;
- localized concrete removals from deteriorated areas of the deck, fascia, soffit, and abutments;
- extension of the footings, abutments and deck to the north and south;
- construction of new wingwalls at all four (4) corners of the bridge and barriers on both sides of the bridge;
- patching of all localized concrete removals;
- replacement of bridge deck waterproofing and asphalt;
- replacement/upgrade of steel beam guide rail on approaches; and
- restoration including scour protection and bank stabilization measures

Given the significant amount of structure removal and reconstruction associated with this option it is debateable whether this will be a cost effective option. As such, if this option were to be considered, a detailed cost analysis would need to be completed and compared against Option 4 in order to select the most economically attractive and viable option.

As for the previous two options, the proposed alignment and superelevation of the reconstructed road would need to match that of the existing bridge structure. Further, given that this option would require some widen of the structure to the south, it could potentially have the same hydraulic capacity concerns as Option 2 and the hydraulic capacity would likewise need to be verified during completion of the preliminary design.

Similarly, the concerns associated with the presence of utility ducts in the north sidewalk and south curb of the existing bridge structure would be the same as those identified for Option 1 and 2 above and would need to be investigated further to understand the full impact on this option.

Option 4 - Replace the Existing Bridge Structure

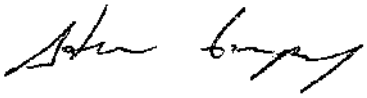
This option would involve complete removal and replacement of the existing bridge structure to accommodate the required road widening.

While this option will likely be the most expensive (save for possibly Option 3), it would provide the most design flexibility as it would permit changes to the bridge alignment, elevation, road profile, superelevation, width and span to fully address all road configuration and hydraulic capacity requirements.

However, this option would likewise require advanced relocation of any utilities contained within the FRE ducts in the curb and sidewalk on the existing bridge. Further, this option may require full closure of the road or construction of a temporary by-pass to permit construction of the new bridge structure depending on the design layout of the replacement bridge structure and the ability to stage construction using the existing bridge structure.

Regardless of the widening option selected, all four (4) of the options identified above can fully address the deterioration issues currently identified on the existing bridge structure.

AINLEY & ASSOCIATES LIMITED



Steve Empey, C.Tech., rcji
Structural Technologist

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Ainley GROUP CONSULTING ENGINEERS PLANNERS

MEMORANDUM

Ainley & Associates Limited
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Tel: (705) 726-3371 • Fax: (705) 726-4391
Email: barrie@ainleygroup.com

To: **File**

Copies to: **Brian Wickenheiser**
Tom Nollert

From: **Steve Empey**

Date: **September 11, 2017**

Ref: **Town of Collingwood**
Mountain Road Bridge over Black Ash Creek
Preliminary Design Cost Assessments

File: **116110**

Preliminary Design Cost Assessments

The following preliminary design cost assessments, for each bridge design alternative, are order of magnitude estimates based on past experience and engineering judgement only; detailed designs have not been completed to assist in the estimations at this time. The estimates do not account for any work associated with the road beyond the bridge or any relocation of utilities embedded within the existing bridge structure (i.e. Bell relocation or temporary support could easily amount to $250,000+ due to the presence of fibre optic cables).

The cost estimates for each of the explored design alternatives are based on the following design criteria and assumptions:

- Road Class: Arterial
- Design Speed: 60 km/h
- Design AADT: 26,600
- Minimum sidewalk width on bridge to be 2.0m, measured from gutter line to face of parapet (this accounts for 0.2m wide curb plus 1.8m wide sidewalk per Canada Infrastructure Guide on Sidewalk Design Construction & Maintenance)
- Side Clearance (shoulder) width to sidewalk to be 1.5m (per Geometric Design Standards for Ontario Highways, Table D7-1, based on urban arterial, undivided)
- Side Clearance (shoulder) width to barrier (without sidewalk) to be 2.0m (per Geometric Design Standards for Ontario Highways, Table D7-1 based on urban arterial, undivided)
- 3 Lane Alternatives
    - existing bridge structure to be rehabilitated and widened
    - all widening to occur on the north (high) side of the existing bridge
    - existing superelevation will be maintained
    - rehabilitation of the bridge will address all existing deficiencies
    - will only be able to maintain one lane of traffic throughout the majority of construction
    - will most likely not be able to maintain pedestrian traffic over bridge during construction as existing sidewalk is on the north side of the bridge and will need to be removed to permit widening

- 5 Lane Alternatives
  - existing bridge structure to be removed/demolished and replaced with a new bridge structure
  - widening may occur on either or both sides of the existing bridge centreline
  - should be able to maintain two lanes of traffic and pedestrian traffic throughout the majority of construction
  - replacement of existing bridge will allow much more flexibility in design (i.e. change vertical or horizontal alignment, superelevation, hydraulic capacity, etc.)

Design Alternative	Cost Estimate
3 Lane Option A *Rehabilitate and widen existing bridge entirely on the north side to provide two 3.5m through lanes, one 4.0m median lane, 1.5m side clearances on both sides, a 2.0m pedestrian sidewalk on the north side and a 3.0m multi-use sidewalk on the south side*	$1,600,000
3 Lane Option B *Rehabilitate and widen existing bridge entirely on the north side to provide two 3.5m through lanes, one 4.0m median lane, 2.0m side clearance on the south side, 1.5m side clearance on the north side and a 2.0m pedestrian sidewalk on the north side plus construction of a standalone 3.0m wide multi-use/pedestrian bridge to the south of the road bridge*	$1,775,000
5 Lane Option A *Existing bridge to be removed and replaced with a new bridge structure which provides four 3.5m through lanes, one 4.0m median lane, 1.5m side clearances on both sides, a 2.0m pedestrian sidewalk on the north side and a 3.0m multi-use sidewalk on the south side*	$2,500,000
5 Lane Option B *Existing bridge to be removed and replaced with a new bridge structure which provides four 3.5m through lanes, one 4.0m median lane, 2.0m side clearance on the south side, 1/5m side clearance on the north side and a 2.0m pedestrian sidewalk on the north side plus construction of a standalone3.0m wide multi-use/ pedestrian bridge to the south side of the road bridge*	$2,675,000

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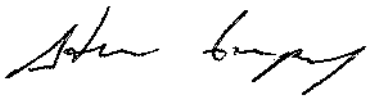

Steve Empey, C.Tech., rcji
Structural Technologist

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Appendix B

Natural Sciences Existing Conditions and Impact Assessment Report

Natural Sciences Existing Conditions and Impact Assessment Report

Design of Tenth Line and Mountain Road Improvement Works

Town of Collingwood

Prepared for:
Ainley Group

Prepared by:
Azimuth Environmental
Consulting, Inc.

December 2018

AEC 16-363

AZIMUTH ENVIRONMENTAL CONSULTING, INC.
Environmental Assessments & Approvals

December 10, 2018 AEC 16-363

Ainley Group
550 Welham Rd.,
Barrie, ON
L4N 8Z7

Attention: Tom Nollert, C.E.T., Senior Technologist

Re: Natural Sciences Existing Conditions and Impact Assessment Report for the Design of Tenth Line and Mountain Road Improvement Works, RFP # PW 2016-16P, Town of Collingwood.

Dear Mr. Nollert:

Azimuth Environmental Consulting, Inc. (Azimuth) is pleased to submit our Natural Sciences Existing Conditions and Impact Assessment Report (ECIA) for the above noted project. It is our understanding that road improvements along portions of Tenth Line and Mountain Road have been proposed (road urbanization, road widening, bridge rehabilitation or replacement, Taylor Creek culvert extension or replacement, *etc.*) and that the Ainley Group has proposed completing this work as a Schedule 'C' undertaking.

This report summarizes investigations undertaken in 2017 and 2018 to characterize and categorize the natural environmental features in the study area and surrounding lands (within the right-of-way). The assessment was designed to evaluate the features with potential to be considered significant within the study area based on applicable policy and/or legislation. Those features with potential to be considered significant existing on or adjacent to the study area are then discussed as the candidate Significant Natural Heritage Features examined in the impact assessment of this report.

An impact assessment has been prepared for each proposed alternative (three in total), and general mitigation measures have been recommended to avoid any potential impacts to candidate Significant Natural Heritage Features based on our understanding of the proposed works at this time.

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Should you have any questions or wish to discuss the information provided, please do not hesitate to contact me.

Yours truly,

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Scott Martin, H.B.O.R., B.Sc.
Terrestrial Ecologist

Matt Stuart, B.Env.Sc.
Fisheries Ecologist/Partner

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1.0 INTRODUCTION

Azimuth Environmental Consulting, Inc. (Azimuth) was retained by the Ainley Group (Ainley) to complete a Natural Sciences Existing Conditions and Impact Assessment Report (ECIA) for the design of road improvements along portions of Tenth Line and Mountain Road in the Town of Collingwood (study area; Figure 1). It is our understanding that work is being completed per a Schedule 'C' undertaking, and that an ECIA is required by the Town to determine and assess the potential impacts of the proposed works on possible Significant Natural Heritage Features (SNHF) and functions in accordance with provincial and municipal planning policy.

The information presented in this report is based upon background information collected from the Ministry of Natural Resources and Forestry (MNRF) and Nottawasaga Valley Conservation Authority (NVCA), including mapping, historical design drawings, and other supplementary background material to assist in the completion of the assessment. At the time of submission, multiple site visits have been completed to confirm the background information and ground truth the existing conditions within the right of way of the study area.

A total of three options have been proposed at this time. The impact assessment and mitigation recommendations in this report reflect these three options.

2.0 STUDY APPROACH

Azimuth conducted the terrestrial and aquatic surveys with a focus on gathering information to explore the potential for SNHF to occur in proximity to the proposed project area, as outlined in Figure 2. The study area focused on features within approximately 30 meters of the right of way (ROW) although additional areas were included [up to 120m from the ROW, as recommended by MNRF (2010)] where sight lines allowed. Data was collected at a level that, if SNHF were to be confirmed to exist in the study area, would be sufficient to provide recommended mitigation measures to allow the proposed works to continue to move forward in a manner consistent with the applicable policies or legislation. The following protocols were used to gather data for the assessment:

2.1 Existing Data Sources

A review of existing documents provided information on site characteristics, habitat, wildlife, vegetation communities, and general aspects of the study area. Data were gathered from the following sources:

- Aerial images (Google, Air photos);
- Atlas of the Breeding Birds of Ontario (OBBA) [website];
- MNRF's NHIC Make-A-Map: Natural Heritage Areas application [website];
- Ontario Nature – Ontario Reptile and Amphibian Atlas [website];
- MNRF's Species at Risk Ontario list;
- Atlas of the Mammals of Ontario (Dobbyn 1994)

In addition, a request for information letter was sent to the MNRF requesting any relevant background information the District may have on file, including fisheries, occurrences of Species at Risk (SAR) in the study area, and any identified natural areas or other sensitive features including Provincially Significant Wetlands (PSW) and Areas of Natural and Scientific Interest (ANSI). This request letter and the MNRF response are included in Appendix A.

2.2 Vegetation Community Mapping and Surveys

Prior to undertaking the field surveys, an initial classification of habitats was undertaken using recent air photo imagery for an area encompassing the study area outlined in Figure 2. Vegetation community types and boundaries were then checked in the field and adjusted for the study area as necessary. Vegetation community types were classified using the Ecological Land Classification (ELC) for southern Ontario (Lee *et al*., 1998, 2008 DRAFT Update).

Field surveys to confirm vegetation community types and plant species compositions were completed in July 2017. The assessment was focused during vegetation community classification work to ensure that appropriate effort was made to detect any federally or provincially designated species, notably SAR as identified by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and by the Committee on the Status of Species at Risk in Ontario (COSSARO). The site visits were conducted by ecologists with knowledge related to SAR as well as rare plant species with potential to occur in the area. ELC community data and vegetation species data are presented on Figures 3a-c and in Table 1, respectively.

2.3 Wildlife Surveys

2.3.1 General

Incidental observations of wildlife were collected to provide additional information related to the study area. Wildlife species utilizing the study area were identified from direct observation and through interpretation of sign (*i.e.* tracks, scats, vocalizations) as a matter of course while conducting site assessment. This information was used with available background data related to wildlife use of the study area to determine the sensitive areas associated with wildlife expected to be present. Significant wildlife habitat (SWH) was identified where applicable as outlined within the Significant Wildlife Habitat Technical Guideline (MNR, 2000) and the Significant Wildlife Habitat Criterion Schedule for 6E (MNRF, 2015).

2.3.2 Birds

Dawn breeding bird surveys were conducted on June 13 and 26, 2017, at the points outlined in Figure 2. The assessment was based on a modified version of the Point Count Methodology outlined in Appendix D of the Ontario Breeding Bird Atlas Guide for Participants (OBBA, 2001). Point counts were undertaken at set locations within the study area. During the 5-minute sample period at each station, bird species were identified through either visual confirmation or bird songs/calls. Breeding evidence was assessed based on the criteria of the OBBA (2001). The weather conditions and results of the surveys can be found in Table 2.

2.4 Vascular Plants

A field survey for vascular plants was conducted on July 25, 2017. As the majority of the lands bordering the study site is private property, most of the vegetation survey was conducted from the ROW, but included species visible and identifiable from the ROW. The purpose of the vascular plants survey is to assess for presence of rare or SAR plant species and associations that may lead to constraining issues for the completion of this proposed project.

2.5 Species at Risk

The SAR screening undertaken for this project included an initial assessment of the habitat requirements of species with potential to occur in the study area. The initial screening was based on air photo interpretation and general knowledge of the area to identify habitats specific to the study area. Habitat requirements and SAR designations (Endangered [END], Threatened [THR], or Special Concern [SC]) for all species with potential to occur in the area are outlined in Table 3.

Typically, where it is determined that potential habitat of a SAR occurs in an area of proposed activity/development, preliminary mapping is created to determine if the proposed works can be carried out with a reasonable certainty that no impacts to the species or their habitat will be incurred as a result of the works. Where there is uncertainty of the ability to avoid habitat, or where it is unclear exactly what future works will be undertaken, additional surveys are carried out to determine if the potential habitat is being used by the species in question. At this stage, only targeted bird and vegetation surveys have been completed.

2.6 Aquatic Habitat and Fisheries

Azimuth conducted a 2017 spring aquatic habitat survey on May 9, 2017 to document fish and fish habitat in the study area. The purpose of the site visit was to assess the watercourses in the study area to determine their form and function as fish habitat. Based on the site conditions observed, the watercourses were assigned one of the following designations:

- Permanent direct fish habitat: sites where flowing or standing water are sufficient to provide year round habitat for fish;
- Seasonal direct fish habitat: sites that are inundated in the spring and provide direct habitat for fish under elevated water levels, but not under low water conditions, due to insufficient open water and refuge habitat or anoxic water quality conditions;
- Indirect fish habitat: sites where there is sufficient water to sustain aquatic life (aquatic invertebrates and plants) however, fish cannot directly access the area as a result of a barrier to upstream fish movement (*i.e.* steep channel grade, low water levels or perched culvert) and water at the site is ultimately discharging to an area of direct fish habitat downstream.

3.0 EXISTING PROJECT SITE CONDITIONS

3.1 General Site Description

The study area is comprised of the Tenth Line and Mountain Road ROW within the settlement area of Collingwood. The roads provide access to various adjacent land uses including agriculture, low density residential, golf course and other recreational lands, commercial /industrial and vacant naturalized lands. In some locations, these land uses extend within the ROW study area.

3.2 Vegetation Communities

The vegetated lands within the ROW limits of the project are comprised largely of long strips of mowed/manicured turf areas (ML) following the roadway. These progress into culturally-influenced vegetation communities where the mowing activity stops, with cultural meadows (MEMM3/CUM1-C) dominating. These communities consist of a suite of forbs and grasses characteristic of anthropogenic communities influenced by a high degree of salt, wind, and soil disturbance. In a few areas, the ROW is bordered by fragmented vegetation types including treed hedgerow (CUH1-A), cultural plantation (CUP3-G), thicket (CUT1-C, THDM2-6, THDM4-1), woodland (WODM5-1), meadow marsh (MAMM3-1, MAM2-2) and swamp thicket (SWT2-8/SWT2-5, SWT2-2). Portions of the ROW consist of vegetated ditches containing a species composition influenced by wet soil conditions. Hereto, conditions are reflective of an anthropogenic legacy. No vegetation communities identified within the study area are considered to be rare or of local, regional or provincial significance.

3.2.1 Wetland Habitat

No wetlands identified as Provincially or Locally Significant were located within or adjacent (*i.e.*, 120 meters) to the study area. As illustrated in Figures 3a and 3b, the MAM2-2, MAMM3-1, SWT2-2 and SWT2-8/SWT2-5 vegetation communities present within the study area are all small pockets of isolated wetlands influenced by local hydrogeology and surface runoff.

3.3 Vascular Plants

A total of 117 vascular plant species were recorded from within the study area. None of the vascular plant species recorded is considered to be rare or of local, regional or provincial significance. No vascular plant SAR were recorded during these surveys.

3.4 Wildlife

3.4.1 General

Wildlife species utilizing the study area were identified from direct observation and through interpretation of sign (*i.e*. tracks, scats, vocalizations) as a matter of course while conducting the survey. No unusual or unexpected wildlife were observed as incidental encounters. Given the urban/rural landscape, the following species are presumed to be present within the study area:

- Mammals: Coyote, Eastern Grey Squirrel, Raccoon, Red Squirrel, Beaver, Red Fox, Striped Skunk and White-tailed Deer; and
- Reptiles and Amphibians: Leopard Frog, Green Frog, American Toad

None of the species are considered rare or designated SAR.

3.4.2 Birds

A total of 31 bird species were detected, with 27 species having shown possible or probable breeding evidence in the study area (Table 2). One species identified in the study area (Eastern Meadowlark [THR]) is considered a SAR. This individual was recorded at survey station 1, as illustrated in Figure 2. This species is further discussed in Section 3.5.

3.5 Species at Risk

The MNRF was contacted on April 10, 2017 to request background and SAR information that may be relevant to this project (Appendix A). Additionally, based on a review of background data, all SAR species that have the potential to occur in the area were considered in our assessment (Table 3).

Of the species identified with potential to exist within the study area, the following were identified, based on habitat requirements, as having the highest possibility:

- Reptiles and Amphibians: Snapping Turtle.
- Birds: Bank Swallow, Barn Swallow, Bobolink, Chimney Swift, Grasshopper Sparrow, Eastern Wood-pewee, Red-headed Woodpecker, Wood Thrush
- Mammals: Little Brown Myotis, Northern Long-eared Myotis, and Tri-colored Bat.
- Insects: Monarch

In addition to these potential species, one Eastern Meadowlark was observed, though not confirmed to be breeding, on lands adjacent to the study area (Figure 3a).

Thus, potential habitat for species listed as THR or END under the *Endangered Species Act*, 2007 (ESA) was identified in proximity to the study area

Habitat requirements associated with these species, as outlined in Table 3, will require consideration when evaluating site alterations and future work in the area. Based on habitat requirements, while Eastern Meadowlark was the only SAR recorded within the project area, potential exists for any of the SAR listed above to be present.

3.6 Aquatic Habitat and Fisheries

The study area is located within the Blue Mountain Subwatershed. Two watercourses (Black Ash Creek and Taylor Creek) and one Storm Water Management Pond (SWMP)

were identified in the study area. Black Ash Creek is a large river system that crosses Mountain Road approximately 900m east of Tenth Line, via a concrete arch bridge structure, and outlets into Georgian Bay approximately 1 km north of Mountain Road. At this bridge, the wetted width of Black Ash Creek is approximately 12m, and the depth is approximately 60cm. To improve fish passage, a concrete low flow structure is located within Black Ash Creek, immediately downstream of Mountain Road. Substrate consists of cobble with bedrock. Watercress, a coldwater-indicator plant species, was observed upstream of the Mountain Road bridge. Extensive riparian restoration plantings are present upstream and downstream of the crossing, although bank hardening with gabion baskets is also present upstream on both banks. Water quality parameters, as recorded on May 9, 2017, were as follows:

Water Temperature: 8.5°C	pH: 8.9
Dissolved Oxygen: 14.23 mg/L	Conductivity: 450 µS/cm

Per the NVCA's 2013 Blue Mountain Subwatershed Health Check, the headwaters of Black Ash Creek are considered trout habitat. However, in this same report, Black Ash Creek was designated as "Impaired". Taylor Creek was not evaluated in the NVCA study. Additionally, NVCA's August 2000 version of the Black Ash Creek Subwatershed Plan identified the following fish species within Black Ash Creek:

- Common Shiner
- Emerald Shiner
- Mimic Shiner
- Blacknose Dace
- Longnose Dace
- Northern Redbelly Dace
- Bluntnose Minnow
- Brassy Minnow
- Creek Chub
- Common Carp
- White Sucker
- Redhorse Sucker
- Brook Stickleback
- Johnny Darter
- Smallmouth Bass
- native Brook Trout
- Northern Pike
- migratory Brown Trout
- migratory Chinook Salmon
- migratory Rainbow Trout

As confirmed through discussions with MNRF (Appendix A), Black Ash Creek is a coldwater system and is known to support Brook Trout, which is a coldwater indicator species, along with migratory Chinook Salmon, Brown Trout, and Rainbow Trout (all salmonids).

Taylor Creek crosses Tenth Line approximately 400m south of Mountain Road via an approximately 1.5m diameter corrugated steel pipe (CSP) culvert, and is a tributary of Black Ash Creek. Taylor Creek has a wetted width of 1.5m, and an average depth of 40cm. Substrate upstream of the Taylor Creek crossing consists of silt and sand, while downstream the substrate consists predominantly of cobble and gravel (70%) with boulders (10%) and silt (20%). A golf course drain enters the watercourse from the northwest. This drain does not support fish habitat. Riparian vegetation upstream consists of mixed grasses and manicured turf, while downstream consists of natural grass hummocks and meadow marsh/thicket habitat. Watercress was also observed downstream of the crossing. Water quality parameters, as recorded on May 9, 2017, were as follows:

Water Temperature: 9.9°C	pH: 8.4
Dissolved Oxygen: 10.97 mg/L	Conductivity: 506 µS/cm

MNRF confirmed that Taylor Creek has the potential to host Brook Trout (Appendix A). Therefore, both Taylor Creek and Black Ash Creek can be characterized as providing permanent direct coldwater fish habitat and would be classified as high sensitivity systems. Additionally, both watercourses are within NVCA regulated lands (Appendix B).

A SWMP is present at the northwest corner of Tenth Line and 6th Street. Based on field observations, the SWMP is an offline feature (*i.e*. not directly connected to a downstream or upstream drainage feature). An abundance of filamentous algae was observed in this feature, with cattails bordering the pond edge. Water depths are unknown, but it is anticipated that a tolerant warmwater fish community would inhabit the feature.

There are no known aquatic SAR within the watercourses in the study area, and no aquatic SAR from Georgian Bay would be expected to use or inhabit these watercourses.

4.0 PROPOSED ROAD WORK ALTERNATIVES

A total of three alterative design solutions have been provided by Ainley. At this time, minimal details are known about the bridge improvements works at Black Ash Creek on Mountain Road, culvert works at Taylor Creek on Tenth Line, and road intersection improvements. The current design alternatives are summarized below:

Alternative 1 – 'Do Nothing'

- No changes or modifications to existing infrastructure within study area.

Alternative 2 – Mountain Road 3 Lanes + Tenth Line 2 Lanes + Bridge Improvements

- Reconstruct Mountain Road to a 3-lane rural cross-section (1 westbound and 1 eastbound through lane; 1 centre left turn lane; 1.5 m paved shoulders and 3.0 m paved multi-use trail on south side of corridor)
- Reconstruct Tenth Line to a 2-lane urban cross-section (1 northbound and 1 southbound through lane; 1.5 m paved bicycle lane both sides and 1.5 m sidewalk on both sides of corridor)
- Intersection improvements (additional turn lanes with signalization or roundabouts)
- Servicing improvements (*i.e*. sanitary, water, and storm drainage)
- Bridge improvements (rehabilitation, widen, or replacement)

Alternative 3 – Mountain Road 5 Lanes + Tenth Line 2 Lanes + Bridge Improvements

- Reconstruct Mountain Road to a 5-lane urban cross-section (2 westbound and 2 eastbound through lanes; 1 centre left turn lane; 1.5 m paved bicycle lane both sides, 1.5 m sidewalk on north side of corridor, and 3.0 m paved multi-use trail on south side of corridor)
- Reconstruct Tenth Line to a 2-lane urban cross-section (1 northbound and 1 southbound through lane; 1.5 m paved bicycle lane both sides and 1.5 m sidewalk on both sides of corridor)
- Intersection improvements (added turn lanes with signalization or roundabouts)
- Municipal servicing improvements (*i.e*. sanitary, water, and storm drainage)
- Bridge improvements (rehabilitation, widen, or replacement)

5.0 NATURAL HERITAGE FEATURES/FUNCTIONS

A background information review concluded that there are no provincial Areas of Natural and Scientific Interest (ANSIs) within or adjacent to the project site. The results of our field surveys and review of background information indicate the potential for the following SNHF and functions to be located on or adjacent to the study area:

- Habitat for THR and END Species;

- Potential habitat for END bat species.
- Potential habitat for THR bird species (Barn Swallow, Bank Swallow, Eastern Meadowlark, Bobolink, Chimney Swift)

- Significant Wildlife Habitat;
  - Potential nesting and foraging habitat for SC bird and reptile species.
- Permanent Direct Coldwater Fish Habitat – Black Ash Creek and Taylor Creek.

The majority of the species listed in this section were not identified in the study area during the assessment. Generally, in order to confirm a species as absent from a study area, additional species-specific studies are required to ensure that a thorough and standard approach is used to confirm absence. An alternative is to consider the potential for impacts assuming that the species could occur in the area. If there is no potential for impacts to occur, or if the impacts can be avoided/mitigated, no further study would be required.

5.1 Significant Habitat for Threatened and Endangered Species (ESA)

Potential habitat for species listed as THR or END under the *Endangered Species Act,* 2007 (ESA) was identified in proximity to the study area

5.1.1 Endangered Bat Species

Little Brown Myotis, Northern Long-eared Myotis, and Tri-colored bat use a wide variety of habitats for summer roosting, including rock crevices, buildings, bridges, caves, mines, and large snags (>25 cm diameter at breast height) in the early stages of decay (MNRF 2015, COSEWIC 2013). During the summer, pregnant and nursing females often roost in large maternity colonies, while males and non-pregnant females tend to roost in small groups or individually (MNR 2011).

Habitat for bat maternity colonies is considered to be forest and swamp communities containing >10 wildlife cavity trees (*i.e*. trees containing cavities or loose bark pockets of sufficient size to house five or more adult bats) per hectare, having $\geq$ 25cm diameter at breast height (DBH). While this project site does not include the forest or swamp habitat generally considered to potentially house bat maternal roosting colonies, the WODM5-1 woodland community was considered to have potential to house such habitat, and as such, was studied under MNRF guidelines.

A field investigation for suitability of this WODM5-1 community to house a bat maternal roosting colony, based on a preliminary snag density estimate, was carried out on May 11, 2018. It was concluded that this vegetation community was unlikely to provide

suitable habitat for bat maternity roosts, and that no detailed snag density survey would be required (see Appendix C). Since male and non-pregnant female bats may use trees for roosting, and since the project will likely require the removal of some trees, there is potential to impact some habitat of solitary-roosting bats.

5.1.2 Barn Swallow

Habitat within the study area is potentially suitable for this species. The Black Ash Creek Bridge may provide nesting habitat for the species and the open meadow and open water features within and adjacent to the study area may provide foraging habitat. This bridge structure was surveyed for Barn Swallow nests during both breeding bird surveys, as well as during fisheries surveys. No Barn Swallows, nor any Barn Swallow nests, were recorded during these surveys.

The Taylor Creek culvert was surveyed for Barn Swallows, but none were recorded. This structure is very low to the ground and to the water surface, has a relatively small opening available above the water, and has vegetation impeding direct access. It is not considered appropriate habitat for Barn Swallows, as they prefer larger openings without overhanging vegetation and with vertical and slightly roughened surfaces for constructing their mud nests.

5.1.3 Bank Swallow, Chimney Swift

Habitat within the study area is potentially suitable for these species. Open meadow and open water features within and adjacent to the study area may provide foraging habitat for the species

5.1.4 Bobolink, Eastern Meadowlark

Habitat within the study area is potentially suitable for these species. Large expanses of cultural meadow may provide nesting habitat and foraging habitat for the species. One Eastern Meadowlark was recorded during the breeding bird surveys, from the MEMM3 vegetation community along Tenth Line, well off the ROW. It was not confirmed to be breeding.

5.2 Significant Wildlife Habitat

It is ultimately the responsibility of the Province and/or the Municipality to designate areas identified as potential SWH as significant. Generally, areas which could be considered habitat of species listed as SC (ESA, 2007) exist in the areas surrounding the study area. For the purpose of this assessment the study area presents candidate SWH for SC bird and reptile species.

5.2.1 Special Concern Reptiles (Snapping Turtle)

Snapping Turtle was not identified in the study area during the assessment. Snapping Turtle nesting habitat is closely associated with the loose gravel soils present on the shoulders of the road where turtles commonly come to nest. Nesting on the shoulder of large roads leaves eggs vulnerable from the months of June through the end of September. Any areas of loose exposed soil or gravel in the study area are potential nesting habitat for Snapping Turtles and could be considered SWH. Snapping Turtle foraging habitat exists within the SWMP feature, as well as Black Ash Creek and Taylor Creek.

5.2.2 Special Concern Birds

None of the listed SC bird species were identified within the study area at the time of the assessment. Based on habitat requirements, Grasshopper Sparrow has the potential to occur within the areas directly adjacent to the ROW, within large expanses of meadow community. Red-headed Woodpecker, Eastern Wood-pewee, and Wood Thrush habitat is directly related to the forest communities.

5.2.3 Special Concern Insects (Monarch)

Based on habitat requirements, Monarch has the potential to occur within, and in areas directly adjacent to, the ROW.

5.3 Aquatic Habitat and Fisheries

MNRF confirmed that both Black Ash Creek and Taylor Creek host coldwater fish species. Therefore, both watercourses can be characterized as providing permanent direct coldwater fish habitat, and would be classified as high-sensitivity systems. Both watercourses are regulated within the NVCA jurisdiction (Appendix B), and are subject to “Ontario Regulation (O. Reg.) 172/06 –Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses”. Under O. Reg. 172/06, the NVCA requires that approvals be obtained for any proposed development within areas regulated under a NVCA’s jurisdiction.

As for the SWMP, it is our understanding that this pond feature is offline (*i.e.* not connected to a downstream or upstream drainage feature). As such, the feature is not characterized as 'fish habitat' per the Federal *Fisheries Act*.

6.0 GENERAL IMPACT ASSESSMENT

6.1 Alternative 1 – 'Do Nothing'

No impacts anticipated for either terrestrial or fisheries natural heritage features as a result of maintaining current road alignment and function.

6.2 Alternative 2 – Mountain Road 3 Lanes + Tenth Line 2 Lanes + Bridge Improvements

6.2.1 Summary of Impacts

The proposed alternative may negatively impact the following SNHF, as identified above:

- Significant Habitat for THR and END Species;
  - Removal and alteration of potential habitat for END bat species.
  - Removal and alteration of potential habitat for THR bird species (Barn Swallow, Bank Swallow, Eastern Meadowlark, Bobolink, Chimney Swift)
- Significant Wildlife Habitat; and
  - Removal and alteration of potential nesting and foraging habitat for SC bird and reptile species.
- Alteration to Permanent Direct Coldwater Fish Habitat – Black Ash Creek and Taylor Creek.

A detailed assessment of impact of this design alternative follows.

6.2.2 Species at Risk

As currently understood, minimal habitat removal (meadows and woodlands) will be required for the proposed upgrades to Tenth Line and Mountain Road under Alternative 2. Therefore, it is not expected that habitat removal will result in contravention of the ESA. However, incidental impact to those species identified above may occur during construction. The protection of SAR can be achieved if work, such as bridge modifications and vegetation clearing is restricted to the period between September 1 to March 31 (*i.e. – avoid clearing between April 1 and August 31*). If the work schedule requires that site terrestrial alteration be completed during the active season, screening by an ecologist with knowledge of bird and bat species present in the area should be undertaken to ensure that the risk of impacting SAR species has been evaluated and assumed to be low to non-existent.

If the proposed works will result in the removal of any woodland habitat (*i.e.* within the WODM5-1 community, areas north of the ROW of Mountain Rd), additional surveys may be required to assess the nature of potential habitat for Endangered bat Species.

6.2.3 Significant Wildlife Habitat

Typically, development and site alteration is not permitted within SWH and adjacent lands unless the ecological function of the features has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions. Development and site alteration do not necessarily include infrastructure works considered under the *Environmental Assessment Act*.

Habitat features with potential to be considered SWH are directly related to the habitat of Snapping Turtle, SC bird species and Monarch. The habitat of Snapping Turtle is limited to nesting on the shoulders of the road. Snapping Turtle foraging habitat exists within the riparian corridors of Black Ash Creek and Taylor Creek, and within the SWMP feature. Potential habitat of Grasshopper Sparrow and Monarch is located within meadow communities. Potential nesting and foraging habitat for Red-headed Woodpecker, Wood Thrush and Eastern Wood-pewee is present within adjacent woodland communities.

Based on the scale of the project and the limitation of works to the existing maintained ROW, it is not expected that the work would lead to degradation that threatens the ecological function of the potential SWH. Assuming proposed mitigation is employed on this project, there is no expectation that the proposed works would result in negative impacts to the natural features or their ecological function. However, incidental impact to those species identified above may occur during construction. The protection of species can be achieved if vegetation clearing occurs outside of the active season for the species (*i.e*. April - September 1, depending on the species). If the work schedule requires that site alteration be completed during the active season, screening by an ecologist with knowledge of bird species present in the area should be undertaken to ensure that the risk of impacting SAR species has been evaluated and assumed to be low to non-existent.

6.2.4 Fisheries Constraints and Concerns

Both Black Ash Creek and Taylor Creek provide permanent direct coldwater fish habitat and can be characterized as high sensitive systems. The MNRF has confirmed that a July 1-September 30 in-water work timing window would be applied to these two watercourses (Appendix A). As specifics to the extent of in-water or near-water work is not known at this time, the need for DFO Review cannot be determined. However, should road improvements require that crossings at these two systems be modified, the project will likely require review by DFO under a Request for Review. This will need to be confirmed once the preferred option is selected and detail design drawings are reviewed. Certainly if works can be 'self assessed' then Azimuth will advise of such during design review. The primary trigger for DFO Review will include any proposal to

realign the watercourses, work below the high water line resulting in immitigable changes in habitat, or culvert extensions that result in habitat changes within the footprint of the structure (*e.g.*, from an open-bottom structure to a closed-bottom structure). Crossings can be self assessed under the Fisheries Act should modifications be limited to maintenance repairs/upgrades involving no footprint change or in-water work, and where impacts are mitigable.

Both watercourses are within the NVCA jurisdiction (Appendix B), and are regulated and subject to "(O. Reg. 172/06. A work permit must be obtained for any proposed development within areas regulated under a CA's jurisdiction.

It is our understanding that the SWMP feature at the northwest corner of Tenth Line and 6th Street is offline (*i.e.* not connected to a downstream or upstream drainage feature), therefore the feature is not 'fish habitat', per the Federal *Fisheries Act*, and DFO review will not be required for work in or in proximity to this feature.

6.3 Alternative 3 – Mountain Road 5 Lanes + Tenth Line 2 Lanes + Bridge Improvements

6.3.1 Summary of Impacts

The proposed alternative may negatively impact the following SNHF, as identified above:

- Significant Habitat for THR and END Species;
  - Removal and alteration of potential habitat for END bat species.
  - Removal and alteration of potential habitat for THR bird species (Barn Swallow, Bank Swallow, Eastern Meadowlark, Bobolink, Chimney Swift)
- Significant Wildlife Habitat; and
  - Removal and alteration of potential nesting and foraging habitat for SC bird and reptile species.
- Alteration to Permanent Direct Coldwater Fish Habitat – Black Ash Creek and Taylor Creek.

A detailed assessment of impact of this design alternative follows.

6.3.2 Species at Risk

As currently understood, minimal meadow and woodland habitat removal will be required for the proposed upgrades to Tenth Line and Mountain Rd. Therefore, it is not expected that habitat availability, and thus local SAR populations, will be significantly

altered as a result of the proposed works. However, incidental impact to those species identified above may occur during construction. The protection of SAR can be achieved if vegetation clearing and bridge modifications occur outside of the active season for the species (*i.e*. April - September 1, depending on the species). If the work schedule requires that site alteration be completed during the active season, screening by an ecologist with knowledge of bird and bat species present in the area should be undertaken to ensure that the risk of impacting SAR species has been evaluated and assumed to be low to non-existent.

If the proposed works will result in the removal of any woodland habitat (*i.e*. within the WODM5-1 community, areas north of the ROW of Mountain Rd), additional surveys may be required to assess the nature of candidate habitat for END bat Species.

6.3.3 Significant Wildlife Habitat

Typically, development and site alteration is not permitted within SWH and adjacent lands unless the ecological function of the features has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions. Development and site alteration do not necessarily include infrastructure works considered under the *Environmental Assessment Act*.

Habitat features with potential to be considered SWH are directly related to the habitat of Snapping Turtle, SC bird species and Monarch. The nesting habitat for Snapping Turtle is limited to the unconsolidated materials of the road shoulders. Snapping Turtle foraging habitat exists within the riparian corridors of Black Ash Creek and Taylor Creek, and within the SWMP feature. Potential habitat of Grasshopper Sparrow and Monarch is located within meadow communities. Potential nesting and foraging habitat for Red-headed Woodpecker, Wood Thrush and Eastern Wood-pewee is present within adjacent woodland communities.

Based on the scale of the project and the limitation of works to the existing maintained ROW, it is not expected that the work would lead to degradation that threatens the ecological function of the potential SWH. Assuming proposed mitigation is employed on this project, there is no expectation that the proposed works would result in negative impacts to the natural features or their ecological function. However, incidental impact to those species identified above may occur during construction. The protection of species can be achieved if vegetation clearing occurs outside of the active season for the species (*i.e*. April - September 1, depending on the species). If the work schedule requires that site alteration be completed during the active season, screening by an ecologist with

knowledge of bird species present in the area should be undertaken to ensure that the risk of impacting SAR species has been evaluated and assumed to be low to non-existent.

6.3.4 Fisheries Constraints and Concerns

Both Black Ash Creek and Taylor Creek provide permanent direct coldwater fish habitat and can be characterized as high sensitive systems. The MNRF has confirmed that a July 1-September 30 in-water work timing window would be applied to these two watercourses (Appendix A). As specifics to the extent of in-water or near-water work is not known at this time, the need for DFO Review cannot be determined. However, should road improvements require that crossings at these two systems be modified, the project will likely require review by DFO under a Request for Review. This will need to be confirmed once the preferred option is selected and detail design drawings are reviewed. Certainly if works can be 'self assessed' then Azimuth will advise of such during design review. The primary trigger for DFO Review will include any proposal to realign the watercourses, work below the high water line resulting in immitigable changes in habitat, or culvert extensions that result in habitat changes within the footprint of the structure (*e.g.*, from an open-bottom structure to a closed-bottom structure). Crossings can be self assessed under the Fisheries Act should modifications be limited to maintenance repairs/upgrades involving no footprint change or in-water work, and where impacts are mitigable.

Both watercourses are within the NVCA jurisdiction (Appendix B), and are regulated and subject to "(O. Reg. 172/06. A work permit must be obtained for any proposed development within areas regulated under a CA's jurisdiction.

It is our understanding that the SWMP feature at the northwest corner of Tenth Line and 6th Street is offline (*i.e.* not connected to a downstream or upstream drainage feature), therefore the feature is not 'fish habitat', per the Federal *Fisheries Act*, and DFO review will not be required for work in or in proximity to this feature.

7.0 MITIGATION AND RECOMMENDATIONS

Proposed mitigation is intended to further reduce potential impacts to candidate SNHF as outlined in Section 5.

7.1 Species at Risk

It should be noted that the absence of a protected species within the study area during field surveys does not indicate that it will never occur within the area. Given the dynamic

character of the natural environment, there is constant variation in habitat use. Care should be taken in the interpretation of presence of species of concern, including those listed under the ESA and SARA. Changes to policy or the natural environment could result in re-designation of species or addition of new species to the SAR in Ontario list. This report is intended as a point in time assessment of the potential to impact SAR; not to provide long term 'clearance' for SAR. While there is no expectation that the assessment should change significantly, it is the responsibility of the proponent to ensure that they are not in contravention of the ESA at the time that site works are undertaken. A review of the assessment provided in this report by a qualified person should be sufficient to provide appropriate advice at the time of the onset of future site works.

7.1.1 Endangered Bat Species

When clearing trees in areas potentially occupied by SAR bats, this work should not be undertaken in the period between April 1 and October 31 (bat active season). This will help to ensure that bats actively roosting in trees will not be killed or harmed as a result of clearing activities. If removal of large areas of woodland is proposed, a bat snag assessment should be undertaken to determine if maternity roosting habitat is present.

7.1.2 Threatened Birds

When clearing vegetation and/or working on bridge structures, care should be taken to ensure that all works respect the nesting period for Migratory Breeding Birds (as described in section 7.2, below). Tree clearing should not occur between April 15 and August 30. This will help to ensure that birds potentially utilizing the habitat, as outlined within this report, are not killed or harmed as a result of the works.

7.1.3 Worker Training

Due to the potential presence of SAR birds (Barn Swallow, Bank Swallow, Eastern Meadowlark, Bobolink, Chimney Swift), which receive species and habitat protection under the ESA, employees working on roadways, culverts, streams and woodlands identified in areas with potential SAR or SAR habitat should be trained to ensure there are no contraventions of the ESA.

7.2 Migratory Breeding Birds

Activities involving the removal of vegetation should be restricted from occurring during the breeding season. Migratory birds, nests, and eggs are protected by the *Migratory Birds Convention Act (MBCA)*, and the *Fish and Wildlife Conservation Act (FWCA)*. Environment Canada outlines dates when activities in any region have potential to impact nests at the Environment Canada Website (http://www.ec.gc.ca/paom-

itmb/default.asp?lang=En&n=4F39A78F-1#_03). In Zone C2, clearing should be avoided from April 15 through August 30 of any given year. If work requires that vegetation clearing is required between these dates, screening by an ecologist with knowledge of bird species present in the area should be undertaken to ensure that the vegetation has been confirmed to be free of nests prior to clearing. This is important to ensure that the proposed work will not result in a contravention of the SARA or the MBCA.

7.3 Turtle Nesting

While there is no legislative requirement, the following is recommended, where possible, as a best management practice in areas where turtle nesting may occur:

- Install silt fencing along the limits of the ROW/work area on both sides of the highway in a configuration that would prevent turtles from moving out of the water body and into roadside gravel shoulders within the work area to nest. Fencing should be erected prior to May 15 of any given year;
- Inspect the silt fence daily during the nesting season (*i.e.*, May 15 to June 30 of any given year) and immediately repair any damage that would allow turtles access to the work area;
- The detailed sediment and erosion plan completed prior to construction should consider the needs for both mitigation of impacts to fish habitat/bridge construction and the exclusion of turtles from the work area.

An additional option that has been utilized on other roadwork contracts is the following:

- Install geotextile cloth as a blanket to the area where excavations are expected to be required in proximity to the culverts. If geotextile cloth is laid over the area and secured with stakes and a small amount of gravel – to ensure that wind and/or passing traffic will not dislodge the material – it is expected that any turtles nesting in the area will preferentially nest on loose gravel shoulders away from the geotextile. In addition, this method would serve to obstruct the ability of the turtles to nest in the work area by walking around the silt curtain or turtle fence.
- Inspect the geotextile weekly during the nesting season (*i.e.*, May 15 to June 30 of any given year) and immediately repair any damage that would allow turtles access to the work area.

7.4 Aquatic Habitat and Fisheries

All in-water work must occur ‘in the dry’ and during the appropriate in-water timing window of July1 to September 30.

Work at the Black Ash Creek location should ensure that the fish passage structure downstream of the bridge is maintained post-construction. Depending on the extent of road widening/bridge replacement proposed, the fish passage structure may need to be retrofitted to ensure it functions as intended post-construction.

Diligent application of sediment and erosion controls should be installed prior to all construction activities occurring in proximity to the watercourses to minimize the extent of accidental or unavoidable impacts to fish habitat and to alleviate the risk of sediment entering the watercourses. Sediment and erosion controls must be maintained throughout construction and until vegetation is re-established post-construction.

All maintenance of machinery required during construction must be conducted a minimum of 30m away from the watercourses to prevent accidental spillage of deleterious substances that may harm the aquatic environment. Snow fencing or equivalent (*i.e.*, silt fencing) should be installed at the limit of the work area to prevent the accidental intrusion of machinery operations into adjacent undisturbed natural areas.

At this time, the need for dewatering and/or bypass pumping of the construction area is unknown. If dewatering is required, all water should be pumped to a filter bag (*i.e.*, "envirobag" or equivalent) prior to being released into any drainage feature. Filter bags should be placed a minimum of 30m from the drainage features on stable, vegetated ground to allow fines to settle out of the water before entering the drainage feature. Monitoring of dewatering operations should occur throughout the construction process to ensure water is free of fines before entering the drainage features. Should bypass pumping be required, pumps should be adequately sized to accommodate storm flows in order to maintain flow quantity and quality around the work area.

8.0 CONCLUSION

Ainley Group and the Town of Collingwood are proposing to upgrade sections of Tenth Line and Mountain Rd, as outlined above. Three alternatives have been proposed, preliminary environmental considerations have been prepared, and the potential impacts to natural resources associated with this project are anticipated to be minimal and mitigable.

Assuming appropriate mitigation measures (*i.e.*, timing and review of development) are taken, the proposed works are not expected to negatively impact any identified features. However, further review will need to be completed once the preferred alternative has been chosen and detailed design plans have been assembled.

An NVCA work permit will need to be acquired for any work in proximity to Black Ash Creek and/or Taylor Creek, and the need for DFO Review will need to be confirmed once the extent of in-water and near-water work is determined. If any SAR species identified within this report are observed at the time of construction then, the proponent should ensure that appropriate actions are taken to protect the species and related habitat. It is recommended that the MNRF be contacted to determine the appropriate actions to protect the species in accordance with the ESA.

9.0 REFERENCES

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LEGEND:

Approx. Property Boundary

REG MAP

250m 0 750m

HORIZONTAL SCALE 1: 25,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Study Area Location

Tenth Line and Mountain Rd.,
Collingwood, ON

DATE ISSUED: *August 2017*	Figure No.
CREATED BY: *JLM*	
PROJECT NO.: *16-363*	1
REFERENCE: *MNRF*	

DAYSTAMP: M:\16 Projects\16-363 Tenth Line and Mountain Road Improvements\04.0 - Drafting\16-363.dwg

Plotted by: JMCCARTNEY on September 20, 2017 at 1:15pm
File: M:\16 Projects\16-363 Tenth Line and Mountain Road Improvements\04.0 - Drafting\16-363.dwg Layout: Figure 1 Plotscale: 10

LEGEND:

- Project Study Area
- Coldwater Watercourse
- Bird Point Count Station
- Eastern Meadowlark Observed
- Flow Direction (white)
- Stormwater Management Pond

100m 0 200m

HORIZONTAL SCALE 1:7,500

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Study Area and
Bird Survey Locations

Tenth Line and Mountain Rd.,
Collingwood, ON

DATE ISSUED:	August 2017	Figure No.
CREATED BY:	JLM	2
PROJECT NO.:	16-363	
REFERENCE:	Simcoe County Maps	

DAYSTAMP: M:\16 Projects\16-363 Tenth Line and Mountain Road Improvements\04.0 - Drafting\16-363.dwg

Plotted by: JMCCARTNEY on December 11, 2018 at 1:26pm
File: M:\16 Projects\16-363 Tenth Line and Mountain Road Improvements\04.0 - Drafting\16-363.dwg Layout: EIS2 Plotscale: 10

LEGEND:

- Project Study Area
- Watercourse
- Bird Point Count Station
- Eastern Meadowlark Observed
- Flow Direction
- Stormwater Management Pond
- Vegetation Communities

ML	Maintained Lands
MEMM3	Dry - Fresh Mixed Meadow Type
MAMM3-1	Mixed Mineral Meadow Marsh Type
MAM2-2	Reed-canary Grass Graminoid Mineral Meadow Marsh Type
SWT 2-8	Silky Dogwood Mineral Deciduous Thicket Swamp Type
SWT2-5	Red-osier Dogwood Mineral Deciduous Thicket Swamp Type
CUH1-A	Treed Hedgerow Type
CUT1-C (a)	Exotic Cultural Thicket Type
CUT1-C (b)	Exotic Cultural Thicket Type
CUP3-6	White Cedar Coniferous Plantation Type

15m 0 30m

HORIZONTAL SCALE 1:1,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

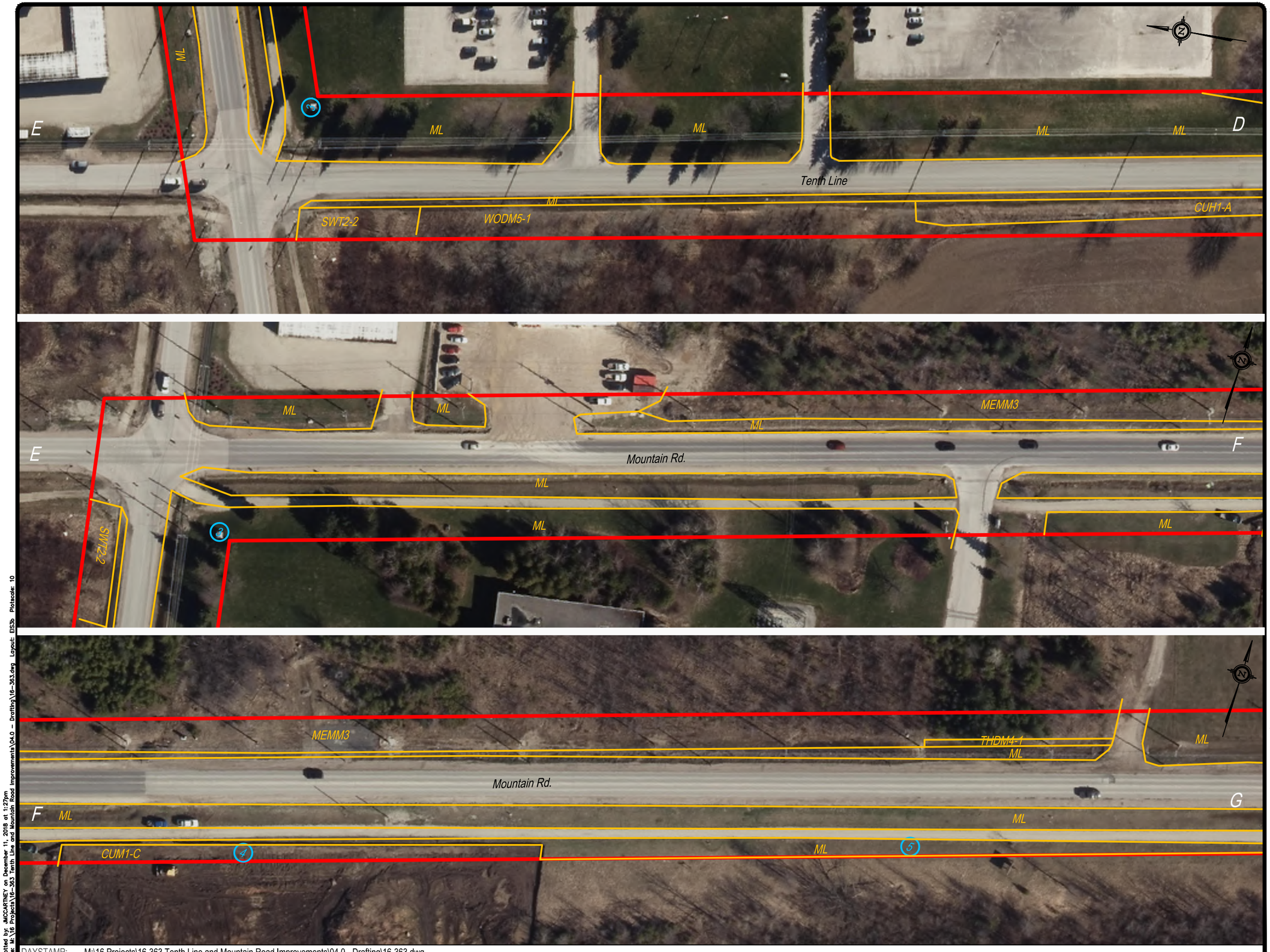
Environmental Features

Tenth Line and Mountain Rd., Collingwood, ON

DATE ISSUED:	August 2017	Figure No.
CREATED BY:	JLM	3a
PROJECT NO.:	16-363	
REFERENCE:	Simcoe County Maps	

DAYSTAMP: M:\16 Projects\16-363 Tenth Line and Mountain Road Improvements\04.0 - Drafting\16-363.dwg

Plotted by: JMCCARTNEY on December 11, 2018 at 1:26pm Layout: EIS3a Plotscale: 10
File: M:\16 Projects\16-363 Tenth Line and Mountain Road Improvements\04.0 - Drafting\16-363.dwg



LEGEND:

- Project Study Area
- Coldwater Watercourse
- Bird Point Count Station
- Vegetation Communities

CUH1-A	Treed Hedgerow Type
ML	Maintained Lands
MEMM3	Dry - Fresh Mixed Meadow Type
WODM5-1	Fresh - Moist Poplar Deciduous Woodland Type
SWT2-2	Willow Mineral Thicket Swamp Type
CUM1-C	Exotic Forb Old Field Meadow
THDM4-1	Native Deciduous Regeneration Thicket Type

15m 0 30m

HORIZONTAL SCALE 1:1,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Environmental Features

Tenth Line and Mountain Rd., Collingwood, ON

DATE ISSUED:	August 2017	Figure No.
CREATED BY:	JLM	3b
PROJECT NO.:	16-363	
REFERENCE:	Simcoe County Maps	

DAYSTAMP: M:\16 Projects\16-363 Tenth Line and Mountain Road Improvements\04.0 - Drafting\16-363.dwg

Plotted by: JMCCARTNEY on December 11, 2018 at 1:27pm Plotscale: 10
File: M:\16 Projects\16-363 Tenth Line and Mountain Road Improvements\04.0 - Drafting\16-363.dwg Layout: EIS3b

LEGEND:

- Project Study Area
- Coldwater Watercourse
- Flow Direction
- Bird Point Count Station
- Vegetation Communities

ML	Maintained Lands
MEMM3	Dry - Fresh Mixed Meadow Type
THDM4-1	Native Deciduous Regeneration Thicket Type
THDM2-6	Buckthorn Deciduous Shrub Thicket Type

15m 0 30m

HORIZONTAL SCALE 1:1,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Environmental Features

Tenth Line and Mountain Rd.,
Collingwood, ON

DATE ISSUED:	August 2017	Figure No.
CREATED BY:	JLM	3c
PROJECT NO.:	16-363	
REFERENCE:	Simcoe County Maps	

DAYSTAMP: M:\16 Projects\16-363 Tenth Line and Mountain Road Improvements\04.0 - Drafting\16-363.dwg

Plotted by: JMCCARTNEY on December 11, 2018 at 1:27pm
File: M:\16 Projects\16-363 Tenth Line and Mountain Road Improvements\04.0 - Drafting\16-363.dwg Layout: EIS3c Plotscale: 10

Table 1: **Vascular Plant Species List –Tenth Line and Mountain Road Improvements, Collingwood**

			Vegetation Communities[2]														Conservation Rankings[3]					
FAMILY	**SCIENTIFIC NAME**	**COMMON NAME**	**ML**	**MEMM3**	**MAMM3-1**	**MAM2-2**	**SWT 2-8/SWT2-5**	**CUH1-A**	**CUT1-C (a)**	**CUT1-C (b)**	**CUP3-6**	**WODM5-1**	**SWT2-2**	**CUM1-C**	**THDM4-1**	**THDM2-6/THDM4-1**	**GRANK**	**SRANK**	**COSEWIC**	**MNRF**	**TRACK**	**RILEY (1989)**
Aceraceae	*Acer negundo*	Manitoba Maple		X		X		X		X		X				X	G5	S5			N	X
Aceraceae	*Acer saccharum*	Sugar Maple						X									G5	S5			N	X
Alismataceae	*Alisma sp.*	Water-plantain species		X																		
Alismataceae	*Sagittaria latifolia*	Broad-leaved Arrowhead		X													G5	S5			N	X
Anacardiaceae	*Rhus typhina*	Staghorn Sumac						X									G5	S5			N	X
Anacardiaceae	*Toxicodendron radicans* var. *rydbergii*	Western Poison Ivy	X	X													G5	S5			N	X
Apiaceae	*Daucus carota*	Wild Carrot		X						X				X	X	X	GNR	SNA			N	X
Apocynaceae	*Apocynum cannabinum* var. *cannabinum*	Hemp Dogbane	X														G5T5	S5			N	X
Asclepiadaceae	*Asclepias syriaca*	Common Milkweed		X		X											G5	S5			N	X
Asteraceae	*Achillea millefolium*	Common Yarrow	X	X		X	X								X	X	G5	SNA			N	X
Asteraceae	*Ambrosia artemisiifolia*	Annual Ragweed	X	X													G5	S5			N	X
Asteraceae	*Arctium minus*	Common Burdock		X													GNR	SNA			N	X
Asteraceae	*Bidens frondosa*	Devil's Beggarticks		X		X											G5	S5			N	X
Asteraceae	*Carduus nutans* ssp. *nutans*	Nodding Thistle		X													GNRTNR	SNA			N	X
Asteraceae	*Centaurea jacea*	Brown Knapweed	X	X													GNR	SNA			N	X
Asteraceae	*Centaurea nigrescens*	Short-fringed Knapweed	X	X													GNR	SNA			N	X
Asteraceae	*Cichorium intybus*	Chicory	X	X													GNR	SNA			N	X
Asteraceae	*Cirsium arvense*	Canada Thistle		X		X											GNR	SNA			N	X
Asteraceae	*Cirsium vulgare*	Bull Thistle		X													GNR	SNA			N	X
Asteraceae	*Erigeron canadensis*	Canada Horseweed	X														G5	S5			N	X
Asteraceae	*Eupatorium perfoliatum*	Common Boneset		X													G5	S5			N	X
Asteraceae	*Euthamia graminifolia*	Grass-leaved Goldenrod		X									X		X		G5	S5			N	X
Asteraceae	*Eutrochium maculatum* var. *maculatum*	Spotted Joe Pye Weed		X													G5T5	S5			N	X
Asteraceae	*Leucanthemum vulgare*	Oxeye Daisy	X	X										X			GNR	SNA			N	X
Asteraceae	*Solidago canadensis* var. *canadensis*	Canada Goldenrod		X		X	X	X		X					X		G5T5	S5			N	X

Table 1: **Vascular Plant Species List –Tenth Line and Mountain Road Improvements, Collingwood**

			Vegetation Communities[2]														Conservation Rankings[3]					
FAMILY	**SCIENTIFIC NAME**	**COMMON NAME**	**ML**	**MEMM3**	**MAMM3-1**	**MAM2-2**	**SWT 2-8/SWT2-5**	**CUH1-A**	**CUT1-C (a)**	**CUT1-C (b)**	**CUP3-6**	**WODM5-1**	**SWT2-2**	**CUM1-C**	**THDM4-1**	**THDM2-6/THDM4-1**	**GRANK**	**SRANK**	**COSEWIC**	**MNRF**	**TRACK**	**RILEY (1989)**
Asteraceae	*Sonchus arvensis* ssp. *arvensis*	Field Sow-thistle	X	X													GNRTNR	SNA			N	X
Asteraceae	*Symphyotrichum lanceolatum* var. *lanceolatum*	White Panicled Aster		X		X							X		X		G5T5	S5			N	X
Asteraceae	*Symphyotrichum lateriflorum* var. *lateriflorum*	Calico Aster	X	X										X			G5T5	S5			N	X
Asteraceae	*Symphyotrichum novae-angliae*	New England Aster	X	X		X									X		G5	S5			N	X
Asteraceae	*Taraxacum officinale*	Common Dandelion	X											X			G5	SNA			N	X
Asteraceae	*Tussilago farfara*	Colt's-foot		X		X											GNR	SNA			N	X
Boraginaceae	*Echium vulgare*	Common Viper's-bugloss	X											X			GNR	SNA			N	X
Caprifoliaceae	*Lonicera tatarica*	Tartarian Honeysuckle				X											GNR	SNA			N	X
Caprifoliaceae	*Viburnum opulus* ssp. *opulus*	Cranberry Viburnum								X							GNR	SNA			N	X
Caryophyllaceae	*Petrorhagia saxifraga*	Saxifrage Pink	X														GNR	SNA			N	X
Caryophyllaceae	*Saponaria officinalis*	Bouncing-bet		X													GNR	SNA			N	X
Caryophyllaceae	*Silene vulgaris*	Bladder Campion	X														GNR	SNA			N	X
Clusiaceae	*Hypericum perforatum*	Common St. John's-wort		X										X			GNR	SNA			N	X
Convolvulaceae	*Convolvulus arvensis*	Field Bindweed	X	X													GNR	SNA			N	X
Cornaceae	*Cornus obliqua*	Pale Dogwood					X										G5T5	S5			N	X
Cornaceae	*Cornus stolonifera*	Red-osier Dogwood			X	X	X		X								G5	S5			N	X
Cupressaceae	*Thuja occidentalis*	Eastern White Cedar		X						X	X						G5	S5			N	X
Cyperaceae	*Carex hystericina*	Porcupine Sedge		X													G5	S5			N	X
Cyperaceae	*Carex spicata*	Spiked Sedge		X													GNR	SNA			N	X
Cyperaceae	*Carex stipata*	Awl-fruited Sedge			X												G5	S5			N	X
Cyperaceae	*Eleocharis* sp.	Spikerush species	X		X																	
Cyperaceae	*Schoenoplectus tabernaemontani*	Soft-stemmed Bulrush		X		X											G5	S5			N	X
Cyperaceae	*Scirpus atrovirens*	Dark-green Bulrush		X		X											G5?	S5			N	X
Dipsacaceae	*Dipsacus fullonum*	Common Teasel		X													GNR	SNA			N	X
Elaeagnaceae	*Shepherdia canadensis*	Canada Buffalo-berry								X							G5	S5			N	X

Table 1: **Vascular Plant Species List –Tenth Line and Mountain Road Improvements, Collingwood**

			Vegetation Communities[2]														Conservation Rankings[3]					
FAMILY	**SCIENTIFIC NAME**	**COMMON NAME**	**ML**	**MEMM3**	**MAMM3-1**	**MAM2-2**	**SWT 2-8/SWT2-5**	**CUH1-A**	**CUT1-C (a)**	**CUT1-C (b)**	**CUP3-6**	**WODM5-1**	**SWT2-2**	**CUM1-C**	**THDM4-1**	**THDM2-6/THDM4-1**	**GRANK**	**SRANK**	**COSEWIC**	**MNRF**	**TRACK**	**RILEY (1989)**
Equisetaceae	*Equisetum arvense*	Field Horsetail		X													G5	S5			N	X
Fabaceae	*Lathyrus latifolius*	Everlasting Pea		X		X											GNR	SNA			N	X
Fabaceae	*Lotus corniculatus*	Garden Bird's-foot Trefoil	X	X													GNR	SNA			N	X
Fabaceae	*Medicago lupulina*	Black Medic	X											X			GNR	SNA			N	X
Fabaceae	*Medicago sativa* ssp. *sativa*	Alfalfa	X														GNRTNR	SNA			N	X
Fabaceae	*Melilotus albus*	White Sweet-clover	X	X										X			G5	SNA			N	X
Fabaceae	*Securigera varia*	Common Crown-vetch		X													GNR	SNA			N	X
Fabaceae	*Trifolium hybridum*	Alsike Clover	X														GNR	SNA			N	X
Fabaceae	*Trifolium pratense*	Red Clover	X											X			GNR	SNA			N	X
Fabaceae	*Trifolium repens*	White Clover	X														GNR	SNA			N	X
Fabaceae	*Vicia cracca*	Tufted Vetch		X						X							GNR	SNA			N	X
Juncaceae	*Juncus articulatus*	Jointed Rush	X	X													G5	S5			N	X
Juncaceae	*Juncus compressus*	Flattened Rush	X		X										X		G5	SNA			N	X
Lamiaceae	*Mentha canadensis*	Canada Mint		X		X											G5T5	S5			N	X
Lamiaceae	*Mentha* x *piperita*	(*Mentha aquatica* X *Mentha spicata*)		X		X											GNA	SNA			N	X
Lamiaceae	*Nepeta cataria*	Catnip		X													GNR	SNA			N	X
Lamiaceae	*Prunella vulgaris* ssp. *vulgaris*	Self-heal		X													G5TU	SNA			N	X
Liliaceae	*Asparagus officinalis*	Garden Asparagus	X	X											X		G5?	SNA			N	X
Moraceae	*Morus alba*	White Mulberry		X													GNR	SNA			N	X
Oleaceae	*Fraxinus pennsylvanica*	Green Ash	X	X						X					X	X	G5	S4			N	X
Onagraceae	*Epilobium hirsutum*	Hairy Willowherb				X											GNR	SNA			N	X
Pinaceae	*Picea pungens*	Blue Spruce	X														G5	SNA			N	Not Listed
Pinaceae	*Pinus sylvestris*	Scots Pine								X							GNR	SNA			N	X
Plantaginaceae	*Plantago lanceolata*	English Plantain	X											X			G5	SNA			N	X
Plantaginaceae	*Plantago major*	Common Plantain	X														G5	SNA			N	X

Table 1: **Vascular Plant Species List –Tenth Line and Mountain Road Improvements, Collingwood**

			Vegetation Communities[2]														Conservation Rankings[3]					
FAMILY	**SCIENTIFIC NAME**	**COMMON NAME**	**ML**	**MEMM3**	**MAMM3-1**	**MAM2-2**	**SWT 2-8/SWT2-5**	**CUH1-A**	**CUT1-C (a)**	**CUT1-C (b)**	**CUP3-6**	**WODM5-1**	**SWT2-2**	**CUM1-C**	**THDM4-1**	**THDM2-6/THDM4-1**	**GRANK**	**SRANK**	**COSEWIC**	**MNRF**	**TRACK**	**RILEY (1989)**
Poaceae	*Agrostis gigantea*	Redtop	X	X													G4G5	SNA			N	X
Poaceae	*Bromus inermis*	Smooth Brome	X	X				X	X					X		X	G5TNR	SNA			N	X
Poaceae	*Dactylis glomerata*	Orchard Grass	X	X										X			GNR	SNA			N	X
Poaceae	*Elymus repens*	Creeping Wildrye	X	X										X			GNR	SNA			N	X
Poaceae	*Leersia oryzoides*	Rice Cutgrass		X													G5	S5			N	X
Poaceae	*Lolium arundinaceum*	Tall Fescue		X						X					X		GNR	SNA			N	X
Poaceae	*Phalaris arundinacea* var. *arundinacea*	Reed Canary Grass		X	X	X											GNR	S5			N	X
Poaceae	*Phleum pratense*	Common Timothy		X													GNR	SNA			N	X
Poaceae	*Poa compressa*	Canada Bluegrass		X										X	X		GNR	SNA			N	X
Poaceae	*Poa pratensis* ssp. *pratensis*	Kentucky Bluegrass	X	X												X	G5T5	SNA			N	X
Polygonaceae	*Rumex crispus*	Curly Dock		X													GNR	SNA			N	X
Ranunculaceae	*Anemone canadensis*	Canada Anemone		X		X											G5	S5			N	X
Ranunculaceae	*Anemone virginiana* var. *virginiana*	Tall Anemone													X		G5T5	S5			N	X
Ranunculaceae	*Ranunculus acris*	Tall Buttercup		X		X											G5	SNA			N	X
Rhamnaceae	*Rhamnus cathartica*	Common Buckthorn	X	X		X	X	X	X	X						X	GNR	SNA			N	X
Rosaceae	*Malus pumila*	Common Apple		X													G5	SNA			N	X
Rosaceae	*Potentilla anserina* ssp. *anserina*	Common Silverweed	X														GNR	S5			N	X
Rosaceae	*Potentilla argentea*	Silvery Cinquefoil	X														GNR	SNA			N	X
Rosaceae	*Potentilla recta*	Sulphur Cinquefoil		X										X			GNR	SNA			N	X
Rosaceae	*Prunus virginiana*	Choke Cherry	X	X													G5	S5			N	X
Rubiaceae	*Galium mollugo*	Smooth Bedstraw		X													GNR	SNA			N	X
Salicaceae	*Populus alba*	White Poplar										X					G5	SNA			N	X
Salicaceae	*Populus balsamifera*	Balsam Poplar	X														G5	S5			N	X
Salicaceae	*Populus nigra*	Black Poplar		X							X						G5	SNA			N	X
Salicaceae	*Populus tremuloides*	Trembling Aspen		X				X									G5	S5			N	X

Table 1: **Vascular Plant Species List –Tenth Line and Mountain Road Improvements, Collingwood**

			Vegetation Communities[2]														Conservation Rankings[3]					
FAMILY	**SCIENTIFIC NAME**	**COMMON NAME**	**ML**	**MEMM3**	**MAMM3-1**	**MAM2-2**	**SWT 2-8/SWT2-5**	**CUH1-A**	**CUT1-C (a)**	**CUT1-C (b)**	**CUP3-6**	**WODM5-1**	**SWT2-2**	**CUM1-C**	**THDM4-1**	**THDM2-6/THDM4-1**	**GRANK**	**SRANK**	**COSEWIC**	**MNRF**	**TRACK**	**RILEY (1989)**
Salicaceae	*Salix bebbiana*	Bebb's Willow		X													G5	S5			N	X
Salicaceae	*Salix discolor*	Pussy Willow														X	G5	S5			N	X
Salicaceae	*Salix eriocephala*	Heart-leaved Willow		X								X					G5	S5			N	X
Salicaceae	*Salix interior*	Sandbar Willow		X								X	X				GNR	S5			N	X
Salicaceae	*Salix petiolaris*	Meadow Willow		X		X											G5	S5			N	X
Salicaceae	*Salix* sp.	Willow species		X																		
Scrophulariaceae	*Linaria vulgaris*	Butter-and-eggs	X	X										X			GNR	SNA			N	X
Solanaceae	*Solanum dulcamara*	Climbing Nightshade				X											GNR	SNA			N	X
Sparganiaceae	*Sparganium* sp.	Burreed species				X																
Tiliaceae	*Tilia americana*	American Basswood		X				X									G5	S5			N	X
Typhaceae	*Typha angustifolia*	Narrow-leaved Cattail	X	X	X	X											G5	SNA			N	X
Typhaceae	*Typha latifolia*	Broad-leaved Cattail		X		X											G5	S5			N	X
Typhaceae	*Typha* x *glauca*	(*Typha angustifolia* X *Typha latifolia*)	X			X	X										GNA	SNA			N	X
Ulmaceae	*Ulmus americana*	American Elm		X			X		X						X		G5	S5			N	X
Verbenaceae	*Verbena hastata*	Blue Vervain				X											G5	S5			N	X
Vitaceae	*Parthenocissus vitacea*	Thicket Creeper		X			X										G5	S5			N	X
Vitaceae	*Vitis riparia*	Riverbank Grape	X	X		X	X	X	X	X							G5	S5			N	X

1 Nomenclature based on Ministry of Natural Resources and Forestry (MNRF) Natural Heritage Information Centre (NHIC, 2017)
2 ELC Codes based on Ecological Land Classification for Southern Ontario manual (Lee et al. 1998)
3 Conservation Rankings: From Ontario Ministry of Natural Resources, Natural Heritage Information Centre (http://nhic.mnr.gov.on.ca/nhic_.cfm) and the "Distribution and Status of the Vascular Plants of Central Region, Ontario Ministry of Natural Resources" (J.L. Riley, 1989; "Simcoe" Rankings)

Table 2 -Bird Species for 10th Line and Mountain Road Improvements, Collingwood

			Point Count Stations[A, B]									Conservation Ranks[D]		
Family	**Scientific Name**	**English Common Name**	**1**	**2**	**3**	**4**	**5**	**6**	**Incidental**	**Breeding Evidence[C]**	**Area-sensitive?***	**S-Rank**	**G-Rank**	**SARO Status**
Bombycillidae	*Bombycilla cedrorum*	Cedar Waxwing	S,	S,	S,			S,	X	Possible	N	S5B	G5	
Cardinalidae	*Cardinalis cardinalis*	Northern Cardinal	,S				,S	,S		Possible	N	S5	G5	
Charadriidae	*Charadrius vociferus*	Killdeer		S,			S,	S,		Possible	N	S5B,S5N	G5	
Columbidae	*Zenaida macroura*	Mourning Dove	S,	S,S			S,			Probable	N	S5	G5	
Corvidae	*Corvus brachyrhynchos*	American Crow	,FO	FO,	FO, FO		FO, FO	,FO		N	N	S5B	G5	
Corvidae	*Cyanocitta cristata*	Blue Jay				,S				Possible	N	S5	G5	
Emberizidae	*Melospiza melodia*	Song Sparrow	S,S	S,S	,S	S,S	S,S	S,S	X	Probable	N	S5B	G5	
Emberizidae	*Spizella passerina*	Chipping Sparrow		S,S	,S			,S		Probable	N	S5B	G5	
Fringillidae	*Carduelis tristis*	American Goldfinch				S,	S,	S,S	X	Probable	N	S5B	G5	
Icteridae	*Agelaius phoeniceus*	Red-winged Blackbird		S,				S,S		Probable	N	S4	G5	
Icteridae	*Molothrus ater*	Brown-headed Cowbird	S,							Possible	N	S4B	G5	
Icteridae	*Quiscalus quiscula*	Common Grackle	S,	FO,	S,			S,		Possible	N	S5B	G5	
Icteridae	*Sturnella magna*	Eastern Meadowlark	S,							Possible	Y	S4B	G5	THR
Laridae	*Larus delawarensis*	Ring-billed Gull	FO, FO	FO, FO	FO, FO	FO, FO	,FO	FO, FO		N	N	S5B,S4N	G5	
Mimidae	*Dumetella carolinensis*	Gray Catbird			,S					Possible	N	S4B	G5	
Mimidae	*Mimus polyglottos*	Northern Mockingbird					,S			Possible	N	S4	G5	
Mimidae	*Toxostoma rufum*	Brown Thrasher				S,S	,S			Probable	N	S4B	G5	
Paridae	*Poecile atricapillus*	Black-capped Chickadee				S,S	,S			Probable	N	S5	G5	
Parulidae	*Geothlypis trichas*	Common Yellowthroat				S,S	,S	S,S		Probable	N	S5B	G5	
Parulidae	*Mniotilta varia*	Black-and-white Warbler		,S		S,				Possible	Y	S5B	G5	
Parulidae	*Setophaga petechia*	Yellow Warbler			S,	S,S		S,		Probable	N	S5B	G5	
Parulidae	*Setophaga ruticilla*	American Redstart			S,		S,			Possible	Y	S5B	G5	
Passeridae	*Passer domesticus*	House Sparrow	,S					,S	X	Possible	N	SNA	G5	
Picidae	*Picoides pubescens*	Downy Woodpecker							X	N		S5	G5	
Troglodytidae	*Troglodytes aedon*	House Wren						,S		Possible	N	S5B	G5	
Turdidae	*Turdus migratorius*	American Robin	,S	S,S	S,S	S,S		,S	X	Probable	N	S5B	G5	
Tyrannidae	*Empidonax alnorum*	Alder Flycatcher			S,					Possible	N	S5B	G5	
Tyrannidae	*Empidonax minimus*	Least Flycatcher			,S					Possible	Y	S4B	G5	
Tyrannidae	*Empidonax traillii*	Willow Flycatcher			S,S			S,		Probable	N	S5B	G5	
Tyrannidae	*Tyrannus tyrannus*	Eastern Kingbird							X	N		S4B	G5	
Vireonidae	*Vireo gilvus*	Warbling Vireo		S,						Possible	N	S5B	G5	

* According to Appendix C of the Significant Wildlife Habitat Technical Guide (MNRF, 2000)

Table 2 -Bird Species for 10th Line and Mountain Road Improvements, Collingwood

Surveys Conditions:
[A]June 13, 2017; Time 0540hr - 0645hr; Temperature 18°C; Wind B0; Cloud Cover 100%; Precipitation Nil; Observer M. Fuller
[B]June 26, 2017; Time 0503hr - 0542hr; Temperature 10°C; Wind B0; Cloud Cover 20-50%; Precipitation Nil; Observer M. Fuller

[C]OBBA Breeding Evidence Codes:
OBSERVED
FO - Fly Over
POSSIBLE
S - Singing male present, or breeding calls heard, in suitable nesting habitat in nesting season.
PROBABLE
T - Permanent territory presumed trhough registration of territorial behaviour (e.g. song)

[D]Conservation Rank - from OMNRF, NHIC and SARO Lists 2014
S-rank - S1 - Extremely Rare, S2 - Very Rare, S3 - Rare to Uncommon, S4 - Common, S5 - Very Common
G-Rank - G1 - Critically Imperiled, G2 - Imperiled, G3 - Vulnerable, G4 - Apparently Secure, G5 - Secure
SARO - EXP (Extirpated), END (Endangered), THR (Threatened), SC (Special Concern)

Table 3: Species at Risk Habitat Summary

Common Name	Species Name	MNRF	SARA	Key Habitats Used By Species[1]	Initial Habitat Assessment
Bank Swallow	*Riparia riparia*	THR	No status	Nests in burrows excavated in natural and human-made settings with vertical sand and silt faces. Commonly found in sand or gravel pits, road cuts, lakeshore bluffs, and along riverbanks (COSEWIC, 2013d). ESA Protection: Species and general habitat protection	**Potential foraging habitat is present within the study limits. No evidence of nesting or foraging was observed during the course of the field surveys.**
Common Five-lined Skink (Southern Shield population)	*Plestiodon fasciatus*	SC	SC	Southern Shield population -rocky outcrops embedded in a matrix of coniferous and deciduous forest, and individuals in these populations seek refuge under rocks overlaid on open bedrock (COSEWIC, 2007b). ESA Protection: N/A	Species not expected to be present within study area. Habitat is not representative of key habitat.
Eastern Musk Turtle	*Sternotherus oderatus*	SC	THR	Inhabit littoral zones of waterways such as rivers, lakes, bays, streams, ponds, canals, and swamps with slow to no current and soft bottoms. During the active season they prefer shallow water (<2m) with abundant vegetation. Most are found close to shore and do not venture onto land except to nest or access adjacent wetlands (COSEWIC, 2012e). ESA Protection: N/A	Species not expected to be present within study area. Habitat is not representative of key habitat.
Hill's Thistle	*Cirsium hillii*	THR	THR	Found in a variety of open, dry, sandy, fire-prone habitats, including such communities as gravel hill or bluff prairies, sand prairies, pine barrens, oak barrens, sand dunes, oak savannah, and open woods (COSEWIC, 2004c). ESA Protection: Species and general habitat protection	Species not expected to be present within study area. Habitat is not representative of key habitat.
Barn Swallow	*Hirundo rustica*	THR	No status	Ledges and walls of man-made structures such as buildings, barns, boathouses, garages, culverts and bridges. Also nest in caves, holes, crevices and cliff ledges (COSEWIC, 2011d). ESA Protection: Species and general habitat protection	**Potential foraging and nesting habitat is present within the study limits. No evidence of nesting or foraging was observed during the course of the field surveys.**
Black Tern	*Chlidonias niger*	SC	No status	Colonial nesters typically found within marshes. Its preferred nesting habitat is a hemi-marsh (i.e. a wetland with 50:50 open water and emergent vegetation). Nests are usually built on an upturned cattail root, floating vegetation mat or patch of mud (Cadman et al., 2007). ESA Protection: N/A	Species not expected to be present within study area. Habitat is not representative of key habitat.
Blanding's Turtle	*Enydoidea blandingii*	THR	THR	Blanding's Turtles are a primarily aquatic species that prefer wetland habitats, lakes, ponds, slow-moving streams, etc., however they may utilize upland areas to search for suitable basking and nesting sites. In general, preferred wetland sites are eutrophic and characterized by clear, shallow water, with organic substrates and high density of aquatic vegetation (COSEWIC, 2005a). ESA Protection: Species and general habitat protection	Species not expected to be present within study area. Habitat is not representative of key habitat.
Bobolink	*Dolichonyx oryzivorus*	THR	No Status	Nests primarily in forage crops (*e.g.* hayfields and pastures) dominated by a variety of species such as clover, Timothy, Kentucky Bluegrass, tall grass, and broadleaved plants. Also occurs in wet prairie, graminoid peatlands, and abandoned fields dominated by tall grasses. Does not generally occupy fields of row crops (*e.g*. corn, soybeans, wheat) or short-grass prairie. Sensitive to habitat size and has lower reproductive success in small habitat fragments (COSEWIC, 2010a). ESA Protection: Species and general habitat protection	**Potential foraging and nesting habitat is present within and adjacent to the study limits. No evidence of nesting or foraging was observed during the course of the field surveys.**
Butternut	*Juglans cinerea*	END	END	Commonly found in riparian habitats, but is also found in rich, moist, well-drained loams, and well-drained gravels. Butternut is intolerant of shade (COSEWIC, 2003b). ESA Protection: Species and general habitat protection	No Butternut were observed on the property.
Chimney Swift	*Chaetura pelagica*	THR	THR	Nests primarily in chimneys though some populations (*i.e*. in rural northern areas) may nest in cavity trees (COSEWIC, 2007e). Recent changes in chimney design may be a significant factor in recent declines in numbers (Cadman et al., 2007). ESA Protection: Species and general habitat protection	**Potential foraging habitat is present within the study limits. Species was not observed during the course of the field surveys.**
Common Nighthawk	*Chordeiles minor*	SC	THR	Open habitats including sand dunes, beaches recently logged/burned over areas, forest clearings, short grass prairies, pastures, open forests, bogs, marshes, lakeshores, gravel roads, mine tailings, quarries, and other open relatively clear areas (COSEWIC, 2007c). ESA Protection: N/A	Species not expected to be present within study area. Habitat is not representative of key habitat.
Eastern Meadowlark	*Sturnella magna*	THR	No status	Most common in grassland, pastures, savannahs, as well as anthropogenic grassland habitats, including hayfields, weedy meadows, young orchards, golf courses, restored surface mines, *etc*. Occasionally nest in row crop fields such as corn and soybean, but there are considered low-quality habitat. Large tracts of grassland are preferred over smaller fragments and the minimum area required is estimated at 5ha (COSEWIC, 2011c). ESA Protection: Species and general habitat protection	**Foraging and nesting habitat is present within and adjacent to the study limits. Species was observed during dawn breeding bird surveys**
Eastern Ribbonsnake	*Thamnophis sauritus*	SC	SC	Found in wetland habitats with both flowing and standing water such as marshes, bogs, fens, ponds, lake shorelines and wet meadows. Most sightings occur near the water's edge (COSEWIC, 2012b). ESA Protection: N/A	Species not expected to be present within study area. Habitat is not representative of key habitat.
Eastern Small-footed Myotis	*Myotis Lleibii*	END	END	Generally occurs in mountainous or rocky regions as well as in buildings, on the face of rock bluffs and beneath slabs of rock and stones. Hibernation is typically confined to caves and old mines (Best and Jennings, 1997). ESA Protection: Species and general habitat protection	Species not expected to be present within study area. Habitat is not representative of key habitat.
Eastern Whip-poor-will	*Antrostomus vociferus*	THR	THR	Semi-open forests or patchy forests with clearings, such as barrens or forests that are regenerating following major disturbances, are preferred nesting habitats (COSEWIC, 2009b). ESA Protection: Species and general habitat protection	Species not expected to be present within study area. Habitat is not representative of key habitat.
Eastern Wood-pewee	*Contopus virens*	SC	No status	Mostly in mature and intermediate-age deciduous and mixed forests having an open understorey. It is often associated with forests dominated by Sugar Maple and oak. Usually associated with forest clearings and edges within the vicinity of its nest (COSEWIC, 2012h). ESA Protection: N/A	**Potential habitat exists within woodland habitat on adjacent lands north and south of Mountain Rd. Species was not observed during surveys**
Grasshopper Sparrow *pratensis* subspecies	*Ammodramus savannarum pratensis*	SC	No status	Typically breeds in large human-created grasslands (≥ 5ha), such as pastures and hayfields, and natural prairies, such as alvars, characterized by well-drained, often poor soil dominated by low, sparse perennial herbaceous vegetation (COSEWIC, 2013b). ESA Protection: N/A	**Potential foraging and nesting habitat is present within and adjacent to the study limits. No evidence of nesting or foraging was observed during the course of the field surveys.**
Hart's-tongue Fern	*Asplenium scolopendrium* var. *americanum*	SC	SC	Grows on calcareous rocks in deep shade on slopes in deciduous forest. Most occurrences are in maple-beech forest (MNRF, 2016). ESA Protection: N/A	Species not expected to be present within study area. Habitat is not representative of key habitat.
Little Brown Myotis	*Myotis lucifugus*	END	END	Forests and regularly aging human structures as maternity roost sites. Regularly associated with attics of older buildings and barns for summer maternity roost colonies. Overwintering sites are characteristically mines or caves, but can often include buildings (MNRF, 2014) (COSEWIC, 2013a). ESA Protection: Species and general habitat protection	**Potential habitat exists within woodland habitat on adjacent lands north and south of Mountain Rd.**

Table 3: Species at Risk Habitat Summary

Common Name	Species Name	MNRF	SARA	Key Habitats Used By Species[1]	Initial Habitat Assessment
Loggerhead Shrike	*Lanius ludovicianus*	END	END (*mirgrans* subspecies)	Breeding habitat characterized by open areas dominated by grasses and/or forbs, interspersed with scattered shrubs or small trees and bare ground. Suitable habitat includes pasture, old fields, prairie, savannah, pinyon-juniper woodland, shrub-steppe and alvar (COSEWIC, 2014a). ESA Protection: Species and general habitat protection	Species not expected to be present within study area. Habitat is not representative of key habitat.
Massasauga (Great Lakes - St. Lawrence population)	*Sistrurus catenatus*	THR	THR	In Georgian Bay, Massasaugas use bedrock barrens, conifer swamps, beaver meadows, fens, bogs, and shoreline habitats. On the upper Bruce Peninsula, forested habitats are used during hibernation and open, wetland, and edge habitat with canopy closure <50% in mid-late summer (COSEWIC, 2012a). ESA Protection: Species and general habitat protection	Species not expected to be present within study area. Habitat is not representative of key habitat.
Monarch	*Danaus plexippus*	SC	SC	Breeding habitat is confined to sites where milkweeds, the sole food of caterpillars, grow. Milkweeds grow in a variety of environments, including meadows in farmlands, along roadsides and in ditches, open wetlands, dry sandy areas, short and tall grass prairie, river banks, irrigation ditches, arid valleys, and south-facing hills (COSEWIC, 2010b). ESA Protection: N/A	**Potential foraging and nesting habitat is present within the study limits. Species was observed during the field surveys**
Northern Myotis	*Myotis septentrionalis*	END	END	Maternity roost sites are generally located within deciduous and mixed forests and focused in snags including loose bark and cavities of trees. Overwintering sites are characteristically mines or caves (COSEWIC, 2013a). ESA Protection: Species and general habitat protection	**Potential habitat exists within woodland habitat on adjacent lands north and south of Mountain Rd.**
Northern Map Turtle	*Grapetemys geographica*	SC	SC	Inhabits rivers and lakes where it basks on emergent rocks, banks, logs and fallen trees. Prefer shallow, soft-bottomed aquatic habitats with exposed objects for basking (COSEWIC, 2012c). ESA Protection: N/A	Species not expected to be present within study area. Habitat is not representative of key habitat.
Red-headed Woodpecker	*Melanerpes erythrocephalus*	SC	THR	Occurs in open deciduous forests, particularly those dominated by oak and beech, grasslands, forest edges, orchards, pastures along rivers and roads, urban parks, golf courses, cemeteries, beaver ponds and timber stands that have been treated with herbicides (COSEWIC, 2007d). ESA Protection: N/A	**Potential habitat exists within woodland habitat on adjacent lands north and south of Mountain Rd. Species was not observed during surveys**
Snapping Turtle	*Chelydra serpentina*	SC	SC	Habitat is characterized by slow-moving water with a soft mud bottom and dense aquatic vegetation. Often located in ponds, sloughs, shallow bays or river edges and slow streams, or areas combining several of these wetland habitats (COSEWIC, 2008a). ESA Protection: N/A	**Potential habitat exists wthin the Black Ash Creek riparian corridor, and the man made pond located at the north-west corner of 10th Line and 6th St.**
Tri-colored Bat	*Perimyotis subflavus*	END	END	Maternity roost sites include forests and modified landscapes (barns or human-made structures). Overwintering sites include mines and caves (COSEWIC, 2013a). ESA Protection: Species and general habitat protection	**Potential habitat exists within woodland habitat on adjacent lands north and south of Mountain Rd.**
Wood Thrush	*Hylocichla mustelina*	SC	No status	Found in moist, deciduous hardwood or mixed stands, often previously disturbed, with a dense deciduous undergrowth and with tall trees for singing perches (COSEWIC, 2012f). ESA Protection: N/A	**Potential habitat exists within woodland habitat on adjacent lands north and south of Mountain Rd. Species was not observed during surveys**

1. Habitat as outlined within the Species at Risk in MNR's Parry Sound District Excel file version 3, updated as of May 10, 2012, MNRF's Species at Risk in Ontario website files

Species at Risk in Ontario List (June 2, 2017)

Best, T., and J. Jennings. 1997. Mammalian Species, *Myotis leibii* . The American Society of Mammalogists. No. 547, pp. 1-6, 5 figs.

Cadman, M., D. Sutherland, G. Beck, D. Lepage and A. Couturier. 2007. Atlas of the Breeding Birds of Ontario 2001-2005. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of

COSEWIC 2003b. COSEWIC assessment and status report on the Butternut *Juglans cinerea* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 32 pp.

COSEWIC. 2004c. COSEWIC assessment and status report on Hill's Thistle *Cirsium hillii* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 34 pp.

COSEWIC. 2005a. COSEWIC assessment and update status report on the Blanding's Turtle *Enydoidea blandingii* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa.viii +40 pp.

COSEWIC. 2007c. COSEWIC assessment and status report on the Common Nighthawk *Chordeiles minor* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 35 pp.

COSEWIC. 2007b. COSEWIC assessment and update status report on the Five-lined Skink *Eumeces fasciatus* (Carolinian population and Great Lakes/St. Lawrence population) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 50 pp.

COSEWIC. 2007d. COSEWIC assessment and status report on the Red-headed Woodpecker *Melanerpes erythrocephalu* s in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 27 pp.

COSEWIC. 2007e. COSEWIC assessment and update status report on the Chimney Swift *Chaetura pelagic* a in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 49 pp.

COSEWIC. 2008a. COSEWIC assessment and status report on the Snapping Turtle *Chelydra serpentina* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp.

COSEWIC. 2009b. COSEWIC assessment and update status report on the Whip-poor-will *Caprimulgus vociferus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 28 pp.

COSEWIC. 2010a. COSEWIC assessment and update status report on the Bobolink *Dolichonyx oryzivorus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 42 pp.

COSEWIC. 2010b. COSEWIC assessment and status report on the Monarch *Danaus plexippus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 43 pp.

COSEWIC. 2011c. COSEWIC assessment and update status report on the Eastern Meadowlark *Sturnella magna* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 40 pp.

COSEWIC. 2011d. COSEWIC assessment and update status report on the Barn Swallow *Hirundo rustica* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 37 pp.

COSEWIC. 2012a. COSEWIC assessment and update status report on the Massasauga *Sistrurus catenatus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 84 pp.

COSEWIC. 2012b COSEWIC assessment and status report on the Eastern Ribbonsnake *Thamnophis sauritus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 39 pp.

COSEWIC. 2012c. COSEWIC assessment and status report on the Northern Map Turtle *Graptemys geographica* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 63 pp.

COSEWIC. 2012e. COSEWIC assessment and status report on the Eastern Musk Turtle Sternotherus odoratus in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 68 pp

COSEWIC. 2012f. COSEWIC assessment and status report on the Wood Thrush *Hylocichla mustelina* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 46 pp.

COSEWIC. 2012h. COSEWIC assessment and status report on the Eastern Wood-pewee *Contopus virens* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 39 pp.

COSEWIC. 2013a. COSEWIC assessment and update status report on the Little Brown Myotis *Myotis lucifugus* , Northern Myotis *Myotis septentrionalis* and Tri-colored Bat *Perimyotis subfalvus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp.

COSEWIC. 2013b. COSEWIC assessment and status report on the Grasshopper Sparrow pratensis subspecies *Ammodramus savannarum pratensis* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 36 pp.

COSEWIC. 2013d. COSEWIC assessment and update status report on the Bank Swallow Riparia riparia in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 48 pp.

COSEWIC. 2014a. COSEWIC assessment and update status report on the Loggerhead Shrike *Lanius ludovicianus* ssp. and the Prairie subspecies *Lanius ludovicianus excubitorides* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 51 pp.

Ministry of Natural Resources and Forestry (MNRF). 2014. Eastern Small-footed Bat. Queen's Printer for Ontario. https://www.ontario.ca/environment-and-energy/eastern-small-footed-bat

Ministry of Natural Resources and Forestry (MNRF). 2016. Species at Risk in Ontario. http://www.ontario.ca/environment-and-energy/species-risk

APPENDICES

Appendix A: **MNRF Consultation**
Appendix B: **NVCA Regulated Lands**
Appendix C: **Technical Memorandum Regarding Bat Habitat Screening**
Appendix D: **Photographs of Study Site**

APPENDIX A

MNRF Consultation

AZIMUTH ENVIRONMENTAL CONSULTING, INC.
Environmental Assessments & Approvals

April 4, 2017 AEC 16-363

Ministry of Natural Resources and Forestry
Midhurst District
2284 Nursery Road
Midhurst, Ontario
L0L 1X0

Attention: District Planner - Midhurst District

Re: **Background Information Request for the Design of Tenth Line and Mountain Road Improvement Works, RFP # PW 2016-16P, Town of Collingwood.**

Azimuth Environmental Consulting (Azimuth) has been retained by the Ainley Group (Ainley) to complete environmental services related to the completion of an EA for the above noted project. The project involves road improvements along portions of 10th Line and Mountain Road (i.e., road widening, Black Ash Creek bridge rehabilitation or replacement, Taylor Creek culvert extension or replacement) and Ainley has proposed completing this work as a Schedule 'C' undertaking. Mapping of the project limits are attached for your reference. The purpose of this letter is to request additional information beyond that outlined below regarding Species at Risk (SAR), fish and fish habitat, and terrestrial features, along with any other sensitive areas associated with the study area that may be relevant to our study.

EXISTING CONDITIONS

Fisheries

The study area is located within the Blue Mountain Subwatershed, and two watercourses are located within the project limits: Black Ash Creek and Taylor Creek. Taylor Creek is a tributary of Black Ash Creek, which outlets into Georgian Bay approximately 1 km north of Mountain Road. No fisheries information for either creek was available on MNRF Fish ON-Line (2016). Black Ash Creek was designated as “Impaired” by the Nottawasaga Valley Conservation Authority (NVCA) in their 2013 Blue Mountain Subwatersheds Health Check, while Taylor Creek was not evaluated is this study.

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However, the headwaters of Black Ash Creek are considered trout habitat as per the 2013 Blue Mountain Subwatersheds Health Check. Additionally, the Black Ash Creek Subwatershed Plan prepared by the NVCA in August, 2000 identified the following species within Black Ash Creek:

- Common Shiner
- Emerald Shiner
- Mimic Shiner
- Blacknose Dace
- Longnose Dace
- Northern Redbelly Dace
- Bluntnose Minnow
- Brassy Minnow
- Creek Chub
- Common Carp
- White Sucker
- Redhorse Sucker
- Brook Stickleback
- Johnny Darter
- Smallmouth Bass
- native Brook Trout
- Northern Pike
- migratory Brown Trout
- migratory Chinook Salmon
- migratory Rainbow Trout

A large portion of Mountain Road (approximately 750 m) and the riparian lands adjacent to the unnamed tributary on 10th Line are regulated by the NVCA according to Ontario Regulation 172/06.

Terrestrial

Air photo interpretation indicates that prominent features in the surrounding area includes mixed woodlands, wetlands (unevaluated), agricultural lands, maintained lawn, residential dwellings, industrial development and two watercourses.

BACKGROUND SAR DATA

Fisheries

DFO SAR mapping (as attached) and the Natural Heritage Information Centre (NHIC) does not indicate the presence of aquatic SAR (threatened or endangered) within the study area.

Terrestrial

Available information from the Natural NHIC shows that one SAR species, a Restricted Species, has been recorded within 1 km of the study area (17NK6027, 17NK5927, 17NK5926).

A search of the Ontario Breeding Bird Atlas has been completed. Square 17NK62 was queried and it was determined that several SAR bird species have been recorded demonstrating probable or confirmed breeding evidence within the 10 x 10 km data square. These species include Bank Swallow, Barn Swallow, Black Tern, Bobolink, Chimney Swift, Common Nighthawk, Eastern Meadowlark, Eastern Whip-poor-will, Eastern Wood-pewee, Grasshopper Sparrow, Loggerhead Shrike, Red-headed Woodpecker and Wood Thrush.

Available information from Ontario Reptile and Amphibian Atlas shows that Blanding's Turtle, Common Five-lined Skink, Eastern Musk Turtle, Eastern Ribbonsnake, Massasauga, Northern Map Turtle and Snapping Turtle have been recorded within the area.

Our preliminary habitat assessment suggests that the following should also be considered, in addition to those noted above: Butternut, Eastern Small-footed Myotis, Hill's Thistle, Hart's-tongue Fern, Little Brown Myotis, Monarch, Northern Long-eared Myotis and Tri-colored Bat.

In summary, based on information reviewed, the following are being considered in our assessment:

- Mammals: Eastern Small-footed Myotis, Little Brown Myotis, Northern Long-eared Myotis and Tri-colored Bat;
- Reptiles and Amphibians: Blanding's Turtle, Common Five-lined Skink, Eastern Musk Turtle, Eastern Ribbonsnake, Massasauga, Northern Map Turtle and Snapping Turtle;
- Birds: Bank Swallow, Barn Swallow, Black Tern, Bobolink, Chimney Swift, Common Nighthawk, Eastern Meadowlark, Eastern Whip-poor-will, Eastern Wood-pewee, Grasshopper Sparrow, Loggerhead Shrike, Red-headed Woodpecker and Wood Thrush;
- Plants and Lichens: Butternut, Hill's Thistle and Hart's-tongue Fern; and,
- Insects: Monarch.

Given our understanding of the habitat requirements of the above-noted species, our screening will focus on Barn Swallow, Blanding's Turtle, Bobolink, Butternut, Chimney Swift, Common Nighthawk, Eastern Meadowlark, Eastern Musk Turtle, Eastern Ribbonsnake, Grasshopper Sparrow, Little Brown Myotis, Massasauga, Monarch, Northern Long-eared Myotis, Red-headed Woodpecker, Snapping Turtle, Tri-colored Bat and Wood Thrush.

There is currently no indication that potential habitat for Bank Swallow, Black Tern, Common Five-lined Skink, Eastern Small-footed Myotis, Eastern Whip-poor-will, Hill's Thistle, Hart's-tongue Fern, Loggerhead Shrike and Northern Map Turtle exists on or adjacent to the property. Azimuth is aware that these species have been identified in the area historically and will continue to be mindful of them during the site assessment. We propose that these species will not be considered in our EIS unless our on-site evaluation or MNRF response provides information indicating potential habitat for these species in the surrounding area.

If the District's files contain additional or contradictory information, we would appreciate your input at this time.

It is generally our intention to append this correspondence in the resulting EIS. If restricted species occur in the area and the MNRF determines that these need to be considered in our review, please provide two copies of the response - one with the species name replaced with (Restricted Species) for inclusion within Azimuth's natural heritage review report, and the other retaining the identity of the species for Azimuth's internal use only.

Thank you very much for your assistance in this matter. If you have any questions regarding this project please do not hesitate to contact us.

Yours truly,

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Roger Holmes, MSc.
Aquatic Ecologist

Scott Martin

From: Roger Holmes
Sent: Friday, December 7, 2018 3:52 PM
To: Scott Martin
Subject: FW: 16-363 MNRF background information request - 10th Line and Mountain Road, Collingwood

---

From: Shirley, Brent (MNRF) [mailto:brent.shirley@ontario.ca]
Sent: September 5, 2017 1:04 PM
To: Roger Holmes
Subject: RE: 16-363 MNRF background information request - 10th Line and Mountain Road, Collingwood

Hi Roger,

That would be the correct in-water timing restriction for the two aforementioned watercourses.

Best Regards,
Brent

From: Roger Holmes [mailto:rholmes@azimuthenvironmental.com]
Sent: August-24-17 2:19 PM
To: Shirley, Brent (MNRF)
Subject: RE: 16-363 MNRF background information request - 10th Line and Mountain Road, Collingwood

Hi Brent,
I had a follow up question in regards to this background info request from a few months ago (original letter and mapping attached for reference).
For both Taylor Creek and Black Ash Creek, can you specify the in-water timing window that would be applied to these two watercourses?
As per your email below and background information, both are coldwater systems, so would a July 1 – September 30 in-water timing window be appropriate?
Thanks,

Roger Holmes, M.Sc.,
Aquatic Ecologist

Azimuth Environmental Consulting, Inc.
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Barrie, ON, L4N 9A1
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fax: (705) 721-8926
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rholmes@azimuthenvironmental.com

www.azimuthenvironmental.com

Providing services in hydrogeology, terrestrial and aquatic ecology & environmental engineering
Please consider the environment before printing this correspondence

From: Shirley, Brent (MNRF) [mailto:brent.shirley@ontario.ca]
Sent: Wednesday, April 19, 2017 5:21 PM
To: Roger Holmes
Subject: RE: 16-363 MNRF background information request - 10th Line and Mountain Road, Collingwood

Hi Roger,

I have reviewed your request for background information that you submitted to MNRF.

You had mentioned in your letter that you didn't find any fisheries information on Fish On-Line. Fish On-Line is intended as a tool for anglers to see what species are present in various water bodies, what species are being stocked, lists access points, boat launches…etc. If you go on LIO all of our fisheries information is available there, including point source data from specific sampling events in various reaches and tributaries. I have reviewed the fish species list that you received from NVCA and it is accurate. The headwaters and small tributaries have the potential for brook trout and other migratory salmonid species.

I have taken a look at the study area and the species at risk found in that immediate area and your list is very complete.

To demonstrate due diligence for species at risk (SAR), an ecological site assessment would not just consider known records of SAR but also, and most importantly, would have to consider the available habitat on the subject lands and what SAR have the potential to be present based on this habitat. As you are aware, given the private landscape in which we work and operate, it would be impossible to know all SAR that occur on private properties.

If you have any questions please feel free to contact me at any time.

Best Regards,

Brent Shirley

A/ Management Biologist
Midhurst District Ministry of Natural Resources & Forestry
2284 Nursery Rd
Midhurst, ON
L0L 1X0

Phone- 705-725-7547
Fax- 705-725-7584

From: Roger Holmes [mailto:rholmes@azimuthenvironmental.com]
Sent: April-10-17 1:00 PM
To: Benner, Kim (MNRF); Mott, Ken (MNRF)
Subject: 16-363 MNRF background information request - 10th Line and Mountain Road, Collingwood

Hello Kim and Ken,
Please see attached a background information request for a project in Collingwood that we are working on. Mapping is

also attached for reference.
If needed, please forward this onto the appropriate Management Biologist for review.
If you have any questions or need further information, please feel free to call me.
Regards,

Roger Holmes, M.Sc.,
Aquatic Ecologist

Azimuth Environmental Consulting, Inc.
642 Welham Road
Barrie, ON, L4N 9A1
office: (705) 721-8451
fax: (705) 721-8926
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rholmes@azimuthenvironmental.com

www.azimuthenvironmental.com

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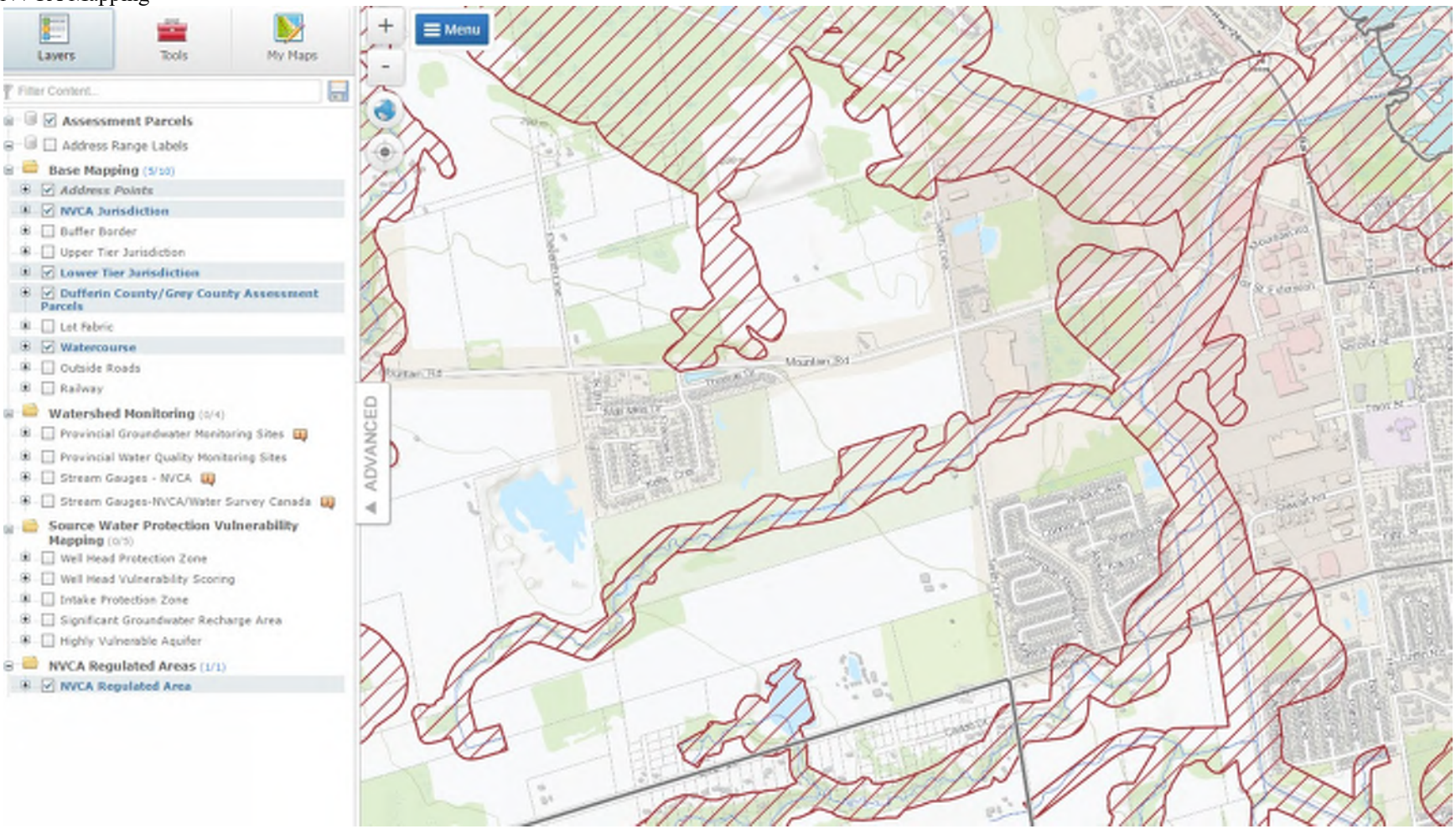
APPENDIX B

NVCA Regulated Lands

NVCA Mapping



APPENDIX C

Technical Memorandum Regarding Bat Habitat Screening

Technical Memorandum

To: **Andrea Potter, B.E.S, Environmental Planner**

Re: **Bat Habitat Screening – Tenth Line and Mountain Road Improvement Works, RFP # PW 2016-16P, Town of Collingwood**

From: Brad Baker, Azimuth Environmental Consulting Inc.

Project: 16-363

Date: July 24, 2018

1.0 BACKGROUND INFORMATION

Azimuth Environmental Consulting Inc. (Azimuth) was initially retained by the Ainley Group to provide a Natural Sciences Existing Conditions and Impact Assessment Report. The report was intended to inform the Environmental Assessment being undertaken for the proposed road improvements along portions of Tenth Line and Mountain Road have been proposed (road urbanization, road widening, bridge rehabilitation or replacement, Taylor Creek culvert extension or replacement, *etc.*). The original Species at Risk screening took place as a component of the Natural Sciences assessment in the 2017 field season which was provided September 2018 in draft. Based on the information available at that, it was recommended that if the proposed works was expected to result in the removal of any woodland habitat (*i.e.*, within the WODM5-1 community, areas north of the right-of-way of Mountain Rd.), additional surveys should be carried out to assess the nature of candidate habitat for Species at Risk bats. It is our understanding that alternatives are being considered which could result in the removal of portions of those features in the right-of-way. As requested, Azimuth staff carried out an additional site visit to assess the nature of candidate habitat for Species at Risk bats. This memo is intended to provide the screening results for your files.

2.0 FIELD INVESTIGATION

Azimuth staff (Brad Baker) attended the study area on the morning of May 11, 2018. At this time, the treed areas of the right-of-way, specifically the WODM5-1 community and areas north of the right-of-way of Mountain Rd were inspected.

Our habitat assessment was based on the 'Technical Note for Species at Risk Bats' published by the Regional Operations Division of the MNRF in 2015 ('Technical Note'). The Technical Note provides direction in the assessment of habitat for endangered bat species. Survey methodology provided by the Ministry of Natural Resources and Forestry (MNRF) for the identification of potential maternity roost habitat for bats suggests that the following Ecological Land Classification polygons may provide maternity roost habitat:

- Deciduous Forests (FOD)
- Mixedwood Forests (FOM)
- Coniferous Forests (FOC)
- Deciduous Swamp (SWD)
- Mixedwood Swamps(SWM)
- Coniferous Swamps (SWC)

The two locations identified did not necessarily meet the listed criteria but were included in the previous screening because the vegetation communities in question were recommended for further consideration at that time because they were borderline communities between Woodland or a Deciduous Forest based on the tree coverage in each community.

Snag density surveys are currently considered by the MNRF to be of importance in the identification of potential maternity roost habitat for Little Brown Myotis and Northern Myotis – both species are designated Endangered. These snag density surveys represent Step 2 of the Survey methodology provided by the MNRF. For the snag density surveys plots are randomly distributed across a vegetation community by means of placing points on a handheld GPS with a spacing of approximately 100 meters between each point. Snag density surveys generally take place while the forest is still in a leaf-off condition. Leaf-off condition in this situation refers to the point in the spring where buds may be emerging, but leaves associated with the deciduous canopy have not emerged fully. At each location, all trees with a Diameter at Breast Height (DBH) of $\geq$ 25cm are identified and assessed within a survey plot with a radius of 12.6 meters. Information related to the species of tree, presence of snags and location of snags would be recorded for each tree within the plots. Typically if the surveyor identifies more than one or two trees per plot the average will be above 10 snags per hectare.

A site walk was arranged by Mr. Brad Baker of Azimuth on May 11, 2018. The focus of the site visit was to estimate the snag density using impromptu plots while at the same time screening the treed areas for potential roost clusters. Impromptu plots were carried out by stopping in randomly determined locations during the site walk and estimating the number of snags that would be counted during a formal survey. As previously noted, if a surveyor counts more than one or two trees in a plot the snag density will be high enough to move to the next steps. The treed areas in question were pioneer growth stands and the majority of the areas contained no trees ≥ 25cm. Of those trees that were ≥ 25cm very few had features which would qualify them as a snag tree. Given this result the treed areas in question are unlikely to provide appropriate function for a maternity roost and there is no expectation that accidental contraventions of Section 9 or Section 10 of the Ontario's *Endangered Species Act* relating to potential maternity roosting would result from the building removal. As such there is no expectation that the density will be above 10 snags per hectare and no further assessment is recommended at this time.

Regardless, the proposed road improvements are likely require tree removals. Male bats and non-reproductive females roost individually or in small groups as they move across the landscape. This function is inconsistent since bats will not necessarily return to the same roost on consecutive nights. Thus, recommendations proposed below are intended to avoid accidental contraventions of Section 9 of Ontario's *Endangered Species Act* should day roosting occur in the treed vegetation communities. Assuming that the recommendations described below are followed, the proposed clearing activities are expected to have no negative effect upon Species at Risk bats or the ability for these species to carry out their life processes and will thus, be compliant with the regulations of the Ontario's *Endangered Species Act*.

3.0 RECOMMENDATIONS

Mitigation was considered to ensure that no accidental contraventions of Section 9 of the ESA relating to potential bat day roosting result from tree removal. Given that any trees may provide inconsistent habitat for Species at Risk bats in the form of day roost, care should be taken when clearing vegetation. Construction activities involving the removal of trees should be restricted between the beginning of April to the end of October. This will ensure that no bats actively roosting in trees will be killed or harmed as a result of clearing activities. Tree Cutting should be restricted to occur during the calendar months of November 1 to March 31 and no cutting activity in forested areas should occur outside that period without proper review by a qualified ecologist.

The absence of a protected species does not indicate that they will never occur within the area. Given the dynamic character of the natural environment, there is a constant variation in habitat presence and use. Care should be taken in the interpretation of presence of species of concern including those listed under the Ontario's *Endangered Species Act*. Changes to policy, or the natural environment, could result in shifts, removal, or addition of new areas to the list of areas currently considered habitat. This report is intended as a point in time assessment of Species at Risk, and specifically the bat species identified. It does not provide long term 'clearance' for Species at Risk. While there is no expectation that the assessment should change significantly, it is the responsibility of the proponent to ensure that they are not in contravention of the ESA at the time that site works are undertaken.

4.0 CLOSURE

The information provided is intended to provide an assessment of the nature of candidate habitat for Species at Risk bats outlined in the original Natural Sciences assessment which was provided September 2018 in draft. This memorandum is intended as additional information to be read in conjunction with that report and as such, we request that the information outlined herein be considered in conjunction with that report or the final version of that report when it is submitted.

APPENDIX D

Photographs of Study Area

Photograph 1: Black Ash Creek bridge –
north-east bank, looking south

Photograph 2: Black Ash Creek bridge –
north-west bank, looking south

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Environmental Assessments & Approvals

AEC Project #16-363

Photograph 3: Black Ash Creek bridge –
south-west bank, looking east

Photograph 4: Black Ash Creek bridge –
south-west bank, looking north-east

AEC Project #16-363

Photograph 5: Taylor Creek culvert –
West side of Tenth Line, looking north

Photograph 6 Taylor Creek culvert –
West side of Tenth Line

AZIMUTH ENVIRONMENTAL CONSULTING, INC.
Environmental Assessments & Approvals

AEC Project #16-363

Photograph 7: Taylor Creek culvert –
East side of Tenth Line

Photograph 8: Taylor Creek culvert –
East side of Tenth line, looking north-east

AZIMUTH ENVIRONMENTAL CONSULTING, INC.
Environmental Assessments & Approvals

AEC Project #16-363

Photograph 5: Black Ash Creek bridge –
Showing lack of Barn Swallow nests

Photograph 6: Black Ash Creek bridge –
Showing lack of Barn Swallow nests

AZIMUTH ENVIRONMENTAL CONSULTING, INC.
Environmental Assessments & Approvals

AEC Project #16-363

Photograph 7: Black Ash Creek bridge –
Showing lack of Barn Swallow nests

Photograph 8: Taylor Creek culvert –
Showing small opening, close to water surface, vegetation over-growing entrance

AEC Project #16-363

Technical Memorandum

To: **Andrea Potter, B.E.S, Environmental Planner**

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From: Brad Baker, Azimuth Environmental Consulting Inc.

Project: 16-363

Date: July 24, 2018

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3.0 RECOMMENDATIONS

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The information provided is intended to provide an assessment of the nature of candidate habitat for Species at Risk bats outlined in the original Natural Sciences assessment which was provided September 2018 in draft. This memorandum is intended as additional information to be read in conjunction with that report and as such, we request that the information outlined herein be considered in conjunction with that report or the final version of that report when it is submitted.

Appendix C

Stage 1 Archaeological Assessment Report

Stage 1 Archaeological Assessment
Tenth Line and Mountain Road Improvements
Part of Lots 42-45, Concessions 10-11
(Former Township of Nottawasaga)
Township of Clearview and Town of Collingwood
County of Simcoe, Ontario

ORIGINAL REPORT

Prepared for:

Ainley Group
280 Pretty River Parkway
Collingwood, ON L9Y 4J5

Archaeological Licence #P1066 (Lytle)
Ministry of Tourism, Culture and Sport PIF# P1066-0063-2017
ASI File: 17EA-130

11 December, 2017

ASI Providing Archaeological & Cultural Heritage Services
528 Bathurst Street Toronto, ONTARIO M5S 2P9
416-966-1069 F 416-966-9723 asiheritage.ca

Stage 1 Archaeological Assessment
Tenth Line and Mountain Road Improvements
Part of Lots 42-45, Concessions 10 & 11
(Former Township of Nottawasaga)
Township of Clearview and Town of Collingwood
County of Simcoe, Ontario

EXECUTIVE SUMMARY

Archaeological Services Inc. (ASI) was contracted by Ainley Group to conduct a Stage 1 Archaeological Assessment (Background Research and Property Inspection) as part of the Tenth Line and Mountain Road Improvements in the Town of Collingwood and the Township of Clearview, County of Simcoe. This project involves road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km).

The Stage 1 background study determined that one previously registered archaeological site is located within one kilometre of the Study Area. The property inspection determined that parts of the Study Area beyond the existing disturbed ROWs exhibit archaeological potential and will require Stage 2 assessment.

In light of these results, the following recommendations are made:

1. The Study Area exhibits archaeological potential. These lands require Stage 2 archaeological assessment by test pit/pedestrian survey at five metre intervals, where appropriate, prior to any proposed impacts to the property;

2. Parts of the Study Area have been previously assessed and do not require further archaeological assessment;

3. The remainder of the Study Area does not retain archaeological potential on account of deep and extensive land disturbance. These lands do not require further archaeological assessment; and,

4. Should the proposed work extend beyond the current Study Area, further Stage 1 archaeological assessment should be conducted to determine the archaeological potential of the surrounding lands.

PROJECT PERSONNEL

Senior Project Manager:	Lisa Merritt, MSc. (P094) *Partner / Director* *Environmental Assessment Division*
Project Coordinator:	Sarah Jagelewski, Hon. BA (R405) *Archaeologist / Assistant Manager* *Environmental Assessment Division*
Project Director (Licensee):	Peter Carruthers, MA (P163) *Senior Associate*
Project Manager:	Eliza Brandy, MA (R1109) *Archaeologist / Project Manager* *Environmental Assessment Division*
Field Director:	Jessica Lytle, MSc (P1066) *Archaeologist / Project Manager* *Environmental Assessment Division*
Report Preparation:	Eliza Brandy
Graphics:	Blake Williams, MLitt (P383) *Archaeologist / Geomatics Specialist* *Operations Division*
Report Reviewer:	Lisa Merritt

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1.0 PROJECT CONTEXT

Archaeological Services Inc. (ASI) was contracted by Ainley Group to conduct a Stage 1 Archaeological Assessment (Background Research and Property Inspection) as part of the Tenth Line and Mountain Road Improvements in the Town of Collingwood and the Township of Clearview, County of Simcoe (Figure 1). This project involves road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km).

All activities carried out during this assessment were completed in accordance with the *Ontario Heritage Act* (1990, as amended in 2009) and the 2011 *Standards and Guidelines for Consultant Archaeologists* (S & G), administered by the Ministry of Tourism, Culture and Sport (MTCS).

In the S & G, Section 1, the objectives of a Stage 1 archaeological assessment are discussed as follows:

- To provide information about the history, current land conditions, geography, and previous archaeological fieldwork of the Study Area;
- To evaluate in detail the archaeological potential of the Study Area that can be used, if necessary, to support recommendations for Stage 2 archaeological assessment for all or parts of the Study Area; and,
- To recommend appropriate strategies for Stage 2 archaeological assessment, if necessary.

This report describes the Stage 1 archaeological assessment that was conducted for this project and is organized as follows: Section 1.0 summarizes the background study that was conducted to provide the historical and archaeological contexts for the project Study Area; Section 2.0 addresses the field methods used for the property inspection that was undertaken to document its general environment, current land use history and conditions of the Study Area; Section 3.0 analyses the characteristics of the project Study Area and evaluates its archaeological potential; Section 4.0 provides recommendations; and the remaining sections contain other report information that is required by the S & G, e.g., advice on compliance with legislation, works cited, mapping and photo-documentation.

1.1 Development Context

All work has been undertaken as required by the *Environmental Assessment Act,* RSO (Ministry of the Environment 1990 as amended 2010) and regulations made under the Act, and are therefore subject to all associated legislation. This project is being conducted in accordance with the Municipal Engineers' Association document *Municipal Class Environmental Assessment* (2000 as amended in 2007, 2011 and 2015).

Authorization to carry out the activities necessary for the completion of the Stage 1 archaeological assessment was granted by Ainley Group on October 12, 2017.

1.2 Historical Context

The purpose of this section, according to the S & G, Section 7.5.7, Standard 1, is to describe the past and present land use and the settlement history and any other relevant historical information pertaining to the Study Area. A summary is first presented of the current understanding of the Indigenous land use of the Study Area. This is then followed by a review of the historical Euro-Canadian settlement history.

1.2.1 Indigenous Land Use and Settlement

Southern Ontario has been occupied by human populations since the retreat of the Laurentide glacier approximately 13,000 years before present (BP) (Ferris 2013). Populations at this time would have been highly mobile, inhabiting a boreal-parkland similar to the modern sub-arctic. By approximately 10,000 BP, the environment had progressively warmed (Edwards and Fritz 1988) and populations now occupied less extensive territories (Ellis and Deller 1990).

Between approximately 10,000-5,500 BP, the Great Lakes basins experienced low-water levels, and many sites which would have been located on those former shorelines are now submerged. This period produces the earliest evidence of heavy wood working tools, an indication of greater investment of labour in felling trees for fuel, to build shelter, and watercraft production. These activities suggest prolonged seasonal residency at occupation sites. Polished stone and native copper implements were being produced by approximately 8,000 BP; the latter was acquired from the north shore of Lake Superior, evidence of extensive exchange networks throughout the Great Lakes region. The earliest evidence for cemeteries dates to approximately 4,500-3,000 BP and is indicative of increased social organization, investment of labour into social infrastructure, and the establishment of socially prescribed territories (Ellis et al. 1990, 2009; Brown 1995:13).

Between 3,000-2,500 BP, populations continued to practice residential mobility and to harvest seasonally available resources, including spawning fish. Exchange and interaction networks broaden at this time (Spence et al. 1990:136, 138) and by approximately 2,000 BP, evidence exists for macro-band camps, focusing on the seasonal harvesting of resources (Spence et al. 1990:155, 164). It is also during this period that maize was first introduced into southern Ontario, though it would have only supplemented people's diet (Birch and Williamson 2013:13–15). Bands likely retreated to interior camps during the winter.

By approximately 1,000 BP until approximately 300 BP, lifeways become more similar to that described in early historical documents. Populations in the study area are generally thought to have been Algonquian-speaking. Subsistence and settlement patterns appear at first to be relatively unchanged from the preceding period, although direct evidence of subsistence and settlement during the eleventh and twelfth centuries within the study area is limited. By the thirteenth and fourteenth centuries, regional populations appear to have added horticulture to their traditional settlement-subsistence practices such that by the fifteenth and sixteenth centuries populations had further coalesced into larger and sometimes fortified settlements, supported by seasonal satellite camps (Murphy and Ferris 1990).

This trend of coalescence has been well documented in Iroquoian sites along the Lake Ontario basin and western St. Lawrence River valley (see Birch and Williamson 2013). It may have developed in response to increased contact with Iroquoian populations resulting in both conflict and cooperation. Archaeological evidence from the Western Basin indicates that Algonquian populations apparently migrated away from the expanding Iroquoian populations, corresponding to the historically described conflict between the

Neutral Nations and the Algonquian Fire Nation (Lennox and Fitzgerald 1990:418). The above description of the evolution of settlement and subsistence systems in Algonquian populations is largely derived from sites between Lake Huron and Lake Erie, west of present day London, Ontario (Murphy and Ferris 1990). In Bruce County, archaeological evidence is indicative, alternatively, of some residential stability related to the practice of agriculture (e.g. Nodwell Site, Rankin 2000). The archaeological evidence of Huron-Wendat/Tionontate material culture on Odawa sites, the proximity of contemporary Huron-Wendat and Tionontate and Odawa sites to each other, and the historically documented alliance between the Odawa and the Neutral Nations are all indicative of cooperation between Algonquian and Iroquoian populations in Bruce and Grey Counties (Fox 1990).

By the mid-seventeenth century, the Indigenous populations occupying southern Ontario had largely been dispersed by the Haudenosaunee[1] who sought to monopolize the beaver hunt in the region. The region of Bruce and Grey Counties is not specifically addressed in the contemporary documentary sources; however, the later dispersal of the Haudenosaunee from the region in the late seventeenth century is confirmed by Ojibwa oral tradition (Copway 1850: 80, 88).

Due, in large part, to increased military pressure from the French upon their homelands south of Lake Ontario, the Iroquois abandoned much of Ontario by the late 1680s, although they did not relinquish their interest in the resources of the area, as they continued to claim the north shore as part of their traditional hunting territory. The territory was immediately re-occupied by Anishinaabek groups, including the Mississauga, Ojibwa (or Chippewa) and Odawa, who, in the early seventeenth century, occupied the vast area extending from the east shore of Georgian Bay, and the north shore of Lake Huron, to the northeast shore of Lake Superior and into the upper peninsula of Michigan. Individual bands were politically autonomous and numbered several hundred people. Nevertheless, they shared common cultural traditions and relations with one another and the land. These groups were highly mobile, with a subsistence economy based on hunting, fishing, gathering of wild plants, and garden farming. Their movement southward also brought them into conflict with the Haudenosaunee.

Peace was achieved between the Iroquois and the Anishinaabek Nations in August of 1701 when representatives of more than twenty Anishinaabek Nations assembled in Montreal to participate in peace negotiations (Johnston 2004:10). During these negotiations captives were exchanged and the Iroquois and Anishinaabek agreed to live together in peace. Peace between these nations was confirmed again at council held at Lake Superior when the Iroquois delivered a wampum belt to the Anishinaabek Nations. By 1710, Ojibwa groups were well established in southern Ontario (Rogers 1978). Euro-Canadian accounts describe the study area as occupied by Anishnaabeg groups by the late 1780s (Bowman 1975). In 1763, following the fall of Quebec, New France was transferred to British control at the Treaty of Paris. The British government began to pursue major land purchases to the north of Lake Ontario in the early nineteenth century, the Crown acknowledged the Mississaugas as the owners of the lands between Georgian Bay and Lake Simcoe and entered into negotiations for additional tracts of land as the need arose to facilitate European settlement.

The eighteenth century saw the ethnogenesis in Ontario of the Métis, when Métis people began to identify as a separate group, rather than as extensions of their typically maternal First Nations and paternal European ancestry (Métis National Council n.d.). Living in both Euro-Canadian and Indigenous societies,

[1] The Haudenosaunee are also known as the New York Iroquois or Five Nations Iroquois and after 1722 Six Nations Iroquois. They were a confederation of five distinct but related Iroquoian–speaking groups - the Seneca, Onondaga, Cayuga, Oneida, and Mohawk. Each lived in individual territories in what is now known as the Finger Lakes district of Upper New York. In 1722 the Tuscarora joined the confederacy.

the Métis acted as agents and subagents in the fur trade but also as surveyors and interpreters. Métis populations were predominantly located north and west of Lake Superior, however, communities were located throughout Ontario (MNC n.d.; Stone and Chaput 1978:607,608). During the early nineteenth century, many Métis families moved towards locales around southern Lake Huron and Georgian Bay, including Kincardine, Owen Sound, Penetanguishene, and Parry Sound (MNC n.d.). By the mid-twentieth century, Indigenous communities, including the Métis, began to advance their rights within Ontario and across Canada, and in 1982, the Métis were federally recognized as one of the distinct Indigenous peoples in Canada. Recent decisions by the Supreme Court of Canada (Supreme Court of Canada 2003, 2016) have reaffirmed that Métis people have full rights as one of the Indigenous people of Canada under subsection 91(24) of the Constitution Act, 1867.

The study area is located in the traditional territory of the Saugeen First Nation and Nawash First Nation, which also includes the Bruce Peninsula (previously known as the Saugeen Peninsula), Grey and Bruce Counties, as well as parts of Huron, Dufferin, Wellington and Simcoe Counties. Ojibway chiefs granted land along the shores of Lake Huron and southern Georgian Bay to the Crown with the signing of the 1818 Lake Simcoe-Nottawasaga Treaty No. 18 (AANDC 2016).

The study area falls within the ancestral territory of the Tionontaté, the Odawa, and the Saugeen Ojibway Nation. The Tionontaté were closely related to the Huron-Wendat and lived in the area west of Huronia within the current Town of The Blue Mountains, Grey County, Ontario. The seventeenth-century French explorers who encountered these peoples dubbed them the Petun, or “tobacco people,” due to their reputation of growing large amounts of tobacco. They lived in large palisaded villages (averaging 1.7 ha), temporary hunting and fishing camps, cabin sites, and small hamlets with a material culture characterized by globular-shaped ceramic vessels, ceramic pipes, bone/antler awls and beads, ground and chipped stone tools, and copper objects. The population peaked at approximately 30,000 people during the late 15th century, however by the early sixteenth century Tionontaté territory contracted and the north shore of Lake Ontario was almost abandoned. (Ramsden 1990:363–378; Warrick 2000:446–454, 2008; Garrad 2014).

The study area is located within the traditional territory of the Odawa (Annishinnabeg). The Odawa are first described in 1615 when Samuel de Champlain encountered a group of Odawas at the mouth of the French River (Biggar 1922:3: 44). The Odawa were an Algonquian-speaking people who occupied portions of the southern Canadian Shield and the western and upper Great Lakes areas (Feest and Feest 1978:772). The Odawa subsisted primarily from fishing but also practiced horticulture and were extensively involved in trade. They were known to co-reside with Iroquoian populations (Thwaites 1901:125).

1.2.2 Euro-Canadian Land Use: Township Survey and Settlement

Historically, the Study Area is located in the Former Nottawasaga Township, County of Simcoe in part of Lots 42-45, Concessions 10 & 11.

The S & G stipulates that areas of early Euro-Canadian settlement (pioneer homesteads, isolated cabins, farmstead complexes), early wharf or dock complexes, pioneer churches, and early cemeteries are considered to have archaeological potential. Early historical transportation routes (trails, passes, roads, railways, portage routes), properties listed on a municipal register or designated under the *Ontario Heritage Act* or a federal, provincial, or municipal historic landmark or site are also considered to have archaeological potential.

For the Euro-Canadian period, the majority of early nineteenth century farmsteads (i.e., those that are arguably the most potentially significant resources and whose locations are rarely recorded on nineteenth century maps) are likely to be located in proximity to water. The development of the network of concession roads and railroads through the course of the nineteenth century frequently influenced the siting of farmsteads and businesses. Accordingly, undisturbed lands within 100 m of an early settlement road are also considered to have potential for the presence of Euro-Canadian archaeological sites.

The first Europeans to arrive in the area were transient merchants and traders from France and England, who followed Indigenous pathways and set up trading posts at strategic locations along the well-traveled river routes. All of these occupations occurred at sites that afforded both natural landfalls and convenient access, by means of the various waterways and overland trails, into the hinterlands. Early transportation routes followed existing Indigenous trails, both along the lakeshore and adjacent to various creeks and rivers (ASI 2006).

In 1798, the County of Simcoe was formed as part of the "Home District". The boundaries of the county were refined in 1821. Almost 20 years later, in 1843, the area was declared a separate district, attaining county status in 1850, with Barrie as the county seat. At this time Simcoe County included portions of Grey and Dufferin Counties, and Muskoka and Parry Sound Districts. In 1881 the borders of Simcoe County were again redefined and the present townships of Tiny, Tay, Matchedash, Flos, Medonte, Orillia, Nottawasaga, Sunnidale, Vespra, Oro, Tosorontio, Essa, Innisfil, Adjala, Tecumseth, and West Gwillimbury were contained within. As of the late twentieth century, Simcoe County had two cities, seven towns, and eight villages (Mika and Mika 1983:394–398).

Nottawasaga Township

The township was named in 1832 after the Nottawasaga River, derived from the Ojibway word *nahdowasaga*, meaning "outlet of the river of the Iroquois." Early maps dating from 1828 and 1836 describe the north part of the township as Java, and the south part as Merlin (Rayburn 1997:251). It was first surveyed in 1833 by Thomas Kelly, and in the same year by Charles Rankin, who noted irregularities in the original survey. By 1834, the first settlers arrived in the township, many from the Island of Islay in Scotland, while others arrived from Ireland and Germany. Settlement was slow, largely because the 200 acre lots assigned to United Empire Loyalists were not all settled. Many Loyalists received the patent for their parcels, but held the land on speculation, or sold their rights to speculators. The first settlement in the township was located at Dunedin, on the banks of Noisy River, approximately 22 km southeast of Collingwood. This settlement had been previously named Bowerman's Hollow, after early setter Israel Bowerman built the township's first grist mill (Mika and Mika 1983:95-96).

The first roads in the township followed existing Indigenous trails. In exchange for supplies, early settlers began clearing huge tracts of land including those areas for new roads. However, settlers had to carry goods on their backs from Barrie until a time when a government overseer was appointed. By 1842, the township population was 420, but it grew substantially after 1844, when a road linking Barrie, Bomore, Meaford and Owen Sound was completed (Mika and Mika 1983:95-96).

Town of Collingwood

Collingwood was an important shipping hub for transferring goods from lake vessels to railcars after the construction of the Northern Railway in 1853-55. Just before the railway was built, Joel Underwood erected a steam saw-mill on his property which became the centre of the future town. The survey of the harbour was made by Sandford Fleming, an assistant engineer on the railway.

1.2.3 Historical Map Review

The 1833 *Patent Plan of Nottawasaga Township*, the 1871 *Hogg's Map of Simcoe County*, the 1879 *Plan of the Town of Collingwood*, and the 1881 *Simcoe Supplement in the Atlas of the Dominion of Canada* (Kelly 1833; Hogg 1871; Miles & Co 1879; Belden 1881) examined to determine the presence of historic features within the Study Area during the nineteenth century (Figures 2-5).

It should be noted, however, that not all features of interest were mapped systematically in the Ontario series of historical atlases, given that they were financed by subscription, and subscribers were given preference with regard to the level of detail provided on the maps. Moreover, not every feature of interest would have been within the scope of the atlases.

In addition, the use of historical map sources to reconstruct/predict the location of former features within the modern landscape generally proceeds by using common reference points between the various sources. These sources are then geo-referenced in order to provide the most accurate determination of the location of any property on historic mapping sources. The results of such exercises are often imprecise or even contradictory, as there are numerous potential sources of error inherent in such a process, including the vagaries of map production (both past and present), the need to resolve differences of scale and resolution, and distortions introduced by reproduction of the sources. To a large degree, the significance of such margins of error is dependent on the size of the feature one is attempting to plot, the constancy of reference points, the distances between them, and the consistency with which both they and the target feature are depicted on the period mapping.

Table 1: Nineteenth-century property owner(s) and historical features(s) within or adjacent to the Study Area

		1833		*1871*	
Con #	**Lot #**	**Property Owner(s)**	**Historical Feature(s)**	**Property Owner(s)**	**Historical Feature(s)**
10	42	Conrad Sills	None	M&L Currie W&G Foreman	None
	43	Aaron Caldwell	None	G & Ziegle	None
	44	Catharine Lott Arvin Stoddart	None	Collingwood Town Lots	None
	45	Crown land	None	Collingwood Town Lots	None
11	42	Michael Lymburner	None	J&? McArthus D. McGillivary	None
	43	William Clendenin	None	D. Currie J. Currie	None
	44	Hiram Young Jaaih Griffin	None	T. Kells J Elliott W. Johnston	None
	45	David D. Jones Joseph Jeron	None	D. Watson W. Miller	None

According to the maps, most of the lots within the Study Area has been granted to landowners shortly after the initial township survey. The 1871 map does not illustrate any features, however the Town of Collingwood had expanded into Concession 10 and 11. The maps also indicates that Tenth Line, Mountain Road, and Sixth Street were historically surveyed. The 1879 and 1881 maps do not illustrate

land tenure. The 1879 map indicates the former alignment of Mountain Road, which was called Water Street, intersected with High Street at the railway on what is now Old Mountain Road, as well as a small residential neighbourhood east of Cambridge Street. The 1881 map indicates that a small settlement existed on the southwest corner of Mountain Road and Tenth Line.

1.2.4 Twentieth-Century Mapping Review

The 1941 National Topographic System Collingwood Sheet (Department of National Defence 1941) and the 1954 aerial photo of Collingwood (University of Toronto 1954) were examined to determine the extent and nature of development and land uses within the Study Area (Figures 6-7). The 1941 map illustrates Mountain Road in its former alignment and that the neighbourhood east of Cambridge Street no longer existed. Two structures are shown within the Study Area, as well as two bridges on Tenth Line. The 1954 photograph illustrates that the Study Area was within a rural agricultural landscape west of the Town of Collingwood. Both figures illustrate that Mountain Road and Tenth Line crossed over Black Ash Creek in three places within or adjacent to the Study Area.

A review of available Google satellite imagery shows that the Study Area has remained relatively unchanged since 2007. The Georgian Meadows subdivision can be seen under construction on the northeast corner of Tenth Line and Sixth Street.

1.3 Archaeological Context

This section provides background research pertaining to previous archaeological fieldwork conducted within and in the vicinity of the Study Area, its environmental characteristics (including drainage, soils or surficial geology and topography, etc.), and current land use and field conditions. Three sources of information were consulted to provide information about previous archaeological research: the site record forms for registered sites available online from the MTCS through “Ontario’s Past Portal”; published and unpublished documentary sources; and the files of ASI.

1.3.1 Current Land Use and Field Conditions

A Stage 1 property inspection was conducted on October 30, 2017 and it was noted that the Study Area is located within the western outskirts of the Town of Collingwood. It crosses the Black Ash Creek which has been engineered from south of Sixth Street into Georgian Bay. The Mountain Road, Tenth Line, and Sixth Street right-of-ways (ROWs) within the Study Area are currently approximately 20 metres wide, consisting of paved two-lane roads, gravel shoulders, ditches, and buried utilities. A gravel trail runs along the south side of Mountain Road, the north side of Sixth Street, and along part of the east side of Tenth Line within the Study Area.

1.3.2 Geography

In addition to the known archaeological sites, the state of the natural environment is a helpful indicator of archaeological potential. Accordingly, a description of the physiography and soils are briefly discussed for the Study Area.

The S & G stipulates that primary water sources (lakes, rivers, streams, creeks, etc.), secondary water sources (intermittent streams and creeks, springs, marshes, swamps, etc.), ancient water sources (glacial lake shorelines indicated by the presence of raised sand or gravel beach ridges, relic river or stream channels indicated by clear dip or swale in the topography, shorelines of drained lakes or marshes, cobble beaches, etc.), as well as accessible or inaccessible shorelines (high bluffs, swamp or marsh fields by the edge of a lake, sandbars stretching into marsh, etc.) are characteristics that indicate archaeological potential.

Water has been identified as the major determinant of site selection and the presence of potable water is the single most important resource necessary for any extended human occupation or settlement. Since water sources have remained relatively stable in Ontario since 5,000 BP (Karrow and Warner 1990:Figure 2.16), proximity to water can be regarded as a useful index for the evaluation of archaeological site potential. Indeed, distance from water has been one of the most commonly used variables for predictive modeling of site location.

Other geographic characteristics that can indicate archaeological potential include: elevated topography (eskers, drumlins, large knolls, and plateaux), pockets of well-drained sandy soil, especially near areas of heavy soil or rocky ground, distinctive land formations that might have been special or spiritual places, such as waterfalls, rock outcrops, caverns, mounds, and promontories and their bases. There may be physical indicators of their use, such as burials, structures, offerings, rock paintings or carvings. Resource areas, including; food or medicinal plants (migratory routes, spawning areas) are also considered characteristics that indicate archaeological potential (S & G, Section 1.3.1).

The Study Area is within the Simcoe Lowlands physiographic region of Southern Ontario on sand and bevelled till plains. There is also a beach ridge associated with post-glacial Lake Nipissing that crosses northwest to the southeast over Mountain Road (Figure 8).

Figure 9 depicts surficial geology for the Study Area. The surficial geology mapping demonstrates that the Study Area is underlain by till, coarse-textured-glaciolacustrine deposits, and intersects with a shore bluff or scarp (Ontario Geological Survey 2010). Soils in the Study Area consist of: Tioga and Percy fine sandy loams, both well-drained grey-brown podzolics; Kemble clay loam, shallow phase, a well-drained brown forest soil; Wiarton loam, a grey-brown podzolic with imperfect drainage; and Parkhill loam, a poorly-drained dark grey gleisolic (Figure 10).

The Study Area contains Black Ash Creek, within the Blue Mountain Subwatershed, which originates on the Niagara Escarpment near Castle Glen and drain into Georgian Bay in the Town of Collingwood. Black Ash Creek originates south of Lake of the Clouds with additional tributaries arising on the Simcoe Lowlands, and the Escarpment branch flows northeastward through rural/agricultural lands into the Town of Collingwood along a recently-constructed flood control channel which extends downstream to Collingwood Harbour (Nottawasaga Valley Conservation Authority 2013).

1.3.3 Previous Archaeological Research

In Ontario, information concerning archaeological sites is stored in the Ontario Archaeological Sites Database (OASD) maintained by the MTCS. This database contains archaeological sites registered within the Borden system. Under the Borden system, Canada has been divided into grid blocks based on latitude and longitude. A Borden block is approximately 13 km east to west, and approximately 18.5 km north to

south. Each Borden block is referenced by a four-letter designator, and sites within a block are numbered sequentially as they are found. The Study Area under review is located in Borden block *BcHb* and *BdHb*.

According to the OASD, one previously registered archaeological site is located within one kilometre of the Study Area (Ministry of Tourism, Culture and Sport 2017). A summary of the sites is provided below.

Table 2: List of previously registered sites within one kilometre of the Study Area

Borden #	Site Name	Cultural Affiliation	Site Type	Researcher
BcHb-51	Cunningham	Euro-Canadian	Homestead	ASI 2003

According to the background research, three previous reports detail fieldwork within 50 m of the Study Area.

Archaeological Assessments Ltd. (2001) conducted a Stage 1-2 archaeological assessment for the Georgian Meadows subdivision on part of the west half of Lot 43, Concession 10, including part of the current Study Area. The property was 38.48 ha on the northeast corner of Tenth Line and Sixth Street. The property at the time consisted of agricultural fields and was subject to Stage 2 pedestrian survey at five metre intervals. No archaeological resources were identified and the area was considered clear of further archaeological concern.

AAL (2012) conducted a Stage 1-2 archaeological assessment of the Hen & Chickens Brewing Co. Ltd. lands on part of the north half of Lot 44, Concession 10, including part of the current Study Area. The property consisted of 15 acres of forested lands on the south side of Mountain Road, between Tenth Line and Black Ash Creek. The property was subject to test pit survey at five metre intervals, identifying the lands adjacent to the road as disturbed. No archaeological resources were identified and the area was considered clear of further archaeological concern.

Earthworks (2016) conducted a Stage 1-2 archaeological assessment for a proposed industrial development at 185 Mountain Road on part of Lot 45, Concession 10, northeast of Mountain Road and Tenth Line. The property consisted of approximately 8.2 hectare property, including parts of the current Study Area. The property was subject to test pit survey at five metre intervals. No archaeological resources were identified and the area was considered clear of further archaeological concern.

2.0 FIELD METHODS: PROPERTY INSPECTION

A Stage 1 property inspection must adhere to the S & G, Section 1.2, Standards 1-6, which are discussed below. The entire property and its periphery must be inspected. The inspection may be either systematic or random. Coverage must be sufficient to identify the presence or absence of any features of archaeological potential. The inspection must be conducted when weather conditions permit good visibility of land features. Natural landforms and watercourses are to be confirmed if previously identified. Additional features such as elevated topography, relic water channels, glacial shorelines, well-drained soils within heavy soils and slightly elevated areas within low and wet areas should be identified and documented, if present. Features affecting assessment strategies should be identified and documented such as woodlots, bogs or other permanently wet areas, areas of steeper grade than indicated on topographic mapping, areas of overgrown vegetation, areas of heavy soil, and recent land disturbance such as grading, fill deposits and vegetation clearing. The inspection should also identify and document structures and built features that will affect assessment strategies, such as heritage structures or landscapes, cairns, monuments or plaques, and cemeteries.

The Stage 1 archaeological assessment property inspection was conducted under the field direction of Peter Carruthers (P163) of ASI, on October 30, 2017, in order to gain first-hand knowledge of the geography, topography, and current conditions and to evaluate and map archaeological potential of the Study Area. It was a visual inspection only and did not include excavation or collection of archaeological resources.

Fieldwork was only conducted when weather conditions were deemed suitable, per S & G Section 2. Previously identified features of archaeological potential were examined; additional features of archaeological potential not visible on mapping were identified and documented as well as any features that will affect assessment strategies. Field observations are compiled onto the existing conditions of the Study Area in Section 7.0 (Figures 11-15) and associated photographic plates are presented in Section 8.0 (Plates 1-26).

3.0 ANALYSIS AND CONCLUSIONS

The historical and archaeological contexts have been analyzed to help determine the archaeological potential of the Study Area. These data are presented below in Section 3.1. Results of the analysis of the Study Area property inspection are presented in Section 3.2.

3.1 Analysis of Archaeological Potential

The S & G, Section 1.3.1, lists criteria that are indicative of archaeological potential. The Study Area meets the following criteria indicative of archaeological potential:

- Previously identified archaeological sites (see Table 2);
- Water sources: primary, secondary, or past water source (Black Ash Creek);
- Early historic transportation routes (Tenth Line, Mountain Road);
- Proximity to early settlements (Town of Collingwood); and
- Well-drained soils (Tioga and Percy fine sandy loams, Kemble clay loam)

According to the S & G, Section 1.4 Standard 1e, no areas within a property containing locations listed or designated by a municipality can be recommended for exemption from further assessment unless the area can be documented as disturbed. The Municipal Heritage Register was consulted and no properties within the Study Area are Listed or Designated under the Ontario Heritage Act.

These criteria are indicative of potential for the identification of Indigenous and Euro-Canadian archaeological resources, depending on soil conditions and the degree to which soils have been subject to deep disturbance.

3.2 Analysis of Property Inspection Results

The property inspection determined that parts of the Study Area exhibit archaeological potential (Figure 8: areas highlighted in green and orange). If impacted, these areas will require Stage 2 archaeological assessment prior to any development. According the S & G Section 2.1.1, pedestrian survey is required in actively or recently cultivated fields (eg. Plates 14, 18, 21). According to the S & G Section 2.1.2, test pit survey is required on terrain where ploughing is not viable, such as wooded areas, properties where

existing landscaping or infrastructure would be damaged, overgrown farmland with heavy brush or rocky pasture, and narrow linear corridors up to 10 metres wide (eg. Plates 4, 6-8, 13, 16, 21, 25, 26).

Parts of the Study have been subject to previous Stage 2 survey (AAL 2001, 2012; Earthworks 2016) and do not require further archaeological assessment (Figures 12-15: areas highlighted in red).

The remainder of the Study Area has been subjected to deep soil disturbance events associated with the construction of the ROWs, including the shoulders, ditches, and buried utilities, as well as adjacent commercial and residential development. According to the S & G Section 1.3.2 these areas do not retain archaeological potential (Plates 1-26; Figures 11-15: areas highlighted in yellow) and do not require further survey.

3.3 Conclusions

The Stage 1 background study determined that one previously registered archaeological site is located within one kilometre of the Study Area. The property inspection determined that parts of the Study Area beyond the existing disturbed ROWs exhibit archaeological potential and will require Stage 2 assessment.

4.0 RECOMMENDATIONS

In light of these results, the following recommendations are made:

1. The Study Area exhibits archaeological potential. These lands require Stage 2 archaeological assessment by test pit/pedestrian survey at five metre intervals, where appropriate, prior to any proposed impacts to the property;

2. Parts of the Study Area have been previously assessed and do not require further archaeological assessment;

3. The remainder of the Study Area does not retain archaeological potential on account of deep and extensive land disturbance. These lands do not require further archaeological assessment; and,

4. Should the proposed work extend beyond the current Study Area, further Stage 1 archaeological assessment should be conducted to determine the archaeological potential of the surrounding lands.

NOTWITHSTANDING the results and recommendations presented in this study, ASI notes that no archaeological assessment, no matter how thorough or carefully completed, can necessarily predict, account for, or identify every form of isolated or deeply buried archaeological deposit. In the event that archaeological remains are found during subsequent construction activities, the consultant archaeologist, approval authority, and the Cultural Programs Unit of the MTCS should be immediately notified.

5.0 ADVICE ON COMPLIANCE WITH LEGISLATION

ASI also advises compliance with the following legislation:

- This report is submitted to the Minister of Tourism, Culture and Sport as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, RSO 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological field work and report recommendations ensure the conservation, preservation and protection of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Tourism, Culture and Sport, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.

- It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological field work on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeology Reports referred to in Section 65.1 of the *Ontario Heritage Act.*

- Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with sec. 48 (1) of the *Ontario Heritage Act*.

- The *Cemeteries Act*, R.S.O. 1990 c. C.4 and the *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 (when proclaimed in force) require that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Consumer Services.

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7.0 MAPS

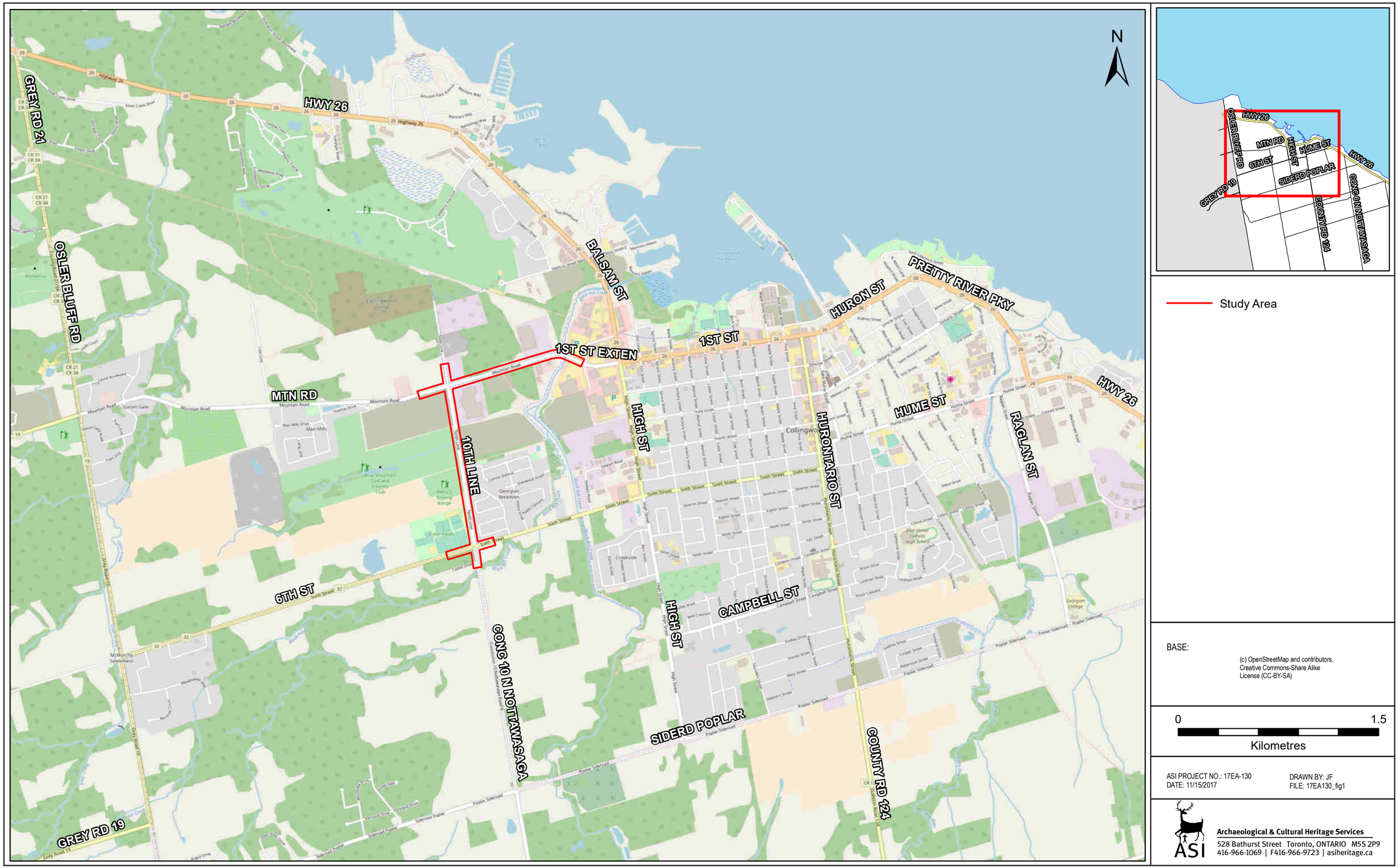

Figure 1: Tenth Line and Mountain Road Improvements - Location of the Study Area

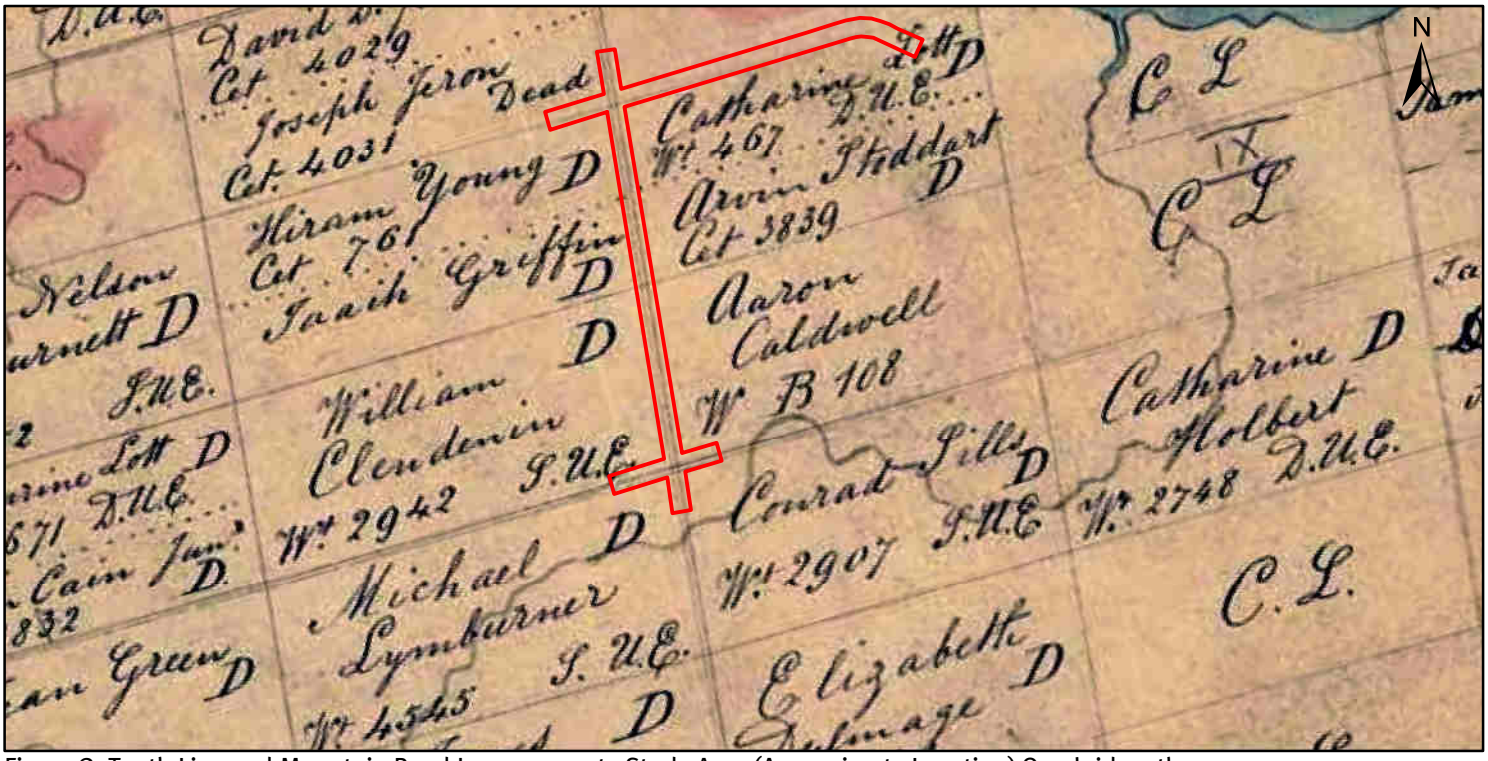

Figure 2: Tenth Line and Mountain Road Improvements Study Area (Approximate Location) Overlaid on the 1833 Plan of Nottawasaga Township

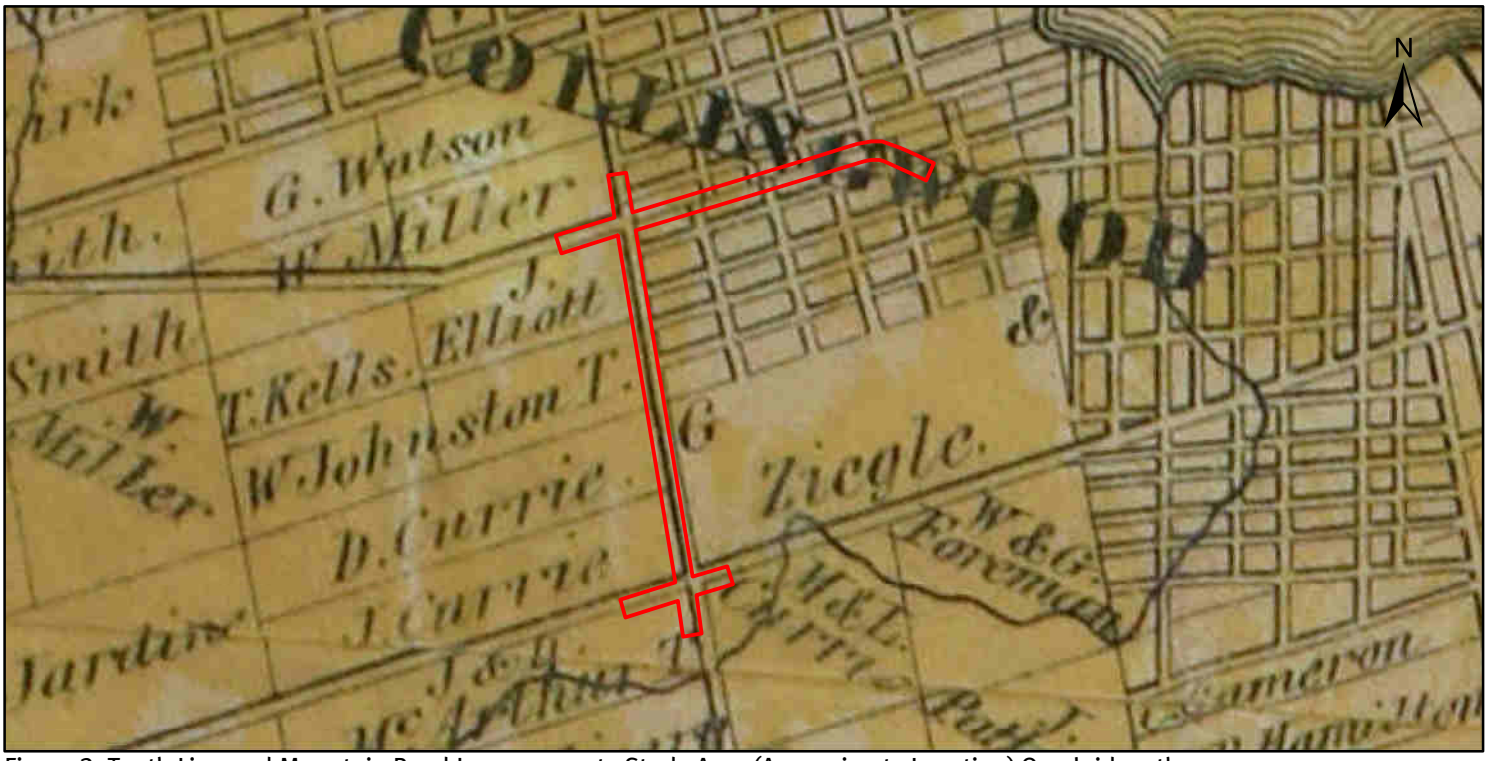

Figure 3: Tenth Line and Mountain Road Improvements Study Area (Approximate Location) Overlaid on the 1871 Hogg's Map of Simcoe County

ASI
Archaeological & Cultural Heritage Services
528 Bathurst Street Toronto, ONTARIO M5S 2P9
416-966-1069 | F416-966-9723 | asiheritage.ca

Study Area

Base:
1833 Plan of Nottawasaga Township
1871 Hogg's Map of Simcoe County

0 500
Metres

ASI PROJECT NO.: 17EA-130
DATE: 11/15/2017

DRAWN BY: JF
FILE: 17EA130_fig2_3_hist

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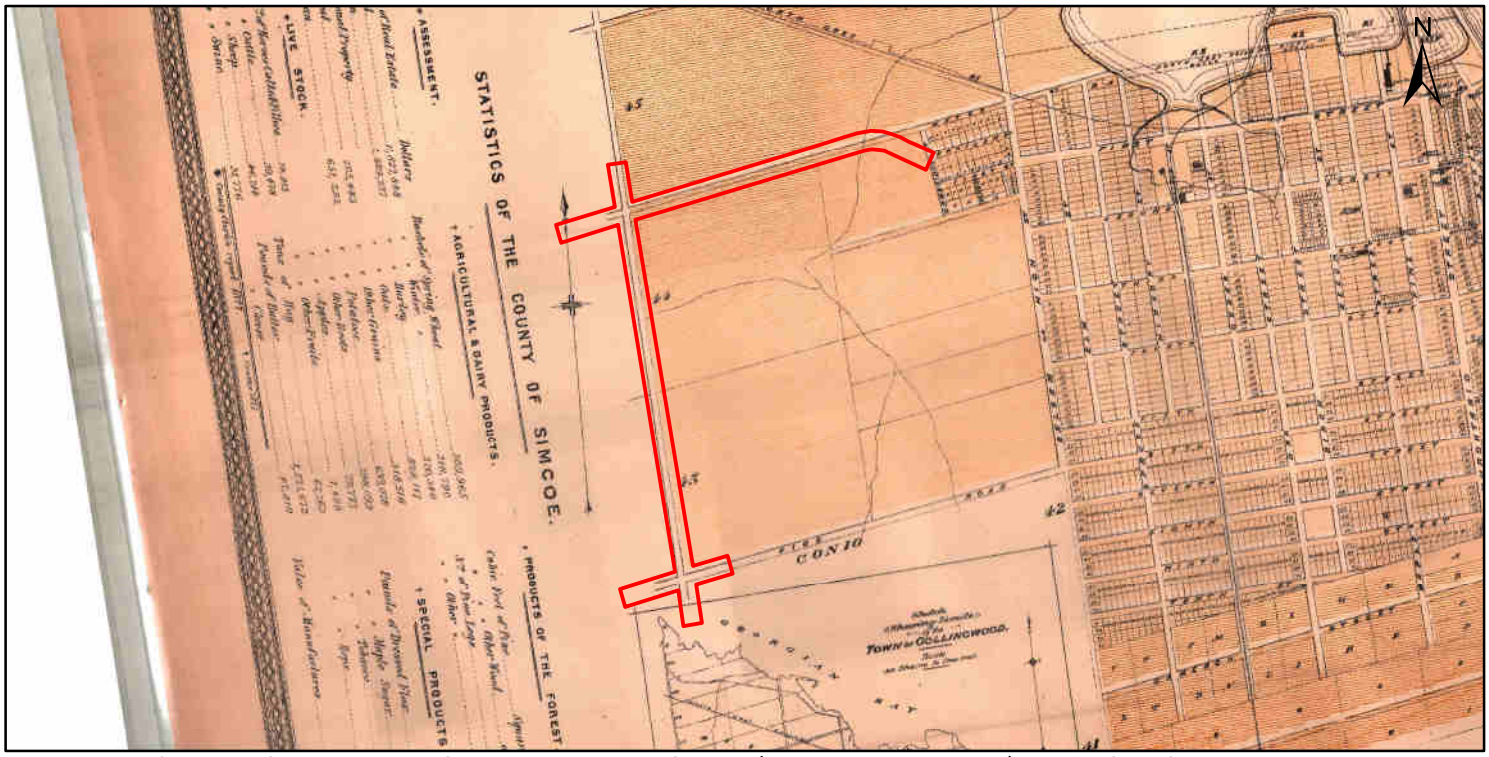

Figure 4: Tenth Line and Mountain Road Improvements Study Area (Approximate Location) Overlaid on the 1879 Plan of the Town of Collingwood

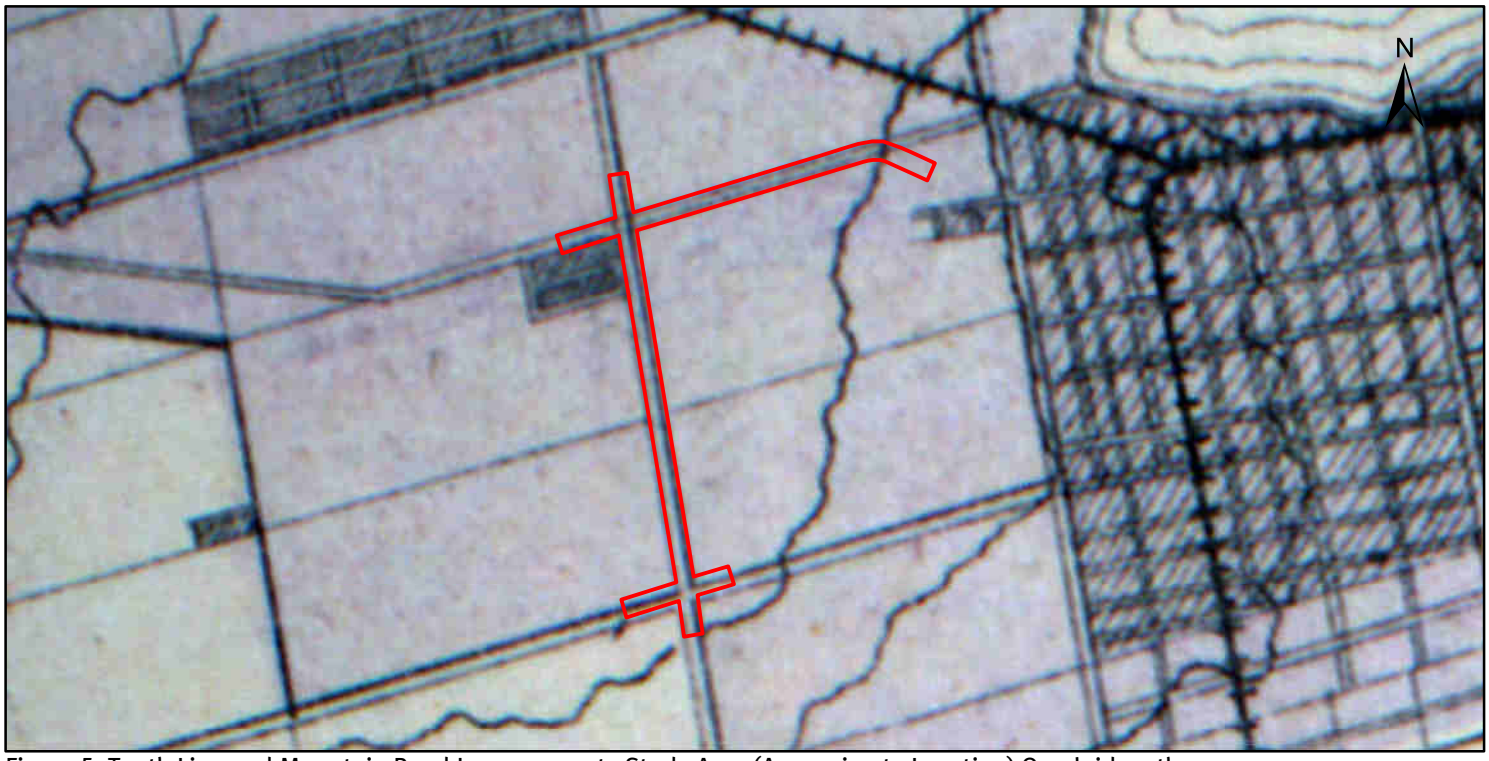

Figure 5: Tenth Line and Mountain Road Improvements Study Area (Approximate Location) Overlaid on the 1881 Hogg's Map of Simcoe County

Archaeological & Cultural Heritage Services
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416-966-1069 | F416-966-9723 | asiheritage.ca

Study Area

Base:
1879 Plan of the Town of Collingwood
1881 Hogg's Map of Simcoe County

0 500
Metres

ASI PROJECT NO.: 17EA-130
DATE: 11/15/2017

DRAWN BY: JF
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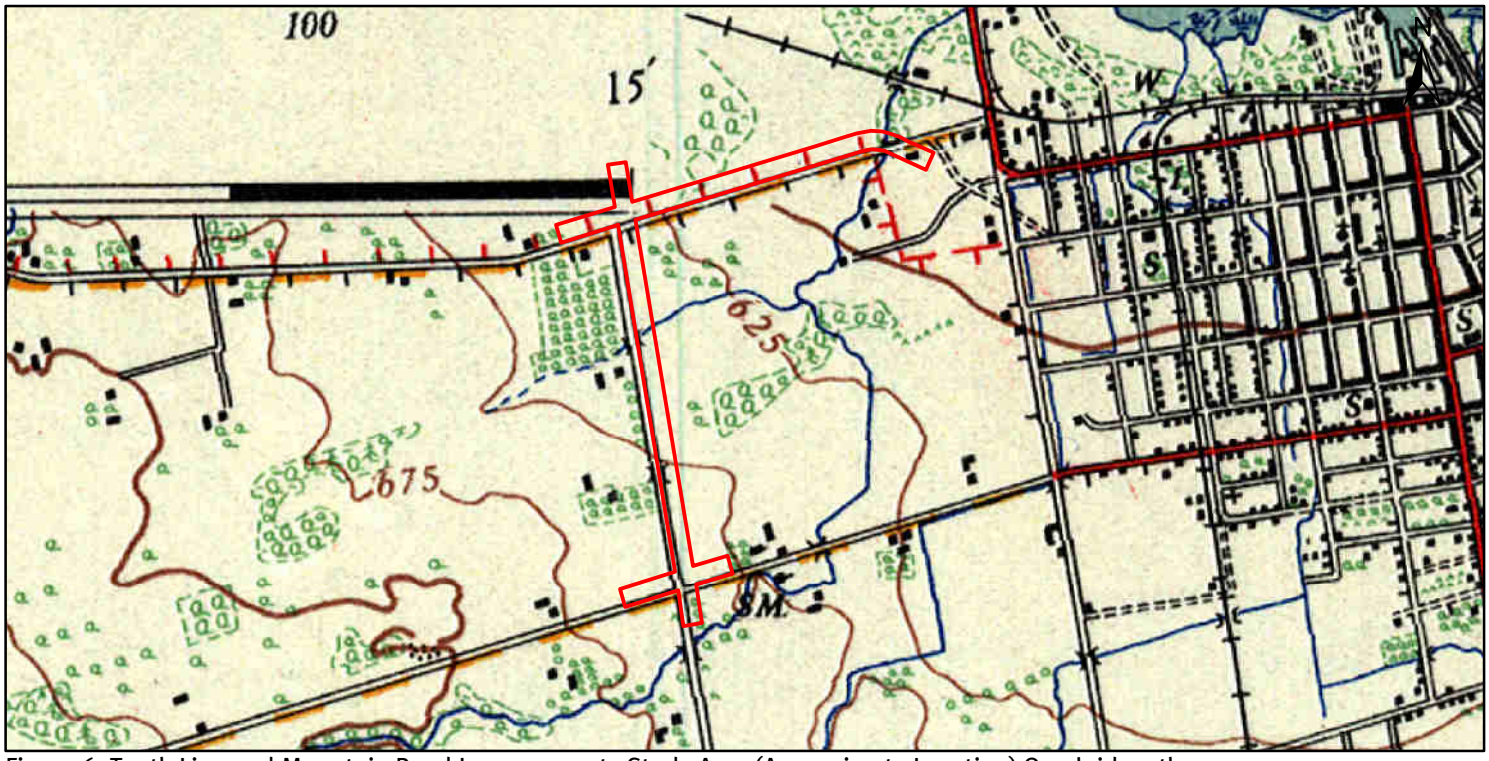

Figure 6: Tenth Line and Mountain Road Improvements Study Area (Approximate Location) Overlaid on the 1941 National Topographic System Collingwood Sheet

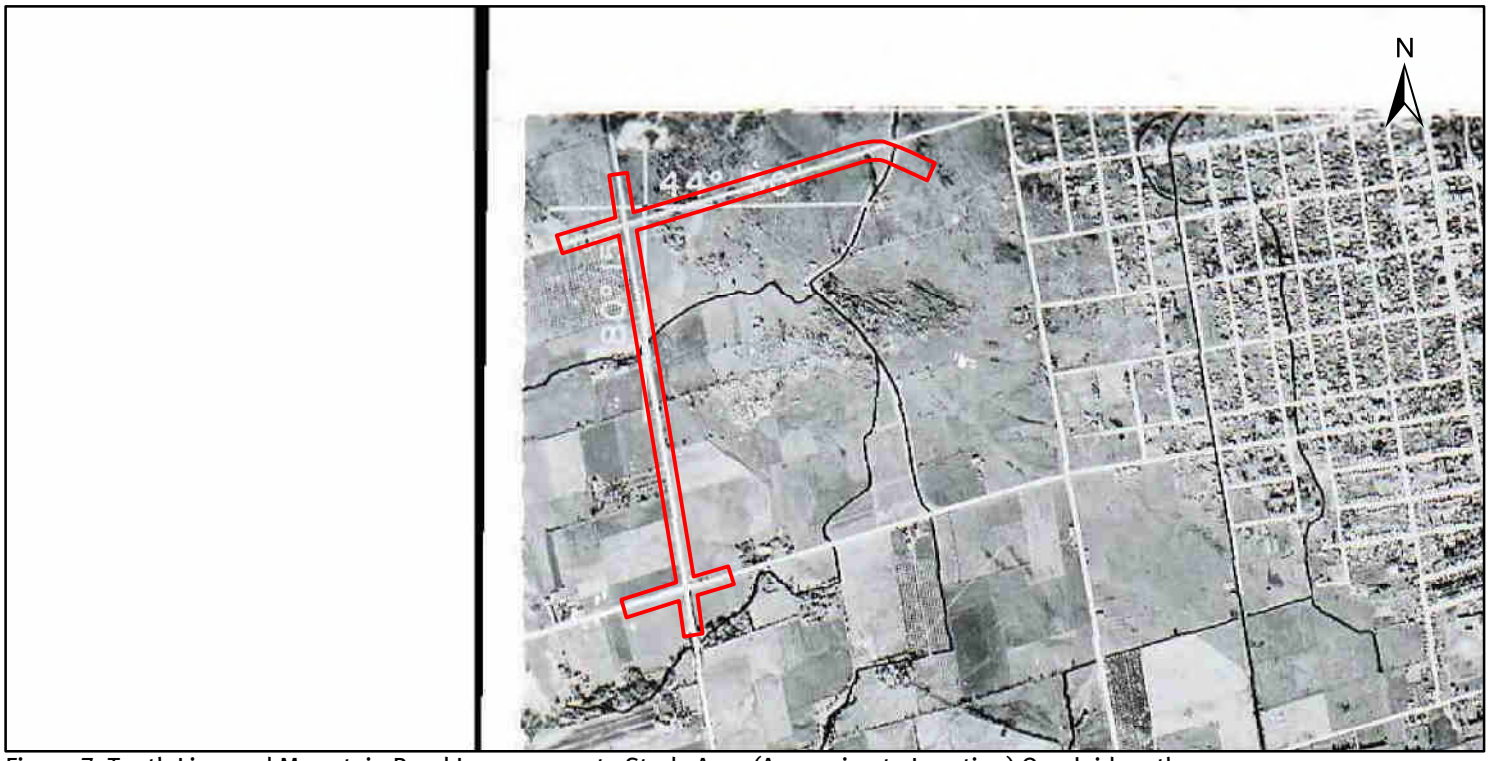

Figure 7: Tenth Line and Mountain Road Improvements Study Area (Approximate Location) Overlaid on the 1954 Aerial Photograph of Collingwood

ASI
Archaeological & Cultural Heritage Services
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Study Area

Base:
1941 National Topographic System Collingwood Sheet
1954 Aerial Photograph of Collingwood

0 500
Metres

ASI PROJECT NO.: 17EA-130
DATE: 11/15/2017

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FILE: 17EA130_fig6_7_hist

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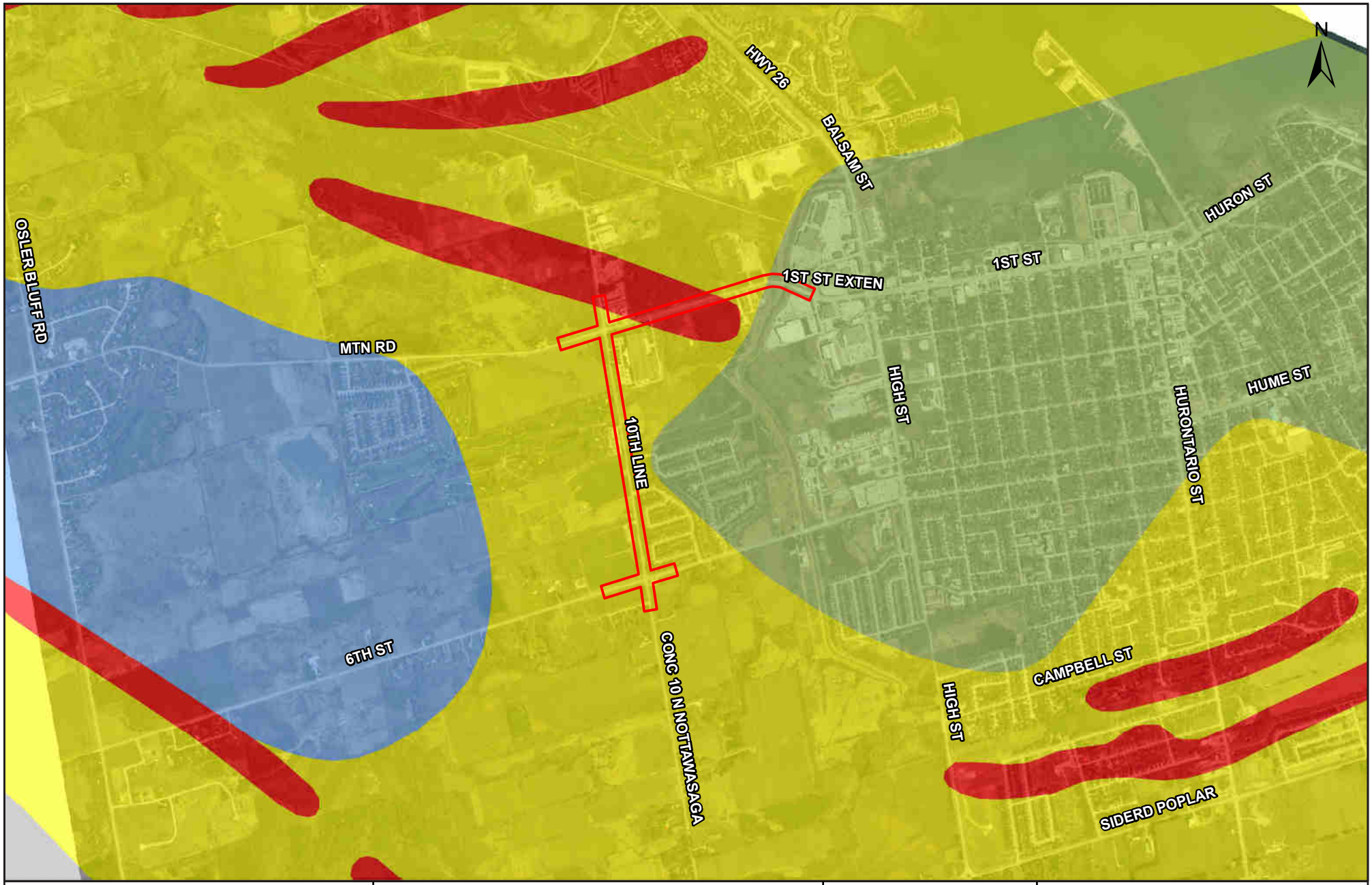

Archaeological & Cultural Heritage Services
528 Bathurst Street Toronto, ONTARIO M5S 2P9
416-966-1069 | F416-966-9723 | asiheritage.ca

Study Area	11: Sand Plains
14: Beaches	8: Bevelled Till Plains
12: Clay Plains	5: Till Plains (Undrumlinized)

BASE:

he Physiography of Southern Ontario, Third Edition by Chapman and Putnam, 1984.

0 1
Kilometres

ASI PROJECT NO.: 17EA-130
DATE: 11/15/2017
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Figure 8: Tenth Line and Mountain Road Improvements Study Area - Physiographic Landforms

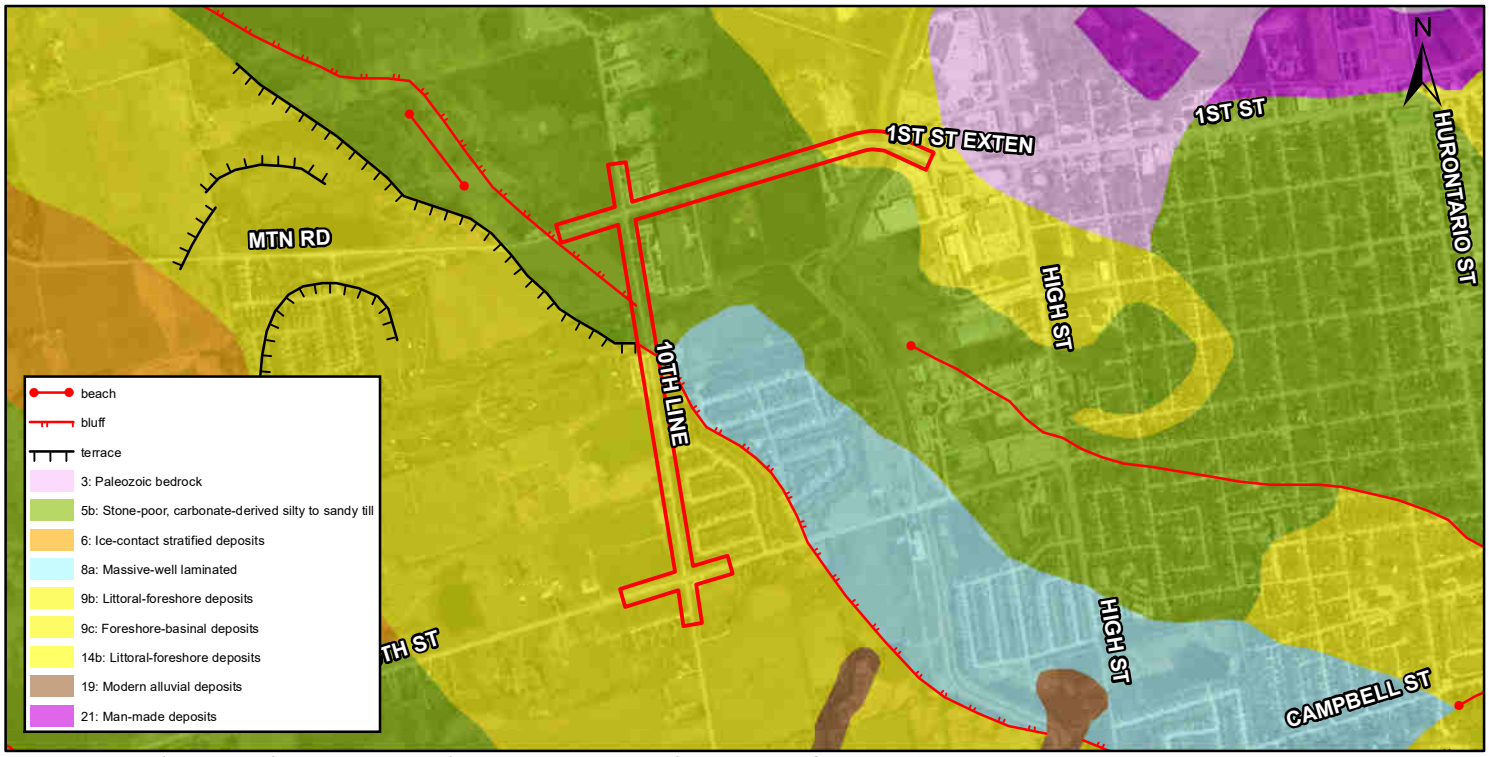

Figure 9: Tenth Line and Mountain Road Improvements Study Area - Surficial Geology

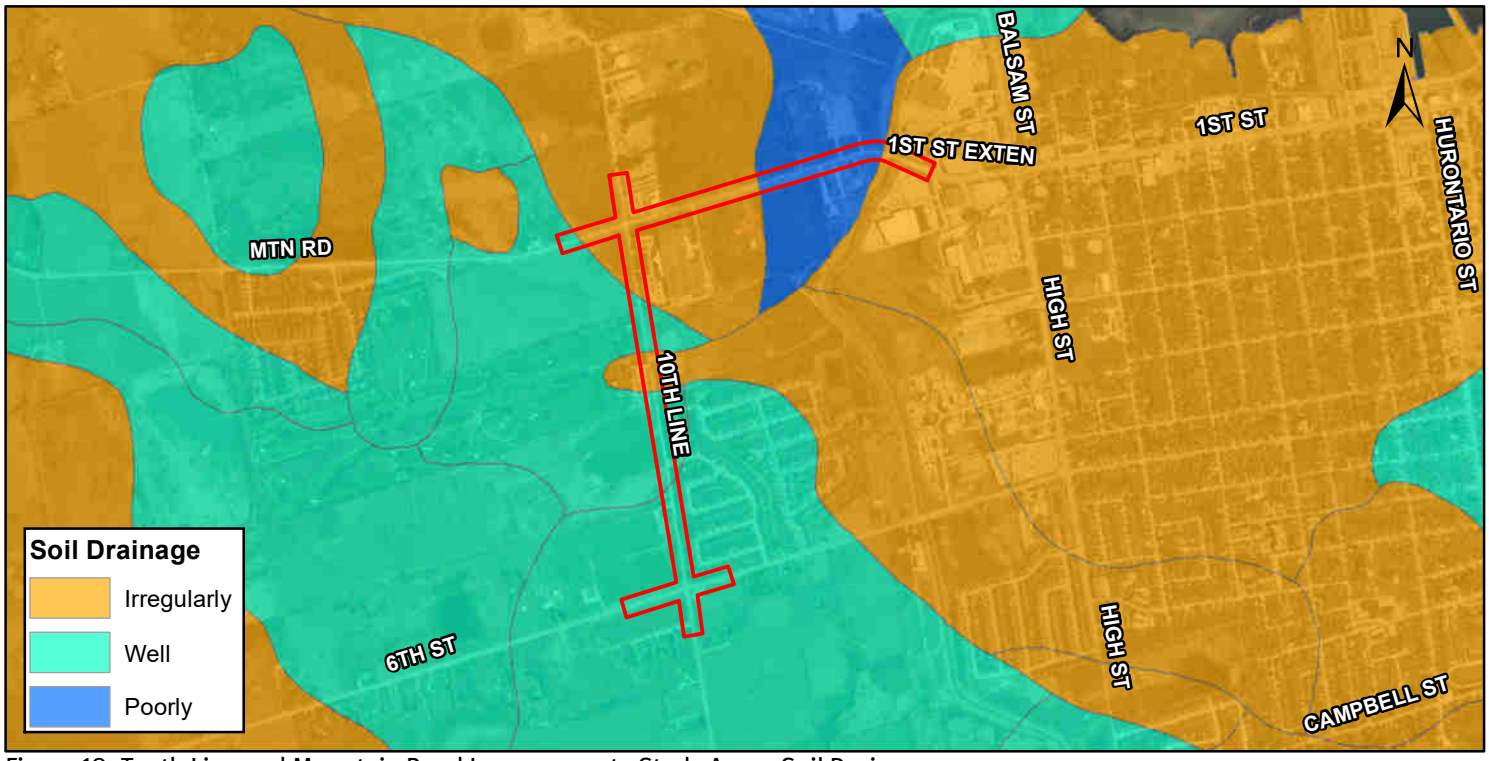

Figure 10: Tenth Line and Mountain Road Improvements Study Area - Soil Drainage

ASI
Archaeological & Cultural Heritage Services
528 Bathurst Street Toronto, ONTARIO M5S 2P9
416-966-1069 | F416-966-9723 | asiheritage.ca

Study Area

Base:
The Physiography of Southern Ontario, Third Edition by Chapman and Putnam, 1984.

0 500
Metres

ASI PROJECT NO.: 17EA-130
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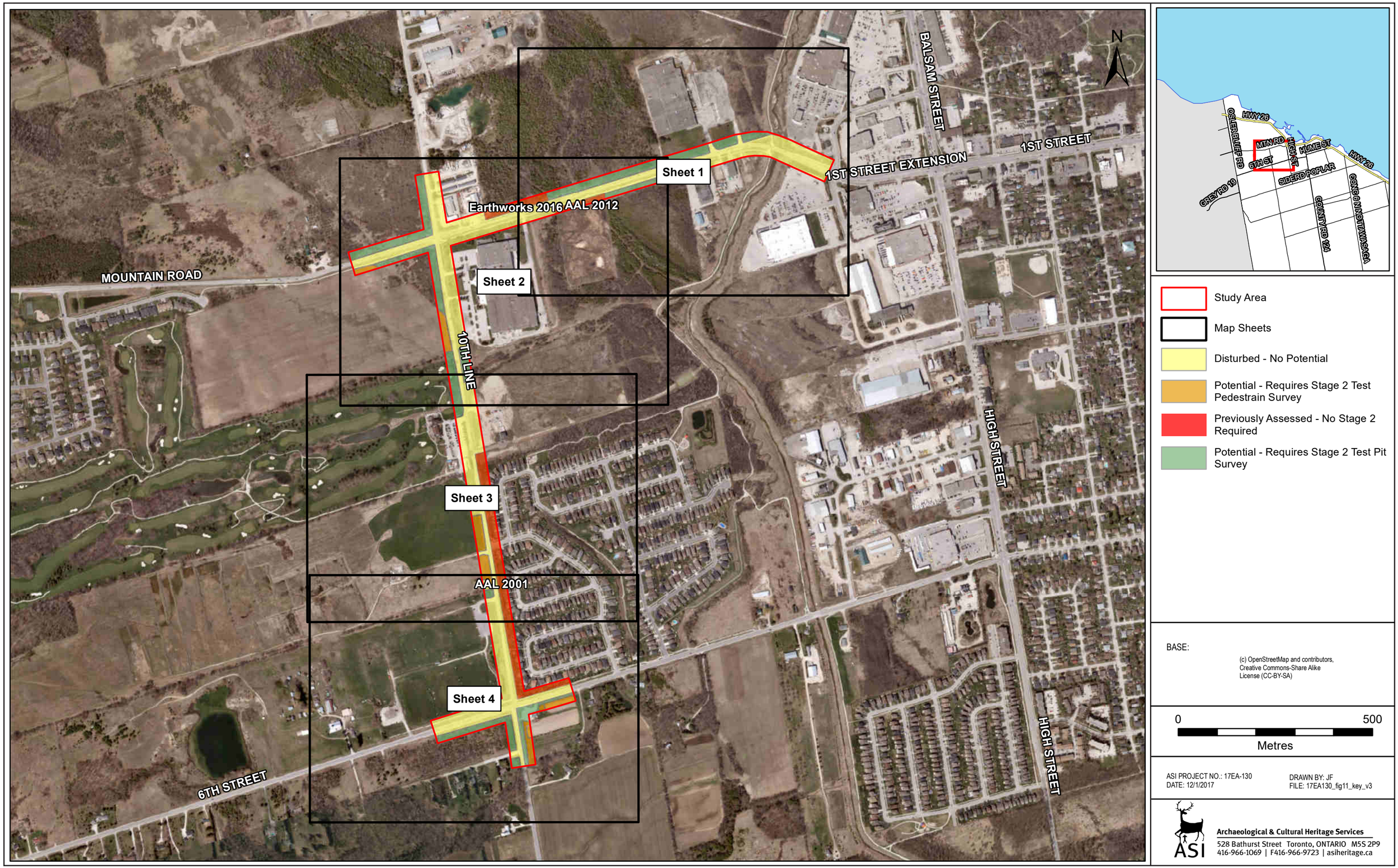
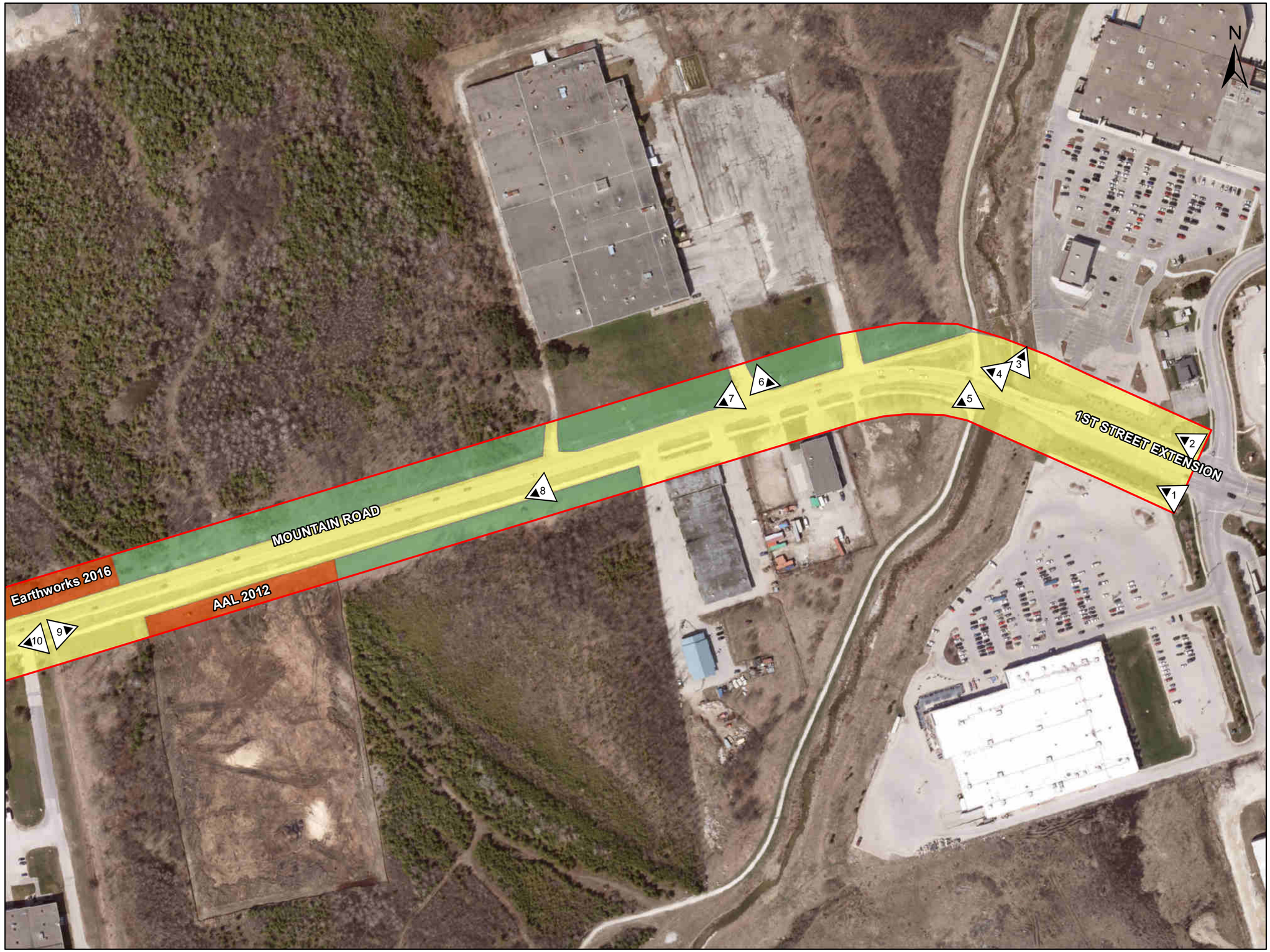
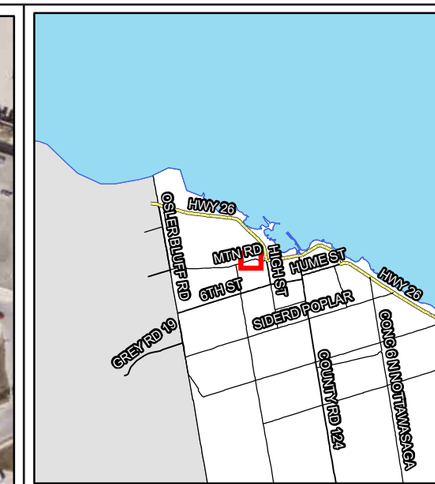


Figure 11: Tenth Line and Mountain Road Improvements - Key Map





Study Area

Photo

Disturbed - No Potential

Previously Assessed - No Stage 2 Required

Potential - Requires Stage 2 Test Pit Survey

BASE:

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Metres

ASI PROJECT NO.: 17EA-130
DATE: 12/1/2017

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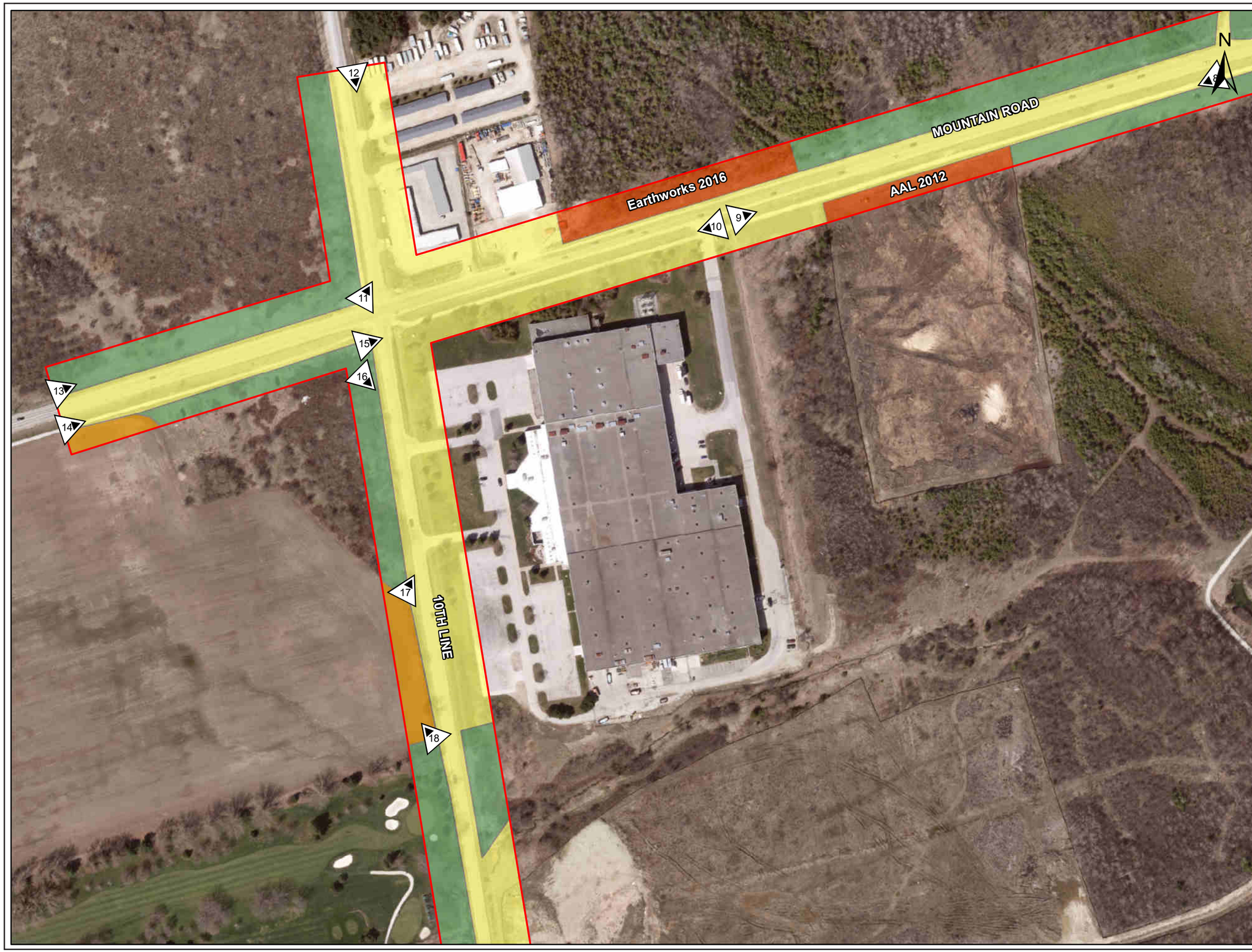
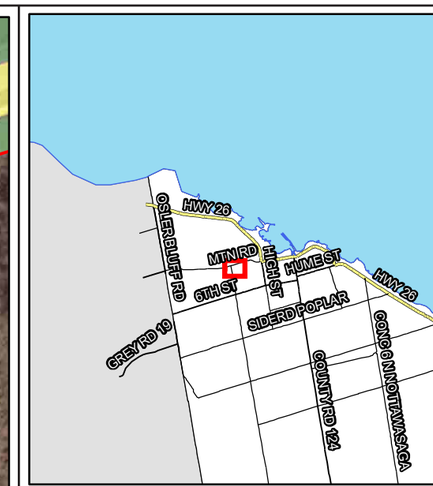
Archaeological & Cultural Heritage Services
528 Bathurst Street Toronto, ONTARIO M5S 2P9
416-966-1069 | F416-966-9723 | asiheritage.ca

Figure 12: Tenth Line and Mountain Road Improvements - Sheet 1





Study Area

Photo

Disturbed - No Potential

Potential - Requires Stage 2 Test Pedestrain Survey

Previously Assessed - No Stage 2 Required

Potential - Requires Stage 2 Test Pit Survey

BASE:

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Metres

ASI PROJECT NO.: 17EA-130
DATE: 12/1/2017

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Archaeological & Cultural Heritage Services
528 Bathurst Street Toronto, ONTARIO M5S 2P9
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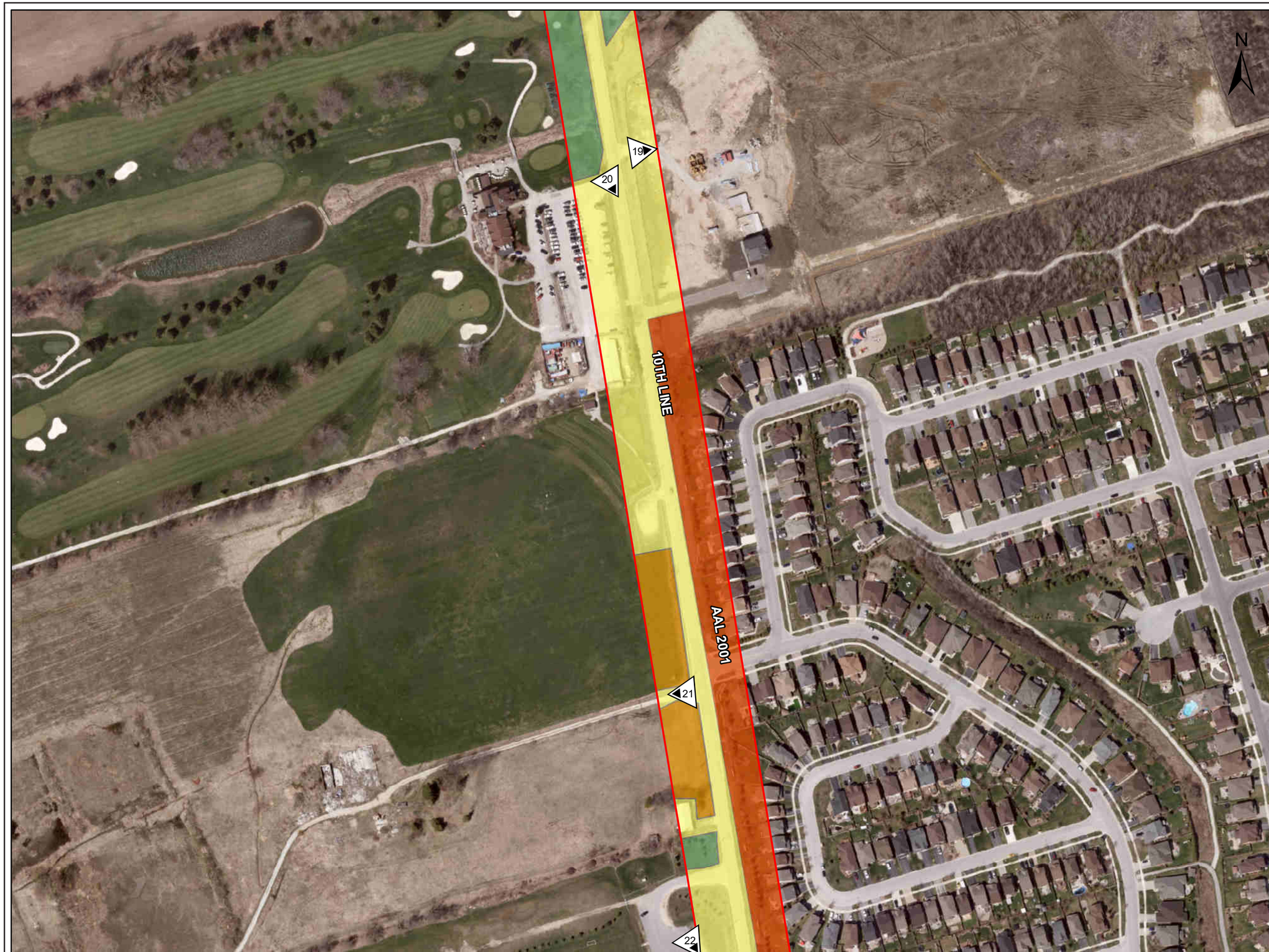
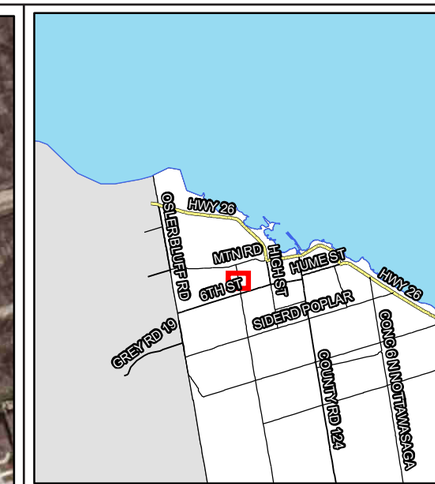
Figure 13: Tenth Line and Mountain Road Improvements - Sheet 2





Study Area

Photo

Disturbed - No Potential

Potential - Requires Stage 2 Test Pedestrain Survey

Previously Assessed - No Stage 2 Required

Potential - Requires Stage 2 Test Pit Survey

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0 150

Metres

ASI PROJECT NO.: 17EA-130
DATE: 12/1/2017

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Figure 14: Tenth Line and Mountain Road Improvements - Sheet 3

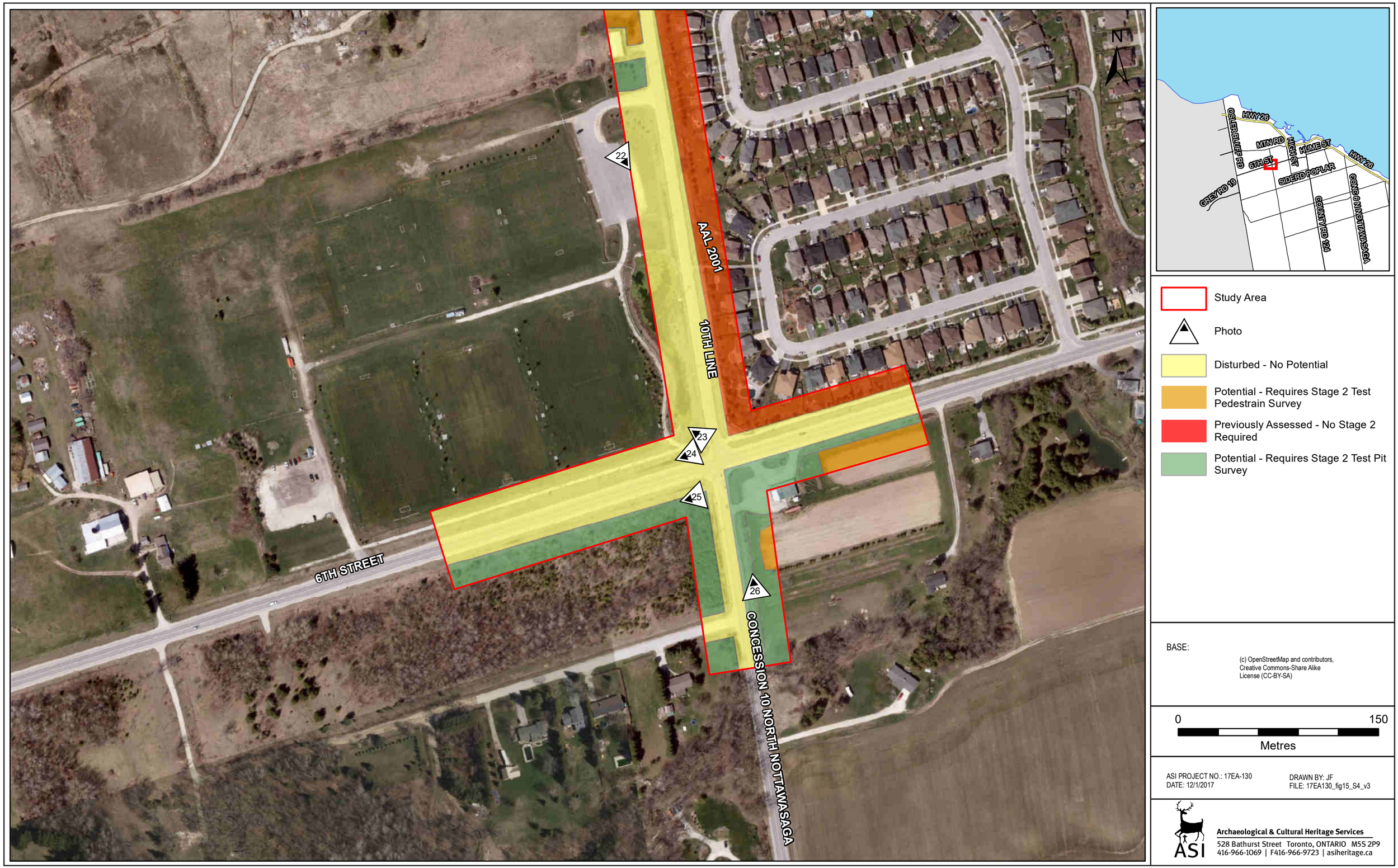

Figure 15: Tenth Line and Mountain Road Improvements - Sheet 4

8.0 IMAGES

Plate 1: Northwest view of Mountain Rd at Cambridge St; Area is disturbed, no potential.

Plate 2: Northwest view of Mountain Rd at Cambridge St; Area is disturbed, no potential.

Plate 3: North view of engineered Black Ash Creek; Area is disturbed, no potential.

Plate 4: Northwest view of Mountain Rd over Black Ash Creek; Area beyond disturbed ROW and trail exhibits potential, requires Stage 2 test pit survey.

Plate 5: Southwest view of Black Ash Creek Trail; Area is disturbed, no potential.

Plate 6: East view of Mountain Rd; Area north of disturbed ROW and ditch exhibits potential, requires Stage 2 test pit survey.

Plate 7: Southwest view of Mountain Rd; Area north of disturbed ROW and ditch exhibits potential, requires Stage 2 test pit survey.

Plate 8: Southwest view of Mountain Rd; Area south of disturbed ROW exhibits potential, requires Stage 2 test pit survey.

Plate 9: Northeast view of Mountain Rd; Area is disturbed, no potential.

Plate 10: Southwest view of Mountain Rd; Area is disturbed, no potential.

Plate 11: Northeast view of Tenth Line at Mountain Rd; Area is disturbed, no potential.

Plate 12: South view of Tenth Line; Area is disturbed, no potential.

Plate 13: Northeast view of Mountain Rd; Area north of the disturbed ROW and ditch exhibits potential, requires Stage 2 test pit survey.

Plate 14: Northeast view of Mountain Rd; Area south of the disturbed ROW and ditch exhibits potential, requires Stage 2 pedestrian survey.

Plate 15: Northeast view of Mountain Rd at Tenth Line; Area is disturbed, no potential.

Plate 16: Southeast view of Tenth Line; Area west of the disturbed ROW and ditch exhibits potential, requires Stage 2 test pit survey.

Plate 17: Northeast view of Tenth Line; Area is disturbed, no potential.

Plate 18: Northwest view of Tenth Line; Area west of the disturbed ROW and ditch exhibits potential, requires Stage 2 pedestrian survey.

Plate 19: East view of Tenth Line; Area is disturbed, no potential.

Plate 20: South view of Tenth Line; Area is disturbed, no potential.

Plate 21: West view of Tenth Line; Area beyond disturbed ROW exhibits potential, requires Stage 2 pedestrian survey.

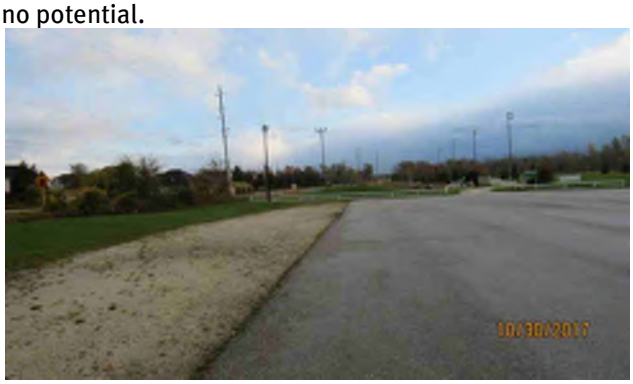

Plate 22: South view of Fisher Field; Area is disturbed, no potential.

Plate 23: Northwest view of Fisher Field SWM pond; Area is disturbed, no potential.

Plate 24: West view of Fisher Field; Area is disturbed, no potential.

Plate 25: West view of Sixth St at Tenth Line; Area south of disturbed ROW and ditch exhibits potential, requires Stage 2 test pit survey.

Plate 26: North view of Tenth Line towards Sixth Street; Area beyond disturbed ROW and ditch exhibits potential, requires Stage 2 test pit and pedestrian survey.

Appendix D

Ministry of Tourism, Culture and Sport Cultural Heritage Checklist

Ontario

Ministry of Tourism,
Culture and Sport

Programs & Services Branch
401 Bay Street, Suite 1700
Toronto ON M7A 0A7

Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes

A Checklist for the Non-Specialist

The **purpose of the checklist** is to determine:

- if a property(ies) or project area:
  - is a recognized heritage property
  - may be of cultural heritage value
- it includes all areas that may be impacted by project activities, including – but not limited to:
  - the main project area
  - temporary storage
  - staging and working areas
  - temporary roads and detours

Processes covered under this checklist, such as:

- *Planning Act*
- *Environmental Assessment Act*
- *Aggregates Resources Act*
- *Ontario Heritage Act* – Standards and Guidelines for Conservation of Provincial Heritage Properties

Cultural Heritage Evaluation Report (CHER)

If you are not sure how to answer one or more of the questions on the checklist, you may want to hire a qualified person(s) (see page 5 for definitions) to undertake a cultural heritage evaluation report (CHER).

The CHER will help you:

- identify, evaluate and protect cultural heritage resources on your property or project area
- reduce potential delays and risks to a project

Other checklists

Please use a separate checklist for your project, if:

- you are seeking a Renewable Energy Approval under Ontario Regulation 359/09 – separate checklist
- your Parent Class EA document has an approved screening criteria (as referenced in Question 1)

Please refer to the Instructions pages for more detailed information and when completing this form.

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Project or Property Name
Tenth Line and Mountain Road Improvements, Schedule 'C' Municipal Class EA

Project or Property Location (upper and lower or single tier municipality)
Town of Collingwood

Proponent Name
Trevor Harvey, Project Coordinator

Proponent Contact Information
545 Tenth Line North, P.O. Box 157, Collingwood, ON L9Y 3Z5

Screening Questions

	Yes	No
1. Is there a pre-approved screening checklist, methodology or process in place?	☐	☑

If Yes, please follow the pre-approved screening checklist, methodology or process.

If No, continue to Question 2.

Part A: Screening for known (or recognized) Cultural Heritage Value

	Yes	No
2. Has the property (or project area) been evaluated before and found **not** to be of cultural heritage value?	☐	☑

If Yes, do **not** complete the rest of the checklist.

The proponent, property owner and/or approval authority will:

- summarize the previous evaluation and
- add this checklist to the project file, with the appropriate documents that demonstrate a cultural heritage evaluation was undertaken

The summary and appropriate documentation may be:

- submitted as part of a report requirement
- maintained by the property owner, proponent or approval authority

If No, continue to Question 3.

	Yes	No
3. Is the property (or project area):		
a. identified, designated or otherwise protected under the *Ontario Heritage Act* as being of cultural heritage value?	☐	☑
b. a National Historic Site (or part of)?	☐	☑
c. designated under the *Heritage Railway Stations Protection Act*?	☐	☑
d. designated under the *Heritage Lighthouse Protection Act*?	☐	☑
e. identified as a Federal Heritage Building by the Federal Heritage Buildings Review Office (FHBRO)?	☐	☑
f. located within a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site?	☐	☑

If Yes to any of the above questions, you need to hire a qualified person(s) to undertake:

- a Cultural Heritage Evaluation Report, if a Statement of Cultural Heritage Value has not previously been prepared or the statement needs to be updated

If a Statement of Cultural Heritage Value has been prepared previously and if alterations or development are proposed, you need to hire a qualified person(s) to undertake:

- a Heritage Impact Assessment (HIA) – the report will assess and avoid, eliminate or mitigate impacts

If No, continue to Question 4.

Part B: Screening for Potential Cultural Heritage Value

	Yes	No
4. Does the property (or project area) contain a parcel of land that:		
a. is the subject of a municipal, provincial or federal commemorative or interpretive plaque?	☐	☑
b. has or is adjacent to a known burial site and/or cemetery?	☐	☑
c. is in a Canadian Heritage River watershed?	☐	☑
d. contains buildings or structures that are 40 or more years old?	☐	☑

Part C: Other Considerations

	Yes	No
5. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area):		
a. is considered a landmark in the local community or contains any structures or sites that are important in defining the character of the area?	☐	☑
b. has a special association with a community, person or historical event?	☐	☑
c. contains or is part of a cultural heritage landscape?	☐	☑

If Yes to one or more of the above questions (Part B and C), there is potential for cultural heritage resources on the property or within the project area.

You need to hire a qualified person(s) to undertake:

- a Cultural Heritage Evaluation Report (CHER)

If the property is determined to be of cultural heritage value and alterations or development is proposed, you need to hire a qualified person(s) to undertake:

- a Heritage Impact Assessment (HIA) – the report will assess and avoid, eliminate or mitigate impacts

If No to all of the above questions, there is low potential for built heritage or cultural heritage landscape on the property.

The proponent, property owner and/or approval authority will:

- summarize the conclusion
- add this checklist with the appropriate documentation to the project file

The summary and appropriate documentation may be:

- submitted as part of a report requirement e.g. under the *Environmental Assessment Act, Planning Act* processes
- maintained by the property owner, proponent or approval authority

Instructions

Please have the following available, when requesting information related to the screening questions below:

- a clear map showing the location and boundary of the property or project area
  - large scale and small scale showing nearby township names for context purposes
- the municipal addresses of all properties within the project area
- the lot(s), concession(s), and parcel number(s) of all properties within a project area

For more information, see the Ministry of Tourism, Culture and Sport's Ontario Heritage Toolkit or Standards and Guidelines for Conservation of Provincial Heritage Properties.

In this context, the following definitions apply:

- **qualified person(s)** means individuals – professional engineers, architects, archaeologists, etc. – having relevant, recent experience in the conservation of cultural heritage resources.
- **proponent** means a person, agency, group or organization that carries out or proposes to carry out an undertaking or is the owner or person having charge, management or control of an undertaking.

1. Is there a pre-approved screening checklist, methodology or process in place?

An existing checklist, methodology or process may already be in place for identifying potential cultural heritage resources, including:

- one endorsed by a municipality
- an environmental assessment process e.g. screening checklist for municipal bridges
- one that is approved by the Ministry of Tourism, Culture and Sport (MTCS) under the Ontario government's Standards & Guidelines for Conservation of Provincial Heritage Properties [s.B.2.]

Part A: Screening for known (or recognized) Cultural Heritage Value

2. Has the property (or project area) been evaluated before and found not to be of cultural heritage value?

Respond 'yes' to this question, if all of the following are true:

A property can be considered not to be of cultural heritage value if:

- a Cultural Heritage Evaluation Report (CHER) - or equivalent - has been prepared for the property with the advice of a qualified person and it has been determined not to be of cultural heritage value and/or
- the municipal heritage committee has evaluated the property for its cultural heritage value or interest and determined that the property is not of cultural heritage value or interest

A property may need to be re-evaluated, if:

- there is evidence that its heritage attributes may have changed
- new information is available
- the existing Statement of Cultural Heritage Value does not provide the information necessary to manage the property
- the evaluation took place after 2005 and did not use the criteria in Regulations 9/06 and 10/06

Note: Ontario government ministries and public bodies [prescribed under Regulation 157/10] may continue to use their existing evaluation processes, until the evaluation process required under section B.2 of the Standards & Guidelines for Conservation of Provincial Heritage Properties has been developed and approved by MTCS.

To determine if your property or project area has been evaluated, contact:

- the approval authority
- the proponent
- the Ministry of Tourism, Culture and Sport

3a. Is the property (or project area) identified, designated or otherwise protected under the *Ontario Heritage Act* as being of cultural heritage value e.g.:

i. designated under the *Ontario Heritage Act*

- individual designation (Part IV)
- part of a heritage conservation district (Part V)

Individual Designation – Part IV

A property that is designated:

- by a municipal by-law as being of cultural heritage value or interest [s.29 of the *Ontario Heritage Act*]
- by order of the Minister of Tourism, Culture and Sport as being of cultural heritage value or interest of provincial significance [s.34.5]. **Note**: To date, no properties have been designated by the Minister.

Heritage Conservation District – Part V

A property or project area that is located within an area designated by a municipal by-law as a heritage conservation district [s. 41 of the *Ontario Heritage Act*].

For more information on Parts IV and V, contact:

- municipal clerk
- Ontario Heritage Trust
- local land registry office (for a title search)

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ii. subject of an agreement, covenant or easement entered into under Parts II or IV of the *Ontario Heritage Act*

An agreement, covenant or easement is usually between the owner of a property and a conservation body or level of government. It is usually registered on title.

The primary purpose of the agreement is to:

- preserve, conserve, and maintain a cultural heritage resource
- prevent its destruction, demolition or loss

For more information, contact:

- Ontario Heritage Trust - for an agreement, covenant or easement [clause 10 (1) (c) of the *Ontario Heritage Act*]
- municipal clerk – for a property that is the subject of an easement or a covenant [s.37 of the *Ontario Heritage Act*]
- local land registry office (for a title search)

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iii. listed on a register of heritage properties maintained by the municipality

Municipal registers are the official lists - or record - of cultural heritage properties identified as being important to the community.

Registers include:

- all properties that are designated under the *Ontario Heritage Act* (Part IV or V)
- properties that have not been formally designated, but have been identified as having cultural heritage value or interest to the community

For more information, contact:

- municipal clerk
- municipal heritage planning staff
- municipal heritage committee

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iv. subject to a notice of:

- intention to designate (under Part IV of the *Ontario Heritage Act*)
- a Heritage Conservation District study area bylaw (under Part V of the *Ontario Heritage Act*)

A property that is subject to a **notice of intention to designate** as a property of cultural heritage value or interest and the notice is in accordance with:

- section 29 of the *Ontario Heritage Act*
- section 34.6 of the *Ontario Heritage Act*. **Note**: To date, the only applicable property is Meldrum Bay Inn, Manitoulin Island. [s.34.6]

An area designated by a municipal by-law made under section 40.1 of the *Ontario Heritage Act* as a **heritage conservation district study area**.

For more information, contact:

- municipal clerk – for a property that is the subject of notice of intention [s. 29 and s. 40.1]
- Ontario Heritage Trust

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v. included in the Ministry of Tourism, Culture and Sport's list of provincial heritage properties

Provincial heritage properties are properties the Government of Ontario owns or controls that have cultural heritage value or interest.

The Ministry of Tourism, Culture and Sport (MTCS) maintains a list of all provincial heritage properties based on information provided by ministries and prescribed public bodies. As they are identified, MTCS adds properties to the list of provincial heritage properties.

For more information, contact the MTCS Registrar at registrar@ontario.ca.

3b. Is the property (or project area) a National Historic Site (or part of)?

National Historic Sites are properties or districts of national historic significance that are designated by the Federal Minister of the Environment, under the *Canada National Parks Act*, based on the advice of the Historic Sites and Monuments Board of Canada.

For more information, see the National Historic Sites website.

3c. Is the property (or project area) designated under the *Heritage Railway Stations Protection Act*?

The *Heritage Railway Stations Protection Act* protects heritage railway stations that are owned by a railway company under federal jurisdiction. Designated railway stations that pass from federal ownership may continue to have cultural heritage value.

For more information, see the Directory of Designated Heritage Railway Stations.

3d. Is the property (or project area) designated under the *Heritage Lighthouse Protection Act*?

The *Heritage Lighthouse Protection Act* helps preserve historically significant Canadian lighthouses. The Act sets up a public nomination process and includes heritage building conservation standards for lighthouses which are officially designated.

For more information, see the Heritage Lighthouses of Canada website.

3e. Is the property (or project area) identified as a Federal Heritage Building by the Federal Heritage Buildings Review Office?

The role of the Federal Heritage Buildings Review Office (FHBRO) is to help the federal government protect the heritage buildings it owns. The policy applies to all federal government departments that administer real property, but not to federal Crown Corporations.

For more information, contact the Federal Heritage Buildings Review Office.

See a directory of all federal heritage designations.

3f. Is the property (or project area) located within a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site?

A UNESCO World Heritage Site is a place listed by UNESCO as having outstanding universal value to humanity under the Convention Concerning the Protection of the World Cultural and Natural Heritage. In order to retain the status of a World Heritage Site, each site must maintain its character defining features.

Currently, the Rideau Canal is the only World Heritage Site in Ontario.

For more information, see Parks Canada – World Heritage Site website.

Part B: Screening for potential Cultural Heritage Value

4a. Does the property (or project area) contain a parcel of land that has a municipal, provincial or federal commemorative or interpretive plaque?

Heritage resources are often recognized with formal plaques or markers.

Plaques are prepared by:

- municipalities
- provincial ministries or agencies
- federal ministries or agencies
- local non-government or non-profit organizations

For more information, contact:

- municipal heritage committees or local heritage organizations – for information on the location of plaques in their community
- Ontario Historical Society's Heritage directory – for a list of historical societies and heritage organizations
- Ontario Heritage Trust – for a list of plaques commemorating Ontario's history
- Historic Sites and Monuments Board of Canada – for a list of plaques commemorating Canada's history

4b. Does the property (or project area) contain a parcel of land that has or is adjacent to a known burial site and/or cemetery?

For more information on known cemeteries and/or burial sites, see:

- Cemeteries Regulations, Ontario Ministry of Consumer Services – for a database of registered cemeteries
- Ontario Genealogical Society (OGS) – to locate records of Ontario cemeteries, both currently and no longer in existence; cairns, family plots and burial registers
- Canadian County Atlas Digital Project – to locate early cemeteries

In this context, adjacent means contiguous or as otherwise defined in a municipal official plan.

4c. Does the property (or project area) contain a parcel of land that is in a Canadian Heritage River watershed?

The Canadian Heritage River System is a national river conservation program that promotes, protects and enhances the best examples of Canada's river heritage.

Canadian Heritage Rivers must have, and maintain, outstanding natural, cultural and/or recreational values, and a high level of public support.

For more information, contact the Canadian Heritage River System.

If you have questions regarding the boundaries of a watershed, please contact:

- your conservation authority
- municipal staff

4d. Does the property (or project area) contain a parcel of land that contains buildings or structures that are 40 or more years old?

A 40 year 'rule of thumb' is typically used to indicate the potential of a site to be of cultural heritage value. The approximate age of buildings and/or structures may be estimated based on:

- history of the development of the area
- fire insurance maps
- architectural style
- building methods

Property owners may have information on the age of any buildings or structures on their property. The municipality, local land registry office or library may also have background information on the property.

Note: 40+ year old buildings or structure do not necessarily hold cultural heritage value or interest; their age simply indicates a higher potential.

A building or structure can include:

- residential structure
- farm building or outbuilding
- industrial, commercial, or institutional building
- remnant or ruin
- engineering work such as a bridge, canal, dams, etc.

For more information on researching the age of buildings or properties, see the Ontario Heritage Tool Kit Guide Heritage Property Evaluation.

Part C: Other Considerations

5a. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) is considered a landmark in the local community or contains any structures or sites that are important to defining the character of the area?

Local or Aboriginal knowledge may reveal that the project location is situated on a parcel of land that has potential landmarks or defining structures and sites, for instance:

- buildings or landscape features accessible to the public or readily noticeable and widely known
- complexes of buildings
- monuments
- ruins

5b. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) has a special association with a community, person or historical event?

Local or Aboriginal knowledge may reveal that the project location is situated on a parcel of land that has a special association with a community, person or event of historic interest, for instance:

- Aboriginal sacred site
- traditional-use area
- battlefield
- birthplace of an individual of importance to the community

5c. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) contains or is part of a cultural heritage landscape?

Landscapes (which may include a combination of archaeological resources, built heritage resources and landscape elements) may be of cultural heritage value or interest to a community.

For example, an Aboriginal trail, historic road or rail corridor may have been established as a key transportation or trade route and may have been important to the early settlement of an area. Parks, designed gardens or unique landforms such as waterfalls, rock faces, caverns, or mounds are areas that may have connections to a particular event, group or belief.

For more information on Questions 5.a., 5.b. and 5.c., contact:

- Elders in Aboriginal Communities or community researchers who may have information on potential cultural heritage resources. Please note that Aboriginal traditional knowledge may be considered sensitive.
- municipal heritage committees or local heritage organizations
- Ontario Historical Society's "Heritage Directory" - for a list of historical societies and heritage organizations in the province

An internet search may find helpful resources, including:

- historical maps
- historical walking tours
- municipal heritage management plans
- cultural heritage landscape studies
- municipal cultural plans

Information specific to trails may be obtained through Ontario Trails.

Municipal Heritage Bridges
Cultural, Heritage and Archaeological
Resources Assessment Checklist
Revised April 11, 2014

This checklist was prepared in March 2013 by the Municipal Engineers Association to assist with determining the requirements to comply with the Municipal Class Environmental Assessment. View all 4 parts of the module on Structures Over 40 Years at www.municipalclassea.ca to assist with completing the checklist.

Project Name:	**10TH LINE AND MOUNTAIN ROAD IMPROVEMENTS #217013**
Location:	**MOUNTAIN ROAD OVER BLACKASH CREEK**
Municipality:	**TOWN OF COLLINGWOOD**
Project Engineer:	**TOM NOLLERT**
Checklist completed by:	**STEVE EMPEY**
Date:	**AUGUST 4, 2017**

NOTE: Complete all sections of Checklist. Both Cultural Heritage and Archaeological Sections must be satisfied before proceeding.

Part A - Municipal Class EA Activity Selection

Description	Yes	No
Will the proposed project involve or result in construction of new water crossings? This includes ferry docks.	☐ Schedule B or C	☒ Next
Will the proposed project involve or result in construction of new grade separation?	☐ Schedule B or C	☒ Next
Will the proposed project involve or result in construction of new underpasses or overpasses for pedestrian recreational or agricultural use?	☐ Schedule B or C	☒ Next
Will the proposed project involve or result in construction of new interchanges between any two roadways, including a grade separation and ramps to connect the two roadways?	☐ Schedule B or C	☒ Next

Description	Yes	No
Will the proposed project involve or result in reconstruction of a water crossing where the structure is less than 40 years old and the reconstructed facility will be for the same purpose, use, capacity and at the same location? (Capacity refers to either hydraulic or road capacity.) This include ferry docks.	☐ Schedule A+	☒ Next **INCREASED VEHICULAR CAPACITY. CONSTRUCTED 1978**
Will the proposed project involve or result in reconstruction of a water crossing, where the reconstructed facility will not be for the same purpose, use, capacity or at the same location? (Capacity refers to either hydraulic or road capacity). This includes ferry docks.	☒ Schedule B or C **INCREASED VEHICULAR CAPACITY.**	☐ Next
Will the proposed project involve or result in reconstruction or alteration of a structure or the grading adjacent to it when the structure is over 40 years old where the proposed work will alter the basic structural system, overall configuration or appearance of the structure?	☐ Next	☒ Assess Archaeological Resources

Part B - Cultural Heritage Assessment

Description	Yes	No
Does the proposed project involve a bridge construction in or after 1956?	☒ Next **CONSTRUCTED 1978**	☐ Prepare CHER Undertake HIA
Does the project involve one of these four bridge types?	☒ Rigid frame Next ☐ Precast with Concrete Deck Next ☐ Culvert or Simple Span Next ☐ Steel Beam Concrete Deck Next	☐ Prepare CHER Undertake HIA

Description	Yes	No
Does the bridge or study area contain a parcel of land that is subject of a covenant or agreement between the owner of the property and a conservation body or level of government?	☐ Prepare CHER Undertake HIA	☒ Next
Does the bridge or study area contain a parcel of land that is listed on a register or inventory of heritage properties maintained by the municipality?	☐ Prepare CHER Undertake HIA	☒ Next
Does the bridge or study area contain a parcel of land that is designated under Part IV of the Ontario Heritage Act?	☐ Prepare CHER Undertake HIA	☒ Next **COLLINGWOOD BYLAW 02-112 (NOT IN STUDY AREA)**
Does the bridge or study area contain a parcel of land that is subject to a notice of intention to designate issued by a municipality?	☐ Prepare CHER Undertake HIA	☒ Next
Does the bridge or study area contain a parcel of land that is located within a designated Heritage Conservation District?	☐ Prepare CHER Undertake HIA	☒ Next **COLLINGWOOD BYLAW 02-112 (NOT IN STUDY AREA)**
Does the bridge or study area contain a parcel of land that is subject to a Heritage Conservation District study area by-law?	☐ Prepare CHER Undertake HIA	☒ Next
Does the bridge or study area contain a parcel of land that is included in the Ministry of Tourism, Culture and Sport's list of provincial heritage properties?	☐ Prepare CHER Undertake HIA	☒ Next
Does the bridge or study area contain a parcel of land that is part of a National Historic Site?	☐ Prepare CHER Undertake HIA	☒ Next
Does the bridge or study area contain a parcel of land that is part of a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site?	☐ Prepare CHER Undertake HIA	☒ Next **(RIDEAU CANAL IS ONLY SITE IN ONTARIO)**

Description	Yes	No
Does the bridge or study area contain a parcel of land that is designated under the Heritage Railway Station Protection Act?	☐ Prepare CHER Undertake HIA	☒ Next
Does the bridge or study area contain a parcel of land that is identified as a Federal Heritage Building by the Federal Heritage Building Review Office (FHBRO)	☐ Prepare CHER Undertake HIA	☒ Next **NOTTAWASAGA ISLAND LIGHTHOUSE AND 44 HURONTARIO ST. (NOT IN STUDY AREA)**
Does the bridge or study area contain a parcel of land that is the subject of a municipal, provincial or federal commemorative or interpretive plaque that speaks to the Historical significance of the bridge?	☐ Prepare CHER Undertake HIA	☒ Next **NORTHERN RAILWAY COMPANY AT ST. PAUL STREET AND HURON STREET (NOT IN STUDY AREA)**
Does the bridge or study area contain a parcel of land that is in a Canadian Heritage River watershed?	☐ Prepare CHER Undertake HIA	☒ Next
Will the project impact any structures or sites (not bridges) that are over forty years old, or are important to defining the character of the area or that are considered a landmark in the local community?	☐ Prepare CHER Undertake HIA	☒ Next
Is the bridge or study area adjacent to a known burial site and/or cemetery?	☐ Prepare CHER Undertake HIA	☒ Next **SITES ON RAGLAN STREET AND POPLAR SIDEROAD (NOT IN STUDY AREA)**
Is the bridge considered a landmark or have a special association with a community, person or historical event in the local community?	☐ Prepare CHER Undertake HIA	☒ Next
Does the bridge or study area contain or is it part of a cultural heritage landscape?	☐ Prepare Cher Undertake HIA	☒ Assess Archaeological Resources

PART C - HERITAGE ASSESSMENT

Description	Yes	No
Does the Cultural Heritage Evaluation Report identify any Heritage Features on the project?	☐ Undertake HIA	☐ Part D - Archaeological Resources
Does the Heritage Impact Assessment determine that the proposed project will impact any of the Heritage Features that have been identified?	☐ Schedule B or C	☐ Part D - Archaeological Resources

PART D - ARCHAEOLOGICAL RESOURCES ASSESSMENT

Description	Yes	No
Will any activity, related to the project, result in land impacts/significant ground disturbance?	☒ Next	☐ Schedule A - proceed
Have all areas, to be impacted by ground disturbing activities, been subjected to recent extensive and intensive disturbances and to depths greater than the depths of the proposed activities?	☒ Schedule A - proceed	☐ Next
Has an archaeological assessment previously been carried out that includes all of the areas to be impacted by this project?	☐ Next	☐ Archaeological Assessment
Does the report on that previous archaeological assessment recommend that no further archaeological assessment is required within the limits of the project for which that assessment was undertaken, and has a letter been issued by the Ministry of Tourism, Culture and Sport stating that the report has been entered into the Ontario Public Register of Archaeological Reports?	☐ Schedule A - proceed	☐ Obtain satisfaction letter - proceed

Appendix E

Noise Impact Assessment

Tom Nollert

From: Tom Nollert
Sent: Thursday, November 15, 2018 3:06 PM
To: John Velick (jvelick@collingwood.ca)
Cc: Trevor Harvey (tharvey@collingwood.ca); Patrick Wojcieszynski; Jody Marks
Subject: Mountain Road and Tenth Line - Noise comment
Attachments: Table 2.1.pdf

Hi John

I did a noise prediction calc using the RTAC method the same method that was used and described in the Hume Street ESR to address comment from Dale Elyea.
MTO Noise Guidelines require a 10 year projection, we have from 2016 to 2037.
Guidelines are as per Table 2.1 MTO Noise Guidelines. < 5dBA change & <65dBA

Here are the results of the analysis:

	EXISTING ROADWAY				
		2016 TRAFFIC VOLUME	**2022 TRAFFIC VOLUME**	**2030 TRAFFIC VOLUME**	**2037 TRAFFIC VOLUME**
1	average annual daily traffic; v/d	4410	5120	9100	10390
2	% heavy vehicles	10	10	10	10
3	average traffic speed (km/h)	50	50	50	50
4	perpendicular distance to centre line of source (m)	24.38	24.38	24.38	24.38
5	speed coefficient (Table J.3.3)	18	18	18	18
6	effective number of vehicles in 24 hrs (Eq. J.3.3b)	11907	13824	24570	28053
7	basic Leq (dBA)	57.2	57.9	60.4	61.0
8	adjustment for road gradient (Table J.3.4)	2	2	2	2
9	effective source height (m) (Table J.3.5)	1.2	1.2	1.2	1.2
10	effective total height (m) (Figure J.3.7b)	3.19	3.19	3.19	3.19
11	adjustment for distance/height (dBA) (Table J.3.7)	0	0	0	0
12	adjustment for pavement type (dBA) (Table J.4.2)	0	0	0	0
13	**net Leq (7+8+11+12) (dBA)**	**59.2**	**59.9**	**62.4**	**63.0**
	Change from 2016		0.7	3.2	3.8

	PROPOSED WIDENED ROADWAY				
		2001 TRAFFIC VOLUME	**2011 TRAFFIC VOLUME**	**2030 TRAFFIC VOLUME**	**2037 TRAFFIC VOLUME**
1	average annual daily traffic; v/d	4410	5120	9100	10390
2	% heavy vehicles	10	10	10	10
3	average traffic speed (km/h)	50	50	50	50
4	perpendicular distance to centre line of source (m)	25.2	25.2	25.2	25.2
5	speed coefficient (Table J.3.3)	18	18	18	18
6	effective number of vehicles in 24 hrs (Eq. J.3.3b)	11907	13824	24570	28053
7	basic Leq (dBA)	57.2	57.9	60.4	61.0

8	adjustment for road gradient (Table J.3.4)	2	2	2	2
9	effective source height (m) (Table J.3.5)	1.2	1.2	1.2	1.2
10	effective total height (m) (Figure J.3.7b)	3.19	3.19	3.19	3.19
11	adjustment for distance/height (dBA) (Table J.3.7)	0	0	0	0
12	adjustment for pavement type (dBA) (Table J.4.2)	0	0	0	0
13	**net Leq (7+8+11+12) (dBA)**	**59.2**	**59.9**	**62.4**	**63.0**
	Change from 2016		0.7	3.2	3.8

Conclusion and comment: The results indicate that noise predictions are within the guidelines and do not require mitigation.
Although the curbs are moving closer to the receiver they are not being used by traffic as they are bike lanes. Also the centre line
of the road is actually moving slightly further away from the receiver.
The overall conclusion is that with the improvements and the growth in traffic noise levels are predicted to be below the 65dBA and are
increasing below the 5dBA.

Tom Nollert, C.E.T.
Senior Technologist

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Table 2.1 Mitigation Effort Required for the Projected Noise Level with the Proposed Improvements above the Ambient

Change in Noise Level Above Ambient / Projected Noise Levels with Proposed Improvements	Mitigation Effort Required
< 5 dBA change & < 65 dBA	- None
≥ 5 dBA change OR ≥ 65 dBA	- Investigate noise control measures on right-of-way. - Introduce noise control measures within right-of-way and mitigate to ambient if technically, economically and administratively feasible. - Noise control measures, where introduced, should achieve a minimum of 5 dBA attenuation, over first row receivers.

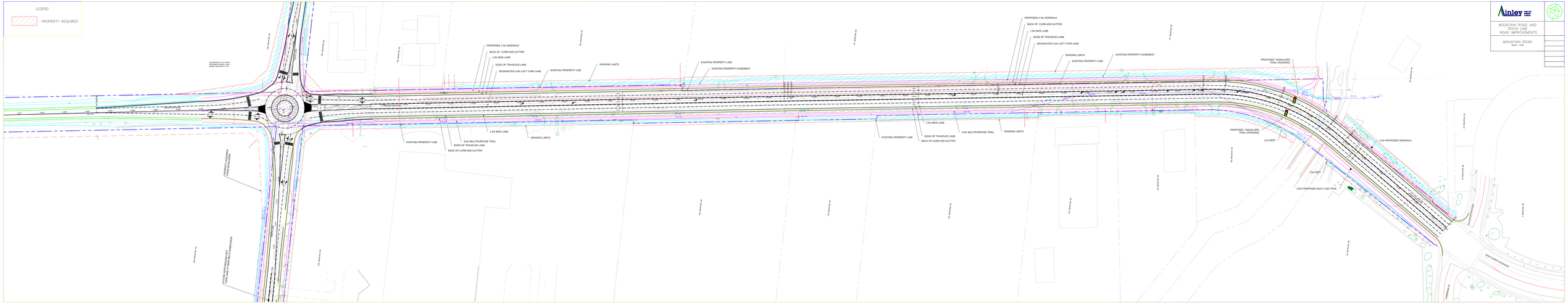
On right-of-way mitigation measures must be identified, considered and implemented where warranted. Mitigation measures within the right-of-way include:

- acoustical barriers;
- berms;
- vertical and horizontal alignments; and
- pavement surfaces.

Mitigation must attempt to achieve levels as close to, or lower than, the objective level (i.e., future predicted ambient without the proposed improvements) as is technically, economically, and administratively feasible.

Appendix F

Recommended Plan


LEGEND
PROPERTY REQUIRED
PROPOSED 1.5m SIDEWALK
BACK OF CURB AND GUTTER
1.5m BIKE LANE
EDGE OF TRAVELED LANE
DESIGNATED 4.0m LEFT TURN LANE
EXISTING PROPERTY LINE
GRADING LIMITS
EXISTING PROPERTY EASEMENT
3.0m MULTIPURPOSE TRIAL
PROPOSED SIGNALIZED TRAIL CROSSING
CULVERT
3.0m PROPOSED MULTI-USE TRAIL
1.5m PROPOSED SIDEWALK
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1000TH AVENUE NE
Ainley
MOUNTAIN ROAD AND TENTH LINE ROAD IMPROVEMENTS
MOUNTAIN ROAD
SCALE: 1:500

Ainley GROUP
CONSULTING ENGINEERS PLANNERS
LEGEND
PROPERTY REQUIRED
FUTURE INTERSECTION
- SIGNALIZED WITH EXCLUSIVE LEFT TURN LANES ON EACH APPROACH
- ALTERNATIVE OPTION, ONE LANE ROUNDABOUT
780 TENTH LINE
FUTURE INTERSECTION
- SIGNALIZED WITH EXCLUSIVE LEFT TURN LANES ON EACH APPROACH
- ALTERNATIVE OPTION, ONE LANE ROUNDABOUT
FUTURE NORTHBOUND LEFT
TURN LANE AT MAIR MILLS SUBDIVISION
PROPERTY ACQUIRED
FROM DEVELOPER
MK 1 MOUNTAIN RD
Ainley GROUP
CONSULTING ENGINEERS PLANNERS
MOUNTAIN ROAD AND
TENTH LINE
ROAD IMPROVEMENTS
TENTH LINE
SCALE: 1:500

Appendix G

Consultation Point 1
(Notice of Commencement / Public Information Centre No. 1)

TOWN OF COLLINGWOOD

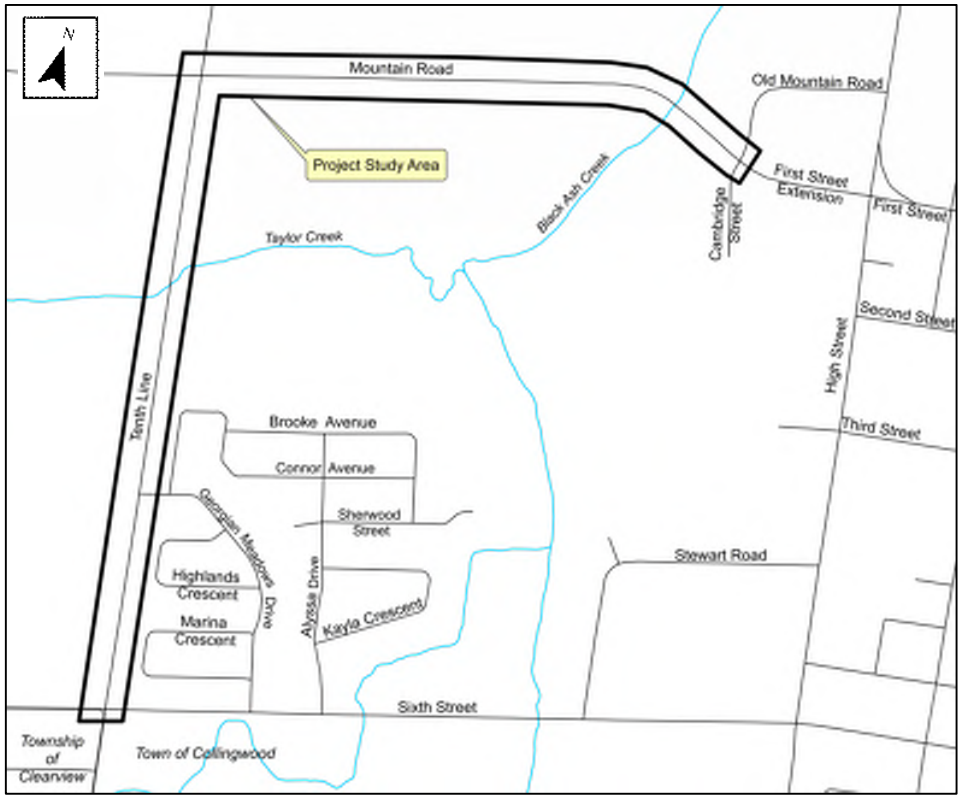
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public information Centre No. 1

The Project

The Town of Collingwood has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) and detailed design to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). The purpose of this undertaking is to address capacity and operational deficiencies and to accommodate future growth. This project will provide improvements to the existing road cross-section as well as drainage, safety and intersection improvements including rehabilitation or replacement of the existing Black Ash Creek Bridge.

The Process

This project will follow the Schedule 'C' planning and design process in accordance with the *Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).*



Public Information Centre No. 1

The first of two Public Information Centres has been scheduled to introduce the project and to allow all interested parties an opportunity to review the alternative solutions developed to address the identified deficiencies and to discuss the project with the study team. Public Information Centre No. 1 has been scheduled as follows:

Date: Thursday, June 1st, 2017.

Time: 4:00 p.m. to 7:00 p.m.

Location: Community Room B and C, Third Floor
Collingwood Public Library
55 Ste. Marie Street
Collingwood, Ontario L9Y 0W6

Public input is encouraged throughout this process and will be given consideration during the planning and design of this project. The deadline for the submission of comments following Public Information Centre No. 1 will be **June 15, 2017**. Information will be collected in accordance with the *Municipal Freedom of Information and Protection of Privacy Act*. With the exception of personal information, all comments will become part of the public record.

To obtain additional information or to provide input, please contact either of the following members of the study team:

Mr. Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5
Tel: 705-445-1292
Fax: 705-445-1286
Email: tharvey@collingwood.ca

Mr. Tom Nollert, C.E.T.
Consultant Project Manager
Ainley Group
280 Pretty River Parkway
Collingwood, ON L9Y 4J5
Tel: 705-445-3460 ext. 156
Fax: 705-445-0968
Email: nollert@ainleygroup.com

This notice first issued May 12, 2017.

Notices

FORM 8
Municipal Act, 2001

SALE OF LAND BY PUBLIC AUCTION

THE CORPORATION OF THE TOWN OF COLLINGWOOD

TAKE NOTICE that the lands described below will be offered for sale by public auction at **1:30 p.m. on the 6th day of June 2017** at the Collingwood Municipal Office Council Chambers, 97 Hurontario Street, Collingwood, Ontario.

Description of Lands:

Roll No. 43 31 080 005 11900 0000; 12 Downer St, Collingwood; PIN 58305-0052(LT); Part Lots 23 and 24 Plan 857 Nottawasaga as in RO1150849; Collingwood; File No. 14-11
Minimum Bid Amount: $18,024.43

Roll No. 43 31 020 002 23950 0000; Oliver Crescent; PIN 58297-0053(LT); Lot Q Plan 1703 Collingwood; File No. 15-01
Minimum Bid Amount: $2,653.30

All amounts payable by the successful purchaser shall be payable in full at the time of the sale by cash or money order or by a bank draft or cheque certified by a bank or trust corporation,

Except as follows, the municipality makes no representation regarding the title to or any other matters relating to the land to be sold. Responsibility for ascertaining these matters rests with the potential purchasers.

This sale is governed by the *Municipal Act, 2001* and the Municipal Tax Sales Rules. The successful purchaser will be required to pay the amount bid plus accumulated taxes and relevant land transfer tax.

The municipality has no obligation to provide vacant possession to the successful purchaser.

Note: HST may be payable by successful purchaser.

For further information regarding this sale and a copy of the Bid Package, contact:

Shelly Burmister, Tax Collector
The Corporation of the Town of Collingwood
Box 157
97 Hurontario Street
Collingwood ON L9Y 3Z5
705-445-1030 Ext. 3222
www.collingwood.ca
sburmister@collingwood.ca

COLLINGWOOD

WANTED - APPLICATIONS FOR
Collus PowerStream Board of Directors – Appointee(s)

The Town of Collingwood is seeking an experienced and energetic individual(s) to fill up to two (2) position(s) on the Collus Powerstream Board of Directors. As one of the Town's appointees, the successful candidate will be responsible for the business stewardship of the Hydro Utility on behalf of its shareholders including the Town of Collingwood with its citizens as taxpayers and customers together with PowerStream (now Alectra). Working collaboratively, the Board has responsibility for governance and corporate decision making in the best interests of the Corporation's shareholders. The Board, importantly, fosters a culture of integrity and ethical conduct and values trust, responsibility, sustainability, people, partnerships & collaboration and continuous improvement.

If you believe you have knowledge, senior level business/management experience together with the personal attributes necessary to participate in the stewardship of this Corporation, we would encourage you to submit a detailed expression of interest, including qualifications, experience, references as well as a statement of why you are interested in assuming this challenging responsibility and how you believe you can contribute to the Board's important responsibility of making decisions in the best interest of those it serves and invested in it.

Applicants MUST submit their interest to the undersigned not later than: **May 24, 2017.**

Application forms are available at the Town Hall and on the website at:
www.collingwood.ca/committee_application

Town of Collingwood
Attn: Andrew Walkom, Coordinator, Clerk Services,
97 Hurontario Street, PO Box 157, Collingwood, Ontario L9Y 3Z5
awalkom@collingwood.ca

TOWN OF COLLINGWOOD
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public information Centre No. 1

The Project
The Town of Collingwood has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) and detailed design to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). The purpose of this undertaking is to address capacity and operational deficiencies and to accommodate future growth. This project will provide improvements to the existing road cross-section as well as drainage, safety and intersection improvements including rehabilitation or replacement of the existing Black Ash Creek Bridge.

The Process
This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

Public Information Centre No. 1
The first of two Public Information Centres has been scheduled to introduce the project and to allow all interested parties an opportunity to review the alternative solutions developed to address the identified deficiencies and to discuss the project with the study team. Public Information Centre No. 1 has been scheduled as follows:

Date: Thursday, June 1st, 2017.
Time: 4:00 p.m. to 7:00 p.m.
Location: Community Room B and C,
Third Floor
Collingwood Public Library
55 Ste. Marie Street
Collingwood, Ontario L9Y 0W6

Public input is encouraged throughout this process and will be given consideration during the planning and design of this project. The deadline for the submission of comments following Public Information Centre No. 1 will be June 15, 2017. Information will be collected in accordance with the Municipal Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.

To obtain additional information or to provide input, please contact either of the following members of the study team:

Mr. Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5
Tel: 705-445-1292
Fax: 705-445-1286
Email: tharvey@collingwood.ca

Mr. Tom Nollert, C.E.T.
Consultant Project Manager
Ainley Group
280 Pretty River Parkway
Collingwood, ON L9Y 4J5
Tel: 705-445-3460 ext. 156
Fax: 705-445-0968
Email: nollert@ainleygroup.com

This notice first issued May 12, 2017.

Spring Bi-Weekly Yard Waste Collection

COUNTY OF SIMCOE
For the Greater Good

Place your materials at curbside by 7 a.m. on Monday of your collection week. To determine your yard waste collection week visit simcoe.ca/wastereminder or consult the waste management calendar. **Collection may not coincide with your garbage day.**

Utilize paper yard waste bags, cardboard boxes, compostable bags or open-ended rigid containers.

County of Simcoe Customer Service
1-800-263-3199

SOLID WASTE MANAGEMENT

Town of Collingwood Weekly Town Page

Thursday, May 17, 2018

Notices

Victoria Day Waste Collection

There will be **NO CHANGE** to your garbage, organics, and recycling collection day. Have materials at the curb by 7 a.m. on your regular day to ensure collection.

WASTE MANAGEMENT FACILITIES HOURS

All County waste management facilities will be **CLOSED** Monday, May 21 except Site 8 (Nottawasaga).

Does not apply to residents of Barrie and Orillia.

County of Simcoe Customer Service
1-705-726-9300

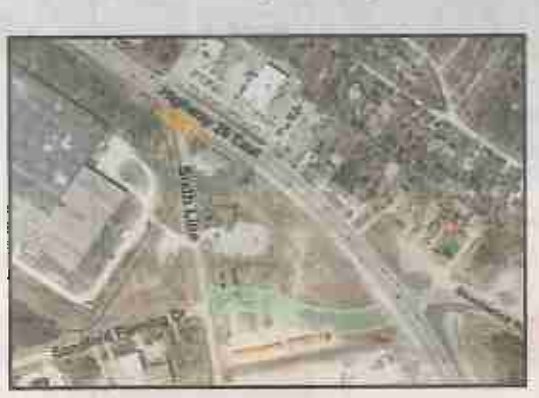
Partial Road Closure

Partial Road Closure – Sixth Line connection to Highway 26 East

As part of the Highway 26 East Re-alignment Project, the Ministry of Transportation requires access from Sixth Line to Highway 26 East to close. To accommodate this closure, a new access point onto Highway 26 East will be constructed in the summer of 2018 extending from Sandford Fleming Drive to the intersection of Beachwood Rd and Highway 26 East. The earliest date Council may consider passing a by-law to close a portion of the Sixth Line at the intersection of Highway 26 East will be during its meeting scheduled for Monday, May 28, 2018 at 5:00 p.m. in the Council Chambers, 97 Hurontario Street, Collingwood, Ontario. A staff report further explaining the closure will be provided at the Development and Operations Standing Committee meeting to be held May 23, 2018 prior to the by-law being considered by Council.

Town of Collingwood, Engineering Services
545 Tenth Line, Collingwood, ON
byaniw@collingwood.ca • 705-445-1030 ext. 4200

Dated at the Town of Collingwood May 3, 2018



Town of Collingwood
Class Environmental Assessment
Black Ash Creek Sewage Pumping Station Upgrades
NOTICE OF COMPLETION

The Study

Further to the Phase 2 Public Notice (issued on March 8, 2018), the Town of Collingwood is continuing to undertake the Municipal Class Environmental Assessment (Schedule B) to consider alternatives to upgrades and improve the Black Ash Creek sewage pumping station include increasing capacity to more than double its current rated capacity. The Black Ash Creek sewage pumping station is located on the west side of Balsam Street, north of Black Ash Creek as illustrated on the accompanying map.

The Town of Collingwood has retained Ainley Group to complete and document a Schedule B Class EA planning process, as outlined by the Municipal Class Environmental Assessment Document, October 2000, as amended in 2015.

The Process

The Class EA study has concluded and the preferred solution is for the design and construction of a new sewage pumping station on the existing Collingwood owned property, west of the existing sewage pumping station. The design will allow for a capacity of 212 L/s. The sewage pumping station will include a standby generator. Decommissioning of the existing Back Ash Creek sewage pumping station will proceed following the construction of the proposed station.

How to Get Involved

The Project File, which provides information on the project and the planning process, is being placed on the public record for review and comment. The Report is available for review at the following locations:

Town Hall
97 Hurontario Street, Collingwood, Ontario
Mon to Fri: 8:30am - 4:30pm
Tel: (705) 445-1030

Collingwood Public Library
55 Ste. Marie Street, Collingwood, Ontario
Mon to Thurs: 10:00am - 9:00pm
Fri: 10:00am - 8:00pm
Sat: 10:00am - 5:00pm
Sun: 1:00pm - 4:00pm

Town of Collingwood Web Site
www.collingwood.ca

Interested persons should provide written comments on the proposal within 30 calendar days from the date of this Notice to the either of the following members of the study team.

Peggy Slama, P. Eng., Manager, Environmental Services
Town of Collingwood, 43 Stewart Road, Collingwood, ON L9Y 4M7
Tel: (705) 445-1581 • pslama@collingwood.ca

Mike Ainley, P. Eng., PMP, Project Manager
Ainley Group, 280 Pretty River Parkway, Collingwood, ON L9Y 4J5
Tel: (705) 445-3451 • ainley.m@ainleygroup.com

If concerns arise regarding this project, which cannot be resolved in discussion with the municipality, a person may request that the Minister of the Environment and Climate Change to order a change in the project status and require a higher level of assessment under an individual Environmental Assessment process (referred to as a Part II Order). Reasons must be provided for the request. Requests must be received by the Minister within 30 calendar days of this Notice.

Minister of the Environment and Climate Change,
77 Wellesley Street West, 11th Floor, Ferguson Block,
Toronto, ON M7A 2T5

Ministry of the Environment and Climate Change, and Environmental Approvals Branch
135 St. Clair Avenue West, 1st Floor, Toronto, ON
M4V 1P5

Town of Collingwood
43 Stewart Road, Collingwood, ON L9Y 4M7

If there is no request received by June 16, 2018, the Towns of Collingwood will proceed to design and construction for the sewage pumping station, as presented on the planning documentation.

Please note that all personal information included in a Part II Order submission – such as name, address, telephone number and property location – is collected, maintained and disclosed by the Ministry of the Environmental and Climate Change for the purpose of transparency and consultation. The information is collected under the authority of the Environmental Assessment Act or is collected and maintained for the purpose of creating a record that is available to the general public as described in s.37 of the Freedom of Information and Protection of Privacy Act. Personal information you submit will become part of a public record that is available to the general public unless you request that your personal information remain confidential. For more information, please contact the ministry's Freedom of Information and Privacy Coordinator at 416-327-1434.

This notice was issued on May 17, 2018.

Town of Collingwood Weekly Town Page

Thursday, May 24, 2018

Notices

Spring Bi-Weekly Yard Waste Collection

Place your materials at curbside by 7 a.m. on Monday of your collection week. To determine your yard waste collection week visit simcoe.ca/wastereminder or consult the waste management calendar. **Collection may not coincide with your garbage day.**

Utilize paper yard waste bags, cardboard boxes, compostable bags or open-ended rigid containers.

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1-800-263-3199

Archaeological Management Plan

Public Open Houses

The County of Simcoe has commenced the preparation of an **Archaeological Management Plan (AMP)** in order to identify, protect and conserve the County's archaeological features and sites.

A few of the key deliverables of the AMP project include:

- GIS based mapping that identifies areas of Indigenous and colonial period archaeological potential;
- Recommendations to guide future engagement and consultation with Indigenous communities; and
- Recommended Official Plan policies relating to cultural heritage conservation and archaeological features and sites.

Additional information pertaining to the Archaeological Management Plan project can be found at:

simcoe.ca/amp

The public are invited to attend any of the eight sessions – noting all sessions will be the same. Information pertaining to the project will be displayed using storyboards, and individuals will have the opportunity to discuss the project one-on-one with the County's archaeological consultants and County Planning staff.

Date	Location	Times
Thursday **May 31**	**Royal Canadian Legion Branch 34 Orillia-Vimy Lounge** 215 Mississaga Street East, Orillia	2 - 4 p.m. 6 - 8 p.m.
Monday **June 4**	**Collingwood Public Library Meeting Rooms B and C** 55 Ste. Marie Street, Collingwood	2 - 4 p.m. 6 - 8 p.m.
Tuesday **June 5**	**Cookstown Library & Community Centre - Community Hall** 20 Church Street, Cookstown	2 - 4 p.m. 6 - 8 p.m.
Wednesday **June 6**	**Midland Public Library Assembly Room** 320 King Street, Midland	2 - 4 p.m. 6 - 8 p.m.

simcoe.ca/amp

Town of Collingwood
Class Environmental Assessment
Black Ash Creek Sewage Pumping Station Upgrades
NOTICE OF COMPLETION

The Study

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The Process

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This notice was issued on May 17, 2018.

Agency and Indigenous Community Contact List and Letters

Town of Collingwood
Tenth Line and Mountain Road Schedule 'C' Class EA
Notice of Study Commencement/PIC No. 1
AGENCY CONTACT LIST

Title	First	Last	Title	Company	Address 1	Address 2	Town	PC	Telephone	Email
Provincial & Federal Agencies										
Mr.	Rob	Dobos	Manager, Environmental Assessment Section	Environment Canada - Environmental Protection Operations Division - Ontario Region	867 Lakeshore Road	P.O. Box 5050	Burlington, ON	L7R 4A6	905-336-4953	
Ms.	Chunmei	Liu	Environmental Resource Planner & EA Coordinator - Air, Pesticides and Environmental Planner *(Barrie, Orillia & County of Simcoe)*	Central Region Ministry of Environment and Climate Change	5775 Yonge Street	8th Floor	North York, ON	M2M 4J1	416-326-4886	chunmei.liu@ontario.ca
Ms.	Cindy	Hood	District Manager	Barrie District Office Ministry of Environment and Climate Change	54 Cedar Point Drive	Unit 1201	Barrie, ON	L4N 5R7	705-739-6436	cindy.hood@ontario.ca
Mr.	Shawn	Carey	District Manager	Midhurst District Ministry of Natural Resources and Forestry	2284 Nursery Road		Midhurst, ON	L0L 1X0	705-725-7561	shawn.carey@ontario.ca
Mr.	Tom	Chrzan	Director, Regional Services Branch	Ministry of Tourism, Culture & Sport	400 University Avenue	2nd Floor	Toronto, ON	M7A 2R9	416-314-6680	tom.chrzan@ontario.ca
Ms.	Carol	Neumann	Rural Planner	Ontario Ministry of Agriculture, Food and Rural Affairs	6484 Wellington Rd. 7	Unit 10	Elora, ON	N0B 1S0	519-846-3393	carol.neumann@ontario.ca
Mr.	Teepu	Khawja	Regional Director	Ministry of Transportation, Central Region	1201 Wilson Avenue		Toronto, ON	M3M 1J8	416-235-5400	teepu.khawja@ontario.ca
Mr.	Chris	Gauer	Executive Vice President Major Projects, Roads & Transit	Infrastructure Ontario	777 Bay Street	6th Floor, Suite 602	Toronto, ON	M5G 2C8	416-327-8037	Chris.Gauer@infrastructureontario.ca
Mr.	Tim	Haldenby	Municipal Planning Advisor - Team Lead Central Ontario	Ministry of Municipal Affairs and Housing	777 Bay Street	13th Floor	Toronto, ON	M5G 2E5	416-585-6559	tim.haldenby@ontario.ca
Local Government, Adjacent Municipalities & Other Agencies										
Mr.	Christian	Meile	Director, Construction & Transportation Maintenance	County of Simcoe	1110 Highway 26 West		Midhurst, ON	L0L 1X0	705-726-9300	christian.meile@simcoe.ca
Mr.	Dave	Parks	Director, Planning, Development & Tourism	County of Simcoe	1110 Highway 26 West		Midhurst, ON	L0L 1X0	705-726-9300	dave.parks@simcoe.ca
Ms.	Nancy	Farrer	Director, Planing Services	Town of Collingwood	545 Tenth Line North	P.O. Box 157	Collingwood, ON	L9Y 3Z5	705-445-1292	nfarrer@collingwood.ca
Mr.	Dean	Collver	Director, Parks, Recreation & Culture	Town of Collingwood	545 Tenth Line North	P.O. Box 157	Collingwood, ON	L9Y 3Z5	705-445-1292	dcollver@collingwood.ca
Mr.	Glenn	Switzer	Director, Engineering and Technical Services	Nottawasaga Valley Conservation Authority	John Hix Conservation Administration Centre	8195 8th Line	Utopia, ON	L0M 1T0	705-424-1479	gswitzer@nvca.on.ca
Mr.	Chris	Hibberd	Director, Planning	Nottawasaga Valley Conservation Authority	John Hix Conservation Administration Centre	8195 8th Line	Utopia, ON	L0M 1T0	705-424-1479	c.hibberd@nvca.on.ca
Mr.	Steve	Sage	CAO	Township of Clearview	217 Gideon Street		Stayner, ON	L0M 1S0	705-428-6230 ext. 228	ssage@clearview.ca
Mr.	Troy	Speck	CAO	Town of the Blue Mountains	32 Mill Street	P.O. Box 310	Thornbury, ON	N0H 2P0	519-599-3131 ext. 234	tspeck@thebluemountains.ca
Ms.	Barb	Fox	Planning Officer	Simcoe Muskoka Catholic District School Board	46 Alliance Blvd.		Barrie, ON	L4M 5K3	705-722-3559 ext. 250	bfox.smcdsb.on.ca
Ms.	Holly	Spacek	Planning Officer	Simcoe County District School Board	1170 Highway 26		Midhurst, ON	L0L 1X0	705-728-7570 ext. 11311	hspacek@scdsb.on.ca
Mr.	Miguel	Ladouceur	Director of Building, Maintenance and Planning	Conseil Scolaire Viamonde	116 Cornelius Parkway		Toronto, ON	M6L 2K5	1-416-614-5917	ladouceurm@csviamonde.ca
Ms.	Nathalie	Huard	Transportation Technician, Service de Transport Francobus	Association Franco-Ontarienne Des Conseils Scolaires Catholiques	138 rue Main Est	Bureau 205	Welland, ON	L3B 3W6	1-800-749-0002	huardn@francobus.ca
Mr.	Earl	Elliott	President	Simcoe County Historical Association		P.O. Box 144	Barrie, ON	L4M 4S9	705-796-7649	earl.elliott@rogers.com
Ms.	Bonnie	Branch	Transportation Coordinator	Simcoe County Student Transportation Consortium	64 Cedar Pointe Drive	Unit 1403	Barrie, ON	L4N 5R7	705-733-8965, ext. 107	bbranch@scstc.ca
Ms.	Sara	Almas	Clerk	Accessiblity Advisory Committee Town of Collingwood	97 Hurontario Street	P.O. Box 157	Collingwood, ON	L9Y 3Z5	705-445-1030	almas@collingwood.ca
Emergency Services										
Mr.	JC	Gilbert	Deputy Chief Operations	County of Simcoe Paramedic Services	1110 Highway 26		Midhurst, ON	L0L 1X0	705-726-9300	jc.gilbert@simcoe.ca
Mr.	Ross	Parr	Fire Chief	Town of Collingwood Fire Department	45 High Street		Collingwood, ON	L9Y 4V4	705-445-3920 ext. 7502	rparr@collingwood.ca
Mr.	Colin	Shewell	Fire Chief	Township of Clearview Fire Department	217 Gideon Street		Stayner, ON	L0M 1S0	705-428-6230 ext. 403	cshewell@clearview.ca
Ms.	Mary	Shannon	Inspector	Ontario Provincial Police Collingwood and the Blue Mountains	201 Ontario Street		Collingwood, ON	L9Y 4M4	705-445-4321	mary.shannon.opp.ca

Town of Collingwood
Tenth Line and Mountain Road Schedule 'C' Class EA
Notice of Study Commencement/PIC No. 1
AGENCY CONTACT LIST

Title	First	Last	Title	Company	Address 1	Address 2	Town	PC	Telephone	Email
Member of Parliament										
Mr.	Jim	Wilson	Member of Provincial Parliament	Collingwood Consistuency Ofice	50 Hume Street		Collingwood, ON	L9Y 1V2	1-800-268-7542	
Ms.	Kellie	Leitch	Member of Parliament - Simcoe-Grey	Collingwood Consistuency Ofice	501 Hume Street	#4	Collingwood, ON	L9Y 4H8	705-445-5557	kellie.leitch@parl.gc.ca
Stakeholders										
Mr.	Ken	Hale	Manager of Land Development and Acquistions	Linksview Development Corporation	Harbouredge Centre	40 Huron St., Suite 300	Collingwood, ON	L9Y 4A3	705-446-1660 xt 32	khale@landexcapital.com
Mr.	Kevin	Morris	Senior Project Manager	CF Crozier & Associates		40 Huron St.,	Collingwood, ON	L9Y 4R3	705-446-3510	kmorris@cfcrozier.ca
Att:	Office Manager			Mairmills Village	160 Southgate Drive		Guelph, ON	N1G 4P5		
Att:	Greg	Goodale		Consar Red Maple Investments Ltd.	64 Shaft Road		Toronto, ON	M9W 4M2		
Mr.	Allan	Brownbridge	Project Manager	C.C. Tatham & Associates Ltd.	115 Sandford Fleming Drive	Suite 200	Collingwood, ON	L9Y 5A6	705-444-2565	abrownridge@cctatham.com
Interest Groups										
Ms.	Trish	Irwin	GM/CEO	Collingwood Chamber of Commerce	115 Hurontario Street	Suite 102	Collingwood, ON	L9Y 2L9	705-445-0221	tirwin@collingwoodchamber.com
Ms.	Kandas	Bondarchuk	Planner - Technician	Collingwood Heritage Committee	55 Ste. Marie Street	Unit 302	Collingwood, ON	L9Y 0W6	705-445-1290 ext. 3275	kbondarchuk@collingwood.ca
Mr.	Jamie	Forsythe		Blue Mountain & Collingwood Snowdrifters Snowmobile Club	453 Oak Street		Collingwood, ON	L9Y 4N1	705-446-1848 705-606-1453	
Mr.	Ben	McNabb		Collingwood Cycling Club	47 Sherwood Street		Collingwood, ON	L9Y0C5		info@collingwoodcyclingclub.ca
Mr.	Murray	Knowles		Black Ash Trail Committee						knowles.murray@gmail.com
Aboriginal Consultation										
Att: Consultation Unit				Ministry of Indigenous Relations & Reconciliation (MIRR)	160 Bloor St. East	9th Floor	Toronto, ON	M7A 2E6	416-326-4757	maa.ea.review@ontario.ca
(INAC (formerly AANDC) not contacted for this project as project is not on Aboriginal lands)				Indigenous & Northern Affairs Canada Consultation Unit (formerly Aboriginal Affairs & Northern Development Canada)	25 St. Clair Avenue East	8th Floor	Toronto, ON	M4T 1M2	1-800-567-9604	
Mr.	Brian	Tucker	Manager of Way of Life Framework	The Metis Nation of Ontario	500 Old St. Patrick St.	Unit 3	Ottawa, ON	K1N 9G4	807-274-1386 (direct) 613-798-1488 (Secretary)	Prefers digital - briant@metisnation.org **& copy to** consultation@metisnation.org
Ms.	Lynette	Davis	Director of Operations	Metis National Council	4-340 MacLaren Street		Ottawa, ON	K2P 0M6	613-232-3216	info@metisnation.ca
First Nation Communities (as per ATRIS Search March 8, 2017)										
Chief	Joanne	Rogers		Aamjiwnaang	978 Tashmoo Avenue		Sarnia, ON	N7T 7H5	519-336-8410	jrogers@aamjiwnaang.ca
Chief	James Robert	Marsden		Alderville First Nation	P.O. Box 46		Roseneath, ON	K0K 2X0	905-352-2011	jbmarsden@alderville.ca
Chief	Patsy	Corbiere		Aundeck-Omni-Kaning	R.R. #1, COMP 21		Little Current, ON	P0P 1K0	705-368-2228	corbierep@aokfn.com
Chief	Mary	McQue-King		Beausoleil First Nation	General Delivery		Cedar Point, ON	L0K 1C0	705-247-2051	bfnchief@chimnissing.ca
Chief	Donna	Big Canoe		Chippewas of Georgina Island	R.R. #2	P.O. Box 13	Sutton West, ON	L0E 1R0	705-437-1337	donna.bigcanoe@georginaisland.com
Chief	Thomas	Bressette		Chippewas of Kettle and Stony Point	6247 Indian Lane		Kettle & Stony Point First Nation, ON	N0N 1J1	519-786-2125	Thomas.bressette@kettlepoint.org
Chief	Greg	Nadjiwon		Chippewas of Nawash First Nation	R.R. #5		Wiarton, ON	N0H 2T0	519-534-1689	chiefsdesk@nawash.ca
Chief	Rodney	Noganosh		Chippewas of Rama First Nation	200-5884-Rama Road		Rama, ON	L3V 6H6	705-325-3611	rodneyn@ramafirstnation.ca
Chief	Leslie	White-eye		Chippewas of the Thames First Nation	R.R. #1		Muncey, ON	N0L 1Y0	519-289-5555	lwhite-eye@cottfn.com
Chief	Phyllis	Williams		Curve Lake First Nation	General Delivery		Curve Lake, ON	K0L 1R0	705-657-8045	PhyllisW@curvelake.ca
Chief	Lori	Carr		Hiawatha First Nation	R.R.#2		Keene, ON	K0L 2G0	705-295-4421	chiefcarr@hiawathafn.ca
Chief	Linda	Debassige		M'Chigeeng First Nation	P.O. Box 333	53 Hwy 551	M'Chigeeng, ON	P0P 1G0	705-377-5362	chief@mchigeeng.ca
Chief	Kelly	Larocca		Mississauga's of Scugog Island First Nation	22521 Island Road		Port Perry, ON	L9L 1B6	905-985-3337	klarocca@scugogfirstnation.com dmowat@scugogfirstnation.com
Chief	Stacey	LaForme		Mississaugas of the Credit	R.R.#6		Hagersville, ON	N0A 1H0	905-768-1133	stacey.laforme@newcreditfirstnation.com
Chief	Abram	Benedict		Mohawks of Akwesasne	P.O. Box 579		Cornwall, ON	K6H 5T3	613-575-2250	abram.benedict@akwesasne.ca
Chief	Donald	Maracle		Mohawks of the Bay of Quinte	R.R. #1		Deseronto, ON	K0K 1X0	613-396-3424	rdonm@mbq-tmt.org
Chief	Barron	King		Moose Deer Point	P.O. Box 119		MacTier, ON	P0C 1H0	705-375-5209	chief@moosedeerpoint.com
Chief	Lester	Anoquot		Saugeen	R.R.#1		Southhampton, ON	N0H 2L0	519-797-2781	lanaquot@saugeenfirstnation.ca
Chief	Andrew	Aguonie		Sheguiandah	P.O. Box 101		Sheguiandah, ON	P0P 1W0	705-368-2781	andrew.aguonie@sheguiandahfn.ca
Chief	Gail Ava	Hill		Six Nations of the Grand River	P.O. Box 5000		Ohsweken, ON	N0A 1M0	519-445-2201	avahill@sixnations.ca

Town of Collingwood
Tenth Line and Mountain Road Schedule 'C' Class EA
Notice of Study Commencement/PIC No. 1
AGENCY CONTACT LIST

Title	First	Last	Title	Company	Address 1	Address 2	Town	PC	Telephone	Email
Chief	Phillip Angus	Franks		Wahta Mohawk	P.O. Box 260		Bala, ON	P0C 1A0	705-762-2354	phillip.franks@wahtamohowakcouncil.ca
Chief	Daniel	Miskokomon		Walpole Island	R.R.#3		Wallaceburg, ON	N8A 4K9	519-627-1481	daniel.miskokomon@wifn.org
Chief	Warren L.	Tabobondung		Wasauksing First Nation	P.O. Box 250		Parry Sound, ON	P2A 2X4	705-746-2531	chief@wasauksing.ca
Chief	Irene	Kells		Zhiibaahaasing First Nation	36 Sagon		Zhiibaahaasing, ON	P0P 1X0	705-283-3963	zhiiband@manitoulin.net
Utilities										
Mr.	Ted	Burrell		Collus Powerstream	43 Stewart Road		Collingwood, ON	L9Y 4M7	705-443-1868	tburrell@collus.com
Ms.	Carol	O'Brien		Bell Canada	136 Bayfield Street	2nd Floor	Barrie, ON	L4M 3B1	705-722-2405	carol.obrien@bell.ca
Mr.	Tony	Dominguez		Rogers	1 Sperling Drive		Barrie, ON	L4N 6B8	705-737-4660 xt 6907	tony.dominguez@rci.rogers.com
Mr.	Tom	Jedemann		Enbridge Gas	101 Honda Blvd		Markham, ON	L6C 0M6	905-927-3184	tom.jedemann@enbridge.com

Ainley & Associates Limited
280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

May 12, 2017 File #217013

'SAMPLE AGENCY LETTER'

Environment Canada
Environmental Protection Operations Division
867 Lakeshore Road
P.O. Box 5050
Burlington, ON L7R 4A6

Attn: Mr. Rob Dobos
Manager, Environmental Assessment Section

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public Information Centre No. 1

Dear Mr. Dobos,

The Town of Collingwood has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) and detailed design to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

The purpose of this letter is to advise of the commencement of the Class EA process and to inform you of an upcoming Public Information Centre (PIC) scheduled for the project. Please refer to the attached notice for additional details regarding the project, including the date and time of the Public Information Centre.

Should you have any questions or concerns regarding this project, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca

Yours truly,
AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

Tel: 705-445-3460 ext. 156
Email: nollert@ainleygroup.com

pc: T. Harvey Town of Collingwood, Project Coordinator
J. Velick Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski Ainley Group, Project Engineer
A. Potter Ainley Group, Environmental Planner

TOWN OF COLLINGWOOD

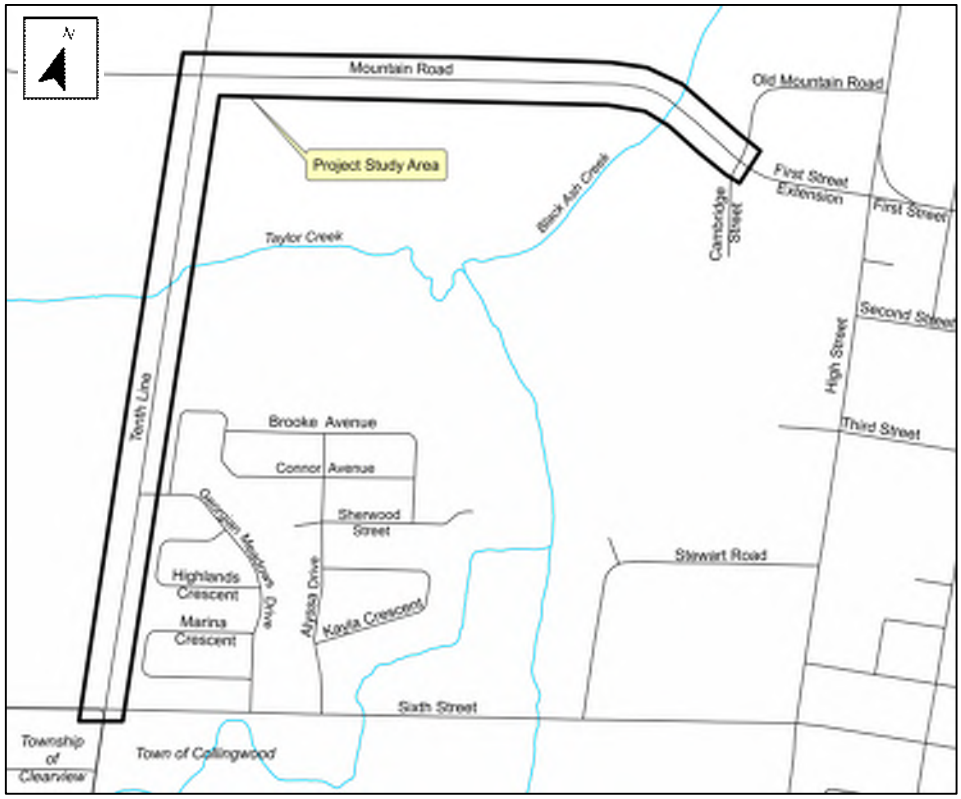
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public information Centre No. 1

The Project

The Town of Collingwood has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) and detailed design to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). The purpose of this undertaking is to address capacity and operational deficiencies and to accommodate future growth. This project will provide improvements to the existing road cross-section as well as drainage, safety and intersection improvements including rehabilitation or replacement of the existing Black Ash Creek Bridge.

The Process

This project will follow the Schedule 'C' planning and design process in accordance with the *Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).*



Public Information Centre No. 1

The first of two Public Information Centres has been scheduled to introduce the project and to allow all interested parties an opportunity to review the alternative solutions developed to address the identified deficiencies and to discuss the project with the study team. Public Information Centre No. 1 has been scheduled as follows:

Date: Thursday, June 1st, 2017.

Time: 4:00 p.m. to 7:00 p.m.

Location: Community Room B and C, Third Floor
Collingwood Public Library
55 Ste. Marie Street
Collingwood, Ontario L9Y 0W6

Public input is encouraged throughout this process and will be given consideration during the planning and design of this project. The deadline for the submission of comments following Public Information Centre No. 1 will be **June 15, 2017**. Information will be collected in accordance with the *Municipal Freedom of Information and Protection of Privacy Act*. With the exception of personal information, all comments will become part of the public record.

To obtain additional information or to provide input, please contact either of the following members of the study team:

Mr. Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5
Tel: 705-445-1292
Fax: 705-445-1286
Email: tharvey@collingwood.ca

Mr. Tom Nollert, C.E.T.
Consultant Project Manager
Ainley Group
280 Pretty River Parkway
Collingwood, ON L9Y 4J5
Tel: 705-445-3460 ext. 156
Fax: 705-445-0968
Email: nollert@ainleygroup.com

This notice first issued May 12, 2017.

Ainley & Associates Limited
280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

May 12, 2017 File #217013

Ministry of Indigenous Relations & Reconciliation (MIRR)
160 Bloor St. East
9th Floor
Toronto, ON M7A 2E6

Attn: Consultation Unit

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public Information Centre No. 1

The Town of Collingwood has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) and detailed design to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Should you have any questions or concerns regarding this project, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca

Yours truly,
AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

Tel: 705-445-3460 ext. 156
Email: nollert@ainleygroup.com

pc: T. Harvey Town of Collingwood, Project Coordinator
J. Velick Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski Ainley Group, Project Engineer
A. Potter Ainley Group, Environmental Planner

Ainley & Associates Limited
280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

May 12, 2017 File #217013

The Metis Nation of Ontario
500 Old St. Patrick St.
Unit 3
Ottawa, ON K1N 9G4

Attn: Mr. Brian Tucker
Manager of Way of Life Framework

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public Information Centre No. 1

Dear Mr. Tucker,

The Town of Collingwood has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) and detailed design to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,
AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

Tel: 705-445-3460 ext. 156
Email: nollert@ainleygroup.com

pc: T. Harvey	Town of Collingwood, Project Coordinator
J. Velick	Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski	Ainley Group, Project Engineer
A. Potter	Ainley Group, Environmental Planner

Ainley & Associates Limited
280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

May 12, 2017 File #217013

Metis National Council
4-340 MacLaren Street
Ottawa, ON K2P 0M6

Attn: Ms. Lynette Davis
Director of Operations

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public Information Centre No. 1

Dear Ms. Davis,

The Town of Collingwood has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) and detailed design to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,
AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

Tel: 705-445-3460 ext. 156
Email: nollert@ainleygroup.com

pc: T. Harvey Town of Collingwood, Project Coordinator
J. Velick Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski Ainley Group, Project Engineer
A. Potter Ainley Group, Environmental Planner

Ainley & Associates Limited
280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

May 12, 2017 File #217013

Aamjiwnaang First Nation
978 Tashmoo Avenue
Sarnia, ON N7T 7H5

Attn: Chief Joanne Rogers

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public Information Centre No. 1

Dear Chief Rogers,

The Town of Collingwood has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) and detailed design to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,
AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

Tel: 705-445-3460 ext. 156
Email: nollert@ainleygroup.com

pc: T. Harvey Town of Collingwood, Project Coordinator
J. Velick Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski Ainley Group, Project Engineer
A. Potter Ainley Group, Environmental Planner

Ainley & Associates Limited
280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

May 12, 2017 File #217013

Alderville First Nation
P.O. Box 46
Roseneath, ON K0K 2X0

Attn: Chief James Robert Marsden

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public Information Centre No. 1

Dear Chief Marsden,

The Town of Collingwood has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) and detailed design to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,
AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

Tel: 705-445-3460 ext. 156
Email: nollert@ainleygroup.com

pc: T. Harvey Town of Collingwood, Project Coordinator
J. Velick Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski Ainley Group, Project Engineer
A. Potter Ainley Group, Environmental Planner

Ainley & Associates Limited
280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

May 12, 2017 File #217013

Aundeck-Omni-Kaning First Nation
R.R. #1, COMP 21
Little Current, ON P0P 1K0

Attn: Chief Patsy Corbiere

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public Information Centre No. 1

Dear Chief Corbiere,

The Town of Collingwood has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) and detailed design to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,
AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

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Email: nollert@ainleygroup.com

pc: T. Harvey Town of Collingwood, Project Coordinator
J. Velick Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski Ainley Group, Project Engineer
A. Potter Ainley Group, Environmental Planner

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280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

May 12, 2017 File #217013

Beausoleil First Nation
General Delivery
Cedar Point, ON L0K 1C0

Attn: Chief Mary McQue-King

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public Information Centre No. 1

Dear Chief McQue-King,

The Town of Collingwood has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) and detailed design to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,
AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

Tel: 705-445-3460 ext. 156
Email: nollert@ainleygroup.com

pc: T. Harvey Town of Collingwood, Project Coordinator
J. Velick Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski Ainley Group, Project Engineer
A. Potter Ainley Group, Environmental Planner

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280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

May 12, 2017 File #217013

Chippewas of Georgina Island First Nation
R.R. #2
P.O. Box 13
Sutton West, ON L0E 1R0

Attn: Chief Donna Big Canoe

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public Information Centre No. 1

Dear Chief Big Canoe,

The Town of Collingwood has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) and detailed design to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,
AINLEY & ASSOCIATES LIMITED

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Project Manager

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pc: T. Harvey Town of Collingwood, Project Coordinator
J. Velick Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski Ainley Group, Project Engineer
A. Potter Ainley Group, Environmental Planner

Ainley & Associates Limited
280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

May 12, 2017 File #217013

Chippewas of Kettle and Stony Point First Nation
6247 Indian Lane
Kettle & Stony Point First Nation, ON N0N 1J1

Attn: Chief Thomas Bressette

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public Information Centre No. 1

Dear Chief Bressette,

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Yours truly,
AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

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Email: nollert@ainleygroup.com

pc: T. Harvey Town of Collingwood, Project Coordinator
J. Velick Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski Ainley Group, Project Engineer
A. Potter Ainley Group, Environmental Planner

Ainley & Associates Limited
280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

May 12, 2017 File #217013

Chippewas of Nawash First Nation
R.R. #5
Wiarton, ON N0H 2T0

Attn: Chief Greg Nadjiwon

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public Information Centre No. 1

Dear Chief Nadjiwon,

The Town of Collingwood has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) and detailed design to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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May 12, 2017 File #217013

Chippewas of Rama First Nation
200-5884-Rama Road
Rama, ON L3V 6H6

Attn: Chief Rodney Noganosh

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public Information Centre No. 1

Dear Chief Noganosh,

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May 12, 2017 File #217013

Chippewas of the Thames First Nation
R.R. #1
Muncey, ON N0L 1Y0

Attn: Chief Leslie White-eye

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public Information Centre No. 1

Dear Chief White-eye,

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May 12, 2017 File #217013

Curve Lake First Nation
General Delivery
Curve Lake, ON K0L 1R0

Attn: Chief Phyllis Williams

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public Information Centre No. 1

Dear Chief Williams,

The Town of Collingwood has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) and detailed design to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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E-mail collingwood@ainleygroup.com

May 12, 2017 File #217013

Hiawatha First Nation
R.R.#2
Keene, ON K0L 2G0

Attn: Chief Lori Carr

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public Information Centre No. 1

Dear Chief Carr,

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May 12, 2017 File #217013

M'Chigeeng First Nation
P.O. Box 333
53 Hwy 551
M'Chigeeng, ON P0P 1G0

Attn: Chief Linda Debassige

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public Information Centre No. 1

Dear Chief Debassige,

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May 12, 2017 File #217013

Mississauga's of Scugog Island First Nation
22521 Island Road
Port Perry, ON L9L 1B6

Attn: Chief Kelly Larocca

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public Information Centre No. 1

Dear Chief Larocca,

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May 12, 2017 File #217013

Mississaugas of the Credit First Nation
R.R.#6
Hagersville, ON N0A 1H0

Attn: Chief Stacey LaForme

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public Information Centre No. 1

Dear Chief LaForme,

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May 12, 2017 File #217013

Mohawks of Akwesasne First Nation
P.O. Box 579
Cornwall, ON K6H 5T3

Attn: Chief Abram Benedict

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public Information Centre No. 1

Dear Chief Benedict,

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E-mail collingwood@ainleygroup.com

May 12, 2017 File #217013

Mohawks of the Bay of Quinte First Nation
R.R. #1
Deseronto, ON K0K 1X0

Attn: Chief Donald Maracle

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
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Dear Chief Maracle,

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May 12, 2017 File #217013

Moose Deer Point First Nation
P.O. Box 119
MacTier, ON P0C 1H0

Attn: Chief Barron King

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public Information Centre No. 1

Dear Chief King,

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May 12, 2017 File #217013

Saugeen First Nation
R.R.#1
Southhampton, ON N0H 2L0

Attn: Chief Lester Anoquot

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public Information Centre No. 1

Dear Chief Anoquot,

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May 12, 2017 File #217013

Sheguiandah First Nation
P.O. Box 101
Sheguiandah, ON P0P 1W0

Attn: Chief Andrew Aguonie

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public Information Centre No. 1

Dear Chief Aguonie,

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May 12, 2017 File #217013

Six Nations of the Grand River First Nation
P.O. Box 5000
Ohsweken, ON N0A 1M0

Attn: Chief Gail Ava Hill

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public Information Centre No. 1

Dear Chief Hill,

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May 12, 2017 File #217013

Wahta Mohawk First Nation
P.O. Box 260
Bala, ON P0C 1A0

Attn: Chief Phillip Angus Franks

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public Information Centre No. 1

Dear Chief Franks,

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J. Velick Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski Ainley Group, Project Engineer
A. Potter Ainley Group, Environmental Planner

Ainley & Associates Limited
280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

May 12, 2017 File #217013

Walpole Island First Nation
R.R.#3
Wallaceburg, ON N8A 4K9

Attn: Chief Daniel Miskokomon

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public Information Centre No. 1

Dear Chief Miskokomon,

The Town of Collingwood has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) and detailed design to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

The purpose of this letter is to advise of the commencement of the Class EA process and to inform you of an upcoming Public Information Centre (PIC) scheduled for the project. Please refer to the attached notice for additional details regarding the project, including the date and time of the Public Information Centre.

Should you have any questions or concerns regarding this project, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca

Yours truly,
AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

Tel: 705-445-3460 ext. 156
Email: nollert@ainleygroup.com

pc: T. Harvey Town of Collingwood, Project Coordinator
J. Velick Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski Ainley Group, Project Engineer
A. Potter Ainley Group, Environmental Planner

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E-mail collingwood@ainleygroup.com

May 12, 2017 File #217013

Wasauksing First Nation
P.O. Box 250
Parry Sound, ON P2A 2X4

Attn: Chief Warren L. Tabobondung

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public Information Centre No. 1

Dear Chief Tabobondung,

The Town of Collingwood has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) and detailed design to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Should you have any questions or concerns regarding this project, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca

Yours truly,
AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

Tel: 705-445-3460 ext. 156
Email: nollert@ainleygroup.com

pc: T. Harvey Town of Collingwood, Project Coordinator
J. Velick Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski Ainley Group, Project Engineer
A. Potter Ainley Group, Environmental Planner

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Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

May 12, 2017 File #217013

Zhiibaahaasing First Nation
36 Sagon
Zhiibaahaasing, ON P0P 1X0

Attn: Chief Irene Kells

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public Information Centre No. 1

Dear Chief Kells,

The Town of Collingwood has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) and detailed design to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Should you have any questions or concerns regarding this project, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca

Yours truly,
AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

Tel: 705-445-3460 ext. 156
Email: nollert@ainleygroup.com

pc: T. Harvey Town of Collingwood, Project Coordinator
J. Velick Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski Ainley Group, Project Engineer
A. Potter Ainley Group, Environmental Planner

From:	Andrea Potter
To:	Joselyn Keeshig (j.keeshig@saugeenojibwaynation.ca)
Cc:	Trevor Harvey (tharvey@collingwood.ca); John Velick (jvelick@collingwood.ca); Tom Nollert; Patrick Wojcieszynski
Bcc:	Ainley File
Subject:	Tenth Line and Mountain Road Improvements Class EA Town of Collingwood File No. 217013
Date:	Wednesday, July 12, 2017 12:01:00 PM
Attachments:	217013 Tenth Ln-Mount Rd C1 Notice May 2017 FINAL.pdf image001.jpg

Hi Jocelyn,

Further to our discussion earlier in the week, please note the following.....

Our office issued the attached notice May 12, 2017 to a number of Aboriginal agencies and communities. Prior to issue of this notice we utilized the Aboriginal and Treaty Rights Information System (ATRIS) website provided by Indian and Northern Affairs Canada (formerly Aboriginal Affairs and Northern Development Canada) to establish an appropriate Aboriginal contact list for this project. We also contacted the MOECC for direction in this regard as they have now taken over this responsibility from the Ministry of Aboriginal Affairs.

While your office was not identified on the ATRIS list, the MOECC did recently advise that you may have an interest in this project. Please find attached a copy of the initial notice issued for this project. While the Public Information Centre was held June 1, 2017 the material presented can be made available upon request and / or we can arrange a meeting if you would like to discuss the project further.

We have added you to our contact list and you will be notified in advance of the next PIC tentatively scheduled for September 2017.

If you have any questions or require anything further please feel free to give me a call.

Regards,

Andrea Potter, B.E.S.
Environmental Planner
image003
www.ainleygroup.com
Tel: (705) 726-3371 Ext. 256

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Jody Marks

From: Andrea Potter <potter@ainleygroup.com>
Sent: Wednesday, July 12, 2017 12:02 PM
To: Dave Dusome (gbmccontact@gmail.com)
Cc: Trevor Harvey (tharvey@collingwood.ca); John Velick (jvelick@collingwood.ca); Tom Nollert; Patrick Wojcieszynski
Subject: Tenth Line and Mountain Road Improvements Class EA Town of Collingwood File No. 217013
Attachments: 217013 Tenth Ln-Mount Rd C1 Notice May 2017 FINAL.pdf

Hello Mr. Dusome,

Our office issued the attached notice May 12, 2017 to a number of Aboriginal agencies and communities. Prior to issue of this notice we utilized the Aboriginal and Treaty Rights Information System (ATRIS) website provided by Indian and Northern Affairs Canada (formerly Aboriginal Affairs and Northern Development Canada) to establish an appropriate Aboriginal contact list for this project. We also contacted the MOECC for direction in this regard as they have now taken over this responsibility from the Ministry of Aboriginal Affairs.

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Jody Marks

From: Andrea Potter <potter@ainleygroup.com>
Sent: Wednesday, July 12, 2017 12:01 PM
To: Tony Muscat (tonymuscat@rogers.com)
Cc: Trevor Harvey (tharvey@collingwood.ca); John Velick (jvelick@collingwood.ca); Tom Nollert; Patrick Wojcieszynski
Subject: Tenth Line and Mountain Road Improvements Class EA Town of Collingwood File No. 217013
Attachments: 217013 Tenth Ln-Mount Rd C1 Notice May 2017 FINAL.pdf

Hi Tony,

Further to our discussion earlier in the week, please note the following…..

Our office issued the attached notice May 12, 2017 to a number of Aboriginal agencies and communities. Prior to issue of this notice we utilized the Aboriginal and Treaty Rights Information System (ATRIS) website provided by Indian and Northern Affairs Canada (formerly Aboriginal Affairs and Northern Development Canada) to establish an appropriate Aboriginal contact list for this project. We also contacted the MOECC for direction in this regard as they have now taken over this responsibility from the Ministry of Aboriginal Affairs.

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If you have any questions or require anything further please feel free to give me a call.

Regards,

Andrea Potter, B.E.S.
Environmental Planner

www.ainleygroup.com
Tel: (705) 726-3371 Ext. 256

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Resident Mail Out

Ainley & Associates Limited
280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

May 12, 2017. File #217013

Attn: Resident / Property Owner / Tenant

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public Information Centre No. 1

The Town of Collingwood has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) and detailed design to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project will follow the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

The purpose of this letter is to advise of the commencement of the Class EA process and to inform you of an upcoming Public Information Centre (PIC) scheduled for the project. Please refer to the attached notice for additional details regarding the project, including the date and time of the Public Information Centre.

Should you have any questions or concerns regarding this project, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

Tel: 705-445-3460 ext. 156
Email: nollert@ainleygroup.com

pc: T. Harvey — Town of Collingwood, Project Coordinator
J. Velick — Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski — Ainley Group, Project Engineer
A. Potter — Ainley Group, Environmental Planner

S:\217013\06. Consultation\02-C1-Commence-PIC 1\217013 Tenth Ln-Mount Rd C1 Prop. Owner Letter May 2017 FINAL.doc

Comments Received From Agencies

2/70-3

Andrea Potter

From:	Liu, Chunmei (MOECC) <Chunmei.Liu@ontario.ca>
Sent:	June-27-17 11:26 AM
To:	Andrea Potter
Cc:	tharvey@collingwood.ca; nollert@ainleygroup.com; Martin, Paul (MOECC); Hood, Cindy (MOECC)
Subject:	RE: Aboriginal Communities to Contact for Municipal Class EA Projects
Attachments:	moecc_initial comments_10th line and moutain rd_june27_2017.pdf

Hi Andrea,

Sorry for this later response. Please find attached a letter as our comments for the above-noted project.

Please note – MOECC is in the process of developing an internal protocol to provide proponents with a list of potentially interested Aboriginal communities that should be notified of and invited to participate in Environmental Assessment studies. Please disregard the section in the attached letter directing proponents to contact the Ministry of Aboriginal Affairs (now Ministry of Indigenous Relations and Reconciliation).

First off, it appears from the emails below that the Town and Ainley Group have developed a list of communities to consult using ATRIS, which has resulted in 25-30 communities being identified. We would like to remind you that the list's size is way too large. We have been running into this problem a lot lately. We recommend that the following Indigenous communities be consulted on the Tenth Line and Mountain Road Reconstruction in Collingwood:

- Saugeen Ojibway Nation Environment Office with a copy to the Chiefs of (Saugeen First Nation and Chippewas of Nawash Unceded First Nation)
- Chippewas of Georgina Island First Nation
- Beausoleil First Nation
- Chippewas of Rama First Nation
- Moon River Métis council
- Georgian Bay Métis council

(Note: notices to these two Métis councils should be copied to the Métis Nation of Ontario main office.)

If you have any questions regarding these comments, please feel free to contact me for further discussion.

Thanks,

Chunmei Liu | Environmental Resource Planner | Environmental Assessment Coordinator |Central Region, Ontario Ministry of the Environment | 5775 Yonge Street, 8th Flr | Toronto, Ontario M2M 4J1
Tel: 416-326-4886 | Fax: 416-325-6347 | Email: Chunmei.Liu@ontario.ca | Website: http://www.ene.gov.on.ca/

Please consider the environment before printing this email

From: Andrea Potter [mailto:potter@ainleygroup.com]
Sent: May-01-17 2:17 PM
To: Liu, Chunmei (MOECC)
Subject: Aboriginal Communities to Contact for Municipal Class EA Projects

Ministry of the Environment
and Climate Change

Central Region
Technical Support Section

5775 Yonge Street, 8th Floor
North York, OntarioM2M 4J1

Tel.: (416) 326-6700
Fax: (416) 325-6347

Ministère de l'Environnement et de
l'Action en Matière de Changement Climatique

Région du Centre
Section d'appui technique

5775, rue Yonge, 8ième étage
North York, Ontario M2M 4J1

Tél. : (416) 326-6700
Téléc. : (416) 325-6347

Ontario

June 27, 2017

File No.: EA 01-06-05

Mr. Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5

RE: Tenth Line and Mountain Road Improvements
Town of Collingwood
Class Environmental Assessment
Response to Notice of Study Commencement

Dear Mr. Harvey:

This letter acknowledges that the Town of Collingwood is conducting a Class Environmental Assessment (EA) study for improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This study is following the approved environmental planning process for a Schedule C project under the *Municipal Engineers Association (MEA) Municipal Class EA (October 2000, as amended in 2007 & 2011)*.

The "Areas of Interest" document attached provides guidance regarding the ministry's interests with respect to the Class EA process. Please identify the areas of interest which are applicable to the proposed project and ensure they are addressed.

Failure to properly follow the Class EA process is an offence under the *Environmental Assessment Act*. It may also result in the ministry withholding/revising an approval provided under the Act and/or the Minister issuing a Part II Order for the project.

Please forward our office the Notice of Completion and Environmental Study Report (ESR) when completed. Should your team have any questions regarding the above, please contact me at 416-326-4886.

Yours sincerely,

Chunmei Liu
Environmental Resource Planner and EA Coordinator
Air, Pesticides and Environmental Planning

c. C. Hood, Manager, Barrie District Office, MOECC
T. Nollert, Project Manager, Ainley Group
Central Region EA File
A & P File

AREAS OF INTEREST

Please check off each applicable area after these areas have been considered / addressed.

☐ **Ecosystem Protection and Restoration**

- Any impacts to ecosystem form and function must be avoided where possible. The Project File/ESR should describe any proposed mitigation measures and how project planning will protect and enhance the local ecosystem.

- All natural heritage features should be identified and described in detail to assess potential impacts and to develop appropriate mitigation measures. The following sensitive environmental features may be located within or adjacent to the study area:

  - Areas of Natural and Scientific Interest (ANSIs)
  - Rare Species of flora or fauna
  - Watercourses
  - Wetlands
  - Woodlots

  Please consult with the Ministry of Natural Resources and Forestry (MNRF), Fisheries and Oceans Canada (DFO) and your local conservation authority to determine if special measures or additional studies will be necessary to preserve and protect these sensitive features. In addition, the proponent may consider the provisions of the Rouge Park Management Plan if applicable.

☐ **Surface Water**

- The Project File/ESR must include a sufficient level of information to demonstrate that there will be no negative impacts on the natural features or ecological functions of any watercourses within the study area. Measures should be included in the planning and design process to ensure that any impacts to watercourses from construction or operational activities (e.g. spills, erosion, pollution) are mitigated as part of the proposed undertaking.

- Additional stormwater runoff from new pavement can impact receiving watercourses and flood conditions. Quality and quantity control measures to treat stormwater runoff should be considered for all new impervious areas and, where possible, existing surfaces. The ministry's Stormwater Management Planning and Design Manual (2003) should be referenced in the Project File/ESR and utilized when designing stormwater control methods. We recommend that a Stormwater Management Plan should be prepared as part of the Class EA process that includes:

  - Strategies to address potential water quantity and erosion impacts related to stormwater draining into streams or other sensitive environmental features, and to ensure that adequate (enhanced) water quality is maintained
  - Watershed information, drainage conditions, and other relevant background information
  - Future drainage conditions, stormwater management options, information on erosion and sediment control during construction, and other details of the proposed works
  - Information on maintenance and monitoring commitments.

- Ontario Regulation 60/08 under the Ontario Water Resources Act (OWRA) applies to the Lake Simcoe Basin, which encompasses Lake Simcoe and the lands from which surface water drains into Lake Simcoe. If the proposed sewage treatment plant is listed in Table 1 of the regulation, the Project File/ESR should describe how the proposed project and its mitigation measures are consistent with the requirements of this regulation and the OWRA.

☐ **Groundwater**

- The status of, and potential impacts to any well water supplies should be addressed. If the project involves groundwater takings or changes to drainage patterns, the quantity and quality of groundwater may be affected due to drawdown effects or the redirection of existing contamination flows. In addition, project activities may infringe on existing wells such that they must be reconstructed or sealed and abandoned. Appropriate information to define existing groundwater conditions should be included in the Project File/ESR.

- If the potential construction or decommissioning of water wells is identified as an issue, the Project File/ESR should refer to Ontario Regulation 903, Wells, under the OWRA.

- Potential impacts to groundwater-dependent natural features should be addressed. Any changes to groundwater flow or quality from groundwater taking may interfere with the ecological processes of streams, wetlands or other surficial features. In addition, discharging contaminated or high volumes of groundwater to these features may have direct impacts on their function. Any potential effects should be identified, and appropriate mitigation measures should be recommended. The level of detail required will be dependent on the significance of the potential impacts.

- Any potential approval requirements for groundwater taking or discharge should be identified in the Project File/ESR. In particular, a Permit to Take Water (PTTW) under the OWRA will be required for any water takings that exceed 50,000 litres per day.

☐ **Air Quality, Dust and Noise**

- If there are sensitive receptors in the surrounding area of this project, an air quality/odour impact assessment will be useful to evaluate alternatives, determine impacts and identify appropriate mitigation measures. The scope of the assessment can be determined based on the potential effects of the proposed alternatives, and typically includes source and receptor characterization, a quantification of air quality impacts by determining emission rates and conducting dispersion modelling, and an assessment of effects. The assessment will compare to all available standards for any contaminants of concern. Please contact this office during the scoping process to confirm the appropriate level of assessment.

- Dust and noise control measures should be addressed and included in the construction plans to ensure that nearby residential and other sensitive land uses within the study area are not adversely affected during construction activities.

- The Project File/ESR should consider the potential impacts of increased noise levels during the operation of the undertaking due to potentially higher traffic volumes resulting from this project. The proponent should explore all potential measures to mitigate significant noise impacts during the assessment of alternatives.

☐ **Servicing and Facilities**

- Any facility that releases emissions to the atmosphere, discharges contaminants to ground or surface water, provides potable water supplies, or stores, transports or disposes of waste must have an Environmental Compliance Approval (ECA) before it can operate lawfully. Please consult with the Environmental Approvals Access and Service Integration Branch (EAASIB) to determine whether a new or amended ECA will be required for any proposed infrastructure.

- Please refer to the ministry's "D-Series" guidelines – Land Use Compatibility to ensure that any potential land use conflicts are considered when planning for any infrastructure or facilities related to wastewater, pipelines, landfills or industrial uses.

☐ **Contamination and Soils**

- Any current or historical waste disposal sites should be identified in the Project File/ESR. The status of these sites should be determined to confirm whether approval pursuant to Section 46 of the EPA may be required for land uses on former disposal sites.

- Since the removal or movement of soils may be required, the ministry's document "Management of Excess Soil – A Guide for Best Management Practices" should be followed regarding all activities related to soil management. If potential contamination involved at the site, appropriate tests to determine contaminant levels from previous land uses or dumping should be undertaken. If the soils are contaminated, you must determine how and where they are to be disposed of, consistent with *Part XV.1 of the Environmental Protection Act* (EPA) and Ontario Regulation 153/04, Records of Site Condition, which details the new requirements related to site assessment and clean up. Please contact the ministry's District Offices for further consultation if contaminated sites are present.

- The location of any underground storage tanks should be investigated in the Project File/ESR. Measures should be identified to ensure the integrity of these tanks and to ensure an appropriate response in the event of a spill. The ministry's Spills Action Centre must be contacted in such an event.

- The Project File/ESR should identify any underground transmission lines in the study area. The owners should be consulted to avoid impacts to this infrastructure, including potential spills.

☐ **Mitigation and Monitoring**

- Design and construction reports and plans should be based on a best management approach that centres on the prevention of impacts, protection of the existing environment, and opportunities for rehabilitation and enhancement of any impacted areas.

- All waste generated during construction must be disposed of in accordance with ministry requirements.

- Contractors must be made aware of all environmental considerations so that all environmental standards and commitments for both construction and operation are met. Mitigation measures should be clearly referenced in the Project File/ESR and regularly monitored during the construction stage of the project. In addition, we encourage proponents to conduct post-construction monitoring to ensure all mitigation measures have been effective and are functioning properly. The proponent's construction and post-construction monitoring plans should be documented in the Project File/ESR.

☐ **Planning and Policy**

- The Provincial Policy Statement (2014) contains policies that protect Ontario's natural heritage, such as significant ANSIs, watercourses and wetlands. Applicable policies should be referenced in the ESR/Project File, and the proponent should demonstrate how this

proposed project is consistent with these policies, including describing measures that prevent and minimize potential impacts.

- Parts of the study area may be subject to the Oak Ridges Moraine Conservation Plan, Niagara Escarpment Plan, Greenbelt Plan, Lake Simcoe Protection Plan, Source Protection Plans, or Growth Plan for the Greater Golden Horseshoe. The Project File/ESR should demonstrate how the proposed study adheres to the relevant policies in these plans.

☐ **Class EA Process**

- If this project is a Master Plan: there are several different approaches that can be used to conduct a Master Plan, examples of which are outlined in Appendix 4 of the Class EA. The Master Plan should clearly indicate the selected approach for conducting the plan, in particular by identifying whether the levels of assessment, consultation and documentation are sufficient to fulfill the requirements for Schedule B or C projects. In addition, any Schedule B or C projects identified in the plan would be subject to Part II Order Requests under the *Environmental Assessment Act* (EAA), although the plan itself would not be.

- The Project File/ESR should provide clear and complete documentation of the planning process in order to allow for transparency in decision-making. The Project File/ESR must also demonstrate how the consultation provisions of the Class EA have been fulfilled, including documentation of all public consultation efforts undertaken during the planning process. Additionally, the Project File/ESR should identify all concerns that were raised and how they have been addressed throughout the planning process. The Class EA also directs proponents to include copies of comments submitted on the project by interested stakeholders, and the proponent's responses to these comments.

- The Class EA requires the consideration of the effects of each alternative on all aspects of the environment. The Project File/ESR should include a level of detail (e.g. hydrogeological investigations, terrestrial and aquatic assessments) such that all potential impacts can be identified and appropriate mitigation measures can be developed. Any supporting studies conducted during the Class EA process should be referenced and included as part of the Project File/ESR.

- Please include in the Project File/ESR a list of all subsequent permits or approvals that may be required for the implementation of the preferred alternative, including the ministry's PTTW and ECAs, conservation authority permits, and approval under the *Canadian Environmental Assessment Act* (CEAA).

- Ministry guidelines and other information related to the issues above are available at http://www.ontario.ca/environment-and-energy/environment-and-energy. Please review all the available guides and reference any relevant information in the Project File/ESR.

☐ **Aboriginal Communities**

- The proposed project may have the potential to affect Aboriginal communities who hold or claim Aboriginal or treaty rights protected under Section 35 of Canada's *Constitution Act* 1982. The Crown has a duty to consult First Nation and Métis communities when it knows about established or credibly asserted Aboriginal or treaty rights, and contemplates decisions or actions that may adversely affect them.

- Although the Crown remains responsible for ensuring the adequacy of consultation with potentially affected Aboriginal communities, it may delegate procedural aspects of the

consultation process to project proponents.

- The environmental assessment process requires proponents to consult with interested persons and government agencies, including those potentially affected by the proposed project. This includes a responsibility to conduct adequate consultation with First Nation and Métis communities.

- The ministry relies on consultation conducted by proponents when it assesses the Crown's obligations and directs proponents during the regulatory process.

- Where the Crown's duty to consult is triggered in relation to your proposed project, the ministry is delegating the procedural aspects of rights-based consultation to proponents through this letter.

- Steps that proponents may need to take in relation to Aboriginal consultation for the proposed projects are outlined in the "Aboriginal Consultation Information" checklist below. Please complete the checklist contained, and keep related notes as part of the consultation record. Doing so will help assess the project's potential adverse effects on Aboriginal or treaty rights.

- Please contact the Director, Environmental Approvals Branch if the proposed project may adversely affect an Aboriginal or treaty right, consultation has reached an impasse, or if a Part II Order request/elevation request has been submitted. The ministry will then assess the extent of any Crown duty to consult in the circumstances, and will consider whether additional steps should be taken and what role proponents will be asked to play in them.

ABORIGINAL CONSULTATION INFORMATION

Consultation with Interested Persons under the Ontario Environmental Assessment Act

Proponents subject to the Ontario *Environmental Assessment Act* are required to consult with interested persons, which may include First Nations and Métis communities. In some cases, special efforts may be required to ensure that Aboriginal communities are made aware of the project and are afforded opportunities to provide comments. Direction about how to consult with interested persons/communities is provided in the Code of Practice: Consultation in Ontario's Environmental Assessment Process available on the Ministry's website:

https://www.ontario.ca/environment-and-energy/consultation-ontarios-environmental-assessment-process

As an early part of the consultation process, proponents are required to contact the Ontario Ministry of Aboriginal Affairs' Consultation Unit and visit Aboriginal Affairs and Northern Development Canada's Aboriginal and Treaty Rights Information System (ATRIS) to help identify which First Nation and Métis communities may be interested in or potentially impacted by their proposed projects.

ATRIS can be accessed through the Aboriginal Affairs and Northern Development Canada website: http://sidait-atris.aadnc-aandc.gc.ca/atris_online/

For more information in regard Aboriginal consultation as part of the Environmental Assessment process, refer to the Ministry's website:

www.ontario.ca/government/environment-assessments-consulting-aboriginal-communities

You are advised to provide notification directly to all of the First Nation and Métis communities who may be interested in the project. You should contact First Nation communities through their Chief and Band Council, and Metis communities through their elected leadership.

Rights-based consultation with First Nation and Métis Communities

Proponents should note that, in addition to requiring interest-based consultation as described above, certain projects may have the potential to adversely affect the ability of First Nation or Métis communities to exercise their established or credibly asserted Aboriginal or treaty rights. In such cases, Ontario may have a duty to consult those Aboriginal communities.

Activities which may restrict or reduce access to unoccupied Crown lands, or which could result in a potential adverse impact to land or water resources in which harvesting rights are exercised, may have the potential to impact Aboriginal or treaty rights. For assistance in determining whether your proposed project could affect these rights, please refer to the attached "Preliminary Assessment Checklist: First Nation and Métis Community Interest."

If there is likely to be an adverse impact to Aboriginal or treaty rights, accommodation may be required to avoid or minimize the adverse impacts. Accommodation is an outcome of consultation and includes any mechanism used to avoid or minimize adverse impacts to Aboriginal or treaty rights and traditional uses. Solutions could include mitigation such as adjustments in the timing or geographic location of the proposed activity. Accommodation may in certain circumstances involve the provision of financial compensation, but does not necessarily require it.

For more information about the duty to consult, please see the Ministry's website at:

www.ontario.ca/government/duty-consult-aboriginal-peoples-ontario

The proponent must contact the Director, Environmental Approvals Branch if a project may adversely affect an Aboriginal or treaty right, consultation has reached an impasse, or if a Part II Order or an elevation request is anticipated; the Ministry will then determine whether the Crown has a duty to consult.

The Director of the Environmental Approvals Branch can be notified either by email with the subject line "Potential Duty to Consult" to EAASIBgen@ontario.ca or by mail or fax at the address provided below:

Email:	EAASIBGen@ontario.ca Subject: Potential Duty to Consult
Fax:	416-314-8452
Address:	Environmental Approvals Branch 135 St. Clair Avenue West, 1st Floor Toronto, ON, M4V 1P5

Delegation of Procedural Aspects of Consultation

Proponents have an important and direct role in the consultation process, including a responsibility to conduct adequate consultation with First Nation and Métis communities as part of the environmental assessment process. This is laid out in existing environmental assessment codes of practice and guides that can be accessed from the Ministry's environmental assessment website at: www.ontario.ca/environmentalassessments

The Ministry relies on consultation conducted by proponents when it assesses the Crown's obligations and directs proponents during the regulatory process. Where the Crown's duty to consult is triggered, various additional procedural steps may also be asked of proponents as part of their delegated duty to consult responsibilities. In some situations, the Crown may also become involved in consultation activities.

Ontario will have an oversight role as the consultation process unfolds but will be relying on the steps undertaken and information you obtain to ensure adequate consultation has taken place. To ensure that First Nation and Métis communities have the ability to assess a project's potential to adversely affect their Aboriginal or treaty rights, Ontario requires proponents to undertake certain procedural aspects of consultation.

The proponent's responsibilities for procedural aspects of consultation include:

- Providing notice to the elected leadership of the First Nation and/or Métis communities (e.g., First Nation Chief) as early as possible regarding the project;
- Providing First Nation and/or Métis communities with information about the proposed project including anticipated impacts, information on timelines and your environmental assessment process;
- Following up with First Nation and/or Métis communities to ensure they received project information and that they are aware of the opportunity to express comments and concerns about the project. If you are unable to make the appropriate contacts (e.g. are unable to

contact the Chief) please contact the Environmental Assessment and Planning Coordinator at the Ministry's appropriate regional office for further direction.

- Providing First Nation and/or Métis communities with opportunities to meet with appropriate proponent representatives to discuss the project;
- Gathering information about how the project may adversely impact the relevant Aboriginal and/or Treaty rights (for example, hunting, fishing) or sites of cultural significance (for example, burial grounds, archaeological sites);
- Considering the comments and concerns provided by First Nation and/or Métis communities and providing responses;
- Where appropriate, discussing potential mitigation strategies with First Nation and/or Métis communities;
- Bearing the reasonable costs associated with these procedural aspects of consultation, which may include providing support to help build communities' capacity to participate in consultation about the proposed project.
- Maintaining a Consultation Record to show evidence that you, the proponent, completed all the steps itemized above or at a minimum made meaningful attempts to do so.
- Upon request, providing copies of the Consultation Record to the Ministry. The Consultation Record should:
    - summarize the nature of any comments and questions received from First Nation and/or Métis communities
    - describe your response to those comments and how their concerns were considered
    - include a communications log indicating the dates and times of all communications; and
    - document activities in relation to consultation.

Successful consultation depends, in part, on early engagement by proponents with First Nation and Métis communities. Information shared with communities must be clear, accurate and complete, and in plain language where possible. The consultation process must maintain sufficient flexibility to respond to new information, and we trust you will make all reasonable efforts to build positive relationships with all First Nation and Métis communities contacted. If you need more specific guidance on Aboriginal consultation steps in relation to your proposed project, or if you feel consultation has reached an impasse, please contact the Environmental Assessment and Planning Coordinator at the Ministry's appropriate regional office.

Preliminary Assessment Checklist: First Nation and Métis Community Interests and Rights

In addition to other interests, some main concerns of First Nation and Métis communities may pertain to established or asserted rights to hunt, gather, trap, and fish – these activities generally occur on Crown land or water bodies. As such, projects related to Crown land or water bodies, or changes to how lands and water are accessed, may be of concern to Aboriginal communities.

Please answer the following questions and keep related notes as part of your consultation record. "Yes" responses will indicate a potential adverse impact on Aboriginal or treaty rights.

Where you have identified that your project may trigger rights-based consultation through the following questions, you should arrange for a meeting between you and the Environmental Assessment and Planning Coordinator at the Ministry's appropriate regional office to provide an

early opportunity to confirm whether Ontario's duty to consult is triggered and to discuss roles and responsibilities in that event.

	YES	NO
1. Are you aware of concerns from First Nation and Métis communities about your project or a similar project in the area? The types of concerns can range from interested inquiries to environmental complaints, and even to land use concerns. You should consider whether the interest represents on-going, acute and/or widespread concern.		
2. Is your project occurring on Crown land, or is it close to a water body? Might it change access to either?		
3. Is the project located in an open or forested area where hunting or trapping could take place?		
4. Does the project involve the clearing of forested land?		
5. Is the project located away from developed, urban areas?		
6. Is your project close to, or adjacent to, an existing reserve? Projects in areas near reserves may be of interest to the First Nation and Métis communities living there.		
7. Will the project affect First Nations and/or Métis ability to access areas of significance to them?		
8. Is the area subject to a land claim? Information about land claims filed in Ontario is available from the Ministry of Aboriginal Affairs; information about land claims filed with the federal government is available from Aboriginal Affairs and Northern Development Canada.		
9. Does the project have the potential to impact any archaeological sites?		

Andrea Potter

From: deMoissac, Daniel (MTCS) <Daniel.deMoissac@ontario.ca>
Sent: October-06-17 2:28 PM
To: potter@ainleygroup.com
Cc: tharvey@collingwood.ca
Subject: Tenth Line and Moutain Road MTCS File No. 0007664
Attachments: Tenth Line and Mountain Road, Collingwood_MTCScomments_Oct2017.pdf

Dear Andrea Potter,

Thank you sending the Ministry of Tourism, Culture and Sport (MTCS) Notice of Commencement and PIC for the project mentioned above. MTCS's interest in this EA project relates to its mandate of conserving Ontario's cultural heritage, which includes archaeological resources, built heritage resources and cultural heritage landscapes.

Please find attached MTCS's comments and recommendations for the project.

Meanwhile, we would appreciate being kept informed of this project as it proceeds through the EA process. Please update your contact list to remove the name of Tom Chrzan and send future notices for this EA to **Daniel de Moissac**, Heritage Planner, at **daniel.demoissac@ontario.ca** or **to the address below**. Please note, future heritage related inquiries or EA Notices can be sent to MTCS to the attention of

Karla Barboza, Team Lead,
Heritage Programs Unit,
401 Bay Street, Suite 1700,
Toronto, ON M7A 0A7
karla.barboza@ontario.ca

We would also appreciate being kept informed of the manner in which the Ministry's input has been considered. Please contact me as necessary for clarification or further discussion.

Thank you.

Daniel de Moissac
Heritage Planner (Acting)
Ministry of Tourism, Culture and Sport
Culture Division | Programs and Services Branch | Heritage Program Unit
401 Bay Street, Suite 1700
Toronto, Ontario M7A 0A7

Ministry of Tourism, Culture and Sport

Heritage Program Unit
Programs and Services Branch
401 Bay Street, Suite 1700
Toronto ON M7A 0A7
Tel: 416 314 5424
Fax: 416 212 1802

Ministère du Tourisme, de la Culture et du Sport

Unité des programmes patrimoine
Direction des programmes et des services
401, rue Bay, Bureau 1700
Toronto ON M7A 0A7
Tél: 416 314 5424
Téléc: 416 212 1802

October 6, 2017 (EMAIL ONLY)

Ainley & Associates Limited
280 Pretty River Parkway
Collingwood, ON L9Y 4J5
E: potter@ainleygroup.com

RE: MTCS file #: 0007664
Proponent: Town of Collingwood
Subject: Notice of Commencement/PIC #1
Tenth Line and Mountain Road Improvements
Location: Town of Collingwood, Ontario

Dear Andrea Potter:

Thank you for providing the Ministry of Tourism, Culture and Sport (MTCS) with the Notice of Commencement and the Public Information Centre #1 (PIC) for your project. MTCS's interest in this Environmental Assessment (EA) project relates to its mandate of conserving Ontario's cultural heritage, which includes:

- Archaeological resources, including land-based and marine;
- Built heritage resources, including bridges and monuments; and,
- Cultural heritage landscapes.

Under the EA process, the proponent is required to determine a project's potential impact on cultural heritage resources.

Aboriginal communities may have knowledge that can contribute to the identification of cultural heritage resources, and we suggest that any engagement with Aboriginal communities includes a discussion about known or potential cultural heritage resources that are of value to these communities.

Archaeological Resources
Further to your phone discussion with Rosi Zirger, we understand that some portions of the study area may have been subject to previous archaeological assessments as part of development; whereas other areas may not have been assessed. We recommend that an archaeological assessment (AA) be undertaken for the entirety of the study area, to determine the areas that may retain archaeological potential. Archaeological assessments (AA) should be undertaken by an archaeologist licenced under the OHA, who is responsible for submitting the report directly to MTCS for review.

For your information and future reference, projects can be screened by using the ministry's Criteria for Evaluating Archaeological Potential to determine if an archaeological assessment is needed. MTCS archaeological sites data are available at archaeology@ontario.ca.

Built Heritage and Cultural Heritage Landscapes
The attached MTCS checklist *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes* should be completed to help determine whether your EA project may impact cultural heritage resources. Although the materials in your PIC identified no affected heritage resources, it is important to provide clarification on this matter by completing the checklist. The clerk for the Town of Collingwood can provide information on property registered or designated under the *Ontario Heritage Act*,

and Municipal Heritage Planners can also provide information that will assist you in completing the checklist.

If potential or known heritage resources exist, MTCS recommends that a Heritage Impact Assessment (HIA), prepared by a qualified consultant, should be completed to assess potential project impacts. Our Ministry's *Info Sheet #5: Heritage Impact Assessments and Conservation Plans* outlines the scope of HIAs. Please send the HIA to MTCS and the local municipality as appropriate for review, and make it available to local organizations or individuals who have expressed interest in heritage.

Environmental Assessment Reporting
All technical heritage studies and their recommendations are to be addressed and incorporated into EA projects. If your screening has identified no known or potential cultural heritage resources, or no impacts to these resources, please include the completed checklists and supporting documentation in the EA report or file.

Thank-you for consulting MTCS on this project: please continue to do so through the EA process, and contact me for any questions or clarification.

Sincerely,

Daniel de Moissac
Heritage Planner (Acting)
daniel.demoissac@ontario.ca

Copied to: Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood

It is the sole responsibility of proponents to ensure that any information and documentation submitted as part of their EA report or file is accurate. MTCS makes no representation or warranty as to the completeness, accuracy or quality of the any checklists, reports or supporting documentation submitted as part of the EA process, and in no way shall MTCS be liable for any harm, damages, costs, expenses, losses, claims or actions that may result if any checklists, reports or supporting documents are discovered to be inaccurate, incomplete, misleading or fraudulent.

Please notify MTCS if archaeological resources are impacted by EA project work. All activities impacting archaeological resources must cease immediately, and a licensed archaeologist is required to carry out an archaeological assessment in accordance with the Ontario Heritage Act and the Standards and Guidelines for Consultant Archaeologists.

If human remains are encountered, all activities must cease immediately and the local police as well as the Cemeteries Regulation Unit of the Ministry of Government and Consumer Services must be contacted. In situations where human remains are associated with archaeological resources, MTCS should also be notified to ensure that the site is not subject to unlicensed alterations which would be a contravention of the Ontario Heritage Act.

Comments Received From Indigenous Communities

Andrea Potter

From:	Trevor Harvey <tharvey@collingwood.ca>
Sent:	May-30-17 4:47 PM
To:	Andrea Potter (potter@ainleygroup.com)
Cc:	John Velick; Patrick Wojcieszynski; Tom Nollert
Subject:	FW: Tenth Line and Mountain Road Improvements
Attachments:	COTTFN LTR_Tenth Line and Mountain Line_2017-05-29.pdf

FYI – response from below.

Trevor

From: Fallon Burch [mailto:fburch@cottfn.com]
Sent: Tuesday, May 30, 2017 2:49 PM
To: Trevor Harvey
Cc: nollert@ainleygroup.com
Subject: Tenth Line and Mountain Road Improvements

Good afternoon Mr. Harvey,

I have attached a letter of response on behalf of Chippewas of the Thames First Nation in regards to the aforementioned project. If you have any questions, please feel free to contact me at any time.

Thanks,

Fallon Burch
Consultations Coordinator
Chippewas of the Thames First Nation
320 Chippewa Road, Muncey, ON N0L 1Y0
519-289-2662 ext. 213

This email or documents accompanying this email contain information belonging to the Chippewas of the Thames First Nation, which may be confidential and/or legally privileged. The information is intended only for the addressed recipient(s). If you are not an intended recipient, you are hereby notified that any disclosure, copying, distribution, or the taking of any action in reliance on the contents of this email is strictly prohibited. If you have received this email in error, please advise my office and delete it from your system.

CHIPPEWAS OF THE THAMES FIRST NATION

May 29th, 2017

Mr. Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5

Subject: **Tenth Line and Mountain Road Improvements, Town of Collingwood**
Schedule 'C' Municipal Class Environmental Assessment

Dear Mr. Harvey,

We are in receipt of correspondence of the aforementioned project, dated May 12th, 2017.

In our screening of your correspondence, we have identified no concerns with your project or the information that you have presented to us. Due to the proximity of this project to other First Nations, we feel that we no longer need to receive regular project updates or any other correspondence related to your project.

If you have any questions, please contact me directly. Thank you for notifying Chippewas of the Thames First Nation.

Sincerely,

Fallon Burch
Chippewa of the Thames
Consultation Coordinator
(519) 289-2662 Ext. 213

c: Mr. Tom Nollert, C.E.T., Consultant Project Manager, Ainley Group

320 Chippewa Road, Muncey, ON, N0L 1Y0
Ph. 519-289-5555 Fax. 519-289-2230
info@cottfn.com www.cottfn.com

Andrea Potter

From: Trevor Harvey <tharvey@collingwood.ca>
Sent: June-02-17 12:12 PM
To: 'Andrea Potter'
Cc: John Velick
Subject: FW: Town of Collingwood - Tenth Line and Mountain Road Improvements - Schedule 'C' Municipal Class Environmental Assessment - Notice of Study Commencement/Public Information Centre No. 1

Fyi – response below.

Trevor

From: Hollie Nolan [mailto:hollien@ramafirstnation.ca] **On Behalf Of** Chief Rodney Noganosh
Sent: Friday, June 02, 2017 11:49 AM
To: Trevor Harvey; nollert@ainleygroup.com
Cc: Shawna McKenzie
Subject: re: Town of Collingwood – Tenth Line and Mountain Road Improvements – Schedule 'C' Municipal Class Environmental Assessment – Notice of Study Commencement/Public Information Centre No. 1

Dear Trevor & Tom;

Thank you for your letter re: Town of Collingwood – Tenth Line and Mountain Road Improvements – Schedule 'C' Municipal Class Environmental Assessment – Notice of Study Commencement/Public Information Centre No. 1.

Please be advised that we reviewed your letter. I have shared it with Council and we've forwarded the information to Karry Sandy McKenzie, Williams Treaties First Nation Process Co-ordinator/Negotiator. Ms. McKenzie will review your letter and take the necessary action if required. In the interim, should you wish to contact Ms. McKenzie directly, please do so at k.a.sandy-mckenzie@rogers.com

Thank you,

Chief Rodney Noganosh

Hollie Nolan
Executive Assistant to the Chief, Administration
Chippewas of Rama First Nation
(ph) 705-325-3611,1216
(cell)
(fax) 705-325-0879
(url) www.ramafirstnation.ca

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By submitting your or another individual's personal information to Chippewas of Rama First Nation, its service providers and agents, you agree and confirm your authority from such other individual, to our collection, use and disclosure of such personal information in accordance with our privacy policy.

Please consider the environment before printing this e-mail.

Andrea Potter

From: Megan DeVries <Megan.DeVries@mncfn.ca>
Sent: July-05-17 3:10 PM
To: Andrea Potter
Cc: Trevor Harvey; Tom Nollert; Patrick Wojcieszynski
Subject: RE: Town of Collingwood Tenth Line and Mountain Road Improvements File No. 217013

Hello Andrea,

Thank you for the email. As discussed on the phone this morning, please note that the project in question is **outside of MNCFN treaty territory**. We apologize for the confusion. MNCFN will not require FLR participation in the upcoming fieldwork associated with the EA, and we can be removed from the project notification list.

Sincerely,
Megan.

Megan DeVries, M.A.
Archaeological Coordinator
Department of Consultation and Accommodation (DOCA)
Mississaugas of the New Credit First Nation (MNCFN)
6 First Line Road, Unit 1, RR#6, Hagersville, ON N0A 1H0
P: 905-768-4260 | M: 289-527-2763
http://www.mncfn.ca

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From: Andrea Potter [mailto:potter@ainleygroup.com]
Sent: Wednesday, July 05, 2017 2:15 PM
To: Megan DeVries
Cc: Trevor Harvey; Tom Nollert; Patrick Wojcieszynski
Subject: Town of Collingwood Tenth Line and Mountain Road Improvements File No. 217013

Hi Megan,

Please see the email below and the attached letter previously submitted by MNCFN.

From our discussion today I understand that the subject project may actually be outside of the treaty area. It would be greatly appreciated if you could please confirm and advise if MNCFN would like to continue to receive correspondence regarding the project and whether coordination with a Field Liaison Representative is still required.

Regards,

Andrea Potter, B.E.S.

Environmental Planner

Ainley

www.ainleygroup.com
Tel: (705) 726-3371 Ext. 256

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From: Trevor Harvey [mailto:tharvey@collingwood.ca]
Sent: June-26-17 10:06 AM
To: Tom Nollert; Patrick Wojcieszynski; Andrea Potter (potter@ainleygroup.com)
Cc: John Velick
Subject: FW: the Tenth Line and Mountain Road Improvements Schedule C Municipal Class EA Notice of Study Commencement dated May 16th, 2017

FYI – response below received.

Trevor

From: DOCA [mailto:DOCA@mncfn.ca]
Sent: Friday, June 23, 2017 10:04 AM
To: Trevor Harvey
Cc: Fawn Sault
Subject: the Tenth Line and Mountain Road Improvements Schedule C Municipal Class EA Notice of Study Commencement dated May 16th, 2017

Thank you for the notification sent to The Mississaugas of the New Credit First Nation (MNCFN) regarding *the Tenth Line and Mountain Road Improvements Schedule C Municipal Class EA Notice of Study Commencement dated May 16th, 2017.* We have reviewed the document you have provided and determined that, at this time, MNCFN has a **low level** of concern about the project. ***Please see the attached letter for more information.***

Respectfully, we ask that you immediately notify MNCFN if there are any changes to the project as they may impact MNCFN's interests. Additionally, MNCFN requests a copy of all associated environmental and/or archaeological reports. These can be electronic copies, if you prefer. Furthermore, MNCFN employs Field Liaison Representatives who must be on location whenever any fieldwork for environmental and/or archaeological assessments is undertaken. If additional work is scheduled, please notify us as soon as possible so that we may work together to discuss and arrange for MNCFN's participation.

Sincerely,

Karissa Johnson
Archaeological/Environmental Assistant

Mississaugas of the New Credit First Nation
Department of Consultation & Accommodation
6 First Line Rd.,Unit 1 R.R. #6 Hagersville, ON N0A 1H0
Phone: (905) 768-4260 Fax: (905) 768-9751

June 30, 2017

Trevor Harvey, BSc. C.E.T.,
Project Coordinator
Town of Collingwood
tharvey@collingwood.ca

Dear Mr. Harvey,

We are the Mississaugas of the New Credit First Nation (MNCFN), the descendants of the Mississaugas of the River Credit. Our traditional territory extends from the Rouge River Valley in the east, across to the headwaters of the Thames River, down to Long Point on Lake Erie, and back along the shores of Lake Erie, the Niagara River, and Lake Ontario to the Rouge River Valley. It encompasses present-day London, Hamilton, and Toronto, as well as our communal lands. Our traditional territory has defined and sustained us as a First Nation for countless generations, and must continue to do so for all our generations to come.

Thank you for your notification on *the Tenth Line and Mountain Road Improvements Schedule C Municipal Class EA Notice of Study Commencement dated May 16th, 2017.* The Mississaugas of the New Credit First Nation (MNCFN) has various treaty rights across its traditional territory, including the area contemplated by your project. For further information, please see our website, http://www.newcreditfirstnation.com/. MNCFN continues to exercise treaty rights which include, but are not limited to, rights to harvest, fish, trap and gather species of plants, animals and insects for any purpose including food, social, ceremonial, trade and exchange purposes. The MNCFN also has the right to use the water and resources from the rivers, creeks and lands across the MCNFN traditional territory.

At this time, MNCFN *does not* have a high level of concern regarding the proposed project and therefore, by way of this letter, approves the continuation of this project. However, MNCFN requests that you continue to notify us about the status of the project. **In addition, we respectfully ask you to immediately notify us if there are any changes to the project as they may impact MNCFN's interests and that you please provide us with a copy of all associated**

environmental and archaeology reports. This includes, but is not limited to changes related to the scope of work and expected archaeological and environmental impacts.

Additionally, MNCFN employs Field Liaison Representatives ("FLRs") to act as official representatives of the community and who are answerable to MNCFN Chief and Council through the Department of Consultation and Accommodation. The FLRs' mandate is to ensure that MNCFN's perspectives and priorities are considered in the field and to enable MNCFN to provide timely, relevant, and meaningful comment on the Project. Therefore, **it is MNCFN policy that FLRs are on location whenever any fieldwork for environmental and/or archaeological assessments are undertaken.** It is expected that the proponent will cover the costs of this FLR participation in the fieldwork. Please also provide the contact information of the person, or consultant, in charge of organizing this work so they may facilitate the participation of the MNCFN FLRs.

Nothing in this letter shall be construed as to affect the Aboriginal or Treaty rights and hence shall not limit any consultation and accommodation owed to MNCFN by the Crown or any proponent, as recognized by section 35 of the Constitution Act, 1982, of any other First Nation.

MNCFN reserves the right in relation to any development project or decision, to decide whether it supports a project and to: comment to regulators, participate in regulatory processes and hearings, seek intervener funding or status, or to challenge and seek remedies through the courts.

MNCFN expects all proponents to act according to the following best practices:

- Engage early in the planning process, before decisions are made
- Provide information in meaningful and understandable formats.
- Convey willingness to transparently describe the project and consider any MNCFN concerns.
- Recognize the significance of cultural activities and traditional practices of the MNCFN
- Demonstrate a respect for MNCFN knowledge and uses of land and resources.
- Understand the importance of youth and elders in First Nation communities.
- Act with honour, openness, transparency and respect.
- Be prepared to listen and allow time for meaningful discussion.

Sincerely,

Fawn D. Sault
Consultation Manager
MNCFN Department of Consultation and Accommodation
cc – Mark LaForme; Director, Department of Consultation and Accommodation

WASAUKSING

P.O. Box 250
Parry Sound, Ontario
P2A 2X4

Phone:
(705) 746-2531
Fax:
(705) 746-5984

Chief
Warren Tabobondung

Chief Councillor
Vince Chechock

Councillors
Alexander Zyganiuk
Brent Tabobandung
Dave Rice
Theresa McInnes

July 5, 2017

To | Seen
TN
File No

Mr. Tom Nollert, C.E.T., Project Manager
Ainley and Associates Limited
280 Pretty River Parkway
Collingwood, Ontario
L9Y 4J5

Dear Mr. Nollert,

RE: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public Information Centre No. 1

Thank you for your notification dated May 12, 2017 in regards to the Study Commencement and the Public Information Centre. Wasauksing First Nation does not have any concerns and/or comments to submit in response to the project and we do not wish to continue to receive information and/or updates.

Once again, thank you for extending invitation to Wasauksing First Nation and should you have any questions or require any further information, please do not hesitate to contact me via email ccc@wasauksing.ca or telephone (705) 746-2531 ext. 2248.

Respectfully,

Daniella Baker
Community Consultation Coordinator

Jody Marks

From: Jody Marks
Sent: Tuesday, November 06, 2018 4:06 PM
To: d.ritchie@saugeenojibwaynation.ca
Subject: FW: Stage 1 Archaeological Assessment of Tenth Line and Mountain Road Improvements Class EA - Town of Collingwood

Hello Doran,

I had previously contacted you in regards to a road improvement project in the Collingwood area. During our discussion on the phone, you had expressed that in general, improvements to existing infrastructure don't typically pose many concerns as they aren't creating a new footprint on the land. Through the noted Environmental Assessment (Class EA) process, a stage 1 archaeological assessment was conducted and the final report was provided to Saugeen Ojibway Nation via email. The deadline for submitting the stage 1 report to the Ministry of Tourism, Culture and Sport has now passed and I would like to notify you that the report is being submitted. We will continue to update you as the project proceeds through the final stage of the Class EA.

Thank you for your time.

Best Regards,

Jody Marks
Environmental Planning Assistant
www.ainleygroup.com
Tel: (705) 726-3371 Ext. 227

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From: Jody Marks
Sent: July-11-18 4:32 PM
To: 'd.ritchie@saugeenojibwaynation.ca'
Subject: Stage 1 Archaeological Assessment of Tenth Line and Mountain Road Improvements Class EA - Town of Collingwood

Hi Doran,

It was nice speaking with you this afternoon. As we discussed, here is a copy of the Stage 1 Archaeological Assessment for the Town of Collingwood's 10th Line and Mountain Road Improvements as part of the Class Environmental Assessment process. The Stage 1 Archaeological Report has yet to be submitted to the Ministry of Tourism, Culture and Sport. I have also attached a copy of the Notice of Study Commencement for your convenience.

If you wouldn't mind confirming receipt of this email, as our phone reception was unclear at times I want to make sure I recorded your contact information correctly. I will add your information to our contact list for future updates and projects.

Thank you, have a nice day.

Regards,

Jody Marks
Environmental Planning Assistant

www.ainleygroup.com
Tel: (705) 726-3371 Ext. 227

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Comments Received From the Public

Andrea Potter

From: Tom Nollert <nollert@ainleygroup.com>
Sent: June-15-17 3:44 PM
To: Andrea Potter
Subject: FW: Tenth Line & Mountain Road Improvements - [redacted]
Attachments: Tenth Line & Mountain Road Improvements - [redacted]

FYI

Tom Nollert, C.E.T.
Senior Technologist

www.ainleygroup.com
Tel: (705) 445-3451 Ext. 156
Cell: (705) 444-4863

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From: [redacted]
Sent: Thursday, June 15, 2017 3:25 PM
To: tharvey@collingwood.ca; Tom Nollert <nollert@ainleygroup.com>
Cc: [redacted]
Subject: Tenth Line & Mountain Road Improvements - [redacted]

Please find attached the comments of [redacted] in response to the Town of Collingwood's Tenth Line and Mountain Road Improvements Schedule 'C' Municipal Class Environmental Assessment.

[redacted] looks forward to participating further in this process as it moves forward. In the interim, please do not hesitate to contact me should you have any questions regarding the attached.

Thanks,
[redacted]

[redacted]

June 15, 2017

BY EMAIL ONLY

Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5

Tom Nollert, C.E.T.
Consultant Project Manager
Ainley Group
280 Pretty River Parkway
Collingwood, ON L9Y 4J5

Dear Trevor & Tom:

RE: Town of Collingwood Tenth Line and Mountain Road Improvements Schedule 'C' Municipal Class Environmental Assessment

May this letter serve as the comments of in response to the Town of Collingwood's Tenth Line and Mountain Road Improvements Schedule 'C' Municipal Class Environmental Assessment. attended the Public Information Centre held on June 1, 2017 and has had an opportunity to further review the information posted on the Town of Collingwood's website.

While appreciates our organization is not a property owner/taxpayer in the Town of Collingwood, tourist visits and the resulting traffic is a benefit to both the and the Town. In addition, there is a demonstrated history of positive, regional collaboration on various initiatives that extends beyond political boundaries (i.e. transit, trails, economic development, etc.). Given the significant number of visitors to our region that travel the Mountain Road and/or Tenth Line corridors, we felt it imperative to submit comments on this matter. Furthermore, approximately reside in the Town of Collingwood and an additional , resulting in a significant proportion of commuting along these two roadways.

has reviewed the background information, anticipated future development, and the alternative solutions currently under consideration to address the identified deficiencies. s strongly in favour of 'Alternative 2' and offers the following comments for the Town's consideration.

Road Design

understands the Traffic Analysis resulted in future traffic projections that warrant a five-lane corridor along the study area of Mountain Road beyond 2037 and that these improvements are included in 'Alternative 3'. also appreciates the cost efficiencies that can be achieved by designing and constructing roads and infrastructure today to accommodate future anticipated demands rather than having to modify and/or expand in the future. However, in this case, respectfully submits that it is premature to design and construct Mountain Road to a 5-lane urban cross-section within the study area. With the increasing costs of owning and

maintaining a personal vehicle and the heightened awareness and focus on creating active transportation and regional transit opportunities, [redacted] strongly recommends the Town discount 'Alternative 3' at present.

Active Transportation

[redacted] is highly supportive of Active Transportation initiatives and administers programs during non-winter months to encourage employees to walk, bike, etc. to work. [redacted] is very pleased to see that 'Alternative 2' proposes 1.5-metre wide paved shoulders along both sides of Mountain Road along with a 3.0-metre wide paved, multi-use trail along the south side of the Mountain Road corridor (within the study area). [redacted]s also pleased to see that 'Alternative 2' includes 1.5-metre wide bicycle lanes and paved sidewalks along both sides of Tenth Line (within the study area).

[redacted] is strongly in favour of improving connectivity between roads or sections of roads with paved shoulders, sidewalks, and/or multi-use trails. There are currently too many areas throughout our region where paved shoulders, sidewalks, and/or multi-use trails abruptly end. This poses a challenge for residents and visitors alike. Many of [redacted], especially families, are not comfortable biking or walking on busy and unfamiliar roads so routes are currently very limited for those wishing to explore the Collingwood area using [redacted] as their starting point. It is [redacted] hope that future road improvements along additional sections of Mountain Road and Tenth Line and other area roads (Grey Road 19, etc.) carry forward similar designs that support a more integrated active transportation network. In this regard, [redacted] strongly encourages the Town of Collingwood to liaise and work with neighbouring municipalities and counties to ensure consistency across political boundaries, wherever possible.

Roundabouts

[redacted] has a significant interest in the Mountain Road/Tenth Line intersection. [redacted] was one of three stakeholders involved in the design and development of the Grey Road 19/Grey Road 119/Gord Canning Drive roundabout in 2009. [redacted] remains a strong proponent of a roundabout at the Grey Road 19/Grey Road 21/Mountain Road intersection due to the success of the existing roundabout and given experiences with the roundabout failing at peak periods due to the existing signaled intersections located further east or 'downstream' of [redacted] In our opinion, a roundabout is crucial at both the Grey Road 19/Grey Road 21/Mountain Road and Mountain Road/Tenth Line intersections in order to ensure the long-term, successful flow of traffic between [redacted] and Collingwood.

Regionally, roundabouts at the Mountain Road/Tenth Line and Tenth Line/Sixth Street intersections will maintain consistency with traffic flowing to and from the Highway 26 corridor. With two roundabouts located along Highway 26 between Wasaga Beach and Collingwood, one roundabout at the Poplar Sideroad/High Street intersection in Collingwood, and one roundabout at the Grey Road 19/Grey Road 119/Gord Canning Drive intersection in the Town of the Blue Mountains, it is highly appropriate to carry the roundabout concept forward for these two intersections. Collectively, the existing four roundabouts provide a welcoming first impression to area visitors and signify that we are a progressive region.

In addition to providing a continuous flow of traffic, particularly during off-peak periods, there are a number of benefits associated with roundabouts recognized by the Ministry of Transportation, and various counties, cities, and municipalities throughout the province - including the Town of Collingwood. These benefits can include:

Safety
According to the Town of Collingwood's 'Roundabouts' website (http://www.collingwood.ca/roundabouts), roundabouts tend to provide a greater level of safety than other types of intersections because of the following characteristics:

- Lower speed/Reduced Differential in Speeds
- Simplified Decision Making: It's just Yield Upon Entry
- Reduced Right Angle and Head On Collisions
- Conflict Points - A traditional 4-way traffic signal has 32 vehicle to vehicle conflict points and 24 vehicle to pedestrian conflict points for a total of 56, whereas a roundabout has 8 vehicle to vehicle conflict points and 8 vehicle to pedestrian conflict points for a total of 16. This translates to a reduction of over 70% in the number of potential conflicts if a roundabout is implemented.

Environment
According to the Town of Collingwood's 'Roundabouts' website (http://www.collingwood.ca/roundabouts), 'vehicles operating in a roundabout result in lower environmental impacts, by keeping traffic moving at a more consistent lower speed and reducing idling. The shorter delays and 'rolling' approach to roundabouts generally reduce fuel and energy consumption, greenhouse gas emissions, the carbon footprint, as well as a reduction in noise to the surrounding community. The longer delays and the start and stop approach to signalized intersections will generally have a more demanding impact on the environment.'

Community
According to the Town of Collingwood's 'Roundabouts' website (http://www.collingwood.ca/roundabouts), roundabouts are considered more aesthetically pleasing as they typically provide for more green space than at signalized intersections and the centre island of roundabouts can be utilized as gateways to communities.

Tourism
In addition to providing a sense of arrival/gateway to an area, roundabouts provide the opportunity for visitors new to an area to circle around if an exit is missed rather than making a U-turn or 3-point turn to correct a navigation error.

[redacted] appreciates the opportunity to provide formal comment on the Tenth Line and Mountain Road Improvements Schedule 'C' Municipal Class Environmental Assessment process. We would also welcome the opportunity to continue dialogue with the Town of Collingwood and/or Ainley Group going forward. Please do not hesitate to contact me should you have any questions or concerns.

Regards,
[redacted]

Cc: [redacted]

[redacted]

June 15th, 2017

Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5

Tom Nollert, C.E.T.
Consultant Project Manager
Ainley Group
280 Pretty River Parkway
Collingwood, ON, L9Y 4J5

Dear Trevor & Tom:

RE: Town of Collingwood Tenth Line and Mountain Road Improvements Schedule 'C' Municipal Class Environmental Assessment [redacted] - Comments

Please allow this letter to serve as the formal response of [redacted] to the Town of Collingwood's Tenth Line and Mountain Road Improvements Schedule 'C' Municipal Class Environmental Assessment.

On behalf of our [redacted] wishes to reinforce and support the positions outlined by [redacted] in its formal response delivered to you via letter on June 15, 2017 by [redacted]

Sincerely, [redacted]

[redacted]

Cc:
[redacted]

[redacted]

Town of Collingwood
Tenth Line & Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment

Public Information Centre No. 1 – June 1, 2017
4:00 p.m. to 7:00 p.m. – Collingwood Library

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

[redacted] The snowmobile trail is currently running from the Golf course property crossing over 10th line to the east side of the road 10th, trail runs towards the taylor creek where there is a snowmobile trail that follows the taylor creek to the black ash Town trails, we also cross the mountain road at the bridge using the town trails to bring in economical (ie food, fuel, acomodation) The urbanization of the roads with side walks on both side is a problem for snowmobile use a 10ft wide trail would be better depending on hydro poles and infrastructure under the sidewalks + or trails. over →

Please submit this Comment Sheet by **June 15, 2017** to either:

Mr. Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5
Tel: 705-445-1292
Fax: 705-445-1286
Email: tharvey@collingwood.ca

Mr. Tom Nollert, C.E.T.
Consultant Project Manager
Ainley Group
280 Pretty River Parkway
Collingwood, ON L9Y 4J5
Tel: 705-445-3460 ext. 156
Fax: 705-445-0968
Email: nollert@ainleygroup.com

Name [redacted]

Mailing Address [redacted]

Telephone # [redacted] E-mail Address [redacted]

Comments and information regarding this project are being collected in accordance with the Municipal Freedom of Information and Protection of Privacy Act for the purpose of meeting environmental assessment requirements. With the exception of personal information, all comments received will become a part of the public record.

How will this affect the town trail crossing the mountain road when there is 3 or 5 lanes wide is there a possibility of town and town trails going under the road or how will the pedestrian traffic get across the mountain rd. ??

Please leave this area blank.

Andrea Potter

From: Tom Nollert <nollert@ainleygroup.com>
Sent: June-14-17 3:01 PM
To: [redacted]; Trevor Harvey
Cc: John Velick (jvelick@collingwood.ca); Andrea Potter; Patrick Wojcieszynski
Subject: RE: Tenth Line & Mountain Road Municipal Class EA - Questions / Comments

Hi [redacted]

Thank you for your comments and notice regarding the potential development of the north-west quadrant at Mountain Road and Tenth Line.
We understand that the Owner of the property is planning to move forward with development, as such and as much as possible could you provide any current information to assist us in the planning of the Town's project.

Regards
Tom
Tom Nollert, C.E.T.
Senior Technologist
www.ainleygroup.com
Tel: (705) 445-3451 Ext. 156
Cell: (705) 444-4863

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From: [redacted]
Sent: Wednesday, June 14, 2017 11:32 AM
To: Tom Nollert <nollert@ainleygroup.com>; Trevor Harvey <tharvey@collingwood.ca>
Subject: Tenth Line & Mountain Road Municipal Class EA - Questions / Comments

Good morning Trevor, Tom:

Further to the PIC in support of the Tenth Line & Mountain Road Municipal Class EA, we respectfully offer the following questions and comments:

1. The study should include consideration with respect to traffic flows/impacts and servicing infrastructure improvements for the future [redacted] which is designated for urban development and located at the [redacted] of the Tenth Line / Mountain Road intersection. This property has been Draft Plan approved in the past and is expected to be the next site slated for sequential development in the [redacted] of Collingwood. The Owner is moving ahead with the necessary studies to submit a complete application for a zoning by-law amendment and draft plan of subdivision in 2017. This development application will meet the Town's residential density targets. The Owner is projecting 30% of the residential density to be completed by 2022 with the entire development completed before 2030.

2. How will the Town accommodate [redacted] residential density by 2022 (from a road and infrastructure servicing perspective)? Will the proposed densities take into consideration the new Growth Plan targets for green field development?

3. For future developments, we assume applicable widenings and/or land will simply be required by the Town (no negotiation) as part of the development process. Please advise the amount and configuration of the land (if any) that would be required from the [redacted] development.

4. Please confirm all proposed improvements will be paid for through Development Charges and/or by the Town.

Regards,

[redacted]

[redacted]

Town of Collingwood
Tenth Line & Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment

Public Information Centre No. 1 – June 1, 2017
4:00 p.m. to 7:00 p.m. – Collingwood Library

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

The snowmobile trail coming into Collingwood from Blue Mountain currently follows the south side of the Blue Mountain golf course. It crosses to the east side of ~~the~~ Tenth Line at the ~~North~~ end of the golf course onto a trail that leads to Taylor creek south side. This then connects to the Black Ash Trail into Collingwood. It is hoped that a similar snowmobile trail will be available after urbanization of the Tenth Line

Please submit this Comment Sheet by **June 15, 2017** to either:

Mr. Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5
Tel: 705-445-1292
Fax: 705-445-1286
Email: tharvey@collingwood.ca

Mr. Tom Nollert, C.E.T.
Consultant Project Manager
Ainley Group
280 Pretty River Parkway
Collingwood, ON L9Y 4J5
Tel: 705-445-3460 ext. 156
Fax: 705-445-0968
Email: nollert@ainleygroup.com

Name [redacted]

Mailing Address [redacted]

[redacted]

Telephone # [redacted] E-mail Address [redacted]

Comments and information regarding this project are being collected in accordance with the Municipal Freedom of Information and Protection of Privacy Act for the purpose of meeting environmental assessment requirements. With the exception of personal information, all comments received will become a part of the public record.

Andrea Potter

From: Tom Nollert <nollert@ainleygroup.com>
Sent: June-02-17 8:14 AM
To: Trevor Harvey
Cc: John Velick; Andrea Potter; Patrick Wojcieszynski
Subject: Fw: Tenth Line and Mountain Road EA

Copy for you

Sent from my BlackBerry 10 smartphone on the Bell network.

From: [redacted]
Sent: Friday, June 2, 2017 8:05 AM
To: Patrick Wojcieszynski
Cc: Tom Nollert
Subject: Tenth Line and Mountain Road EA

Good morning Patrick,

It was a pleasure to meet you yesterday and thank you for taking the time to review the key aspects of the proposal for these roads with me. It would appear that the active transportation issues have been addressed. As discussed, I would like to review the project with the other members of the [redacted] at our upcoming meeting on June 8 and it would be extremely helpful if you could send me a PDF version of the "Alternative 2" drawings. I expect that this alternative will likely be the chosen solution. Once this review with the group has been completed, I will summarize any comments and forward them to you.

Thanks again and if you have any questions, do not hesitate to contact me.

[redacted]

Andrea Potter

From: Tom Nollert <nollert@ainleygroup.com>
Sent: June-14-17 3:51 PM
To: Andrea Potter
Cc: Trevor Harvey (tharvey@collingwood.ca); John Velick (jvelick@collingwood.ca)
Subject: FW: Tenth Line and Mountain Road EA

Hi Andrea
For your comment file.

Tom Nollert, C.E.T.
Senior Technologist
www.ainleygroup.com
Tel: (705) 445-3451 Ext. 156
Cell: (705) 444-4863

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From: [redacted]
Sent: Wednesday, June 14, 2017 3:47 PM
To: Patrick Wojcieszynski <wojcieszynski@ainleygroup.com>
Cc: Tom Nollert <nollert@ainleygroup.com>
Subject: Tenth Line and Mountain Road EA

Hi Patrick,

Thank you for forwarding a copy of the roll plans for this project. I did show them to the committee members at our recent [redacted] meeting, and the following are the comments from that session:

MOUNTAIN ROAD

- Everyone was comfortable with the current plan to have bike lanes plus the paved trail on the south side of Mountain Road. This plan will hopefully concur with the study that is underway to create a trail link between Collingwood and the Village at Blue.
- Everyone was very happy to see that both the bike lanes and the trail were being extended across the widened bridge.
- Some concerns expressed over what might be the final outcome of the Black Ash Trail crossing immediately to the west of the bridge. If a route under the Mountain Road bridge is just not possible without a complete bridge rebuild, then it was unclear what the alternative will be. If it is a pedestrian/cyclist rescue island in the middle lane, then this feature will also have to deal with the snowmobile route crossing and the snowmobile groomer at this same location. Is a pedestrian-activated traffic signal an option?.

TENTH LINE

- Again, everyone is very comfortable with the current plan to have bike lanes plus sidewalks on both sides of the street.
- The issue of a mid-block crossing reappears again along this road. At the moment the snowmobile route west of Tenth Line follows the land immediately south of the Blue Mountain Golf Course. The route then crosses Tenth Line and follows the road northbound on the east side of the street to Taylor Creek, where it then goes eastbound over to the Black Ash. It is expected that a future pedestrian/cycling trail will follow this same route. Is it possible to have curb cuts at the appropriate trail route locations so that bikes will not have to jump the curb to access the bike lanes on Tenth Line? Same would apply for snowmobiles who will also need a flat area beside the road to travel on if this main snowmobile route into town stays where it is.

If any clarifications are required, do not hesitate to contact me.

[redacted]

Town of Collingwood
Tenth Line & Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment

COLLINGWOOD

Ainley

Public Information Centre No. 1 – June 1, 2017
4:00 p.m. to 7:00 p.m. – Collingwood Library

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COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

TN SEEN

- intersection at 10th line & 6th street needs improvement
- not safe for children & families crossing from soccer field or Georgian Meadows.
- 10th line needs a trail from 6th street to Mountain Rd.
- large volume of truck traffic as well as trucks going to land fill
- we feel an intersection with lights would be safest.

Please submit this Comment Sheet by **June 15, 2017** to either:

Mr. Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5
Tel: 705-445-1292
Fax: 705-445-1286
Email: tharvey@collingwood.ca

Mr. Tom Nollert, C.E.T.
Consultant Project Manager
Ainley Group
280 Pretty River Parkway
Collingwood, ON L9Y 4J5
Tel: 705-445-3460 ext. 156
Fax: 705-445-0968
Email: nollert@ainleygroup.com

Name [redacted]

Mailing Address [redacted]

Telephone # [redacted] E-mail Address [redacted]

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- we strongly disagree with putting a roundabout at this intersection as it is not safe for pedestrians and would take up space that is part of our [redacted]

- current 4 way stop signs at the corner of 10th line & 6th Street has been an improvement but traffic lights at this intersection would be a better solution with the least impact on our [redacted] and farming ~~agreeration~~ operation as well as being the safest option.

Please leave this area blank.

From: [redacted]
Subject: Public Information Session
Date: Jun 9, 2017, 5:35:30 AM
To: [redacted]
Cc: [redacted]

We attended your first public information session relating to planning for future development of the mountain road and the tenth line from sixth street to the mountain road based on future development needs . [redacted] We agree that both the Mountain road and the Tenth Line need to be improved to handle the amount of traffic as well as to make the area safe and user friendly for bicycles as well as pedestrians. At the corner of the Tenth Line and sixth street we were very concerned with the number of accidents at this corner and talked to the county about this and they did respond by lowering the speed limit on sixth street and last year changed the intersection to a 4 way stop ,which has helped to make the intersection safer ,before this families and children trying to cross from Georgian meadows or the soccer fields on the north west to our market were in great danger .

We feel this intersection needs to be improved ,there is a large volume of truck traffic with many of these trucks going to the landfill at the end of the Tenth Line from other transfer stations . We do not agree that a round about would be a solution as it does not stop traffic and allow children and families to cross the street and the amount of land required to build one would have a detrimental effect on our market business.We feel that an intersection with traffic lights would be the best solution as it would allow pedestrians and kids with bikes to cross on the walk signal safely. On the whole ,the concept of a new road with trails or sidewalks and safe crossings both at the Mountain and Sixth Street is welcome as well as the 5 lane option on the Mountain Road is the way to go.

Town of Collingwood
Tenth Line & Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment

Public Information Centre No. 1 – June 1, 2017
4:00 p.m. to 7:00 p.m. – Collingwood Library

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

As a homeowner [redacted]
I have concerns about the number of years we will need to "tolerate" the reconstruction of the Tenth, the huge number of truck loads bringing soil into the Consar Development, the Linksview and Consar Devt building time frame etc.
I think Alternative 3 is the better one — 5 lanes on Mountain Road right away as this is a major route from the Mountain to town. The addition of sidewalks and bike lanes on the Tenth will be wonderful (Alternative 2 and 3).
We would expect that regulations regarding dust control (be rigidly enforced) and noise.

Please submit this Comment Sheet by June 15, 2017 to either:

Mr. Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5
Tel: 705-445-1292
Fax: 705-445-1286
Email: tharvey@collingwood.ca

Mr. Tom Nollert, C.E.T.
Consultant Project Manager
Ainley Group
280 Pretty River Parkway
Collingwood, ON L9Y 4J5
Tel: 705-445-3460 ext. 156
Fax: 705-445-0968
Email: nollert@ainleygroup.com

[redacted]

Name [redacted]

Mailing Address [redacted]

[redacted]

Telephone # [redacted] E-mail Address [redacted]

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Is there any way that construction vehicles for Mair Mills & Consar Developments be "encouraged" to use Mountain Rd and the Tenth Line rather than Sixth St and the Town Line?

Please leave this area blank.

Town of Collingwood
Tenth Line & Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment

Public Information Centre No. 1 – June 1, 2017
4:00 p.m. to 7:00 p.m. – Collingwood Library

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

- There is a blind spot currently at Tenth Line and Georgian Meadows Drive
- The intersection at Tenth & Mountain Rd is dangerous needs a roundabout or left hand turning lane
- The alternatives "Do Nothing" is not an option
- Tenth line is too narrow - dangerous to walk/bike on the road right now!!!
- Traffic projections into last of the Side Launch Brewery is vastly understated. The brewery is growing rapidly and traffic will increase. Currently turning left onto Mountain Road from the brewery is an issue at times.

Please submit this Comment Sheet by **June 15, 2017** to either:

Mr. Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5
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Fax: 705-445-0968
Email: nollert@ainleygroup.com

Name [redacted]

Mailing Address [redacted]

Telephone # [redacted] E-mail Address [redacted]

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- The Tenth Line surface is currently noisy - The paving when done needs to be better quality
- Tenth Line is prone to flooding (from Georgian Meadows to Mountain Road)
- Roundabouts are preferred - Mtn & Tenth is needed ASAP, not 2030.
- At least 4 way stop, if not lights, at Georgian Meadows & Tenth plus Georgian Meadows & Sixth
- Alternative 3 is the best solution (Phase 2 board)

Please leave this area blank.

Town of Collingwood
Tenth Line & Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment

Public Information Centre No. 1 – June 1, 2017
4:00 p.m. to 7:00 p.m. – Collingwood Library

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

We would prefer a roundabout at the intersection of 6th and 10th to reduce braking. We are in favour of bike lanes and sidewalks and reducing the 2 lane road.

Please submit this Comment Sheet by **June 15, 2017** to either:

Mr. Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5
Tel: 705-445-1292
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Mr. Tom Nollert, C.E.T.
Consultant Project Manager
Ainley Group
280 Pretty River Parkway
Collingwood, ON L9Y 4J5
Tel: 705-445-3460 ext. 156
Fax: 705-445-0968
Email: nollert@ainleygroup.com

Name [redacted]

Mailing Address [redacted]

Telephone # [redacted] E-mail Address [redacted]

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Town of Collingwood
Tenth Line & Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment

Public Information Centre No. 1 – June 1, 2017
4:00 p.m. to 7:00 p.m. – Collingwood Library

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

(1) Put in proper underground drainage to ensure ~~run~~ run off from 10 Line is proper & perhaps help run off into Georgian Meadows Dr. Tired of having to install piping into lawn to prevent ~~the~~ flooding into house

(2) Put in lights not round about on 10th Line as traffic in winter for ski hills - would not allow 10th line traffic to flow properly

Please submit this Comment Sheet by June 15, 2017 to either:

Mr. Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5
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Fax: 705-445-0968
Email: nollert@ainleygroup.com

Name [redacted]

Mailing Address [redacted]

Telephone # [redacted] E-mail Address [redacted]

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Town of Collingwood
Tenth Line & Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment

Public Information Centre No. 1 – June 1, 2017
4:00 p.m. to 7:00 p.m. – Collingwood Library

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

Prefer lights at 6th & 10th unless roundabout could be positioned south west of existing intersection, not interfering with existing residential or the soccer field which are valueable to our town's families. Concern re: increased truck traffic on Tenth Line which already is very noisey.
Concern re: potential flooding from Taylor Creek into homes in Georgian Meadows.
Correct Paving on Tenth Line. At least →

Please submit this Comment Sheet by **June 15, 2017** to either:

Mr. Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5
Tel: 705-445-1292
Fax: 705-445-1286
Email: tharvey@collingwood.ca

Mr. Tom Nollert, C.E.T.
Consultant Project Manager
Ainley Group
280 Pretty River Parkway
Collingwood, ON L9Y 4J5
Tel: 705-445-3460 ext. 156
Fax: 705-445-0968
Email: nollert@ainleygroup.com

Name [redacted]

Mailing Address [redacted]

Telephone # [redacted] E-mail Address [redacted]

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extend walking path along Tenth to Mountain as it is very dangerous for walkers, especially children

Alternative 2 looks the best

Please leave this area blank.

Andrea Potter

From: Trevor Harvey <tharvey@collingwood.ca>
Sent: June-05-17 4:19 PM
To: 'Andrea Potter'
Cc: John Velick; 'Patrick Wojcieszynski'
Subject: FW: Tenth Line and Mountain Road Improvements

FYI - comments received.

Trevor

-----Original Message-----
From: [redacted]
Sent: Monday, June 05, 2017 4:17 PM
To: Trevor Harvey
Cc: nollert@ainleygroup.com
Subject: Tenth Line and Mountain Road Improvements

Mr Trevor Harvey BSc,C.E.T
Some Years past ,Traffic Lights where installed at Mountain Rd.and 10th Line .What a waist of Money .Maybe this time you should consider a " Traffic Circle " while land on the west side of 10th Line is still available ,for future consideration to the present Landowners .
Traffic Circles work and are a lot cheaper to maintain.
I have proposed this since moving to [redacted].
Regards ,
[redacted]

Town of Collingwood
Tenth Line & Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment

Public Information Centre No. 1 – June 1, 2017
4:00 p.m. to 7:00 p.m. – Collingwood Library

COMMENT SHEET – PLEASE PRINT

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IN SUPPORT OF EXPANSION OF BOTH MTN / 10th.
→ TURNING CIRCLES PROVIDED AT BOTH INTERSECTIONS
→ CALMS TRAFFIC AND PROVIDES OPPORTUNITY FOR FUTURE
CONVERTABLE (CONTINUOUS / ROUNDABOUT)
→ MIXED USE CROSSING AT BRIDGE ASSUMES CONCERN.
→ WOULD LIKE TO SEE CROSSING UNDERNEATH
WITH MORE SPAN & CLEARANCE STRUCTURE

Please submit this Comment Sheet by **June 15, 2017** to either:

Mr. Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5
Tel: 705-445-1292
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Mr. Tom Nollert, C.E.T.
Consultant Project Manager
Ainley Group
280 Pretty River Parkway
Collingwood, ON L9Y 4J5
Tel: 705-445-3460 ext. 156
Fax: 705-445-0968
Email: nollert@ainleygroup.com

Name [redacted]

Mailing Address [redacted]

Telephone # [redacted] E-mail Address

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Town of Collingwood
Tenth Line & Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment

Public Information Centre No. 1 – June 1, 2017
4:00 p.m. to 7:00 p.m. – Collingwood Library

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

(1) I feel alternative 3 with sidewalks on both sides of 10th line is most appropriate for the amount of foot traffic both to the soccer fields & golf course.
(2) Georgian Meadows Dr & Linksview Intersection should have light
(3) Presently town does no maintenance on property beside road.
(4) Drainage and ground water control is a concern. Our basement flooded when 10th line ditches backed up. Taylor Creek is a huge concern.
(5) Will there be a sound barrier for 10th line. This seems to be a major truck route – eg. Lafarge Concrete & Town Truck
(6) Prefer traffic lights at 6th & 10th rather than roundabout.
(7) Prefer traffic lights at Mountain Rd & 10th line.

Please submit this Comment Sheet by June 15, 2017 to either:

Mr. Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5
Tel: 705-445-1292
Fax: 705-445-1286
Email: tharvey@collingwood.ca

Mr. Tom Nollert, C.E.T.
Consultant Project Manager
Ainley Group
280 Pretty River Parkway
Collingwood, ON L9Y 4J5
Tel: 705-445-3460 ext. 156
Fax: 705-445-0968
Email: nollert@ainleygroup.com

Name [redacted]

Mailing Address [redacted]

Telephone # [redacted] E-mail Address [redacted]

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(8) There is a blind spot between 6th & Georgian Meadows Dr creating a huge hazard.

(9) The alternatives do nothing not an option.
(10) Dangerous road for cyclists. It should be wider.
(11) Lights at Georgian Meadows & Sixth St.

Please leave this area blank.

Town of Collingwood
Tenth Line & Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment

Public Information Centre No. 1 – June 1, 2017
4:00 p.m. to 7:00 p.m. – Collingwood Library

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

Comments on Tenth Line
Alternative 3 would be in my
Best Interest

Main Concern for Georgian Meadows
Subdivision is Drainage and Storm
Water Control (Storm Sewers)

Proper Traffic Control Lights
to Roundabout
Private Lights at Georgian Meadows Dr.
? Noise from Increased Traffic ?

Please submit this Comment Sheet by **June 15, 2017** to either:

Mr. Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5
Tel: 705-445-1292
Fax: 705-445-1286
Email: tharvey@collingwood.ca

Mr. Tom Nollert, C.E.T.
Consultant Project Manager
Ainley Group
280 Pretty River Parkway
Collingwood, ON L9Y 4J5
Tel: 705-445-3460 ext. 156
Fax: 705-445-0968
Email: nollert@ainleygroup.com

Name [redacted]

Mailing Address [redacted]

Telephone # [redacted] E-mail Address [redacted]

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Town of Collingwood
Tenth Line & Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment

Ainley

Public Information Centre No. 1 – June 1, 2017
4:00 p.m. to 7:00 p.m. – Collingwood Library

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

Wildlife under crossing Mountain Rd.

- Wildlife Tunnels ie Streams, 11th line (2 large O's culverts) example.
- (*) 5 lanes Preferred / Preffered w. Wild life Tunnels
- Pedestrian (Am) (Cross Light) at East / West at Trail
- Phase In before Bridge Build. Conserve / Protect Natural Corridors at 20 metre
- Taylor Creek Forrest Save the Natural Channel (Red Hayes Property)
- (*) Restorative Natural Species Ecology. 10/20 m.

Please submit this Comment Sheet by **June 15, 2017** to either:

Mr. Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5
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Mr. Tom Nollert, C.E.T.
Consultant Project Manager
Ainley Group
280 Pretty River Parkway
Collingwood, ON L9Y 4J5
Tel: 705-445-3460 ext. 156
Fax: 705-445-0968
Email: nollert@ainleygroup.com

ie. High St. Light

Name [redacted]

Mailing Address [redacted]

Telephone # [redacted] E-mail Address [redacted]

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Response Provided

Ainley & Associates Limited
280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3451 P Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

September 15, 2017 File No. 217013

[redacted]

Attn: [redacted]

Re: Town of Collingwood Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Study Commencement / Public Information Centre No. 1
Response to Comments Received

Dear [redacted]

We thank you for your interest in the Tenth Line and Mountain Road Improvement Class Environmental Assessment (Class EA) project currently being undertaken by the Town of Collingwood and for submitting a comment. As you are aware, the municipality held a Public Information Centre (PIC) for this project on Thursday, June 1, 2017. Following that meeting a number of comments were submitted by area residents and interested parties. We received some great feedback on the options under consideration and on the proposed improvements in general.

The project team has reviewed all comments submitted following PIC No. 1 and is working towards selection of a preferred solution from the options presented at the aforementioned PIC. A second PIC is tentatively scheduled for the fall of 2017 that will identify the preferred solution and the design alternatives under consideration as part of Phase 3 of the Class EA process.

Overall, the Town received a number of comments in support of completing improvements to the subject segments of both the Tenth Line and Mountain Road. There was support for both the three lane and five lane option for Mountain Road and support for and against the construction of roundabouts (aka traffic circles) at the intersection of Tenth Line and Sixth Street and the intersection of Tenth Line and Mountain Road. Many were supportive of the addition of sidewalks and bike lanes so as to promote active transportation and improved connectivity.

We have prepared this letter to not only address your individual concerns regarding the project, but to also afford opportunity for you to see comments submitted by others and the associated Town response. As some comments were quite lengthy they have been paraphrased to include only key points for this letter. This same letter will be circulated to all those that provided input on the project; however, please note that the respondent name and personal information has been removed.

We provide the following summary of comments received and the associated response from the municipality.

1. **General Design of Tenth Line and Mountain Road:**

   a. ***It is premature to design and construct Mountain Road to a 5-lane urban cross-section within the study area. With the increasing costs of owning and maintaining a personal vehicle and the heightened awareness and focus on creating active transportation and regional transit opportunities, it is recommended that the Town discount Alternative 3 (5 lane option) at present. Strongly in favour of Alternative 2 (3 lane option).***

   b. ***Alternative 3 involving 5 lanes on Mountain Road is preferred as this is a major route from Blue Mountain to the Town.***

   c. ***The concept of a new road with trails or sidewalks and safe crossings both at the Mountain Road and Sixth Street is welcome as well as the 5 lane option on Mountain Road.***

   RESPONSE: As can be seen from the above comments support was received for both the three lane and five lane design options. Please note that many factors will be considered in determining whether a three lane or a five lane design is appropriate for the Mountain Road. Prior to selection of a preferred solution, consideration will be given to traffic operation and safety, pedestrian safety, property requirements and utility impacts as well as impacts to adjacent land use and natural heritage features and economic considerations such as costs associated with property acquisition, construction, and maintenance. While a definitive answer cannot be provided at the present time the preferred solution(s) will be presented at Public Information Centre No. 2 which will provide additional opportunity for comment.

2. **Roundabouts:**

   a. ***A roundabout is crucial at both the Grey Road 19/Grey Road 21/Mountain Road and Mountain Road/Tenth Line intersections in order to ensure the long-term, successful flow of traffic between Blue Mountain Resort and Collingwood.***

   b. ***In addition to providing a continuous flow of traffic, particularly during off-peak periods, there are a number of benefits associated with roundabouts recognized by the Ministry of Transportation, and various counties, cities, and municipalities throughout the province. The Town of Collingwoods website (http://www.collingwood.ca/roundabouts) notes that benefits include an increased level of safety and lower impacts on the environment, and indicates that roundabouts are more aesthetically pleasing. In addition to providing a sense of arrival/gateway to an area, roundabouts provide the opportunity for visitors new to an area to circle around if an exit is missed rather than making a U-turn or 3-point turn to correct a navigation error.***

   c. ***The intersection at Tenth Line and Mountain Road is dangerous and needs a roundabout or left hand turning lane.***

   d. ***Consider a traffic circle at the intersection of Tenth Line and Mountain Road while land on the west side of Tenth Line is still available. Traffic Circles work and are a lot cheaper to maintain.***

e. ***Traffic circles preferred at the intersection of Tenth Line/Mountain Road. Traffic circles calm traffic and provide opportunity for a gateway feature (heritage/cultural/aboriginal).***

f. ***Roundabouts are preferred at the intersection of Mountain Road and Tenth Line ASAP, not 2030.***

g. ***Prefer traffic lights at the intersection of Tenth Line and Mountain Road rather than a roundabout.***

h. ***The intersection at Tenth Line and Sixth Street needs improvement. Not safe for children and families crossing from soccer fields or Georgian Meadows. Strongly disagree with putting a roundabout at this intersection as it does not stop traffic and allow children and families to cross the street and the amount of land required to build one may have a detrimental effect on adjacent market and land use. Traffic lights at this intersection would be a better solution.***

i. ***A roundabout is preferred at the intersection of Tenth Street and Sixth Street to reduce braking.***

j. ***Prefer lights at Tenth Street and Sixth Street intersection unless a roundabout can be positioned south-west of the existing intersection so as not to impact existing residential area or soccer field.***

k. ***Traffic circles preferred at the intersection of Tenth Line and Sixth Street. Traffic circles calm traffic and provide opportunity for a gateway feature (heritage/cultural/aboriginal).***

l. ***Prefer traffic lights at the intersection of the Tenth Line and Sixth Street rather than a roundabout.***

RESPONSE: It is recognized that roundabouts have many benefits and while they have been successfully implemented in the Town and in area municipalities, they may not be appropriate in all locations. During this Class EA process many factors will be considered to determine if a roundabout is suitable at a specific intersection or whether signalization is more appropriate. Prior to selection of a preferred solution, consideration will be given to traffic operation and safety, pedestrian safety, property requirements and utility impacts as well as impacts to adjacent land use and natural heritage features and economic considerations such as costs associated with property acquisition, construction, and maintenance. If a roundabout is selected as the preferred option its location can be optimized to try and minimize the potential for impact. While a definitive answer cannot be provided at the present time, the preferred solution(s) will be presented at Public Information Centre No. 2 which will provide additional opportunity for comment.

3. **Signalization at Other Intersections (i.e. Georgian Meadows/Sixth St., Tenth Line/Georgian Meadows Dr., and Entrance to Linksview Development):**

   a. ***If a signalized intersection is not proposed at Georgian Meadows and Sixth Street, please consider a four way stop.***

   b. ***Definitely lights preferred at Georgian Meadows Drive.***

   c. ***The intersection of Tenth Line and Georgian Meadows Drive and the proposed Linksview intersection with Tenth Line should be signalized.***

   RESPONSE: Intersection traffic control requirements are being assessed as part of this Class EA process. Consideration will be given to recent traffic counts and land development proposals in the area.

4. **Snowmobile Trail:**

   a. ***The existing snowmobile trail provides economic benefit (ie food, fuel, accommodation) to the Town. The existing snowmobile trail currently travels from the golf course property east across the Tenth Line towards Taylor Creek where it intercepts with an alternate snowmobile trail that follows Taylor Creek north to the Black Ash Trail. The trail also crosses Mountain Road at the Black Ash Creek Bridge. The urbanization of both the Tenth Line and Mountain Road with sidewalks may create a problem for the snowmobile trail. How will the proposed urbanization of both the Tenth Line and Mountain Road accommodate the existing snowmobile trail system?***

   RESPONSE: The Town recognizes the contribution that the snowmobile trail system affords the local economy. We are in the process of investigating an alternative snowmobile route. We understand that trail crossings of public roads from private lands to other private lands may be difficult to secure permanently. We will continue to keep you informed as the project progresses and additional opportunity for comment will be provided at the second Public Information Centre to be scheduled for this project later this year.

5. **Active Transportation and Trail Connectivity:**

   a. ***Strongly in favour of improving connectivity between roads or sections of roads with paved shoulders, sidewalks, and/or multi-use trails. There are currently too many areas throughout our region where paved shoulders, sidewalks, and/or multi-use trails abruptly end. It is hoped that future road improvements along additional sections of Mountain Road and Tenth Line and other area roads (Grey Road 19, etc.) carry forward similar designs that support a more integrated active transportation network. It is strongly encouraged that the Town of Collingwood to liaise and work with neighbouring municipalities and counties to ensure consistency across political boundaries, wherever possible.***

b. ***Mountain Road - Comfortable with plans to have bike lanes plus the paved trail on the south side of Mountain Road. This plan will hopefully concur with the study that is underway to create a trail link between Collingwood and the Village at Blue. Concerned with the Black Ash Trail crossing immediately to the west of the Black Ash Creek Bridge on Mountain Road. This location will need to provide a safe crossing for pedestrians and cyclists as well as area snowmobilers and the trail groomer. Is a pedestrian-activated traffic signal an option?***

c. ***Tenth Line - The issue of a mid-block crossing reappears again along this road. At the moment the snowmobile route west of Tenth Line follows the land immediately south of the Blue Mountain Golf Course and then crosses Tenth Line and follows the road northbound on the east side of Tenth Line to Taylor Creek. It is expected that a future pedestrian/cycling trail will follow this same route. Is it possible to have curb cuts at the appropriate trail route locations for bikes and snowmobiles?***

d. ***A mixed use crossing at the Black Ash Creek Bridge on Mountain Road is a safety concern. Would like to see a crossing under the road with a 5-lane structure.***

e. ***Tenth Line needs a trail from 6th Street to Mountain Road.***

RESPONSE: One of the problems to be addressed as part of this undertaking is to provide for active transportation (pedestrian and cyclists) which includes giving consideration to improved safety and trail connectivity. The Town of Collingwood has recently prepared an Active Transportation Framework Plan to provide formal direction relating to the development of active transportation within the municipality. The design options currently under consideration to improve both the Tenth Line and Mountain Road propose the inclusion of bicycle lanes and sidewalks which will assist in improving active transportation and connectivity in that area of the municipality.

The Town recognizes that the crossing on Tenth Line west of the Black Ash Creek Bridge is a key location that will need to safely accommodate pedestrians, cyclists and snowmobilers. The project team is reviewing various crossing options for this location including a tunnel crossing, a pedestrian island or crosswalk, or potentially moving the crossing to a location with better sight lines. The alternatives as presented at the June 1, 2017 PIC do provide for improved pedestrian and cyclist safety via a 1.5 m sidewalk on both sides of the Tenth Line from Sixth Street to Mountain Road as well as a 3.0 m multi-use trail on Mountain Road as part of the three lane option. Sidewalks, a bike lane and a multi-use trail are also proposed as part of the five lane option. It is expected that these provisions within the corridor will greatly improve safety for pedestrians and cyclists.

The potential to provide curb cuts at appropriate trail locations will also be given further consideration during this process. We hope to provide additional details in this regard at PIC No. 2 scheduled for later this year.

6. **Existing Truck Traffic, Noise and Dust:**

a. ***Concerned with road reconstruction and the huge number of truck loads bringing soil into the Consar Development, the Linksview etc. Will regulations regarding dust control and noise be rigidly enforced?***

b. ***There is a large volume of truck traffic with many of these trucks going to the landfill at the end of the Tenth Line from other transfer stations.***

c. ***Concerned with increased truck traffic on Tenth Line which is already very noisy.***

d. ***The Tenth Line surface is currently noisy. The paving when done needs to be better quality.***

e. ***Will there be a sound barrier for the Tenth Line. This seems to be a major truck route for Lafarge Concrete and Town trucks.***

f. ***Will there be increased noise from increased traffic on Tenth Line?***

g. ***Is there way that construction vehicles from Mair Mills and Consar Developments can be directed to use Mountain Road and the Tenth Line rather than Sixth Street and the Town Line?***

RESPONSE: The Tenth Line reconstruction proposes improvements to the existing corridor and not an expansion in terms of additional lanes for increased capacity. While it is recognized that truck traffic and resulting noise may be increased during the period of construction, this will be temporary. Please note that during construction contractors working within the Town are required to abide by the Town's noise bylaw and implement standard noise mitigation measures during construction.

Standard best management practices can also be utilized during construction to address dust. These may include the covering of stockpiles, the application of dust suppressants, the regular cleaning of access roads to remove debris and dust caused by construction, as well as reducing travel speeds of construction vehicles. The surface treatment of the Tenth Line will be improved as part of the planned reconstruction which may also assist in reducing noise.

It is recognized that there may be an increase in noise as a result of the land development projects planned for the area, but please keep in mind that this area of the municipality is designated for growth in the Town of Collingwood's Official Plan.

7. **Perceived Blind Spot on Tenth Line**

a. ***There is a blind spot on the Tenth Line between Sixth Street and Georgian Meadows Drive.***

b. ***There is a blind spot at the Tenth Line and Georgian Meadows Drive.***

RESPONSE: The Town is aware of potential existing sight line issues and these will be addressed as part of this undertaking.

8. Traffic Projections

a. Traffic Projections into and out of the Side Launch Brewery is vastly understated. The brewery is growing rapidly and traffic will increase. Currently turning left onto Mountain Road from the brewery is an issue at times.

RESPONSE: The traffic projections as presented at PIC No. 1 were based on traffic counts taken at the site in August 2016. We acknowledge that the numbers presented for this location at PIC No. 1 may be understated; however, a shared left turn lane will address turning movement requirements at this location.

9. Drainage Concerns:

a. Tenth Line is prone to flooding from Georgian Meadows to Mountain Road.

b. Concerns with potential flooding from Taylor Creek into homes in Georgian Meadows.

c. Drainage and ground water control is a concern. Past basement flooding when Tenth Line ditch backed up. Taylor Creek is a huge concern.

d. Proper underground drainage is necessary to ensure runoff from the Tenth Line is properly addressed so that flooding does not occur in the Georgian Meadows subdivision.

RESPONSE: During the Class EA process a drainage assessment is being completed to examine existing drainage within the subject study area and to develop an appropriate drainage strategy to accommodate the works proposed. As presented at PIC No. 1 it is proposed to urbanize the Tenth Line. This means that the existing ditch drainage will be removed and replaced with a curb and gutter system with road drainage conveyed underground to a storm sewer. This will lead to improved drainage within the corridor and may assist in reducing overland flow. It is not expected that this project will impact existing groundwater levels.

10. Corridor Maintenance:

a. Presently Town does no maintenance on property beside road.

RESPONSE: The Town carries out maintenance, as required, to meet the Town's required roadway standards.

11. Existing Natural Heritage Features:

a. Consider constructing a wildlife tunnel on Mountain Road to accommodate wildlife movement. Conserve/protect natural corridors at 20 metres. The Taylor Creek forested area and the natural channel on the east side of the corridor within the Red Maple property should be protected. Restoration should be completed with natural species ecology.

RESPONSE: As part of the current Class EA process a natural heritage review is being completed that will establish an inventory of the existing environment and identify any sensitive features or aspects that need to be considered in the development of the design. The potential to impact fish and fish habitat, area wildlife, vegetation and Species at Risk will be considered as part of this Class EA process and an appropriate mitigation strategy will be developed to minimize impacts during construction. Once the natural heritage review is complete the Project Team will have a better understanding of design measures that may be necessary to minimize impacts.

The forested area noted above on the Red Maple property (i.e. Consar Development) is outside the study area for the current project and all environmental concerns associated with that property will be addressed as part of the land use planning process for that development.

12. <u>Area Development:</u>

a. The study should include consideration with respect to traffic flows/impacts and servicing infrastructure improvements for the future Todco Development which is designated for urban development and located at the northwest corner of the Tenth Line / Mountain Road intersection. This property has been Draft Plan approved. It is projected that 30% of the residential density will be completed by 2022 with the entire development completed before 2030. How will the Town accommodate Todco's residential density by 2022 (from a road and infrastructure servicing perspective)? Will the proposed densities take into consideration the new Growth Plan targets for green field development? For future developments, we assume applicable widenings and/or land will simply be required by the Town (no negotiation) as part of the development process. Please advise the amount and configuration of the land (if any) that would be required from the Todco development. Please confirm all proposed improvements will be paid for through Development Charges and/or by the Town.

RESPONSE: During the current Class EA process consideration will be given to any new developments proposed in the area of the project. Ongoing consultation throughout the Class EA process with the developer's consultant will assist in ensuring that the site can be accommodated from a traffic and infrastructure servicing perspective. Any site specific questions pertaining to widening requirements, site servicing, densities and Development Charges will require separate discussion with the Town as part of the land use planning process.

Please note that you will be added to the project contact list if not already on it. Notification regarding the second PIC planned for the fall of 2017 will be provided in advance.

We trust the above is satisfactory; however, if there are aspects that require further clarification, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

Tel: 705-445-3460 ext. 156
Email: nollert@ainleygroup.com

pc: T. Harvey	Town of Collingwood, Project Coordinator
J. Velick	Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski	Ainley Group, Project Engineer
A. Potter	Ainley Group, Environmental Planner

S:\217013\06. Consultation\06-C1-Commence-PIC 1\06-Comments Rec'd\Response\217013 Tenth Line PIC Response Letter Sept 2017 FINAL.doc

Public Information Centre No. 1
Presentation Material

Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment

PUBLIC INFORMATION CENTRE

Date: Thursday June 1, 2017

Time: 4:00 p.m. to 7:00 p.m.

Location: Community Room B and C, Third Floor
Collingwood Public Library
55 Ste. Marie Street
Collingwood, Ontario

WELCOME

Your input is appreciated.

- You are encouraged to review the display material.
- Please feel free to discuss any concerns with members of the study team in attendance.
- All PIC material will be available for download June 2nd, 2017 from the Town's website at www.collingwood.ca
- We invite you to provide any comments, in writing, on the Comment Sheet provided.

PLEASE SIGN IN

MUNICIPAL FREEDOM OF INFORMATION & PROTECTION OF PRIVACY ACT

All comments received will be maintained on file for use during the project and may be included in study documentation. Information collected will be used in accordance with the Municipal Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.

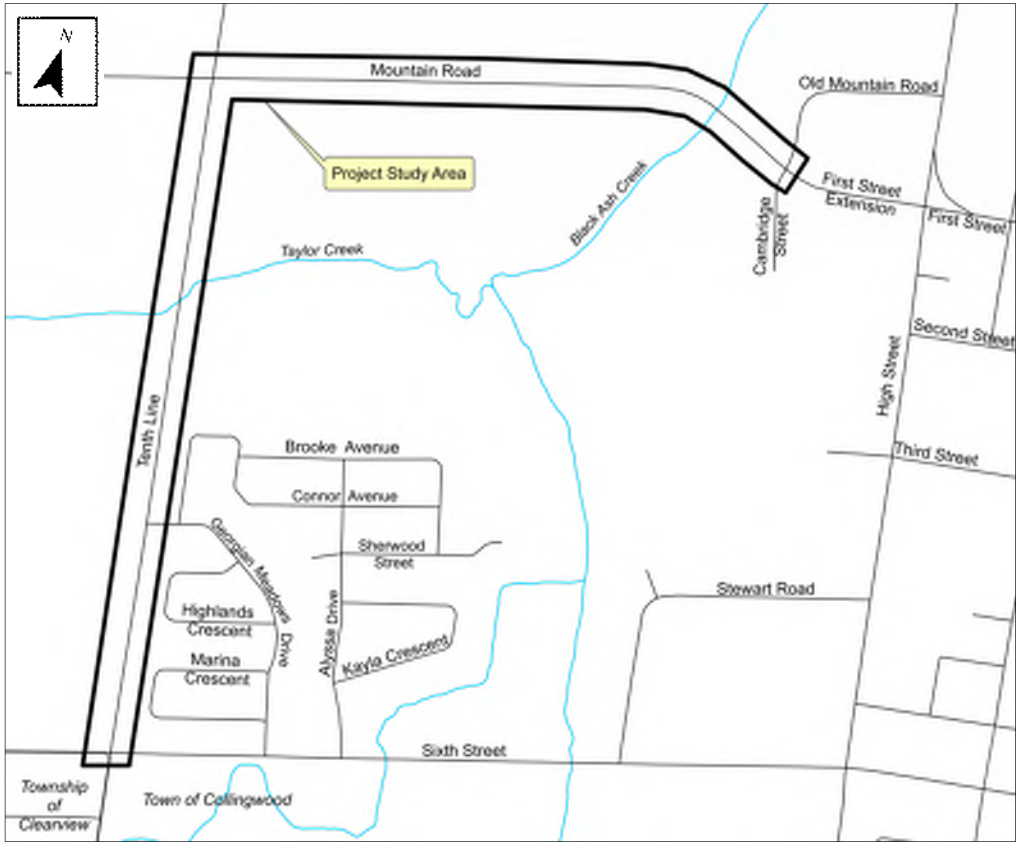
INTRODUCTION

- Thank you for your interest in this Municipal Class Environmental Assessment.
- This public meeting will present the following information:
  - Project Background
  - The Municipal Class Environmental Assessment Process
  - The problem / opportunity
  - Alternative solutions under consideration to address the identified deficiencies
  - Evaluation of alternatives
  - Next Step in the process

PROJECT STUDY AREA

The Project Study Area includes the following:

- Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km)
- Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km).



(n.t.s.)

BACKGROUND INFORMATION

- The *Growth Plan for the Greater Golden Horseshoe* designates the Town of Collingwood as a Primary Settlement Area and identifies the following future population and employment projections for the municipality:

Community	Population			Employment		
	2011	2031	Annual Growth	2006	2031	Annual Growth
Town of Collingwood	19,243	33,400	2.8%	8,140	13,500	2.0%

- In 2012, the Town of Collingwood completed a Transportation Study that identified major road and intersection improvement needs for the Town's road network, including widening of the subject section of Mountain Road, and improvements to the intersections of Mountain Road/Tenth Line and Tenth Line/Sixth Street.

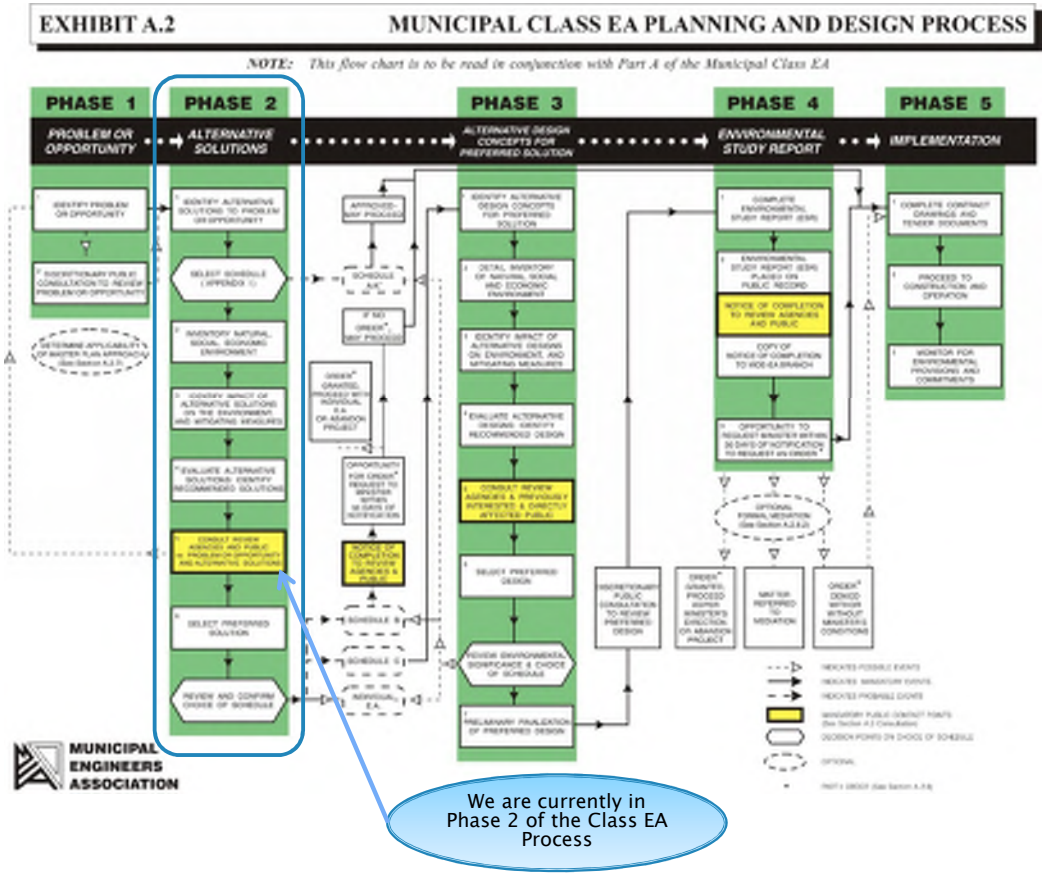
- The municipality has initiated this Schedule 'C' Municipal Class Environmental Assessment (Class EA) to accommodate the future growth planned for the study area and to address capacity and operational deficiencies.

- A municipality is required to conduct a Municipal Class Environmental Assessment before this type of road and bridge improvement project can proceed to construction.

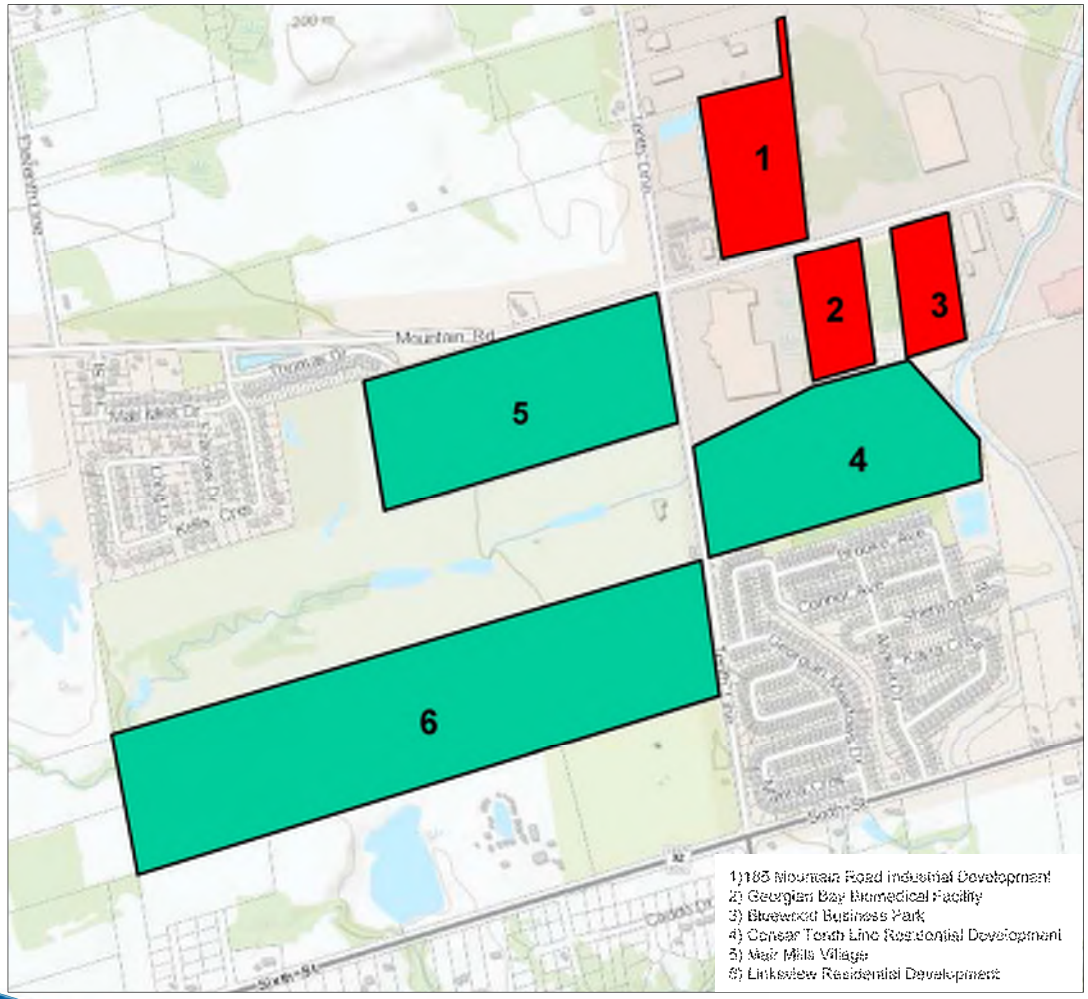
- A Municipal Class Environmental Assessment follows an approved planning process designed to protect the environment and to ensure compliance with the Ontario Environmental Assessment Act.

MUNICIPAL CLASS EA PROCESS

- The purpose of the Ontario Environmental Assessment Act (EA Act) is to provide for *"…the betterment of the people of the whole or any part of Ontario by providing for the protection, conservation and wise management in Ontario of the environment."*
- The term "environment" is broadly defined and includes the built, natural, socio-economic and cultural environments.
- The process requires the evaluation of potential solutions and design concepts so as to select a suitable approach that will address the problem/opportunity, but also keep impacts to a minimum.
- Based on the scope of work proposed this project is classified as a Schedule 'C' in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).
- A Schedule 'C' project requires completion of Phases 1 to 5. We are currently in Phase 2 of the process.



FUTURE DEVELOPMENT



- There are a number of developments planned within and adjacent to the current study area as illustrated in the accompanying map.

- The anticipated timing for the completion of these developments is illustrated in the table below:

No.	Development	Build Out Timing/Phasing		
		2022	2030	2037
1	185 Mountain Road Industrial Development	100%		
2	Georgian Bay Biomedical Facility	100%		
3	Bluewood Business Park	100%		
4	Consar Tenth Line Residential Development	43%	100%	
5	Mair Mills Village	38%	100%	
6	Linksview Residential Development	20%	73%	100%

PROBLEM / OPPORTUNITY

Problems

- Road and intersection improvements are necessary to accommodate future growth.
- The existing corridors do not accommodate active transportation (pedestrian and cycling) since there are no existing sidewalks or bicycle lanes.
- Existing servicing infrastructure (sanitary and storm) cannot accommodate development planned for the area.

Opportunities

- Addressing the problems noted above will provide opportunity to complete improvements to drainage, safety and the existing Black Ash Creek Bridge.

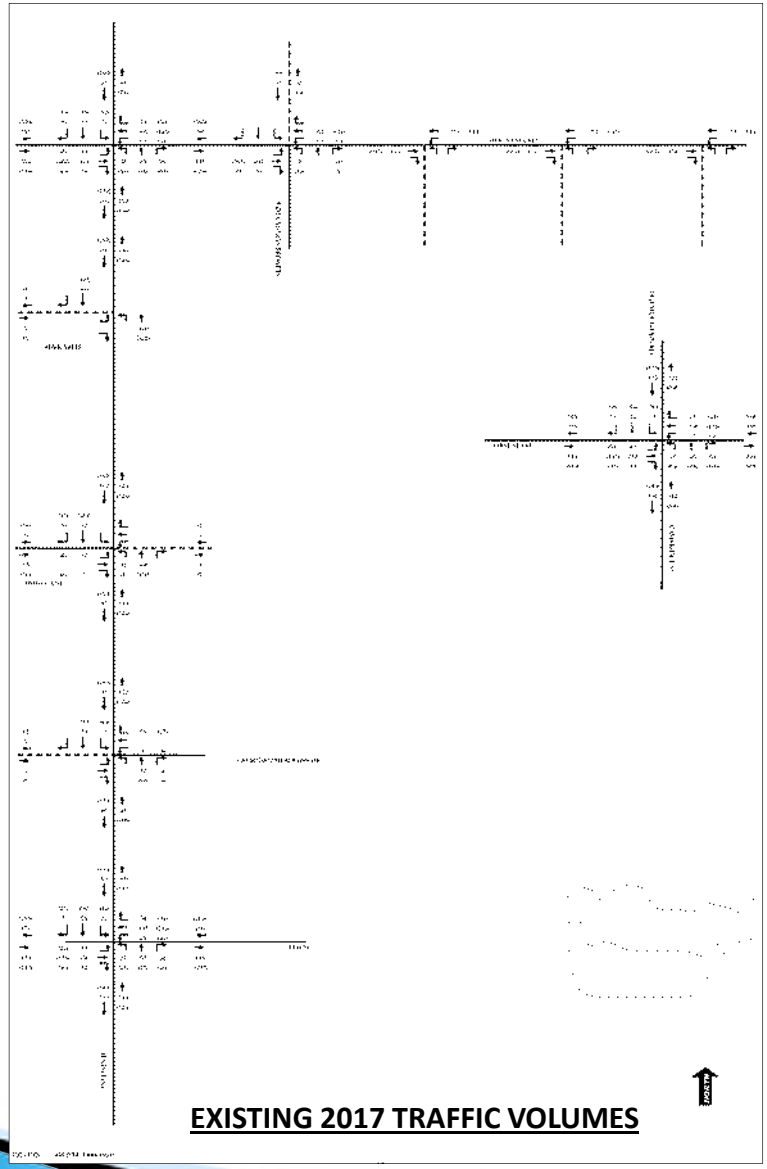
TRAFFIC PROJECTIONS

- As part of the current Class EA process a Traffic Analysis was completed to assess the transportation requirements for the subject study area and to update traffic volume projections to reflect the significant changes in development activities in the area.

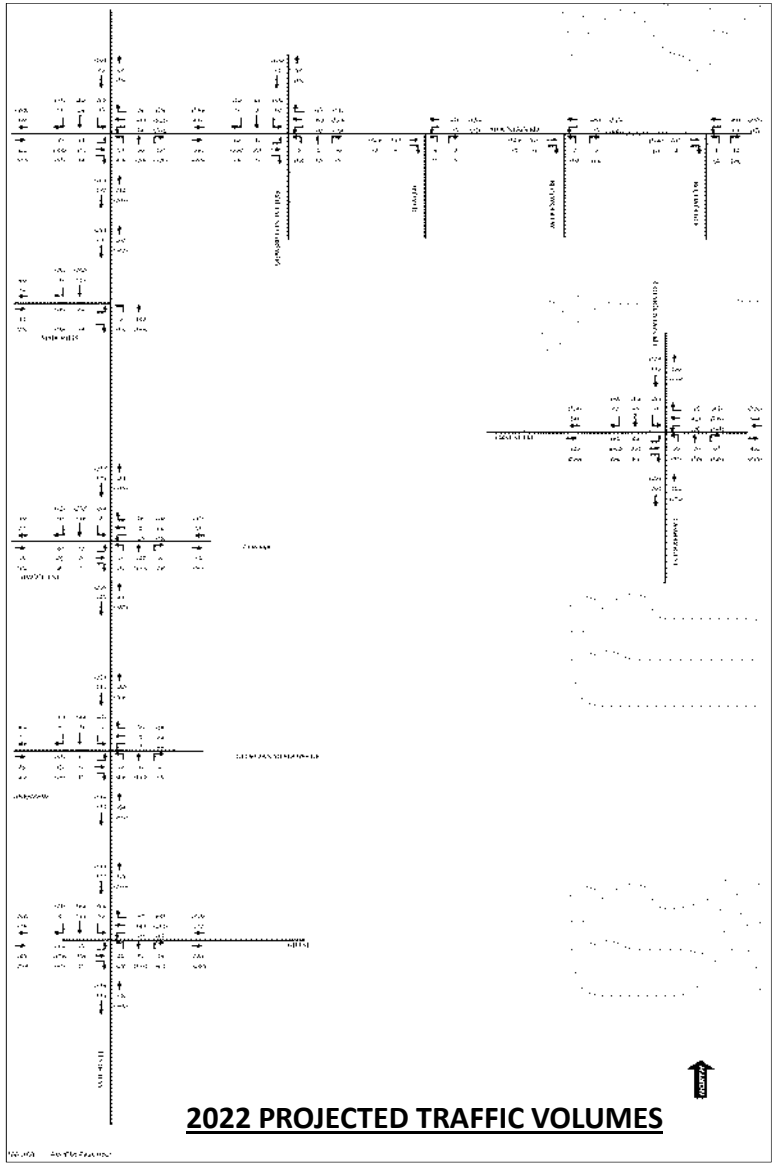
- The Traffic Analysis reviewed the subject corridors under 2017 existing conditions and future traffic projections for the horizon years of:
  - 2022 (representing a 5 year horizon)
  - 2030 (10 year horizon to align with the area development timing and phasing), and
  - 2037 (20 year horizon).

- The results of the above noted traffic analysis, including the projected traffic volumes, are presented on the boards that follow.

TRAFFIC PROJECTIONS

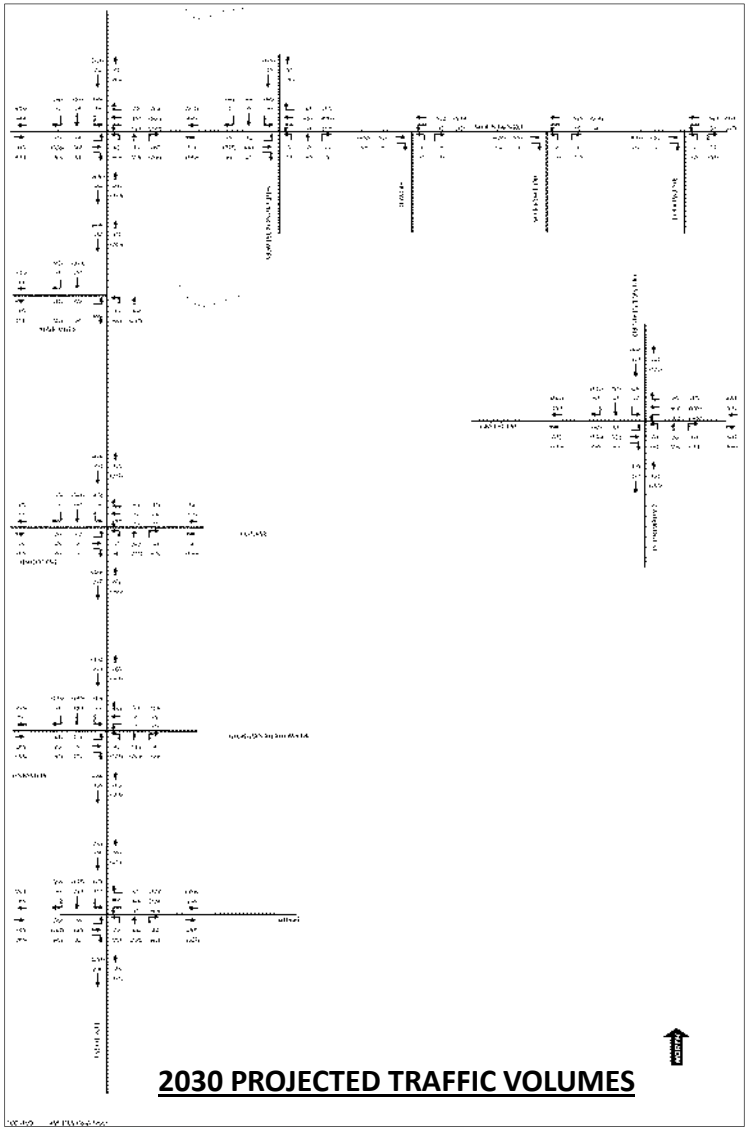


EXISTING 2017 TRAFFIC VOLUMES

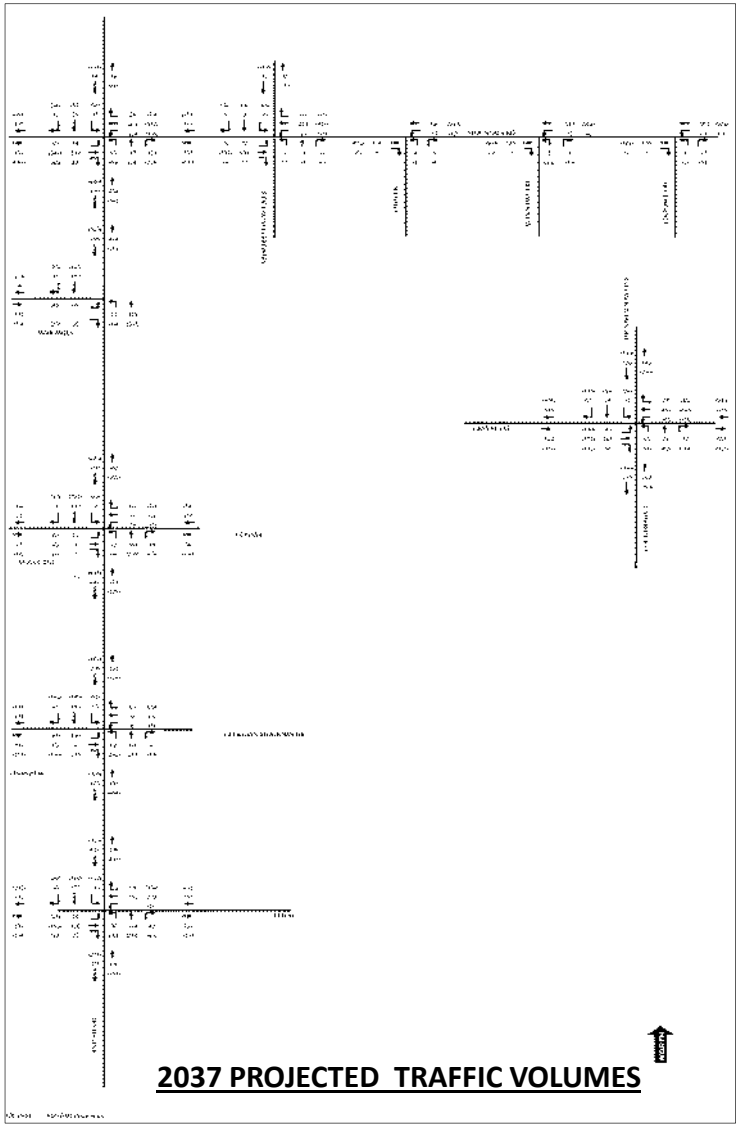


2022 PROJECTED TRAFFIC VOLUMES

TRAFFIC PROJECTIONS



2030 PROJECTED TRAFFIC VOLUMES



2037 PROJECTED TRAFFIC VOLUMES

IMPROVEMENTS REQUIRED

The following summarizes the corridor improvements required and the anticipated timing:

IMPROVEMENTS REQUIRED BY 2022

Mountain Road

- Three lane corridor (i.e. one through lane in each direction and a centre turn lane on Mountain Road from east of Tenth Line to First Street Extension).
- Improvements to servicing infrastructure.
- Widening of Black Ash Creek Bridge on Mountain Road.

Tenth Line

- Urbanize Tenth Line to a local collector with curbs, sidewalks, bike lanes and associated servicing infrastructure.

IMPROVEMENTS REQUIRED BY 2037

Intersection of Tenth Line and Georgian Meadows Drive/Linksview Development

- Signalization of the intersection with left turn lanes on each approach OR construct a one lane roundabout.

- **Intersection of Tenth Line and Entrance to Mair Mills Village**
  - Addition of northbound left turn lane.

IMPROVEMENTS REQUIRED BY 2030

Intersection of Mountain Road and Tenth Line

- Addition of exclusive left turn lanes on each approach and signalization upgrades OR construct a two lane roundabout.

Intersection of Tenth Line and Entrance to Blue Mountain Golf & Country Club Entrance/Consar Development

- Addition of a southbound left turn lane.

Intersection of Tenth Line and Georgian Meadows Drive/Linksview Development

- Addition of southbound and northbound left turn lanes.

Intersection of Tenth Line and Sixth Street

- Signalization of the intersection with exclusive left turn lanes on each approach OR construct a one lane roundabout.

BEYOND 2037

Mountain Road Through Lanes

- Five lane corridor (i.e. two through lanes in each direction and a centre left turn lane on Mountain Road from east of Tenth Line to the First Street Extension and associated servicing infrastructure).

(The above improvements are further illustrated on the board that follows.)

IMPROVEMENTS REQUIRED

By 2030
Intersection of Tenth Line & Moutain Road

- Addition of exclusive left turn lanes on each approach.
- Signalization upgrades OR construct a two lane roundabout.

By 2030
Intersection of Tenth Line and Entrance to Blue Mountain Golf & Country Club / Consar Development

- Addition of southbound left turn lane.

Tenth Line

By 2022
- Urbanization of Tenth Line to a local collector road with curbs, sidewalks, bike lanes.
- Improvements to servicing infrastructure.

By 2030
Intersection of Tenth Line and Georgian Meadows Drive / Linksview Development

- Addition of southbound and northbound left turn lanes.

Mountain Road

By 2022
- Three lane corridor required (i.e. one through lane in each direction and a centre turn lane on Mountain Road from east of Tenth Line to First Street Extension).
- Improvements to servicing infrastructure.

By 2037
- Five lane corridor required (i.e. two through lanes in each direction and a centre left turn lane on Mountain Road from east of Tenth Line to the First Street Extension and associated servicing infrastructure).

By 2022
- Widening of Black Ash Creek Bridge

By 2037
Intersection of Tenth Line and Mair Mills Entrance

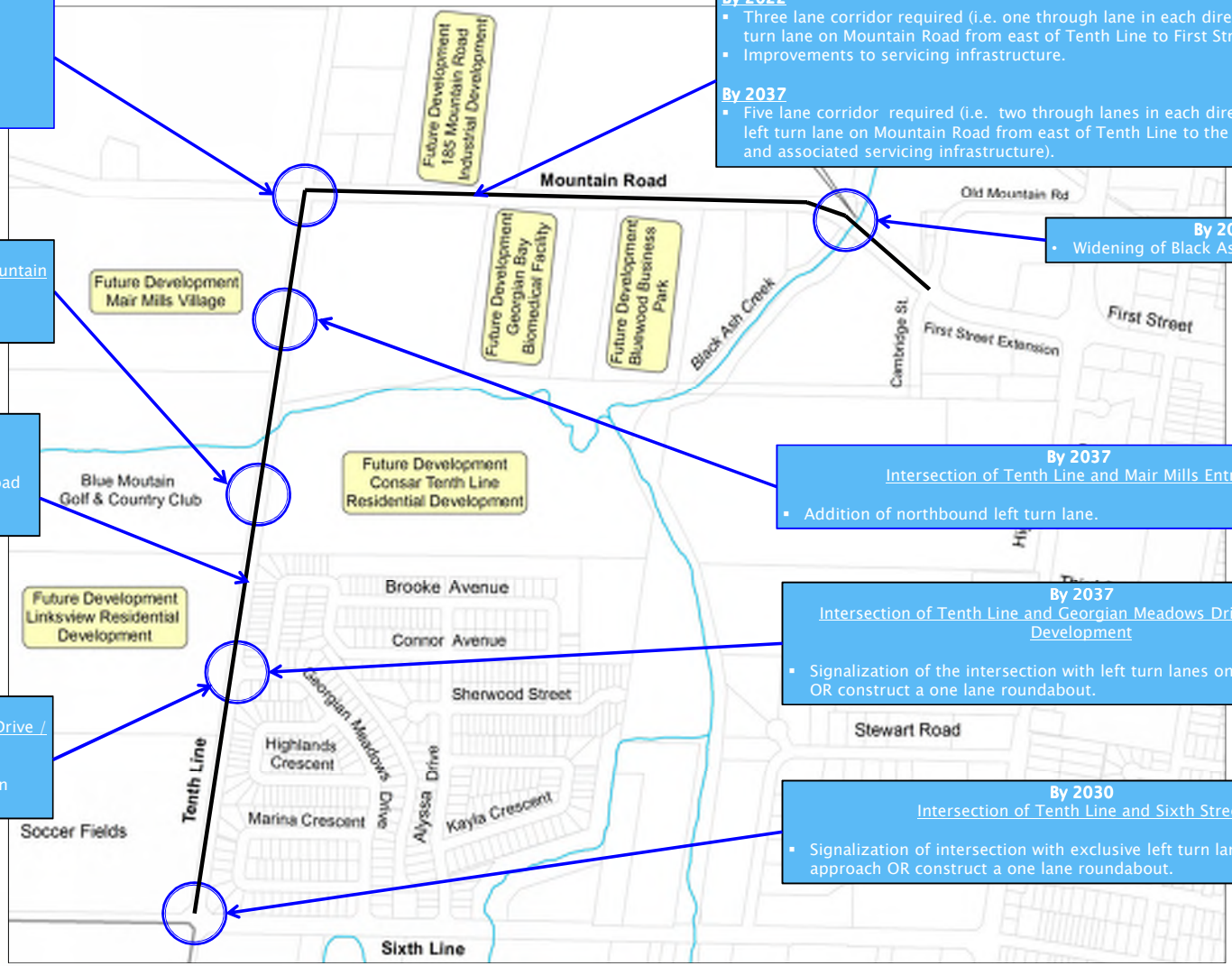
- Addition of northbound left turn lane.

By 2037
Intersection of Tenth Line and Georgian Meadows Drive / Linksview Development

- Signalization of the intersection with left turn lanes on each approach OR construct a one lane roundabout.

By 2030
Intersection of Tenth Line and Sixth Street

- Signalization of intersection with exclusive left turn lanes on each approach OR construct a one lane roundabout.



EXISTING BRIDGE

Existing Black Ash Creek Bridge on Mountain Road

EXISTING STRUCTURE:

- The existing Black Ash Creek Bridge was constructed circa 1978 and is a super elevated single span, cast-in-place concrete rigid frame structure.
- The existing bridge provides for two lanes of traffic and a sidewalk on the north side.

Existing Black Ash Creek Bridge Looking East

BRIDGE INSPECTION:

- A bridge inspection was completed in 2016 in accordance with the Ontario Structure Inspection Manual (OSIM) and again in April 2017 as part of the current Class EA process.
- The bridge inspections noted the following:
  - Concrete end posts of the barriers show medium deterioration.
  - Bridge deck wearing surface observed to have a large amount of cracking.
  - Spalling, delamination, cracking and staining observed on the wingwalls, fascia and soffit.
- **Bridge Inspection Conclusion:** Overall condition of bridge determined to be fair to good.

Cracking & Staining on Bridge Fascia and Soffit

Cracking on Existing Bridge Deck Surface

PHASE 2 ALTERNATIVE SOLUTIONS

During Phase 2 of the Class EA process, alternative solutions are developed to address the identified deficiencies. For this project three alternative solutions are under consideration as follows:

- **Alternative 1 – 'Do Nothing'**
  - No changes or modifications to existing infrastructure within study area.

- **Alternative 2 – Mountain Road 3 Lanes + Tenth Line 2 Lanes + Bridge Improvements**
  - Reconstruct Mountain Road to a 3 lane rural cross-section (1 westbound and 1 eastbound through lane; 1 centre left turn lane; 1.5 m paved shoulders and 3.0 m paved multi-use trail on south side of corridor)
  - Reconstruct Tenth Line to a 2 lane urban cross-section (1 northbound and 1 southbound through lane; 1.5 m paved bicycle lane both sides and 1.5 m sidewalk both sides of corridor)
  - Intersection improvements (additional turn lanes with signalization or roundabouts)
  - Servicing improvements (i.e. sanitary, water, and storm drainage)
  - *Bridge improvements (rehabilitation, widen, or replacement)

- **Alternative 3 – Mountain Road 5 Lanes + Tenth Line 2 Lanes + Bridge Improvements**
  - Reconstruct Mountain Road to a 5 lane urban cross-section (2 westbound and 2 eastbound through lanes; 1 centre left turn lane; 1.5 m paved bicycle lane both sides, 1.5 m sidewalk on north side of corridor, and 3.0 m paved multi-use trail on south side of corridor)
  - Reconstruct Tenth Line to a 2 lane urban cross-section (1 northbound and 1 southbound through lane; 1.5 m paved bicycle lane both sides and 1.5 m sidewalk both sides of corridor)
  - Intersection improvements (added turn lanes with signalization or roundabouts)
  - Municipal servicing improvements (i.e. sanitary, water, and storm drainage)
  - *Bridge improvements (rehabilitation, widen, or replacement)

**Note: The nature of the bridge improvement (i.e. rehab, widen, or replacement) is dependent upon the road cross-section selected. These will be reviewed in more detail during Phase 3 of the Class EA process.*

(Additional details for each of the above options are presented on the following boards)

ALTERNATIVE 1

Do Nothing

Near 95 Mountain Road Looking East

- The 'Do Nothing' alternative proposes no changes. The existing corridor and bridge would remain 'as is' with no improvements or modifications.
- The 'Do Nothing' alternative is given consideration as part of the Class EA process and used as a benchmark to gauge the potential for environmental impact.

Near 795823 Tenth Line Looking North

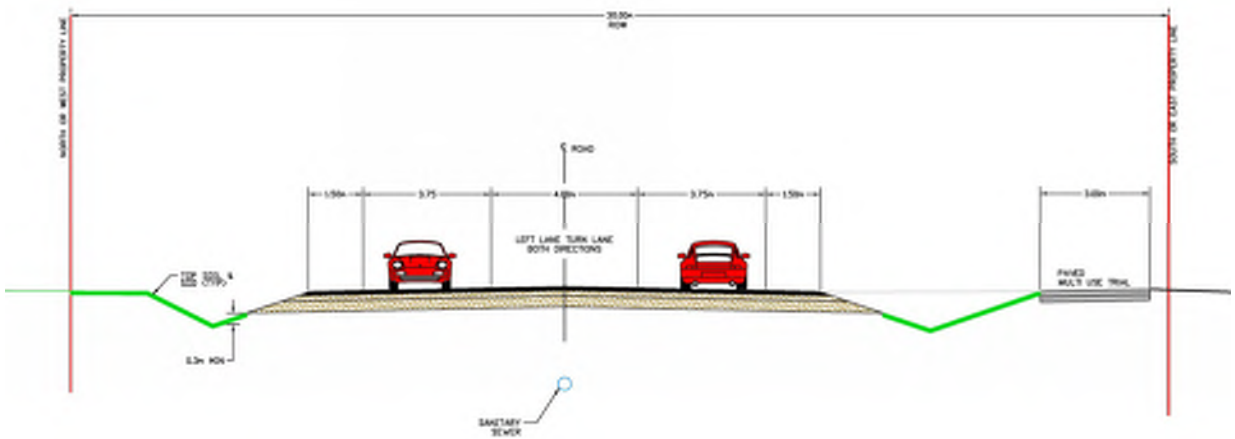
Near 795787 Tenth Line Looking South

Existing Black Ash Creek Bridge on Mountain Road

Existing Tenth Line / Sixth Street Intersection

ALTERNATIVE 2

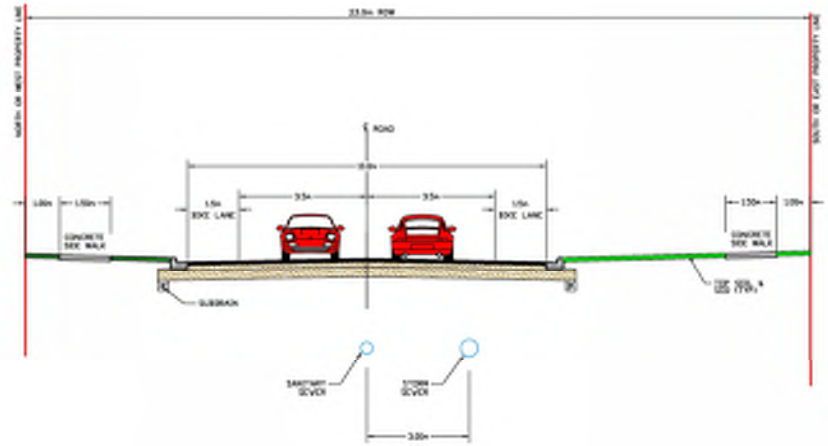
MOUNTAIN ROAD 3 LANE RURAL CROSS-SECTION + TENTH LINE 2 LANE URBAN CROSS-SECTION + BRIDGE IMPROVEMENTS



MOUNTAIN ROAD 3 LANE RURAL CROSS-SECTION

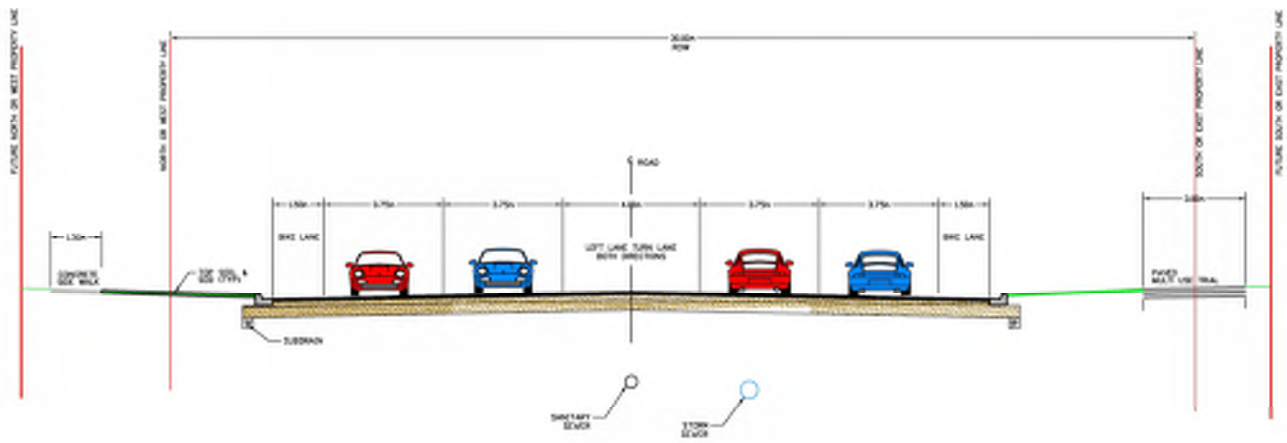
- ✓ Reconstruct Mountain Road to a 3 lane rural cross-section providing:
  - Two 3.75 m wide travel lanes and one 4.0 m wide continuous centre turn lane in a 30.0 m wide right-of-way
  - 3.0 m wide paved multi-use trail on south side of corridor
  - 1.5 m paved shoulders
- ✓ Reconstruct Tenth Line to a 2 lane urban cross-section providing:
  - Two 3.50 m wide travel lanes in a 23.0 m wide right-of-way
  - 1.5 m wide bicycle lane on both sides of corridor
  - 1.5 m wide paved sidewalk on both sides of corridor
- ✓ Intersection improvements (additional turn lanes with signalization or roundabouts)
- ✓ Servicing Improvements (i.e. sanitary, water, and storm drainage)
- ✓ Bridge rehabilitation, widening or replacement

TENTH LINE 2 LANE URBAN CROSS-SECTION



ALTERNATIVE 3

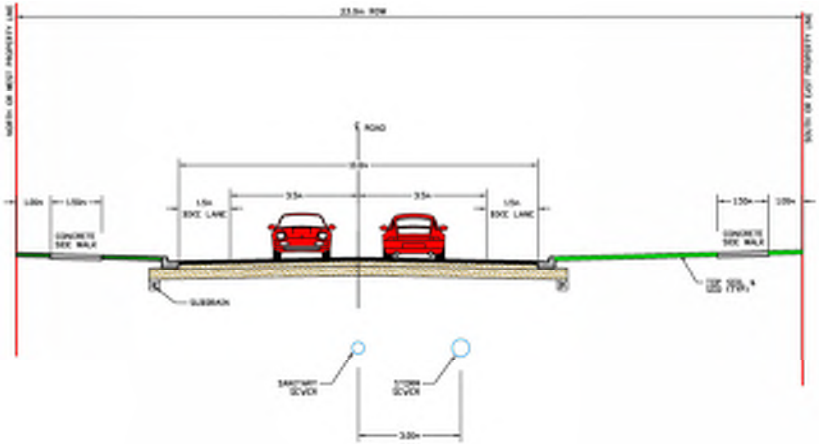
MOUNTAIN ROAD 5 LANE URBAN CROSS-SECTION + TENTH LINE 2 LANE URBAN CROSS-SECTION + BRIDGE IMPROVEMENTS



MOUNTAIN ROAD 5 LANE URBAN CROSS-SECTION

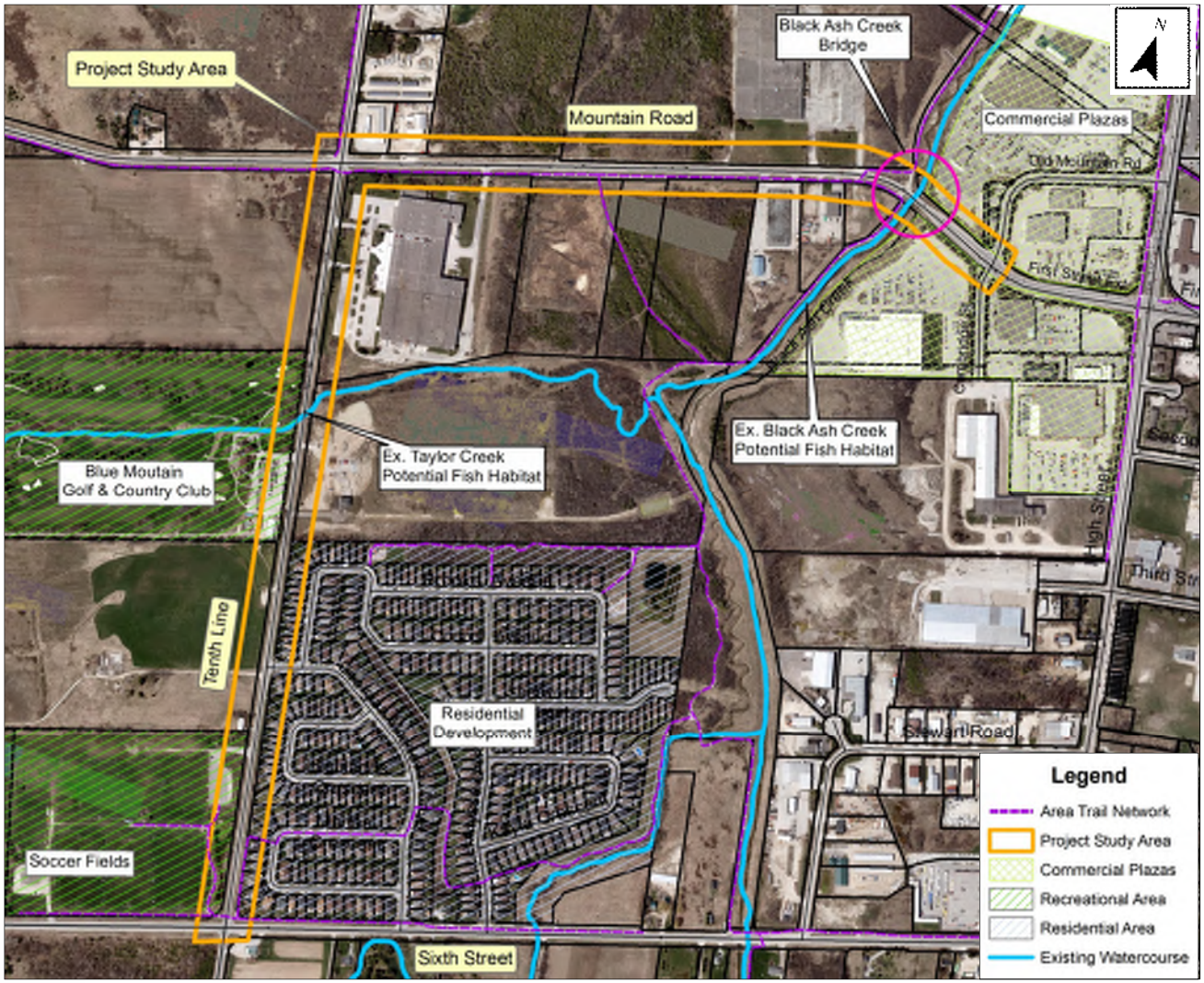
- ✓ Reconstruct Mountain Road to an urban cross-section providing:
  - Four 3.75 m wide travel lanes and one 4.00 m wide continuous centre turn lane in a 30.0 m wide right-of-way
  - 3.0 m wide paved multi-use trail on south side of corridor
  - 1.5 m wide bicycle lane on both sides of corridor
  - 1.5 m sidewalk on north side of corridor
- ✓ Reconstruct Tenth Line to an urban cross-section providing:
  - Two 3.50 m wide travel lanes in a 23.0 m right-of-way
  - 1.5 m wide bicycle lane on both sides of corridor
  - 1.5 m wide paved sidewalk on both sides of corridor
- ✓ Intersection improvements (additional turn lanes with signalization or roundabouts)
- ✓ Servicing Improvements (i.e. sanitary, water, and storm drainage)
- ✓ Bridge rehabilitation, widening or replacement

TENTH LINE 2 LANE URBAN CROSS-SECTION



KEY FEATURES / CONSTRAINTS OF STUDY AREA

- There are two watercourses that provide fish and fish habitat.
- A review of the natural heritage features within the project study area is currently underway. This review will assist in determining the potential for impact and in the development of an appropriate mitigation strategy.
- Land use is varied within the study area and includes recreational, commercial, industrial and residential uses.



EVALUATION MATRIX

The table below provides a comparison of the potential for impact on the study area environment (physical, natural, socio-economic and cultural) resulting from each alternative under consideration.

Not Acceptable Does not address key issues | Negative Impact | Moderate Impact | Positive Impact

EVALUATION CRITERIA	ALT 1	ALT 2	ALT 3	DESCRIPTION OF EFFECTS	MITIGATION
PHYSICAL ENVIRONMENT					
Future Traffic Capacity	Not Acceptable	Moderate Impact	Positive Impact	Alt. 1 will not accommodate future capacity requirements and will result in increased congestion over time. Alt. 3 will address future capacity needs to the greatest extent since 5 lanes are proposed.	n/a
Operations	Not Acceptable	Moderate Impact	Positive Impact	Alt. 1 proposes no improvements to operations so intersection movement will continue to deteriorate. Alt. 3 will address operational improvements to the greatest extent.	n/a
Constructability	Positive Impact	Moderate Impact	Negative Impact	As Alt. 3 requires the widest corridor it will have more challenges in terms of constructability in comparison to the other alternatives.	n/a
Safety	Negative Impact	Positive Impact	Positive Impact	Alt. 1 proposes no improvements. Alt. 2 & 3 will equally address safety concerns.	n/a
Bridge Structure	Not Acceptable	Positive Impact	Positive Impact	The current structure cannot accommodate anticipated future capacity. Alt. 1 is considered 'not acceptable' since it proposes no improvements to the existing structure . Alts. 2 & 3 will have a positive impact in this regard since bridge improvements are proposed with each of these options.	n/a
Services	Not Acceptable	Positive Impact	Positive Impact	Alt. 1 proposes no changes to existing municipal services and is the least preferred option since it will not accommodate future development. Alt. 2 & 3 propose improvements to existing servicing to accommodate future development and will equally address this aspect.	Confirm area development servicing needs and incorporate into design.
Utilities	Positive Impact	Negative Impact	Negative Impact	Alt. 1 will have the least amount of impact to existing utilities since no improvements or modifications are proposed. Alt. 3 will result in the greatest impact to existing utilities since it proposes the widest cross-section and may require utility relocation.	Advance contact with area utilities during design to minimize impacts.
NATURAL ENVIRONMENT					
Terrestrial Wildlife (including Species at Risk)	Positive Impact	Moderate Impact	Negative Impact	As Alt. 1 proposes no improvements it will have the least potential for impact in comparison to the other two options under consideration. There is an increased potential to impact area wildlife from Alt. 3 since it proposes the widest cross-section; however, impacts can be mitigated.	Minimize encroachment beyond right-of-way; comply with Migratory Birds Convention Act and Migratory Bird Regulations and avoid impacting migratory birds (including SAR) during the breeding season; obtain input, as required, from Nottawasaga Valley Conservation Authority and Ministry of Natural Resources and Forestry.
Fisheries / Aquatic (including Species at Risk)	Positive Impact	Moderate Impact	Negative Impact	As Alt. 1 proposes no improvements it will have the least potential for impact of the three options under consideration. Alts. 2 & 3 propose improvements to the existing Black Ash Creek Bridge and other drainage infrastructure which has the potential to impact fish and fish habitat during construction; however, impacts can be mitigated.	Utilize design that minimizes in-water work; adherence to fisheries timing restrictions; obtain necessary approvals from the Department of Fisheries & Oceans , Nottawasaga Valley Conservation Authority, and the Ministry of Natural Resources and Forestry; application of standard best management practices for working in and around water (i.e. sediment & erosion control; site restoration following construction; equipment refueling and maintenance restrictions etc.).
Vegetation	Positive Impact	Moderate Impact	Negative Impact	As Alt. 1 proposes no improvements it will have the least potential for impact of the three options under consideration. Alt. 3 has an increased potential to impact area vegetation as it proposes the widest cross-section and could require construction outside the existing right-of-way.	Design footprint to minimize impacts to area vegetation as much as possible; re-stabilize and re-vegetate exposed surfaces as soon as possible following construction; minimize disturbance to root systems; define limits of construction with fencing to minimize intrusion into unnecessary areas.
Surface Water / Drainage	Not Acceptable	Positive Impact	Positive Impact	As drainage improvements are required to accommodate future development, Alt. 1 is the least preferred since this option proposes no improvements to drainage in the area. Alt. 2 & 3 will equally improve drainage for the area since both propose the urbanization of the Tenth Line and improvements to drainage on Mountain Road.	Obtain necessary approval from the Nottawasaga Valley Conservation Authority; application of standard best management practices for working in and around water (i.e. sediment & erosion control; site restoration following construction; equipment refueling and maintenance restrictions etc.); obtain MOECC Permit To Take Water (surface water), as required.
Groundwater	Positive Impact	Moderate Impact	Negative Impact	Alt. 1will result in the least amount of impact to groundwater of the three options under consideration since no construction is proposed. Alt. 2 & 3 will have an increased potential in this regard during the construction process; however, impacts can be mitigated.	Complete baseline well survey prior to construction; obtain Ministry of Environment and Climate Change Permit To Take Water (groundwater), as required; utilize standard water conservation measures to minimize the amount of water taken and to terminate the usage as soon as possible.

EVALUATION MATRIX

The table below provides a comparison of the potential for impact on the study area environment (physical, natural, socio-economic and cultural) resulting from each alternative under consideration.

Not Acceptable Does not address key issues | Negative Impact | Moderate Impact | Positive Impact

EVALUATION CRITERIA	ALT 1	ALT 2	ALT 3	DESCRIPTION OF EFFECTS	MITIGATION
SOCIAL ENVIRONMENT					
Land Use Planning Objectives	Negative Impact	Moderate Impact	Positive Impact	Alt. 2 & 3 provide the necessary capacity and operational improvements necessary to accommodate development planned for the area and is in accordance with land use planning objectives. Alt. 1 does not provide for future development.	n/a
Active Transportation (pedestrian & cycling)	Not Acceptable	Positive Impact	Positive Impact	Alt. 2 & 3 include provisions for cyclists and pedestrians while Alt. 1 proposes no changes in this regard.	n/a
Property Impacts	Positive Impact	Moderate Impact	Negative Impact	While Alt. 2 could potentially be constructed within the existing right-of-way there is the possibility that property may be required if it becomes apparent that the alignment needs to be shifted. This will be confirmed later in the process. Regardless, Alt. 3 is expected to result in the greatest amount of impact in this regard.	Adjust design (slopes, grading, ditching) so as to minimize impacts to adjacent property and to reduce property requirements.
Residential and Commercial Access	Not Acceptable	Positive Impact	Positive Impact	Alt. 1 is considered to be 'not acceptable' since it proposes no improvements to property access in the area. Both Alt. 2 & 3 will result in improved access to adjacent properties. While there may be potential property access impacts during construction, these can be mitigated.	Maintain property access during construction; utilize traffic management measures (i.e. detours, construction staging etc.) to minimize impacts to traffic flow during construction.
Noise	Moderate Impact	Negative Impact	Negative Impact	As an increase in traffic capacity is anticipated, there is the potential for increased noise with any of the alternatives proposed. There is also an increased potential for noise impacts during construction for Alts. 2 & 3; however, this will be temporary and can be mitigated.	Utilize standard noise mitigation measures to minimize potential for impact (i.e. construction equipment to comply with the noise emission standards; equipment to be in good repair & fitted with functioning mufflers; limit construction activities that create excessive noise to daytime hours; maximize the separation distance between construction staging areas and nearby receptors to the greatest extent possible). Adherence to Municipal Noise By-law and associated timing restrictions.
Air Quality	Negative Impact	Moderate Impact	Moderate Impact	As Alt. 1 proposes no corridor improvements the increased traffic volumes may lead to congestion which could negatively impact air quality. While construction associated with Alt. 2 & Alt. 3 has the potential to impact air quality it would be temporary and measures can be implemented to minimize impacts.	Utilize best management practices during construction such as no unnecessary idling of vehicles; covering of stockpiles of soil, sand and aggregate; application of dust suppressants during construction.
CULTURAL ENVIRONMENT					
Archaeological Resources	Positive Impact	Moderate Impact	Moderate Impact	Alts. 2 & 3 have a greater potential for impact since both options may require construction beyond the existing limits of the current right-of-way in areas not previously disturbed.	To be determined once archaeological assessment complete.
Built Heritage & Cultural Heritage Landscapes	Positive Impact	Positive Impact	Positive Impact	Minimal potential for impact since no built heritage resources or cultural heritage landscapes are located in proximity to the project.	n/a
ECONOMIC ENVIRONMENT					
Property Acquisition Costs	Positive Impact	Moderate Impact	Negative Impact	As property is not required for Alt. 1 it is the least expensive of the three alternatives. It is expected that Alt. 3 will be the most expensive of the options under consideration since it proposes the widest cross-section.	Efforts will be made to negotiate fair and equitable arrangements for property acquisition.
Construction Costs	Positive Impact	Moderate Impact	Negative Impact	Alt. 1 will have no costs associated with construction since no improvements are proposed. Alt. 3 will be the most costly of the alternatives under consideration.	n/a
Operating & Maintenance Costs	Negative Impact	Positive Impact	Positive Impact	Alt. 1 will incur greater operating/maintenance costs over time as compared to Alt. 2 & 3. Improved geometrics and pavement structure associated with Alts. 2 & 3 will reduce operation/maintenance costs.	n/a

WHAT'S NEXT?

- The project team will review the comments received following completion of this Public Information Centre and select a Preferred Solution.
- The project will then move into Phase 3 of the Class EA process.
- A second Public Information Centre will be scheduled at a future date to identify the Preferred Solution and to present the alternative design concepts developed to implement the Preferred Solution.
- Advance notification of PIC No. 2 will be provided.

COMMENTS

- All PIC material will be available for download **June 2nd, 2017** from the Town's website at www.collingwood.ca
- We invite you to provide any comments, in writing, on the Comment Sheet provided.
- All comments are to be submitted by **July 15, 2017** to either of the following members of the Project Team:

Mr. Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5
Tel: 705-445-1292
Fax: 705-445-1286
Email: tharvey@collingwood.ca

Mr. Tom Nollert, C.E.T.
Consultant Project Manager
Ainley Group
280 Pretty River Parkway
Collingwood, ON L9Y 4J5
Tel: 705-445-3460 ext. 156
Fax: 705-445-0968
Email: nollert@ainleygroup.com

Thank you for your attendance at this meeting!

We appreciate your participation.

MUNICIPAL FREEDOM OF INFORMATION & PROTECTION OF PRIVACY ACT
All comments received will be maintained on file for use during the project and may be included in study documentation. Information collected will be used in accordance with the Municipal Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.

Appendix H
Consultation Point No. 2
(Public Information Centre No. 2)

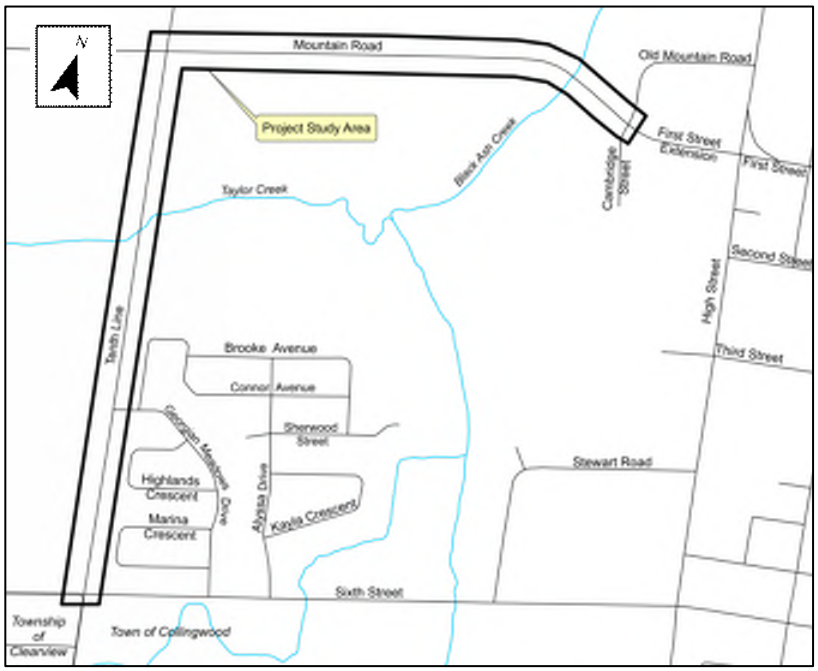
TOWN OF COLLINGWOOD

Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public information Centre No. 2

Background

In April 2017, the Town of Collingwood initiated a Municipal Class Environmental Assessment (Class EA) and detailed design study to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project was initiated to address capacity and operational deficiencies and to accommodate future growth. This project is following the Schedule 'C' planning and design process in accordance with the *Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).*

Public Information Centre No. 1 was held June 1, 2017 as part of Phase 2 of the Class EA process to present the alternative solutions under consideration to address the deficiencies affecting the study area. Following that meeting and a review of comments received, the municipality has selected Alternative 3 as the Preferred Solution which proposes: a reconstruction of Mountain Road to a 5 lane urban cross-section; the reconstruction of Tenth Line to a 2 lane urban cross-section; and Black Ash Creek Bridge improvements (i.e. rehabilitation, widen, or replacement). Additional details pertaining to drainage, active transportation, servicing and intersection improvements will be provided at the upcoming Public Information Centre.



Public Information Centre No. 2

As part of Phase 3 of the Class EA process a second Public Information Centre has been scheduled to present the design options under consideration to implement the Preferred Solution. Public Information Centre No. 2 is scheduled as follows:

Date: Thursday, September 6, 2018.

Time: 4:00 p.m. to 7:00 p.m.

Location: Community Room B and C,
Third Floor
Collingwood Public Library
55 Ste. Marie Street
Collingwood, Ontario L9Y 0W6

Public input is encouraged throughout this process and will be given consideration during the planning and design of this project. The deadline for the submission of comments following Public Information Centre No. 2 will be **September 20, 2018**. If you are unable to attend the PIC, presentation material will be available on the Town's website at www.collingwood.ca after September 6, 2018. Following the completion of PIC No. 2 and a review of comments received, the Town will formally select the preferred design concept to implement the Preferred Solution. An Environmental Study Report (ESR) will be prepared to document the Class EA process and will be made available for a 30-day public review period. A Notice of Completion will be issued to provide additional details regarding the ESR including the locations available to review the document.

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Mr. Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5
Tel: 705-445-1292
Fax: 705-445-1286
Email: tharvey@collingwood.ca

Mr. Tom Nollert, C.E.T.
Consultant Project Manager
Ainley Group
280 Pretty River Parkway
Collingwood, ON L9Y 4J5
Tel: 705-445-3460 ext. 156
Fax: 705-445-0968
Email: nollert@ainleygroup.com

Published on *Town of Collingwood* (http://www.collingwood.ca)

Notice of Public Information Centre No. 2 re: Tenth Line and Mountain Road Improvements

Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public information Centre No. 2

Background

In April 2017, the Town of Collingwood initiated a Municipal Class Environmental Assessment (Class EA) and detailed design study to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project was initiated to address capacity and operational deficiencies and to accommodate future growth. This project is following the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

Public Information Centre No. 1 was held June 1, 2017 as part of Phase 2 of the Class EA process to present the alternative solutions under consideration to address the deficiencies affecting the study area. Following that meeting and a review of comments received, the municipality has selected Alternative 3 as the Preferred Solution which proposes: a reconstruction of Mountain Road to a 5 lane urban cross-section; the reconstruction of Tenth Line to a 2 lane urban cross-section; and Black Ash Creek Bridge improvements (i.e. rehabilitation, widen, or replacement). Additional details pertaining to drainage, active transportation, servicing and intersection improvements will be provided at the upcoming Public Information Centre.

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Town of Collingwood
545 Tenth Line North, P.O. Box 157
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Consultant Project Manager
Ainley Group
280 Pretty River Parkway
Collingwood, ON L9Y 4J5
Tel: 705-445-3460 ext. 156
Fax: 705-445-0968
Email: nollert@ainleygroup.com

Attachment	Size
217013 Tenth Line PIC 2 Exhibits.pdf [2]	5.3 MB
217013 Tenth Ln-Mount Rd PIC 2 Notice PIC 2 August 2018.pdf [3]	205.14 KB

Yes
Engineering Services [4]

Documents are available in alternate formats upon request. If you require an accessible format or communication support, please email: townhall@collingwood.ca or call 445-1030 to discuss how best we can meet your needs.

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Town of Collingwood Weekly Town Page

Thursday, August 16, 2018

Bid Opportunities

Current Bid Opportunities with the Town of Collingwood:

- FIN2018-036P, Urban Forest Management Plan, closing September 20, 2018
- FIN2018-017P, Architectural Services for a Clubhouse Facility at Fisher Field Sports Park, closing September 20, 2018

Town of Collingwood competitive bid opportunities can be found at www.Biddingo.com/Collingwood (a fee may apply). Documents can also be picked up in person from the Tax Department, 97 Hurontario Street during business hours, Monday to Friday 8:30 a.m. to 4:30 p.m.

Employment

Current Job Opportunities with the Town of Collingwood:

- **Crossing Guard (Casual)** Deadline: August 27

For further information please visit www.collingwood.ca/humanresources

HIRING NOW

Temporary Road Closure

Please be advised Hurontario Street from Third Street to Huron Street, Hurontario Street below Rexall to Sidelaunch Way, Sidelaunch Way from Pine Street to entrance at Monaco parking lot, Second Street from laneway of municipal parking lot to Ontario Street (not blocking Ste. Marie Street traffic), will be closed from 6:00 a.m. to 8:00 p.m. Saturday, August 18th for the Collingwood Century of Classics

Tenth Line and Mountain Road Improvements: Notice of Public information Centre No. 2

Schedule 'C' Municipal Class Environmental Assessment

Background: In April 2017, the Town of Collingwood initiated a Municipal Class Environmental Assessment (Class EA) and detailed design study to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project was initiated to address capacity and operational deficiencies and to accommodate future growth. This project is following the Schedule 'C' planning and design process in accordance with the *Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015)*.

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Mr. Trevor Harvey, BSc, C.E.T.
Project Coordinator, Town of Collingwood
545 Tenth Line North, P.O. Box 157, Collingwood, ON L9Y 3Z5
Tel: 705-445-1292 | Fax: 705-445-1286 | Email: tharvey@collingwood.ca

Mr. Tom Nollert, C.E.T.
Consultant Project Manager | Ainley Group
280 Pretty River Parkway, Collingwood, ON L9Y 4J5
Tel: 705-445-3460 ext. 156 | Fax: 705-445-0968 | Email: nollert@ainleygroup.com

simcoa.com

Town of Collingwood Weekly Town Page

Thursday, August 23, 2018

Bid Opportunities

Current Bid Opportunities with the Town of Collingwood:

- FIN2018-036P, Urban Forest Management Plan, closing September 20, 2018
- FIN2018-017P, Architectural Services for a Clubhouse Facility at Fisher Field Sports Park, closing September 20, 2018

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Employment

Current Job Opportunities with the Town of Collingwood:

- **Crossing Guard (Casual)** Deadline: August 27
- **Truck Driver/Labourers (4 Temporary)** Deadline: September 4
- **Lifeguard/Instructors (Part-time)** Deadline: September 4
- **Facility Attendant (Part-time)** Deadline: September 4
- **Rink Helper (Part-time Students)** Deadline: September 4

For further information please visit
www.collingwood.ca/humanresources

Tenth Line and Mountain Road Improvements: Notice of Public information Centre No. 2

Schedule 'C' Municipal Class Environmental Assessment

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Consultant Project Manager | Ainley Group
280 Pretty River Parkway, Collingwood, ON L9Y 4J5
Tel: 705-445-3460 ext. 156 | Fax: 705-445-0968 | Email: nollert@ainleygroup.com

97 Hurontario Street, Collingwood 705-445-1030

If you require an accessible format of any Town Page ad please contact Clerk Services at 705-445-1030 ext. 3230

Visit us at: www.collingwood.ca **Call us at:** 705-445-1030
Email us at: townhall@collingwood.ca

simcoe.com

Agency and Indigenous Community Contact List and Letters

Town of Collingwood
Tenth Line and Mountain Road Schedule 'C' Class EA
Notice of PIC No. 2
AGENCY CONTACT LIST

Title	First	Last	Title	Company	Address 1	Address 2	Town	PC	Telephone	Email
Provincial & Federal Agencies										
Mr.	Rob	Dobos	Manager, Environmental Assessment Section	Environment Canada - Environmental Protection Operations Division - Ontario Region	867 Lakeshore Road	P.O. Box 5050	Burlington, ON	L7R 4A6	905-336-4953	
Ms.	Chunmei	Liu	Environmental Resource Planner & EA Coordinator - Air, Pesticides and Environmental Planner *(Barrie, Orillia & County of Simcoe)*	Central Region Ministry of Environment and Climate Change	5775 Yonge Street	8th Floor	North York, ON	M2M 4J1	416-326-4886	chunmei.liu@ontario.ca
Ms.	Cindy	Hood	District Manager	Barrie District Office Ministry of Environment and Climate Change	54 Cedar Point Drive	Unit 1201	Barrie, ON	L4N 5R7	705-739-6436	cindy.hood@ontario.ca
Mr.	Shawn	Carey	District Manager	Midhurst District Ministry of Natural Resources and Forestry	2284 Nursery Road		Midhurst, ON	L0L 1X0	705-725-7561	shawn.carey@ontario.ca
Ms.	Karla	Barboza	Team Lead, Heritage	Ministry of Tourism, Culture & Sport	401 Bay Street	Suite 1700	Toronto, ON	M7A 0A7	416-314-7120	karla.barboza@ontario.ca
Ms.	Carol	Neumann	Rural Planner	Ontario Ministry of Agriculture, Food and Rural Affairs	6484 Wellington Rd. 7	Unit 10	Elora, ON	N0B 1S0	519-846-3393	.carol.neumann@ontario.ca
Mr.	Teepu	Khawja	Regional Director	Ministry of Transportation, Central Region	1201 Wilson Avenue		Toronto, ON	M3M 1J8	416-235-5400	teepu.khawja@ontario.ca
Mr.	Chris	Gauer	Executive Vice President Major Projects, Roads & Transit	Infrastructure Ontario	777 Bay Street	6th Floor, Suite 602	Toronto, ON	M5G 2C8	416-327-8037	Chris.Gauer@infrastructureontario.ca
Mr.	Tim	Haldenby	Municipal Planning Advisor - Team Lead Central Ontario	Ministry of Municipal Affairs and Housing	777 Bay Street	13th Floor	Toronto, ON	M5G 2E5	416-585-6559	tim.haldenby@ontario.ca
Local Government, Adjacent Municipalities & Other Agencies										
Mr.	Christian	Meile	Director, Construction & Transportation Maintenance	County of Simcoe	1110 Highway 26 West		Midhurst, ON	L0L 1X0	705-726-9300	christian.meile@simcoe.ca
Mr.	Dave	Parks	Director, Planning, Development & Tourism	County of Simcoe	1110 Highway 26 West		Midhurst, ON	L0L 1X0	705-726-9300	dave.parks@simcoe.ca
Ms.	Nancy	Farrer	Director, Planing Services	Town of Collingwood	545 Tenth Line North	P.O. Box 157	Collingwood, ON	L9Y 3Z5	705-445-1292	nfarrer@collingwood.ca
Mr.	Dean	Collver	Director, Parks, Recreation & Culture	Town of Collingwood	545 Tenth Line North	P.O. Box 157	Collingwood, ON	L9Y 3Z5	705-445-1292	dcollver@collingwood.ca
Mr.	Chris	Hibberd	Director, Watershed Management Services	Nottawasaga Valley Conservation Authority	John Hix Conservation Administration Centre	8195 8th Line	Utopia, ON	L0M 1T0	705-424-1479	c.hibberd@nvca.on.ca
Mr.	Steve	Sage	CAO	Township of Clearview	217 Gideon Street		Stayner, ON	L0M 1S0	705-428-6230 ext. 228	ssage@clearview.ca
Mr.	Troy	Speck	CAO	Town of the Blue Mountains	32 Mill Street	P.O. Box 310	Thornbury, ON	N0H 2P0	519-599-3131 ext. 234	tspeck@thebluemountains.ca
Ms.	Barb	Fox	Planning Officer	Simcoe Muskoka Catholic District School Board	46 Alliance Blvd.		Barrie, ON	L4M 5K3	705-722-3559 ext. 250	bfox.smcdsb.on.ca
Ms.	Holly	Spacek	Planning Officer	Simcoe County District School Board	1170 Highway 26		Midhurst, ON	L0L 1X0	705-728-7570 ext. 11311	hspacek@scdsb.on.ca
Mr.	Miguel	Ladouceur	Director of Building, Maintenance and Planning	Conseil Scolaire Viamonde	116 Cornelius Parkway		Toronto, ON	M6L 2K5	1-416-614-5917	ladouceurm@csviamonde.ca
Ms.	Nathalie	Huard	Transportation Technician, Service de Transport Francobus	Association Franco-Ontarienne Des Conseils Scolaires Catholiques	138 rue Main Est	Bureau 205	Welland, ON	L3B 3W6	1-800-749-0002	huardn@francobus.ca
Mr.	Earl	Elliott	President	Simcoe County Historical Association		P.O. Box 144	Barrie, ON	L4M 4S9	705-796-7649	earl.elliott@rogers.com
Ms.	Bonnie	Branch	Transportation Coordinator	Simcoe County Student Transportation Consortium	64 Cedar Pointe Drive	Unit 1403	Barrie, ON	L4N 5R7	705-733-8965, ext. 107	bbranch@scstc.ca
Ms.	Sara	Almas	Clerk	Accessiblity Advisory Committee Town of Collingwood	97 Hurontario Street	P.O. Box 157	Collingwood, ON	L9Y 3Z5	705-445-1030	almas@collingwood.ca
Emergency Services										
Mr.	JC	Gilbert	Deputy Chief Operations	County of Simcoe Paramedic Services	1110 Highway 26		Midhurst, ON	L0L 1X0	705-726-9300	jc.gilbert@simcoe.ca
Mr.	Ross	Parr	Fire Chief	Town of Collingwood Fire Department	45 High Street		Collingwood, ON	L9Y 4V4	705-445-3920 ext. 7502	rparr@collingwood.ca
Mr.	Colin	Shewell	Fire Chief	Township of Clearview Fire Department	217 Gideon Street		Stayner, ON	L0M 1S0	705-428-6230 ext. 403	cshewell@clearview.ca
Ms.	Mary	Shannon	Inspector	Ontario Provincial Police Collingwood and the Blue Mountains Detachment	201 Ontario Street		Collingwood, ON	L9Y 4M4	705-445-4321	mary.shannon.opp.ca

Town of Collingwood
Tenth Line and Mountain Road Schedule 'C' Class EA
Notice of PIC No. 2
AGENCY CONTACT LIST

Title	First	Last	Title	Company	Address 1	Address 2	Town	PC	Telephone	Email
Member of Parliament										
Mr.	Jim	Wilson	Member of Provincial Parliament	Collingwood Consistuency Ofice	50 Hume Street		Collingwood, ON	L9Y 1V2	1-800-268-7542	
Ms.	Kellie	Leitch	Member of Parliament - Simcoe-Grey	Collingwood Consistuency Ofice	501 Hume Street	#4	Collingwood, ON	L9Y 4H8	705-445-5557	kellie.leitch@parl.gc.ca
Stakeholders										
Mr.	Ken	Hale	Manager of Land Development and Acquistions	Linksview Development Corporation	Harbouredge Centre	40 Huron St., Suite 300	Collingwood, ON	L9Y 4A3	705-446-1660 xt 32	khale@landexcapital.com
Mr.	Kevin	Morris	Senior Project Manager	CF Crozier & Associates		40 Huron St.,	Collingwood, ON	L9Y 4R3	705-446-3510	kmorris@cfcrozier.ca
Attn:	Office Manager			Mairmills Village	160 Southgate Drive		Guelph, ON	N1G 4P5		
Att:	Greg	Goodale		Consar Red Maple Investments Ltd.	64 Shaft Road		Toronto, ON	M9W 4M2		
Mr.	Allan	Brownbridge	Project Manager	C.C. Tatham & Associates Ltd.	115 Sandford Fleming Drive	Suite 200	Collingwood, ON	L9Y 5A6	705-444-2565	abrownridge@cctatham.com
Interest Groups										
Ms.	Trish	Irwin	GM/CEO	Collingwood Chamber of Commerce	115 Hurontario Street	Suite 102	Collingwood, ON	L9Y 2L9	705-445-0221	tirwin@collingwoodchamber.com
Ms.	Kandas	Bondarchuk	Planner - Technician	Collingwood Heritage Committee	55 Ste. Marie Street	Unit 302	Collingwood, ON	L9Y 0W6	705-445-1290 ext. 3275	kbondarchuk@collingwood.ca
Mr.	Jamie	Forsythe		Blue Mountain & Collingwood Snowdrifters Snowmobile Club	453 Oak Street		Collingwood, ON	L9Y 4N1	705-446-1848 705-606-1453	
Mr.	Ben	McNabb		Collingwood Cycling Club	47 Sherwood Street		Collingwood, ON	L9Y0C5		info@collingwoodcyclingclub.ca
Mr.	Murray	Knowles		Black Ash Trail Committee	32 Westwind Drive		Collingwood, ON	L9Y 5J1		knowles.murray@gmail.com
Aboriginal Consultation										
Att: Consultation Unit				Ministry of Indigenous Relations & Reconciliation (MIRR)	160 Bloor St. East	9th Floor	Toronto, ON	M7A 2E6	416-326-4757	maa.ea.review@ontario.ca
(INAC (formerly AANDC) not contacted for this project as project is not on Aboriginal lands)				~~Indigenous & Northern Affairs Canada - Consultation Unit (formerly Aboriginal Affairs & Northern Development Canada)~~	~~25 St. Clair Avenue East~~	~~8th Floor~~	~~Toronto, ON~~	~~M4T 1M2~~	~~1 800 567 9604~~	
Mr.	Brian	Tucker	Manager of Way of Life Framework	The Metis Nation of Ontario	500 Old St. Patrick St.	Unit 3	Ottawa, ON	K1N 9G4	807-274-1386 (direct) 613-798-1488 (Secretary)	Prefers digital - briant@metisnation.org **& copy to** consultation@metisnation.org
Mr.	Tony	Muscat	President Interim	Moon River Metis Council	B26360 Cedarhurst Beach Road	R.R. 1	Beaverton, ON	L0K 1A0	705-426-1381	tonymuscat@rogers.com
Mr.	Dave	Dusome	President	Georgian Bay Metis Council	355 Cranston Crescent	P.O. Box 400	Midland, ON	L4R 4K6	705-526-6335	gbmccontact@gmail.com
Ms.	Lynette	Davis	Director of Operations	Metis National Council	4-340 MacLaren Street		Ottawa, ON	K2P 0M6	613-232-3216	info@metisnation.ca
Ms.	Karry	Sandy-Mckenzie	Coordinator / Negotiator	Williams Treaties First Nation						k.a.sandy-mckenzie@rogers.com
First Nation Communities (as per MOECC Email dated June 27, 2017)										
Ms.	Joselyn	Keeshig	Manager	Saugeen Ojibway Nation Environment Office	25 Maadookii Subdivision		Neyaashiinigming, ON	N0H 2T0	519-534-5507	j.keeshig@saugeenojibwaynation.ca
Mr.	Doran	Ritchie	Land Use Planning Coordinator	Saugeen Ojibway Nation Environment Office	25 Maadookii Subdivision		Neyaashiinigming, ON	N0H 2T0	519-534-5507	d.ritchie@saugeenojibwaynation.ca
Chief	Mary	McQue-King		Beausoleil First Nation	General Delivery		Cedar Point, ON	L0K 1C0	705-247-2051	bfnchief@chimnissing.ca
Chief	Donna	Big Canoe		Chippewas of Georgina Island First Nation	R.R. #2	P.O. Box 13	Sutton West, ON	L0E 1R0	705-437-1337	donna.bigcanoe@georginaisland.com
Chief	Greg	Nadjiwon		Chippewas of Nawash First Nation	135 Lakeshore Blvd.		Neyaashiinigmiing, ON	N0H 2T0	519-534-1689	chiefsdesk@nawash.ca cnadministrator@newash.ca
Chief	Rodney	Noganosh		Chippewas of Rama First Nation	200-5884-Rama Road		Rama, ON	L3V 6H6	705-325-3611	rodneyn@ramafirstnation.ca
Chief	Lester	Anoquot		Saugeen First Nation	R.R.#1		Southhampton, ON	N0H 2L0	519-797-2781	lanaquot@saugeenfirstnation.ca
Utilities										
Mr.	Ted	Burrell		Collus Powerstream	43 Stewart Road		Collingwood, ON	L9Y 4M7	705-443-1868	tburrell@collus.com
Ms.	Carol	O'Brien		Bell Canada	136 Bayfield Street	2nd Floor	Barrie, ON	L4M 3B1	705-722-2405	carol.obrien@bell.ca
Mr.	Tony	Dominguez		Rogers	1 Sperling Drive		Barrie, ON	L4N 6B8	705-737-4660 xt 6907	tony.dominguez@rci.rogers.com
Mr.	Tom	Jedemann		Enbridge Gas	101 Honda Blvd		Markham, ON	L6C 0M6	905-927-3184	tom.jedemann@enbridge.com

Ainley & Associates Limited
280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

August 13, 2018. File #217013

SAMPLE AGENCY LETTER

Environment Canada
Environmental Protection Operations Division
867 Lakeshore Road, P.O. Box 5050
Burlington, ON L7R 4A6

Attn: Mr. Rob Dobos
Manager, Environmental Assessment Section

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Information Centre No. 2

Dear Mr. Dobos,

The Town of Collingwood has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) and detailed design to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project is following the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

The purpose of this letter is to inform you of a second Public Information Centre (PIC) scheduled for the above noted project. Please refer to the attached notice for additional details regarding the project, including the date and time of Public Information Centre No. 2.

Should you have any questions or concerns regarding this project, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

Tel: 705-445-3460 ext. 156
Email: nollert@ainleygroup.com

pc: T. Harvey	Town of Collingwood, Project Coordinator
J. Velick	Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski	Ainley Group, Project Engineer
A. Potter	Ainley Group, Environmental Planner
J. Marks	Ainley Group, Environmental Planning Assistant

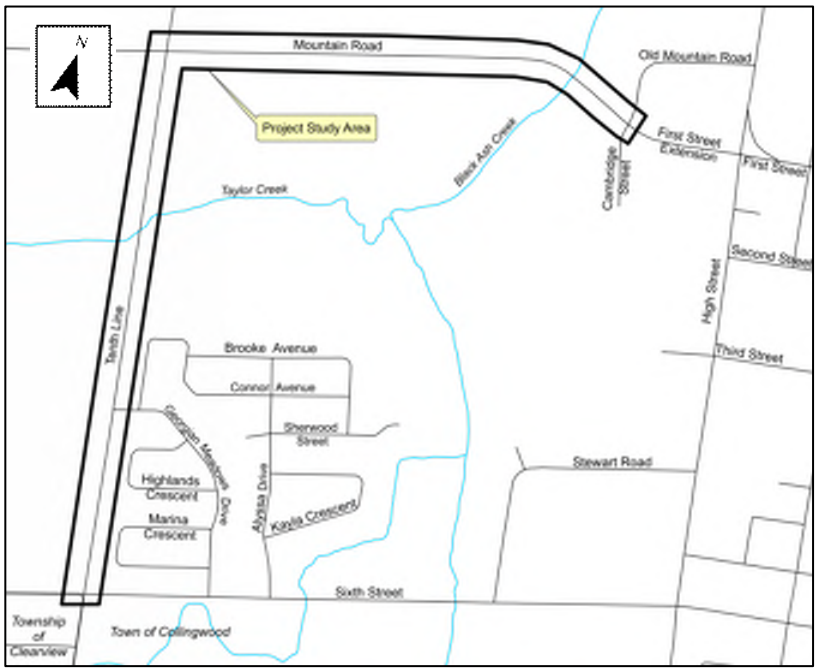
TOWN OF COLLINGWOOD

Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public information Centre No. 2

Background

In April 2017, the Town of Collingwood initiated a Municipal Class Environmental Assessment (Class EA) and detailed design study to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project was initiated to address capacity and operational deficiencies and to accommodate future growth. This project is following the Schedule 'C' planning and design process in accordance with the *Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).*

Public Information Centre No. 1 was held June 1, 2017 as part of Phase 2 of the Class EA process to present the alternative solutions under consideration to address the deficiencies affecting the study area. Following that meeting and a review of comments received, the municipality has selected Alternative 3 as the Preferred Solution which proposes: a reconstruction of Mountain Road to a 5 lane urban cross-section; the reconstruction of Tenth Line to a 2 lane urban cross-section; and Black Ash Creek Bridge improvements (i.e. rehabilitation, widen, or replacement). Additional details pertaining to drainage, active transportation, servicing and intersection improvements will be provided at the upcoming Public Information Centre.



Public Information Centre No. 2

As part of Phase 3 of the Class EA process a second Public Information Centre has been scheduled to present the design options under consideration to implement the Preferred Solution. Public Information Centre No. 2 is scheduled as follows:

Date: Thursday, September 6, 2018.

Time: 4:00 p.m. to 7:00 p.m.

Location: Community Room B and C,
Third Floor
Collingwood Public Library
55 Ste. Marie Street
Collingwood, Ontario L9Y 0W6

Public input is encouraged throughout this process and will be given consideration during the planning and design of this project. The deadline for the submission of comments following Public Information Centre No. 2 will be **September 20, 2018**. If you are unable to attend the PIC, presentation material will be available on the Town's website at www.collingwood.ca after September 6, 2018. Following the completion of PIC No. 2 and a review of comments received, the Town will formally select the preferred design concept to implement the Preferred Solution. An Environmental Study Report (ESR) will be prepared to document the Class EA process and will be made available for a 30-day public review period. A Notice of Completion will be issued to provide additional details regarding the ESR including the locations available to review the document.

Any input received during this process will be maintained on file for use during the project and may be included in project documentation. Information collected will be used in accordance with the *Municipal Freedom of Information and Protection of Privacy Act*. With the exception of personal information, all comments will become part of the public record. To obtain additional information or to provide input, please contact either of the following members of the study team:

Mr. Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5
Tel: 705-445-1292
Fax: 705-445-1286
Email: tharvey@collingwood.ca

Mr. Tom Nollert, C.E.T.
Consultant Project Manager
Ainley Group
280 Pretty River Parkway
Collingwood, ON L9Y 4J5
Tel: 705-445-3460 ext. 156
Fax: 705-445-0968
Email: nollert@ainleygroup.com

Ainley & Associates Limited
280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

August 13, 2018. File #217013

Ministry of Indigenous Relations & Reconciliation
160 Bloor St. East, 9th Floor
Toronto, ON M7A 2E6

Attn: Consultation Unit

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Information Centre No. 2

The Town of Collingwood has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) and detailed design to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project is following the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,

AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

Tel: 705-445-3460 ext. 156
Email: nollert@ainleygroup.com

pc: T. Harvey	Town of Collingwood, Project Coordinator
J. Velick	Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski	Ainley Group, Project Engineer
A. Potter	Ainley Group, Environmental Planner
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Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

August 13, 2018. File #217013

The Metis Nation of Ontario
500 Old St. Patrick St., Unit 3
Ottawa, ON K1N 9G4

Attn: Mr. Brian Tucker
Manager of Way of Life Framework

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Information Centre No. 2

Dear Mr. Tucker,

The Town of Collingwood has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) and detailed design to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project is following the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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E-mail collingwood@ainleygroup.com

August 13, 2018. File #217013

Moon River Metis Council
B26360 Cedarhurst Beach Road, R.R. 1
Beaverton, ON L0K 1A0

Attn: Mr. Tony Muscat
President Interim

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Information Centre No. 2

Dear Mr. Muscat,

The Town of Collingwood has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) and detailed design to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project is following the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,

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Project Manager

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280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
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E-mail collingwood@ainleygroup.com

August 13, 2018. File #217013

Georgian Bay Metis Council
355 Cranston Crescent, P.O. Box 400
Midland, ON L4R 4K6

Attn: Mr. Dave Dusome
President

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Information Centre No. 2

Dear Mr. Dusome,

The Town of Collingwood has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) and detailed design to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project is following the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,

AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

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Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

August 13, 2018. File #217013

Metis National Council
4-340 MacLaren Street
Ottawa, ON K2P 0M6

Attn: Ms. Lynette Davis
Director of Operations

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Information Centre No. 2

Dear Ms. Davis,

The Town of Collingwood has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) and detailed design to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project is following the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,

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A. Potter — Ainley Group, Environmental Planner
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E-mail collingwood@ainleygroup.com

August 13, 2018. File #217013

Williams Treaties First Nation
k.a.sandy-mckenzie@rogers.com

Attn: Ms. Karry Sandy-Mckenzie
Coordinator / Negotiator

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Information Centre No. 2

Dear Ms. Sandy-Mckenzie,

The Town of Collingwood has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) and detailed design to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project is following the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,

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Project Manager

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E-mail collingwood@ainleygroup.com

August 13, 2018. File #217013

Saugeen Ojibway Nation Environment Office
25 Maadookii Subdivision
Neyaashiinigming, ON N0H 2T0

Attn: Ms. Joselyn Keeshig
Manager

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Information Centre No. 2

Dear Ms. Keeshig,

The Town of Collingwood has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) and detailed design to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project is following the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,

AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

Tel: 705-445-3460 ext. 156
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pc:	T. Harvey	Town of Collingwood, Project Coordinator
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280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
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August 13, 2018. File #217013

Saugeen Ojibway Nation Environment Office
25 Maadookii Subdivision
Neyaashiinigming, ON N0H 2T0

Attn: Mr. Doran Ritchie
Land Use Planning Coordinator

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Information Centre No. 2

Dear Mr. Ritchie,

The Town of Collingwood has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) and detailed design to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project is following the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Yours truly,

AINLEY & ASSOCIATES LIMITED

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Project Manager

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E-mail collingwood@ainleygroup.com

August 13, 2018. File #217013

Beausoleil First Nation
General Delivery
Cedar Point, ON L0K 1C0

Attn: Chief Mary McQue-King

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Information Centre No. 2

Dear Chief McQue-King,

The Town of Collingwood has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) and detailed design to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project is following the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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AINLEY & ASSOCIATES LIMITED

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Project Manager

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August 13, 2018. File #217013

Chippewas of Georgina Island First Nation
R.R. #2, P.O. Box 13
Sutton West, ON L0E 1R0

Attn: Chief Donna Big Canoe

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Information Centre No. 2

Dear Chief Big Canoe,

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Yours truly,

AINLEY & ASSOCIATES LIMITED

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E-mail collingwood@ainleygroup.com

August 13, 2018. File #217013

Chippewas of Nawash First Nation
R.R. #5
Wiarton, ON N0H 2T0

Attn: Chief Greg Nadjiwon

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Information Centre No. 2

Dear Chief Nadjiwon,

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Yours truly,

AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

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August 13, 2018. File #217013

Chippewas of Rama First Nation
200-5884-Rama Road
Rama, ON L3V 6H6

Attn: Chief Rodney Noganosh

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Information Centre No. 2

Dear Chief Noganosh,

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Yours truly,

AINLEY & ASSOCIATES LIMITED

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E-mail collingwood@ainleygroup.com

August 13, 2018. File #217013

Saugeen First Nation
R.R.#1
Southhampton, ON N0H 2L0

Attn: Chief Lester Anoquot

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public Information Centre No. 2

Dear Chief Anoquot,

The Town of Collingwood has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) and detailed design to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project is following the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

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Should you have any questions or concerns regarding this project, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

Tel: 705-445-3460 ext. 156
Email: nollert@ainleygroup.com

pc: T. Harvey — Town of Collingwood, Project Coordinator
J. Velick — Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski — Ainley Group, Project Engineer
A. Potter — Ainley Group, Environmental Planner
J. Marks — Ainley Group, Environmental Planning Assistant

Resident Mail Out

Ainley & Associates Limited
280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

August 13, 2018. File #217013

Attn: Resident / Property Owner / Tenant

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Public Information Centre No. 2

The Town of Collingwood has retained the services of the Ainley Group to undertake a Municipal Class Environmental Assessment (Class EA) and detailed design to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project is following the Schedule 'C' planning and design process in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).

The purpose of this letter is to inform you of a second Public Information Centre (PIC) scheduled for the above noted project. Please refer to the attached notice for additional details regarding the project, including the date and time of Public Information Centre No. 2.

Should you have any questions or concerns regarding this project, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

Tel: 705-445-3460 ext. 156
Email: nollert@ainleygroup.com

pc: T. Harvey	Town of Collingwood, Project Coordinator
J. Velick	Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski	Ainley Group, Project Engineer
A. Potter	Ainley Group, Environmental Planner
J. Marks	Ainley Group, Environmental Planning Assistant

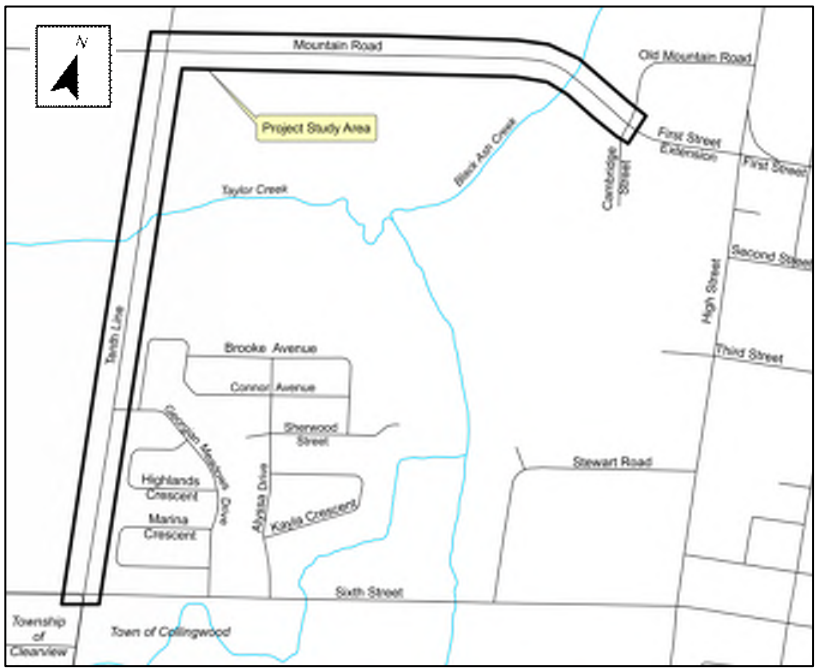
TOWN OF COLLINGWOOD

Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Public information Centre No. 2

Background

In April 2017, the Town of Collingwood initiated a Municipal Class Environmental Assessment (Class EA) and detailed design study to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project was initiated to address capacity and operational deficiencies and to accommodate future growth. This project is following the Schedule 'C' planning and design process in accordance with the *Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).*

Public Information Centre No. 1 was held June 1, 2017 as part of Phase 2 of the Class EA process to present the alternative solutions under consideration to address the deficiencies affecting the study area. Following that meeting and a review of comments received, the municipality has selected Alternative 3 as the Preferred Solution which proposes: a reconstruction of Mountain Road to a 5 lane urban cross-section; the reconstruction of Tenth Line to a 2 lane urban cross-section; and Black Ash Creek Bridge improvements (i.e. rehabilitation, widen, or replacement). Additional details pertaining to drainage, active transportation, servicing and intersection improvements will be provided at the upcoming Public Information Centre.



Public Information Centre No. 2

As part of Phase 3 of the Class EA process a second Public Information Centre has been scheduled to present the design options under consideration to implement the Preferred Solution. Public Information Centre No. 2 is scheduled as follows:

Date: Thursday, September 6, 2018.

Time: 4:00 p.m. to 7:00 p.m.

Location: Community Room B and C,
Third Floor
Collingwood Public Library
55 Ste. Marie Street
Collingwood, Ontario L9Y 0W6

Public input is encouraged throughout this process and will be given consideration during the planning and design of this project. The deadline for the submission of comments following Public Information Centre No. 2 will be **September 20, 2018**. If you are unable to attend the PIC, presentation material will be available on the Town's website at www.collingwood.ca after September 6, 2018. Following the completion of PIC No. 2 and a review of comments received, the Town will formally select the preferred design concept to implement the Preferred Solution. An Environmental Study Report (ESR) will be prepared to document the Class EA process and will be made available for a 30-day public review period. A Notice of Completion will be issued to provide additional details regarding the ESR including the locations available to review the document.

Any input received during this process will be maintained on file for use during the project and may be included in project documentation. Information collected will be used in accordance with the *Municipal Freedom of Information and Protection of Privacy Act*. With the exception of personal information, all comments will become part of the public record. To obtain additional information or to provide input, please contact either of the following members of the study team:

Mr. Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5
Tel: 705-445-1292
Fax: 705-445-1286
Email: tharvey@collingwood.ca

Mr. Tom Nollert, C.E.T.
Consultant Project Manager
Ainley Group
280 Pretty River Parkway
Collingwood, ON L9Y 4J5
Tel: 705-445-3460 ext. 156
Fax: 705-445-0968
Email: nollert@ainleygroup.com

Comments Received

Town of Collingwood
Tenth Line & Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment

Public Information Centre No. 2 – September 6, 2018
4:00 p.m. to 7:00 p.m. – Collingwood Library

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

Thomas Lane is a Lane – for Walking or Bizycles – Entrances for #5 should be on 10th – 2 > like Creekside or an extra Straight ~~[illegible]~~ into Mtn Rd.

Please submit this Comment Sheet by **September 20, 2018** to either:

Mr. Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5
Tel: 705-445-1292
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Ainley Group
280 Pretty River Parkway
Collingwood, ON L9Y 4J5
Tel: 705-445-3460 ext. 156
Fax: 705-445-0968
Email: nollert@ainleygroup.com

Name

Mailing Address

Telephone #

E-mail Address

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Town of Collingwood
Tenth Line & Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment

Public Information Centre No. 2 – September 6, 2018
4:00 p.m. to 7:00 p.m. – Collingwood Library

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

THE EXIT FOR MAIR MILLS RESIDENCE IS GOING TO BE BAD REGARDLESS OF WHAT IS DONE AT 10th LINE. WOULD IT BE FEASIBLE T WIDEN MT. RD. AT THE ENTRANCE/EXIT OF MAIR MILLS. AS IT IS NOW, THE TURN LANES EAST & WEST ARE FAR TOO NARROW AND AS TRAFFIC INCREASES POTENTIAL FOR ACCIDENTS WILL INCREASE. STOP SIGNALS WILL EVENTUALLY BE REQUIRED AT THAT INTERSECTION.

Please submit this Comment Sheet by **September 20, 2018** to either:

Mr. Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5
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Tel: 705-445-3460 ext. 156
Fax: 705-445-0968
Email: nollert@ainleygroup.com

Name [redacted]

Mailing Address [redacted]

[redacted]

Telephone # [redacted] E-mail Address [redacted]

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Town of Collingwood
Tenth Line & Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment

Public Information Centre No. 2 – September 6, 2018
4:00 p.m. to 7:00 p.m. – Collingwood Library

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

VERY CONCERNED WITH ROUNDABOUT AT 10 AND MT ROAD. CONTINUOUS FLOW (THE STATED PURPOSE) WILL MAKE IN VERY DIFFICULT AND DANGEROUS TO ENTER AND EXIT KELLS CRES IN MAR MILLS. THERE WILL BE LITTLE/FEW GAPS IN TRAFFIC MT RD WESTBOUND RESULTING IN FEW OPPORTUNITIES TO EXIT FROM KELLS WEST BOUND. COMPOUNDING THE PROBLEM IS USING THOMAS/KELLS AS THE SECOND EXIT FROM THE NEW MAR MILLS VILLAGE. NEED A TRAFFIC LIGHT AT KELLS/MT RD.

Please submit this Comment Sheet by **September 20, 2018** to either:

Mr. Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5
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Fax: 705-445-0968
Email: nollert@ainleygroup.com

Nam[redacted]

Mailing Address [redacted]

Telephone # [redacted] E-mail Address [redacted]

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IF MT RD WEST IS NOT TO BE REBUILT FOR MANY YEARS AFTER THIS STUDY AREA, CONSIDERATION SHOULD BE GIVEN FOR MAKING THE TURN LANE @ MT RD / KELLS MUCH SAFER. THIS COULD INCLUDE WIDENING THE THROUGH AND TURNING LANES AT MT RD / KELLS

CONSIDERATION SHOULD BE GIVEN TO PUTTING AN ~~INTERCHANGE~~ ENTRANCE/EXIT ACROSS FROM BANFF SKI / LANDSCAPE INTO MAIR MILLS VILLAGE TO ALLEVIATE SIGNIFICANT TRAFFIC DELAYS EXPECTED AT KELLS / MT RD.

Please leave this area blank.

Town of Collingwood
Tenth Line & Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment

Public Information Centre No. 2 – September 6, 2018
4:00 p.m. to 7:00 p.m. – Collingwood Library

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

(1) Request bike Lanes be extended on Montain Rd from Cambridge to High Street
(2) Need Plan extended to include bike lanes West of 10th on Montain Rd to Blue Mountains
(3) Need traffic lights installed crossing Mountain at Black Ash (Now ASAP)
* Critical with Increased Traffic Volumes expected that a bike lane is provided connecting Blue Mountain to High Street on both East + West bound.

Please submit this Comment Sheet by **September 20, 2018** to either:

Mr. Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5
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Fax: 705-445-1286
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Consultant Project Manager
Ainley Group
280 Pretty River Parkway
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Tel: 705-445-3460 ext. 156
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Name [redacted]

Mailing Address [redacted]

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Town of Collingwood
Tenth Line & Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment

Public Information Centre No. 2 – September 6, 2018
4:00 p.m. to 7:00 p.m. – Collingwood Library

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

(1) Multi use trail crossing mountain Rd south to North after 10th line safety is a must to keep the trails inked for long term use
(2) Multi use trails meeting roundabouts how do we manage the Auto traffic vs the Pedestrian traffic ?
(3) Realignment of black ash trail at mountain road crossing and curve must accomodate industrial grooming equipment as per towns plan to groom winter trails for ease of use in winter
(4) tenth line at ~~[illegible]~~ taylor creek redesign how will traffic (multi use trail) cross tenthline and snowmobile trails from Golf course parking lot to taylor creek the east side or west side of the tenth.

Please submit this Comment Sheet by **September 20, 2018** to either:

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Project Coordinator
Town of Collingwood
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Telephone # [redacted] E-mail Address [redacted]

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(5) The 3 month use for snowmobiles is important to locale bussness and shop that rely on snowmobile traffic to get into town, via the golf course and across tenth line to taylor creek, and on to black ash trail. to montana Rd.

(6) The town of the Blue mountains multi use trail will be connecting to collingwood via montana rd. North or south side how will the roundabout effect trail use in the future??

Please leave this area blank.

Town of Collingwood
Tenth Line & Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment

Public Information Centre No. 2 – September 6, 2018
4:00 p.m. to 7:00 p.m. – Collingwood Library

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

Round abouts - Do not help cyclists nor pedestrians -
The 4 way Stop on 10th & 6th is proving to allow traffic to turn & for pedestrians to be able to cross safely -
4 way Stops are good / better than lights because the cars slow & stop (not speed up to get thru the light) plus keep moving allowing turns & people to cross -

Please submit this Comment Sheet by **September 20, 2018** to either:

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Town of Collingwood
Tenth Line & Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment

Public Information Centre No. 2 – September 6, 2018
4:00 p.m. to 7:00 p.m. – Collingwood Library

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

- MAJOR CONCERN WITH NO STOPLIGHT AT KELLS CRESENT.
- MAJOR CONCERN " 10TH LINE & MOUNTAIN ROAD THAT NO SHORT TERM SOLUTION TO PREVENT TRAFFIC BACK UP WITH NO LEFT HAND TURN LANE FOR SOUTH BOUND TRAFFIC FROM MOUNTAIN ROAD ON TO 10TH LINE.
- I'M NOT CONVINCED THAT A PROPER TRAFFIC STUDY FROM TOWN OF BLUE MOUNTAINS END OF MOUNTAIN ROAD HAS BEEN DONE.
- NO REAL TIME LINE HAS BEEN PROVIDED

Please submit this Comment Sheet by **September 20, 2018** to either:

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Mailing Address [redacted]

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Town of Collingwood
Tenth Line & Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment

Public Information Centre No. 2 – September 6, 2018
4:00 p.m. to 7:00 p.m. – Collingwood Library

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

1) Roundabout good
2) Bike Lanes good on Mountain Rd and 10th Line
3) Turn Lanes on Mountain Rd + 10th Line
4) Bike Lanes extended from 10th Line to Mair Mills Subdivision
5) Consideration for alternate exit from Mair Mills Village to Mountain Rd (Not Thomas Dr)

Please submit this Comment Sheet by **September 20, 2018** to either:

Mr. Trevor Harvey, BSc, C.E.T.
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Mailing Address [redacted]

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Town of Collingwood
Tenth Line & Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment

Public Information Centre No. 2 – September 6, 2018
4:00 p.m. to 7:00 p.m. – Collingwood Library

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

I have previously submitted my concerns, specifically the round about @ 10th + NEW Road. After today's public meeting, I distinctly get the impression that the Town will march forward with the roundabout as its clear they have already decided to do so! Reps from Ainley were unyielding to the concerns of citizens in attendance. What a shame! Our town deserves better. Roundabouts are dangerous for both pedestrian + vehicular traffic. PEOPLE DO NOT know understand how to YIELD. We take our lives in hand even trying to negotiate them.

Please submit this Comment Sheet by **September 20, 2018** to either:

Mr. Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5
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Tel: 705-445-3460 ext. 156
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Email: nollert@ainleygroup.com

Name [redacted]

Mailing Address [redacted]

Telephone # [redacted] E-mail Address [redacted]

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LISTEN TO YOUR
TAX PAYING CITIZENS!!

Please leave this area blank.

Town of Collingwood
Tenth Line & Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment

Public Information Centre No. 2 – September 6, 2018
4:00 p.m. to 7:00 p.m. – Collingwood Library

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

Privacy/Security/Sound fence along east side of tenth line and georgian meadows subdivision. - due to increased vehicle traffic, pedestrian and bike traffic.
- at no cost to georgian meadows residents.

Please submit this Comment Sheet by **September 20, 2018** to either:

Mr. Trevor Harvey, BSc, C.E.T.
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Name [redacted]

Mailing Address [redacted]

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Town of Collingwood
Tenth Line & Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment

Public Information Centre No. 2 – September 6, 2018
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COMMENT SHEET – PLEASE PRINT

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Round-a-bout - Are not used properly by people.
- The traffic that is going to be increased on Mountain Rd and Tenth Line will make it harder for people to turn onto Mountain Rd from Tenth due to the fact that people do not Yield at Round abouts they simple follow the car in front of them.
Crossing the road on a bike will most likely be impossible.
Why not 5 lane with Stop lights, turning lanes and turning signals just like First and high St works there with all the traffic. →

Please submit this Comment Sheet by **September 20, 2018** to either:

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Telephone # E-mail Address [redacted]

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Note: No other option is being presented to us

It seems that this is what is happening with our input or not !!

oo

Please leave this area blank.

Town of Collingwood
Tenth Line & Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment

Public Information Centre No. 2 – September 6, 2018
4:00 p.m. to 7:00 p.m. – Collingwood Library

COMMENT SHEET – PLEASE PRINT

Please print all responses. Use back of page if necessary.

Increase of traffic on Mountain Road will mean Mair Mills residents will be unable to turn left onto Mountain Road. A roundabout at Tenth and Mountain Road will mean traffic will be constant. We need traffic lights at Kells Cr. and Mountain Road

Please submit this Comment Sheet by **September 20, 2018** to either:

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Project Coordinator
Town of Collingwood
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Mailing Address [redacted]

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Response Provided

Ainley & Associates Limited
280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3451 P Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

Thursday, November 29, 2018 File No. 217013

Anonymous
Added to consultation record

Re: Town of Collingwood Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Public Information Centre No. 2 September 6, 2018
Response to Comments Received

Dear Anonymous:

We thank you for your interest in the Tenth Line and Mountain Road Improvement Class Environmental Assessment (Class EA) project currently being undertaken by the Town of Collingwood and for submitting a comment.

We provide the following responses to the issues and concerns you raised:

Your comment 1: Thomas Lane is a lane – for walking or bicycles. Entrance for #5 should be on 10th - like Creekside or an extra straight onto Mtn Rd.
Response: The connection to Thomas Drive is outside the scope of this study.

We trust the above is satisfactory; however, if there are aspects that require further clarification, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

Tel: 705-445-3460 ext. 156
Email: nollert@ainleygroup.com

cc: T. Harvey Town of Collingwood, Project Coordinator
J. Velick Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski Ainley Group, Project Engineer
J. Marks Ainley Group, Environmental Planning Assistant

S:\116110\Class EA - 217013\Response Letters\116110 Anonymous - Tenth Line PIC 2 - Response Letter October 2018 DRAFT-TN.doc

Ainley & Associates Limited
280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
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Thursday, December 20, 2018 File No. 217013

[redacted]
Collingwood, ON
[redacted]

Re: Town of Collingwood Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Public Information Centre No. 2 September 6, 2018
Response to Comments Received

Dear [redacted]:

We thank you for your interest in the Tenth Line and Mountain Road Improvement Class Environmental Assessment (Class EA) project currently being undertaken by the Town of Collingwood and for submitting a comment.

We provide the following responses to the issues and concerns you raised:

Your comment 1: Multi-use trail crossing Mountain Rd south to north after 10th line safety is a must to keep the trails inked for long term use.
Response: Multi-use trail west of Tenth Line is outside the scope of this study.

Your comment 2: Multi-use trails meeting roundabouts how do we manage the auto traffic vs. the pedestrian traffic?
Response: If the snowmobile is on the multi-use trail the crossing of each roundabout leg can be accomplished similar to pedestrians and how snowmobiles negotiate other intersections. Similar to pedestrian and cyclists, snowmobiles will only have to cross one approaching traffic stream at a time as the lanes are separated with the splitter island.

Your comment 3: Realignment of Black Ash trail at Mountain Road crossing and curve must accommodate industrial grooming equipment as per towns plan to groom winter trails for ease of use in winter.
Response: We will review the required geometric design. In the meantime, please provide the details i.e. dimensions of any grooming equipment that you propose.

Your comment 4: Tenth Line at Taylor Creek redesign how will traffic (multi-use trail) cross tenth line and snowmobile trails from golf course parking lot to Taylor Creek the east side or west side of the tenth.
Response: The detail design will incorporate curb cuts to facilitate crossing Tenth Line in the Vicinity of Taylors Creek. The snowmobile club will have to coordinate the best route from adjacent properties as to how to get to the crossing. There will not be enough room in the boulevards of 10th Line to accommodate snowmobiles.

Your comment 5: The 3 months use for snowmobiles is important to local business and shop that rely on snowmobile traffic to get into town, via the golf course and across tenth line to Taylor Creek, and on the Black Ash trail to Mountain Road.
Response: See responses 3&4 above.

Your comment 6: The town of the Blue Mountains multi use trail will be connecting to Collingwood via mountain road. North or south site how will this roundabout effect trail use I the future
Response: See response 1& 2 above.

We trust the above is satisfactory; however, if there are aspects that require further clarification, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

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Project Manager

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cc: T. Harvey	Town of Collingwood, Project Coordinator
J. Velick	Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski	Ainley Group, Project Engineer
J. Marks	Ainley Group, Environmental Planning Assistant

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Thursday, December 20, 2018 File No. 217013

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Dear [redacted]:

We thank you for your interest in the Tenth Line and Mountain Road Improvement Class Environmental Assessment (Class EA) project currently being undertaken by the Town of Collingwood and for submitting a comment.

We provide the following responses to the issues and concerns you raised:

Your comment 1: The exit for Mair Mills residence is going to be bad regardless of what is done at 10th Line. Would it be feasible to widen Mt Rd. at the entrance/exit of Mair Mills? As it is now, the turn lanes east and west are far too narrow and as traffic increases potential for accidents will increase. Stop signals will eventually be required at that intersection.
Response: Improvements at Kells Cres. are outside the scope of this study.

We trust the above is satisfactory; however, if there are aspects that require further clarification, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca

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Dear [redacted]

We thank you for your interest in the Tenth Line and Mountain Road Improvement Class Environmental Assessment (Class EA) project currently being undertaken by the Town of Collingwood and for submitting a comment.

We provide the following responses to the issues and concerns you raised:

Your comment 1: Very concerned with roundabout at 10 and Mt. Road. Continuous flow (the stated purpose) will make it very difficult and dangerous to enter and exit Kells Cres. In Mair Mills. There will be little/few gaps in traffic Mt Road. Westbound resulting in few opportunities to exit from Kells west bound. Compounding the problem is using Thomas/Kells as the second exit from the new Mair Mills Village. Need a traffic light at Kells/Mt Rd.
Response: Current analysis indicated that roundabout vs signalized intersection of Mountain Road and Tenth Line will not have a significant differing impact on the traffic from Kells Cres.

We offer the following explanations as to why this is the case:
Left turns onto Mountain Road from Kells Cres. must have an available gap in both the eastbound traffic as well as the westbound traffic coming from Tenth Line intersection at Mountain Road. Only the westbound traffic from Tenth Line might be affected by the type of intersection. Eastbound traffic would not be affected by whichever type of intersection is present.

What your comment eludes to is that because a roundabout will have a steadier release of traffic than that of a signalized intersection, that this will impede your ability to get onto Mountain Road. While it is true that traffic released from a traffic signal will be in the form of closely spaced platoons of vehicles, they will quickly stretch out and disperse along the road. The distance between Tenth Line and Kells Cres. is approximately 1km and over that distance the vehicles released from a signal will have undergone a high level of dispersion and spread out, any potential platooning or gap benefit derived from a signal will have been lost. It should also be noted that after the Mountain Road vehicles have been released from the intersection, the signal would then release vehicles from the Tenth Line further dispersing them along Mountain Road on their way past Kells Cres.

Both types of intersection were analysed in our year 2037 traffic model using the same traffic

volumes and the results indicated that there were no significant differences on delay impact on Kells Cres. As mentioned above this is due to the distance between Tenth Line and Kells Cresc. and platoon dispersion as well as the eastbound traffic which is not affected by the type of intersection at Mountain Road and Tenth Line.

Your comment 2: If Mt Rd. west is not to be rebuilt for many years after this study area, consideration should be given for making the turn lane at Mt Rd./Kells much safer. This could include widening the through and turning lanes at Mt Rd/Kells.
Response: Improvements at Kells Cres. are outside the scope of this study.

Your comment 3: Consideration should be given to putting an entrance/exit across from Banff Ski/Landscape into Mair Mills Village to alleviate significant traffic delays expected at Kells/Mt Rd
Response: The connection to Thomas Drive is outside the scope of this study.

We trust the above is satisfactory; however, if there are aspects that require further clarification, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca

Yours truly,

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Dear [redacted]:

We thank you for your interest in the Tenth Line and Mountain Road Improvement Class Environmental Assessment (Class EA) project currently being undertaken by the Town of Collingwood and for submitting a comment.

We provide the following responses to the issues and concerns you raised:

Your comment 1: Request bike lanes be extended on Mountain Rd. from Cambridge to High Street.
Response: Extending the bike lanes from Cambridge to High Street is outside the scope of this study.

Your comment 2: Need plan extended to include bike lanes west of 10th on Mountain Rd. Blue Mountains.
Response: Multi-use trail west of Tenth Line is outside the scope of this study.

Your comment 3: Need traffic lights installed crossing Mountain at Black Ash now (ASP) *Critical with increased traffic volume – that a bike lane is provided connecting Blue Mountain to High Street on both east and west bound.
Response: The proposed improvements being planned for Mountain Road include the installation of a pedestrian traffic signal. With respect to the trail extension east and west please refer to responses 1 & 2.

We trust the above is satisfactory; however, if there are aspects that require further clarification,

please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca

Yours truly,

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Re: Town of Collingwood Tenth Line and Mountain Road Improvements
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Dear [redacted]

We thank you for your interest in the Tenth Line and Mountain Road Improvement Class Environmental Assessment (Class EA) project currently being undertaken by the Town of Collingwood and for submitting a comment.

We provide the following responses to the issues and concerns you raised.

Your comment 1: As our home [redacted] backs onto the 10th Line, I will comment on that part of the project only. When the 10th line is widened, along with a bike lane and sidewalk, these changes will be [redacted]. At the present time a chain link fence exists at the rear of properties along the 10th line. Perhaps consideration of a nose abatement alternative to the chain link fence would be included in the final plan/approval
Response: We carried out a review of potential noise predictions and conclude that no mitigation is required. The predicted future noise changes are less than 5dBA and are not to exceed 65dBA which are the current thresholds above which mitigation would be considered.

Although the curbs are moving closer to the property line, they are not being used by traffic as they are bike lanes. Also, the centre line of the road is actually moving slightly further west than the existing centre line. The overall conclusion is that with the improvements and the growth in traffic volume, noise levels are predicted to be below the threshold for requiring any noise mitigation measures. The potential noise level change is less than 5dBA and less than 65dBA during the design horizon of 2037.

Your comment 2: The volume of traffic along the 10th line increases yearly and as time goes by will be one of the busiest in town. The speed limit of 50km does not have a positive effect on the traffic with vehicles travelling at + 70 km on average. Hopefully when this project commences safety relating to speed issues will be given a top priority. In the meantime, I would suggest the Town invest in solar powered speed radar devices that post oncoming traffic speeds. I believe traffic does respond positively to these.
Response: The Tenth Line speed is posted at 50 km/h. If excessive speeding becomes an issue then other mitigating measures may be introduced and or increased enforcement required. The Town will consider the use of an interactive speed sign.

Your comment 2: If roundabouts are incorporated in the plan, some kind of activation signal for the crosswalks would make sense. No doubt the roundabout at Mountain Road and Tenth Line will be extremely active and the safety of cyclists and pedestrians is of paramount importance.
Response: Within the region and surrounding Collingwood there are 4 roundabouts and others in the planning stages by the Ministry of Transportation. Roundabouts are being employed all over Ontario and motorists are becoming familiar with the proper usage of them.

Roundabouts are circular intersections in which vehicles travel counter clockwise around a central island. Traffic approaching the roundabout is deflected and separated from on-coming traffic with a splitter island and are designed to cause vehicles to slow down on the approach and within the roundabout. Vehicles entering the roundabout must yield to vehicles already in the roundabout and proceed into available gaps.

Roundabouts virtually eliminate the potential for some of the most severe type collisions such as right angle (T-bone) and head-on collisions that can occur on signalized and stop controlled intersections. Potential conflicts at roundabouts are less severe due to the slower speed and angular merging of vehicles therefore making them safer. Pedestrian and cyclists will only have to cross one approaching traffic stream at a time as the lanes are separated with the splitter island which provides refuge for the pedestrian.

Roundabouts are also the most environmentally friendly type of intersection. This is due to their visual aesthetics with the landscaped inner island and reduced emissions from less idling and less wasted fuel. Noise levels will be lower compared to signalized and stop controlled intersections because of the smoother flow through roundabouts, reduced braking and reduced accelerating. Operation and maintenance costs for a roundabout are lower since there is no signal to maintain and consume electricity.

We trust the above is satisfactory; however, if there are aspects that require further clarification, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca

Yours truly,

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Dear [redacted]:

We thank you for your interest in the Tenth Line and Mountain Road Improvement Class Environmental Assessment (Class EA) project currently being undertaken by the Town of Collingwood and for submitting a comment.

We provide the following responses to the issues and concerns you raised:

Your comment 1: "Roundabouts – do not help cyclists nor pedestrians. The 4 way stop on 10th and 6th is proving to allow traffic to turn and for pedestrians to be able to cross safely. 4-way stops are good/better than lights because the cars slow and stop (not speed up to get through the light) plus keep moving allowing turns and people to cross."
Response: Within the region and surrounding Collingwood there are 4 roundabouts and others in the planning stages by the Ministry of Transportation. Roundabouts are being employed all over Ontario and motorists are becoming familiar with the proper usage of them.

Roundabouts are circular intersections in which vehicles travel counter clockwise around a central island. Traffic approaching the roundabout is deflected and separated from on-coming traffic with a splitter island and are designed to cause vehicles to slow down on the approach and within the roundabout. Vehicles entering the roundabout must yield to vehicles already in the roundabout and proceed into available gaps.

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Additional comments received via email comments 1-10 before PIC 2

Your comment 1-6: Several of your comments related to trucks.
Response: Roundabouts will be designed to accommodate trucks. Ainley group has also contacted Agnora who utilize some of the largest trucks to travel through the study area and we are working together to ensure that Agnora's trucks are accommodated in our design.

Your comment 7: Mountain Road is the main thoroughfare to Blue Mountain and there is lots of bus traffic, cars and trucks.
Response: The traffic growth rates for the study area were adjusted to reflect the growth and potential traffic from The Town of the Blue Mountains. The County of Grey Transportation plan was also reviewed which provided traffic projections for the year 2036 on Mountain Road. Traffic volumes also include a percentage of trucks.

Your comment 8: The death a couple of years ago happened on the dangerous curve just west of 10th line. Spend our money fixing that corner and the road so further deaths will be avoided. I've seen several accidents at that corner.
Response: This part of Mountain Road was not part of this study.

Your comment 9: Spend our money widening the turn lanes on Mountain Road at 10th Line, so traffic can go around vehicles turning onto 10th Line. I've seen cars go in the ditch at that corner.
Response: Although the existing traffic analysis indicated an overall acceptable level of service for the intersection with existing traffic volumes, it is acknowledged that west to south left turns can impede the flow of through traffic. The proposed improvements will address this.

Your comment 10: Talk to the people that travel Mountain Road and 10th Line to get more input. I know I'm not alone being AGAINST a roundabout at 10th Line and Mountain Road.
Response: We have evaluated the options for the intersection and through our evaluation matrix roundabouts scored higher and are the best alternative for this intersection.

Within the region and surrounding Collingwood there are 4 roundabouts and others in the planning stages by the Ministry of Transportation. Roundabouts are being employed in the GTA and motorists are becoming familiar with the proper usage of them.

We trust the above is satisfactory; however, if there are aspects that require further clarification, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca

Yours truly,
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Dear [redacted]:

We thank you for your interest in the Tenth Line and Mountain Road Improvement Class Environmental Assessment (Class EA) project currently being undertaken by the Town of Collingwood and for submitting a comment.

We provide the following responses to the issues and concerns you raised:

Your comment 1: Major concern with no stop light at Kells Crescent.
Response: This intersection is outside the scope of this study.

Your comment 2: Major concern with 10th Line and Mountain Road that no short terms solution to prevent traffic back up with no left-hand turn lane for south bound turns from Mountain Road onto 10th Line.
Response: Although the existing traffic analysis indicated an overall acceptable level of service for the intersection with existing traffic volumes, it is acknowledged that west to south left turns can impede the flow of through traffic. The proposed improvements will address this.

Your comment 3: I'm not convinced that a proper traffic study from Town of Blue Mountain's end of Mountain Road has been done.
Response: The traffic growth rates for the study area were adjusted to reflect the growth and potential traffic from The Town of the Blue Mountains.

Your comment 4: No real time line has been provided.
Response: Implementation of the improvements is subject to development progress and the Town's Capital Works Budget.

We trust the above is satisfactory; however, if there are aspects that require further clarification,

please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca

Yours truly,

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Dear [redacted]:

We thank you for your interest in the Tenth Line and Mountain Road Improvement Class Environmental Assessment (Class EA) project currently being undertaken by the Town of Collingwood and for submitting a comment.

We provide the following responses to the issues and concerns you raised:

Your comment 1: Turn lanes on Mountain Rd. and 10th Line
Response: Mountain Road is planned to include a centre left turn lane. Turn lanes are planned on Tenth Line at specific locations.

Your comment 2: Bike Lanes extended from 10th Line to Mair Mills subdivision
Response: Bike lanes west of Tenth Line are outside the scope of this study.

Your comment 3: Consideration for alternate exit from Mair Mills Village to Mountain Rd. (Not Thomas Dr.)
Response: The connection to Thomas Drive is outside the scope of this study and a matter for the Town's Planning and development review process.

We trust the above is satisfactory; however, if there are aspects that require further clarification, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca

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We provide the following responses to the issues and concerns you raised:

Your comment 1: I have previously submitted my concerns, specifically the roundabout at 10th and Mtn Road. After today's public meeting, I distinctly get the impression that the Town will march forward with the roundabout as its clear they have already decided to do so! Reps from Ainley were unyielding to concerns of citizens in attendance. What a shame! Our town deserves better. Roundabouts are dangerous to both pedestrian and vehicular traffic. PEOPLE DO NOT know/understand how to YIELD. We take our lives in hand even trying to negotiate them. LISTEN TO YOUR TAX PAYING CITIZENS!!
Response: Within the region and surrounding Collingwood there are 4 roundabouts and others in the planning stages by the Ministry of Transportation. Roundabouts are being employed all over Ontario and motorists are becoming familiar with the proper usage of them.

Roundabouts are circular intersections in which vehicles travel counter clockwise around a central island. Traffic approaching the roundabout is deflected and separated from on-coming traffic with a splitter island and are designed to cause vehicles to slow down on the approach and within the roundabout. Vehicles entering the roundabout must yield to vehicles already in the roundabout and proceed into available gaps.

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Roundabouts are also the most environmentally friendly type of intersection. This is due to their visual aesthetics with the landscaped inner island and reduced emissions from less idling and less

wasted fuel. Noise levels will be lower compared to signalized and stop controlled intersections because of the smoother flow through roundabouts, reduced braking and reduced accelerating. Operation and maintenance costs for a roundabout are lower since there is no signal to maintain and consume electricity.

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Dear [redacted]:

We thank you for your interest in the Tenth Line and Mountain Road Improvement Class Environmental Assessment (Class EA) project currently being undertaken by the Town of Collingwood and for submitting a comment.

We provide the following responses to the issues and concerns you raised:

Your comment 1: Noise abatement for residents backing onto road widening.
Response: We carried out a review of potential noise predictions and conclude that no mitigation is required. The predicted future noise changes are less than 5dBA and are not to exceed 65dBA which are the current thresholds above which mitigation would be considered.

We trust the above is satisfactory; however, if there are aspects that require further clarification, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca

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Response to Comments Received

Dear [redacted]:

We thank you for your interest in the Tenth Line and Mountain Road Improvement Class Environmental Assessment (Class EA) project currently being undertaken by the Town of Collingwood and for submitting a comment.

We provide the following responses to the issues and concerns you raised:

Your comment 1: Roundabouts are not used properly by people. The traffic that is going to be increased on Mountain Rd. and Tenth Line will make it harder for people to turn onto Mountain Rd. from Tenth due to the fact that people do no yield at roundabouts they simply follow the car in front of them. Crossing the road on a bike will most likely be impossible. Why not 5 lane with stop lights turning lanes and turning signals just like First and High St works there with all the traffic.
Response: Within the region and surrounding Collingwood there are 4 roundabouts and others in the planning stages by the Ministry of Transportation. Roundabouts are being employed all over Ontario and motorists are becoming familiar with the proper usage of them.

Roundabouts are circular intersections in which vehicles travel counter clockwise around a central island. Traffic approaching the roundabout is deflected and separated from on-coming traffic with a splitter island and are designed to cause vehicles to slow down on the approach and within the roundabout. Vehicles entering the roundabout must yield to vehicles already in the roundabout and proceed into available gaps.

Roundabouts virtually eliminate the potential for some of the most severe type collisions such as right angle (T-bone) and head-on collisions that can occur on signalized and stop controlled intersections. Potential conflicts at roundabouts are less severe due to the slower speed and angular merging of vehicles therefore making them safer. Pedestrian and cyclists will only have to cross one approaching traffic stream at a time as the lanes are separated with the splitter island which provides refuge for the pedestrian.

Roundabouts are also the most environmentally friendly type of intersection. This is due to their visual aesthetics with the landscaped inner island and reduced emissions from less idling and less wasted fuel. Noise levels will be lower compared to signalized and stop controlled intersections because of the smoother flow through roundabouts, reduced braking and reduced accelerating.

Operation and maintenance costs for a roundabout are lower since there is no signal to maintain and consume electricity.

Your comment 2: No other option is being presented to us. It seems that this is what is happening with our input or not!!
Response: A signalized intersection was reviewed and presented at the first PIC. Both types provide similar capacity levels, however the roundabout option was chosen as the preferred option as it has some factors that are more favourable as presented at the PIC.

We trust the above is satisfactory; however, if there are aspects that require further clarification, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

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Email: nollert@ainleygroup.com

cc: T. Harvey	Town of Collingwood, Project Coordinator
J. Velick	Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski	Ainley Group, Project Engineer
J. Marks	Ainley Group, Environmental Planning Assistant

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280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3451 P Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

Thursday, December 20, 2018 File No. 217013

[redacted]

Re: Town of Collingwood Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Public Information Centre No. 2 September 6, 2018
Response to Comments Received

Dear: [redacted]

We thank you for your interest in the Tenth Line and Mountain Road Improvement Class Environmental Assessment (Class EA) project currently being undertaken by the Town of Collingwood and for submitting a comment.

We provide the following responses to the issues and concerns you raised:

Your comment 1: Increase of traffic on Mountain Road will mean Mair Mills residents will be unable to turn left onto Mountain Road. A roundabout at Tenth and Mountain Road will mean traffic will be constant. We need traffic lights at Kells Crescent and Mountain Rd
Response: Current analysis indicated that roundabout vs signalized intersection of Mountain Road and Tenth Line will not have a significant differing impact on the traffic from Kells Cres.

We offer the following explanations as to why this is the case:
Left turns onto Mountain Road from Kells Cres. must have an available gap in both the eastbound traffic as well as the westbound traffic coming from Tenth Line intersection at Mountain Road. Only the westbound traffic from Tenth Line might be affected by the type of intersection. Eastbound traffic would not be affected by whichever type of intersection is present.

What your comment eludes to is that because a roundabout will have a steadier release of traffic than that of a signalized intersection, that this will impede your ability to get onto Mountain Road. While it is true that traffic released from a traffic signal will be in the form of closely spaced platoons of vehicles, they will quickly stretch out and disperse along the road. The distance between Tenth Line and Kells Cres. is approximately 1km and over that distance the vehicles released from a signal will have undergone a high level of dispersion and spread out, any potential platooning or gap benefit derived from a signal will have been lost. It should also be noted that after the Mountain Road vehicles have been released from the intersection, the signal would then release vehicles from the Tenth Line further dispersing them along Mountain Road on their way past Kells Cres.

Both types of intersection were analysed in our year 2037 traffic model using the same traffic volumes and the results indicated that there were no significant differences on delay impact on Kells Cres. As mentioned above this is due to the distance between Tenth Line and Kells Cresc. and platoon dispersion as well as the eastbound traffic which is not affected by the type of intersection at Mountain Road and Tenth Line.

With respect to your comment about needing traffic lights at Kells Cresc. We advise that they are not warranted at this time.

We trust the above is satisfactory; however, if there are aspects that require further clarification, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca

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Thursday, December 20, 2018 File No. 217013

[redacted]

Re: Town of Collingwood Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Public Information Centre No. 2 September 6, 2018
Response to Comments Received

Dear [redacted]

We thank you for your interest in the Tenth Line and Mountain Road Improvement Class Environmental Assessment (Class EA) project currently being undertaken by the Town of Collingwood and for submitting a comment.

We provide the following responses to the issues and concerns you raised:

Your comment 1: Long range traffic patterns: must have regard for Collingwood area tourist destination and residential growth.
Response: The traffic growth rates for the study area were adjusted to reflect the growth and potential traffic from The Town of the Blue Mountains. The County of Grey Transportation plan was also reviewed which provided traffic projections for the year 2036 on Mountain Road.

Your comment 2: Roundabouts – must have regard for heavy/large truck movements, specific construction with Agnora which has very specific/special shipping and receiving requirements. It is understood that Agnora may be planning "large" equipment upgrades.
Response: Ainley group has contacted Agnora and are working together to ensure that Agnora's trucks are accommodated in our design.

Your comment 3: Roundabout design and construction layout "must" be and remain on centre line of right of way. Any deviation, for example Poplar Side road at High Street west to east movement R.O.W acquisition seemed to have been compromised.
Response: Both roundabouts will be constructed with approach lanes aligned with the centre of the roundabout. Approach lanes will not be offset resulting in a tangential alignment of the approaches.

Your comment 4: Can roundabout safely move heavy bicycle and pedestrian movements. There did not seem to be any regard for planning at the PIC?
Response: Roundabouts, through their geometric design, encourage vehicles to slow down on the approach and within the roundabout. Pedestrian and cyclists will only have to cross one approaching traffic stream at a time as the splitter islands provide refuge and sperate opposing traffic lanes. Due to only having to cross one direction of traffic at a time, there are fewer pedestrian/vehicle conflict points in a roundabout than in a conventional intersection. In a conventional intersection the conflict points that pedestrians encounter are from both opposing

lanes of traffic as well as cars making a left or right turn. Cyclists travelling in the proposed bike lane will have the option to circulate within the roundabout as a vehicle or to transfer at the proposed curb ramp onto the sidewalks, dismount and cross as a pedestrian.

Your comment 5: Expect that 80% of costs are growth related and as such recoverable through municipal development charges. This should be identified in last D.C study and current D/C by-law. Recommend update to more accurately identify real estimated costs not bench mark costing.
Response: Project funding will be partially through development. The current Development Charges By-Law's expire after 5 years. It is anticipated that the current DC's will require updating in 2019.

Your comment 6: Also suggest comprehensive traffic study update of 2012 be included in EA recommendations.
Response: The Town is proposing an update to the Collingwood Transportation Study in 2019.

We trust the above is satisfactory; however, if there are aspects that require further clarification, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca

Yours truly,

AINLEY & ASSOCIATES LIMITED

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Public Information Centre No. 2
Presentation Material

Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment

PUBLIC INFORMATION CENTRE NO. 2

Date: Thursday, September 6, 2018

Time: 4:00 p.m. to 7:00 p.m.

Location: Community Room B and C, Third Floor
Collingwood Public Library
55 Ste. Marie Street
Collingwood, Ontario

WELCOME

Thank you for your interest in this Municipal Class Environmental Assessment. This public meeting will present the following information:

- Project Background
- The Municipal Class Environmental Assessment Process
- Preferred Solution selected following PIC No. 1.
- Design Options under consideration to implement the Preferred Solution
- Evaluation of Design Options
- Impacts and mitigation
- Next Step in the process

Your input is appreciated.
Please review the displays and feel free to discuss any concerns with the members of the study team in attendance.
We invite you to provide any comments, in writing, on the comment sheet provided.

PLEASE SIGN IN

MUNICIPAL FREEDOM OF INFORMATION & PROTECTION OF PRIVACY ACT
All comments received will be maintained on file for use during the project and may be included in study documentation. Information collected will be used in accordance with the Municipal Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.

MUNICIPAL CLASS EA PROCESS

- A municipality is required to conduct a Municipal Class Environmental Assessment before this type of road and bridge improvement project can proceed to construction.

- A Municipal Class Environmental Assessment follows an approved planning process designed to protect the environment and to ensure compliance with the Ontario Environmental Assessment Act.

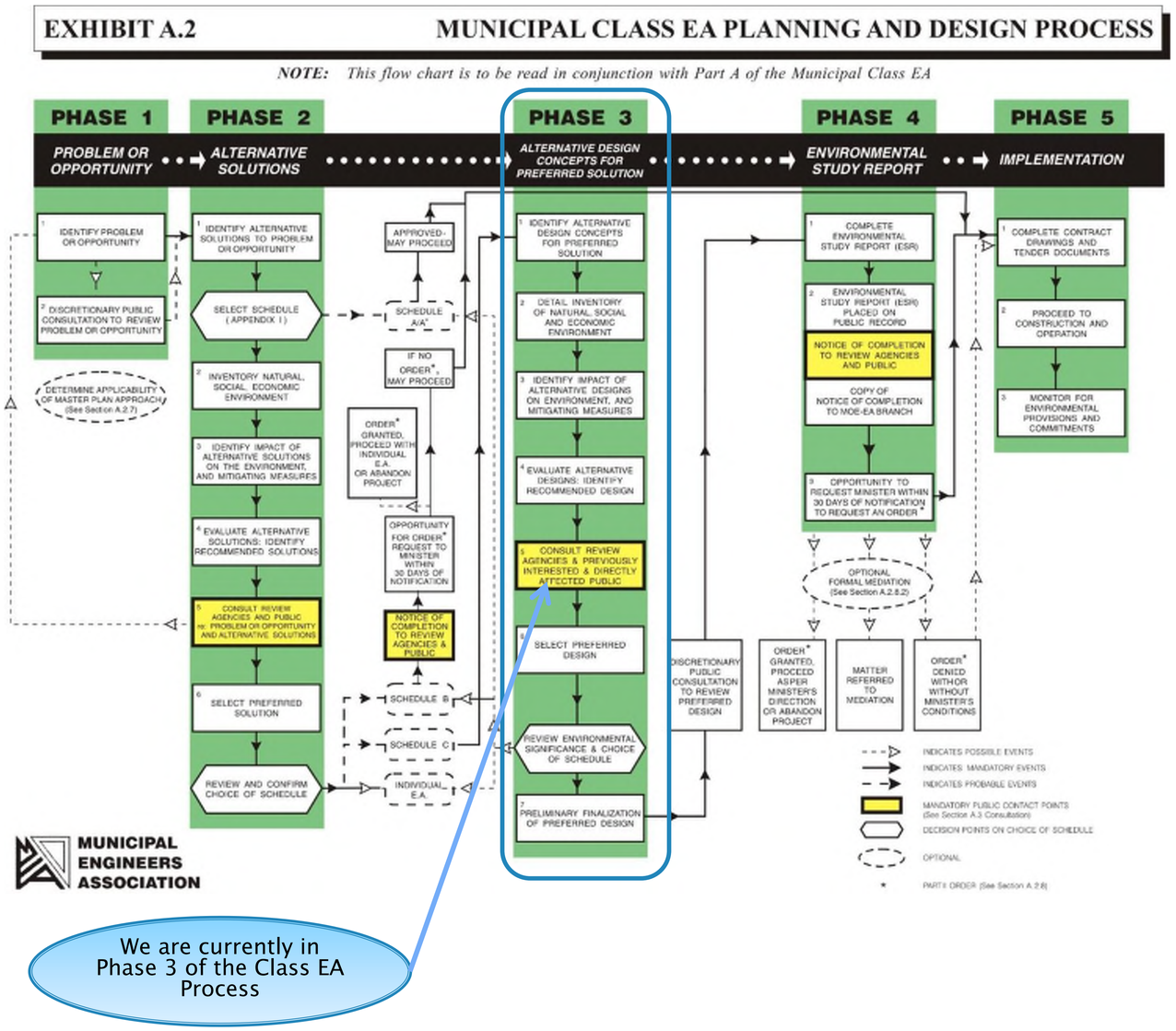
- The purpose of the Ontario Environmental Assessment Act (EA Act) is to provide for *"…the betterment of the people of the whole or any part of Ontario by providing for the protection, conservation and wise management in Ontario of the environment."* The term "environment" is broadly defined and includes the built, natural, socio-economic and cultural environments.

- The process requires the evaluation of potential solutions and design concepts so as to select a suitable approach that will address the problem/opportunity, but also keep impacts to a minimum.

- Based on the scope of work proposed this project is classified as a Schedule 'C' in accordance with the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015) and requires completion of Phases 1 to 4, with implementation in Phase 5.

- PIC No. 1 was held June 1, 2017 during Phase 2 where the Town presented the alternative solutions under consideration.

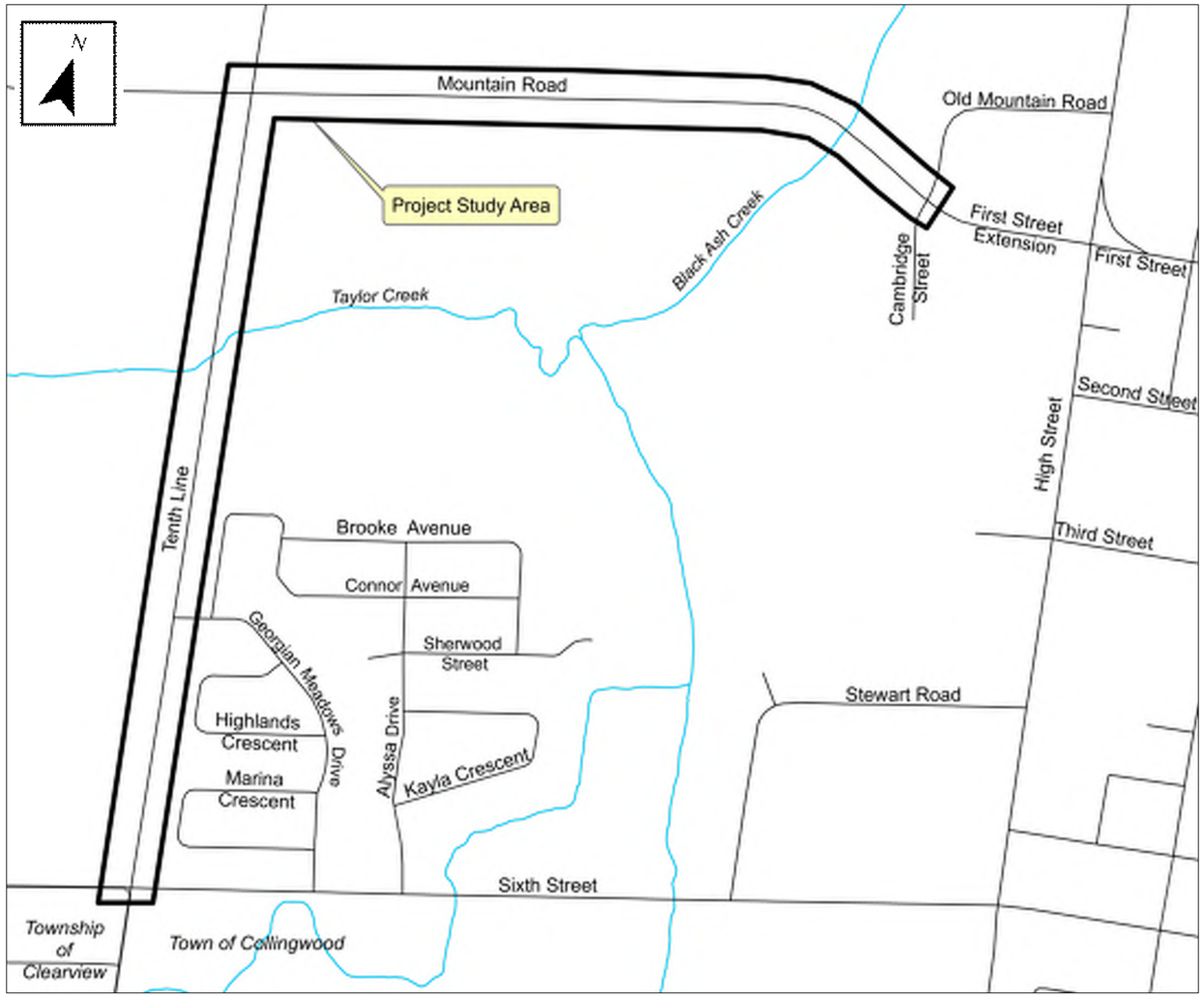
- We are currently in Phase 3 of the Class EA process. Tonight's meeting will identify the Preferred Solution selected at the close of Phase 2 and the Design Options currently under consideration to implement that solution.



PROJECT STUDY AREA

The Project Study Area includes the following:

- Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km)
- Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km).



(n.t.s.)

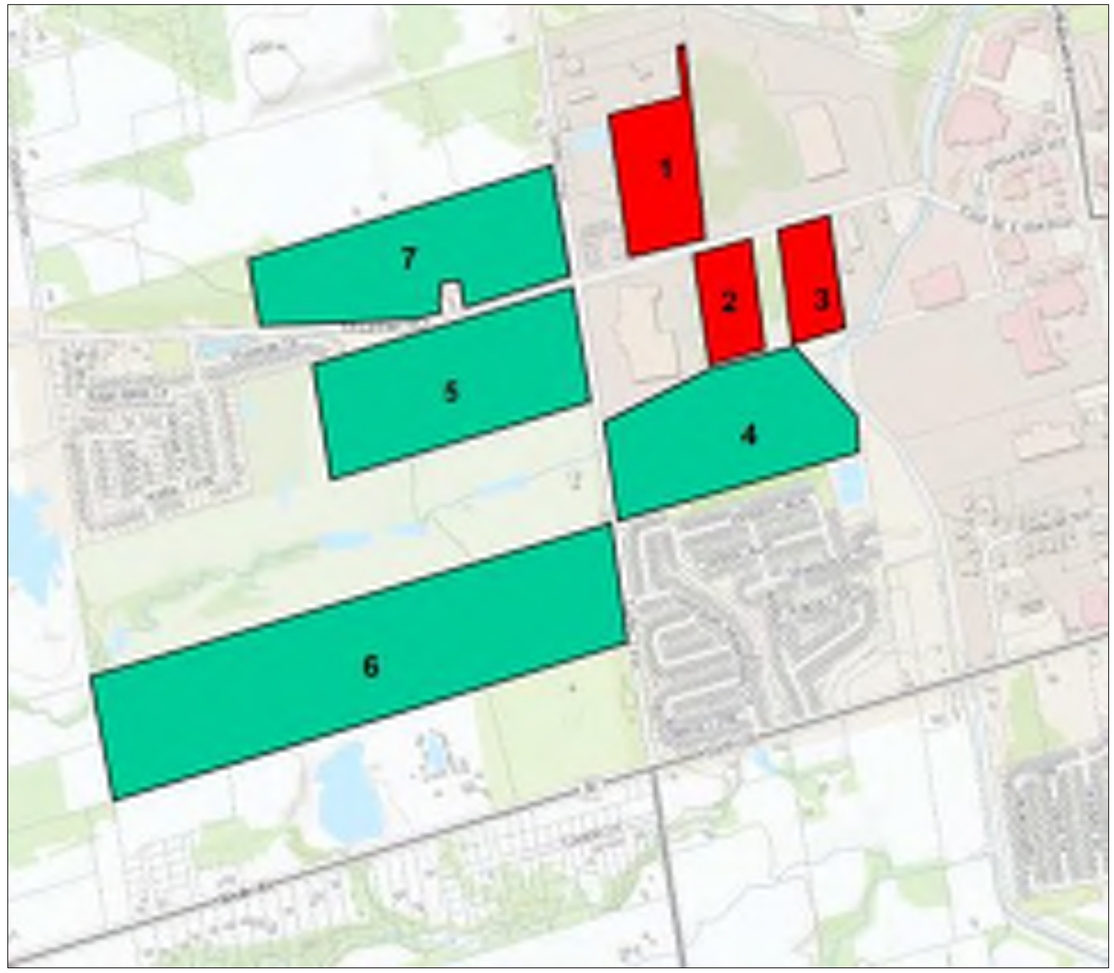
BACKGROUND INFORMATION

- The *Growth Plan for the Greater Golden Horseshoe* designates the Town of Collingwood as a Primary Settlement Area and identifies the following future population and employment projections for the municipality:

Community	Population			Employment		
	2011	2031	Annual Growth	2006	2031	Annual Growth
Town of Collingwood	19,243	33,400	2.8%	8,140	13,500	2.0%

- There are a number of developments planned within and adjacent to the current study area as illustrated in the accompanying map. The anticipated timing for the completion of these developments is illustrated in the table below:

No.	Development	Build Out Timing/Phasing		
		2022	2030	2037
1	185 Mountain Road Industrial Development	100%		
2	Georgian Bay Biomedical Facility	100%		
3	Bluewood Business Park	100%		
4	Red Maple Tenth Line Development 237 residential units	43%	100%	
5	Mair Mills Village 302 residential units	38%	100%	
6	Linksview Development 1000 residential units	20%	73%	100%
7	Todco Development 700 residential units	30%	100%	



IMPROVEMENTS REQUIRED

In 2012, the Town of Collingwood completed a Transportation Study that identified major road and intersection improvement needs for the Town's road network, including widening of the subject section of Mountain Road, and improvements to the intersections of Mountain Road/Tenth Line and Tenth Line/Sixth Street. During the EA process the traffic projections have been updated to represent current conditions. The following summarizes the corridor improvements required and the anticipated timing:

IMPROVEMENTS REQUIRED BY 2022

Mountain Road

- Three lane corridor (i.e. one through lane in each direction and a centre turn lane on Mountain Road from east of Tenth Line to First Street Extension).
- Improvements to servicing infrastructure.
- Widening of Black Ash Creek Bridge on Mountain Road.

Tenth Line

- Urbanize Tenth Line to a local collector with curbs, sidewalks, bike lanes and associated servicing infrastructure.

IMPROVEMENTS REQUIRED BY 2037

Intersection of Tenth Line and Georgian Meadows Drive/Linksview Development

- Signalization of the intersection with left turn lanes on each approach OR construct a one lane roundabout.

- **Intersection of Tenth Line and Entrance to Mair Mills Village**
  - Addition of northbound left turn lane.

IMPROVEMENTS REQUIRED BY 2030

Intersection of Mountain Road and Tenth Line*

- Addition of exclusive left turn lanes on each approach and signalization upgrades OR construct a two lane roundabout.

Intersection of Tenth Line and Entrance to Blue Mountain Golf & Country Club Entrance/Consar Development

- Addition of a southbound left turn lane.

Intersection of Tenth Line and Georgian Meadows Drive/Linksview Development

- Addition of southbound and northbound left turn lanes.

Intersection of Tenth Line and Sixth Street*

- Signalization of the intersection with exclusive left turn lanes on each approach OR construct a one lane roundabout.

BEYOND 2037

Mountain Road Through Lanes

- Five lane corridor (i.e. two through lanes in each direction and a centre left turn lane on Mountain Road from east of Tenth Line to the First Street Extension and associated servicing infrastructure).

* Intersection improvements are identified as needed by 2030 however, depending on the progression of the developments around this area the intersections improvements may be required sooner.

PROBLEM / OPPORTUNITY

The municipality has initiated this Schedule 'C' Municipal Class Environmental Assessment (Class EA) to accommodate future growth planned for the study area and to address capacity and operational deficiencies.

Problems

- Road and intersection improvements are necessary to accommodate future growth.
- The existing corridors do not accommodate active transportation (pedestrian and cycling) since there are no existing sidewalks or bicycle lanes.
- Existing servicing infrastructure (sanitary and storm) cannot accommodate development planned for the area.

Opportunities

- Addressing the problems noted above will provide opportunity to complete improvements to drainage, safety and the existing Black Ash Creek Bridge.

EXISTING CONDITIONS / CONSTRAINTS

NATURAL ENVIRONMENT

Fisheries/Aquatic:

- Fish and fish habitat is present in in Black Ash Creek and Taylor Creek. Both locations provide permanent, direct fish habitat for coldwater fish species and are classified as high sensitivity.
- An offline pond located to the northwest of Tenth Line and Sixth Street may contain a warmwater fish community, but is not considered fish habitat under the Fisheries Act.

Wildlife: Area wildlife is generally limited to those species which are accustomed to an urbanized environment.

Species at Risk (SAR): Potential habitat for the following SAR may be present within proximity to the project:

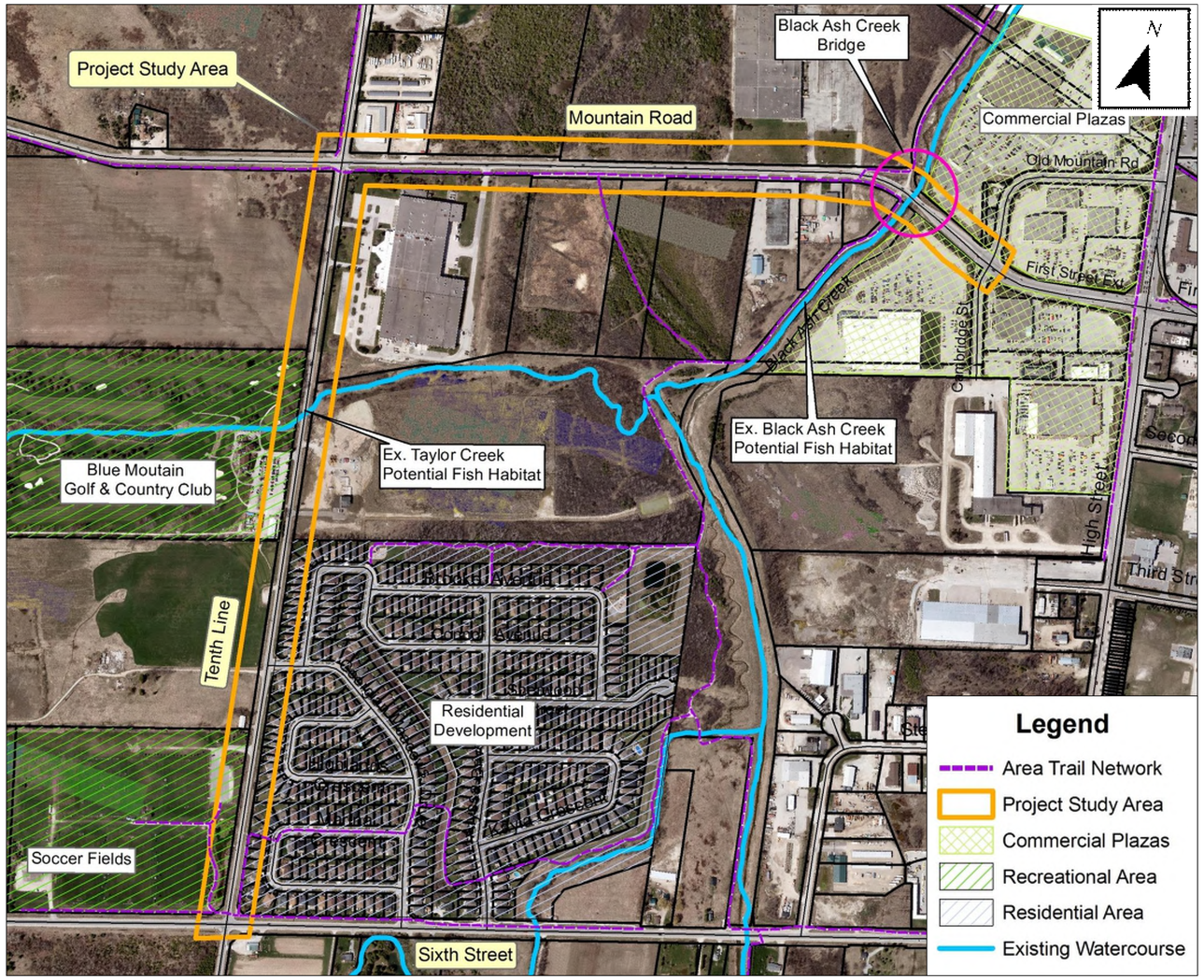
- Bats (Threatened)
- Avian (Threatened) - Barn Swallow, Bank Swallow, Chimney Swift, Bobolink, Eastern Meadowlark.
- Several species of Special Concern.

Vegetation: Vegetation present is confirmed to be common with no species considered to be unique or rare.

Designated Areas:

- While there are small pockets of isolated wetlands there are no Provincially Significant Wetlands (PSW) or Areas of Natural and Scientific Interest (ANSI) within the study area or in proximity.
- The site is not within an area that is subject to the Greenbelt Plan (2017), the Niagara Escarpment Plan (2017) or the Oak Ridges Moraine Conservation Plan (2017).
- Portions of the project study area are within an area regulated by the Nottawasaga Valley Conservation Authority (NVCA).

- **Groundwater:** This project is subject to the South Georgian Bay Lake Simcoe Source Protection Plan and is within the Nottawasaga Valley Source Protection Area. The subject location is not within a Wellhead Protection Area, Intake Protection Zone, or Significant Groundwater Recharge Area. The eastern half of Mountain Road is within a Highly Vulnerable Aquifer Area.



CULTURAL ENVIRONMENT

Built Heritage and Cultural Heritage Landscapes:

- The project study area was assessed using the Ministry of Tourism, Culture and Sport *Built Heritage Resources and Cultural Heritage Landscape Checklist.* This project has a low potential to impact Built Heritage resources and Cultural Heritage Landscapes.
- The heritage potential of the Black Ash Creek Bridge was assessed using the *Municipal Heritage Bridge Checklist* (provided by the Municipal Engineers Association). The structure is not of cultural heritage significance.

Archaeological:

- A Stage 1 Archaeological assessment was completed for the project.
- A Stage 2 assessment will be required in localized areas for any work taking place outside the existing road allowance.

SOCIO-ECONOMIC ENVIRONMENT

Land Use:

- Land use is varied within the study area and includes recreational, commercial, industrial and residential uses.
- Commercial land use is primarily to east of the Black Ash Creek on Mountain Road in the area of the Walmart Plaza.

Recreational:

- The Black Ash Trail crosses the study area in proximity to the Black Ash Creek Bridge on Mountain Road.
- Soccer fields and a golf course are located on the west side of Tenth Line.
- An existing snowmobile trail crosses Tenth Line from the golf course property east towards Taylor Creek. It crosses Mountain Road via the Black Ash Trail at the location of the Black Ash Creek Bridge.

SELECTION OF THE PREFERRED SOLUTION

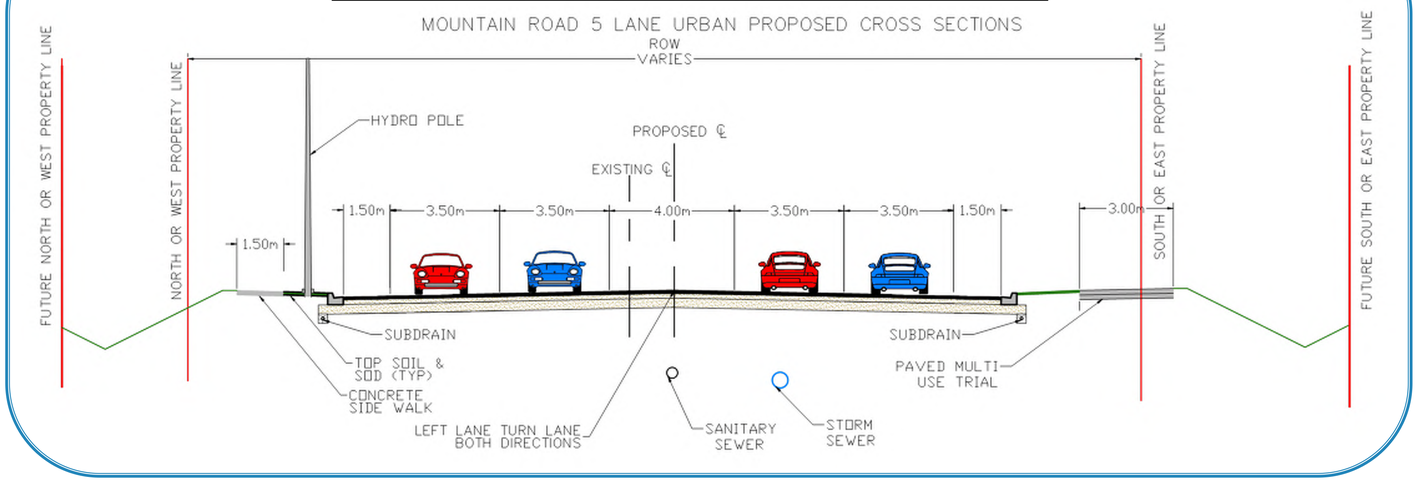
- During Phase 2 of the Class EA process the Town of Collingwood hosted PIC No. 1 to present the alternative solutions under consideration to address the deficiencies affecting the corridor.
- Subsequent to a review of comments received, the Town of Collingwood has selected ALTERNATIVE 3 as the Phase 2 PREFERRED SOLUTION. The rationale for this selection is summarized below:

ALTERNATIVE SOLUTIONS PRESENTED AT PUBLIC INFORMATION CENTRE NO. 1		RATIONALE FOR MOVING FORWARD
Alternative 1 'Do Nothing'	✗	• This alternative is not being carried forward because it does not address capacity or operational deficiencies or accommodate future development and does not provide improvements to active transportation.
ALTERNATIVE 2 • Mountain Road 3 lane rural cross-section • Tenth line 2 lane urban cross-section • Intersection improvements (i.e. signalization or roundabouts) • Servicing improvements • Bridge improvements (rehabilitation, widen or replacement).	✗	• This option will address capacity and operational deficiencies for a period of time, but will require widening at some point in the future. • Property acquisition will be required to accommodate three lanes.
ALTERNATIVE 3 • Mountain Road 5 lane urban cross-section • Tenth Line 2 lane urban cross-section • Intersection improvements (i.e. signalization or roundabouts) • Servicing improvements • Bridge improvements (rehabilitation, widen or replacement).	✓	• This option will fully address capacity and operational requirements and accommodate future development. • It is advantageous to obtain property requirements now before the area is fully developed. • Alternative 3 Mountain Road can be implemented as a phased 3 lane rural cross section that will eventually be widened to the full 5 lane urban cross section.

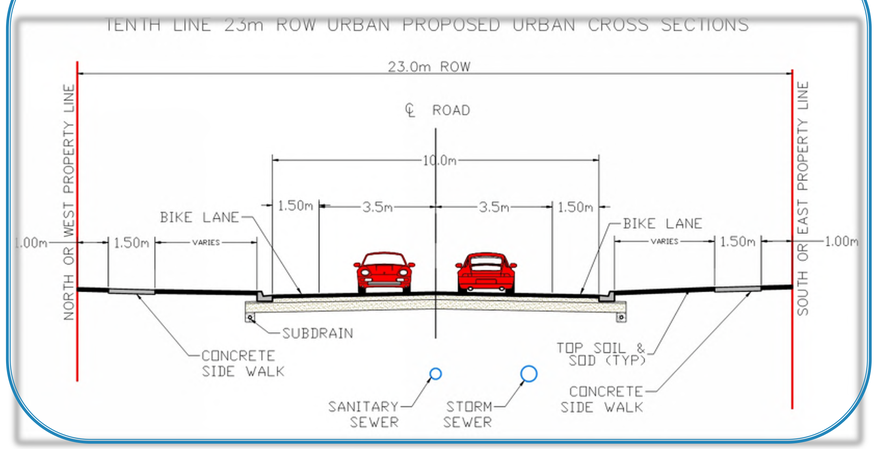
PHASE 2 PREFERRED SOLUTION – ALTERNATIVE 3

MOUNTAIN ROAD 5 LANE URBAN CROSS-SECTION + TENTH LINE 2 LANE URBAN CROSS-SECTION + BRIDGE IMPROVEMENTS

MOUNTAIN ROAD 5 LANE URBAN CROSS-SECTION



TENTH LINE 2 LANE URBAN CROSS-SECTION



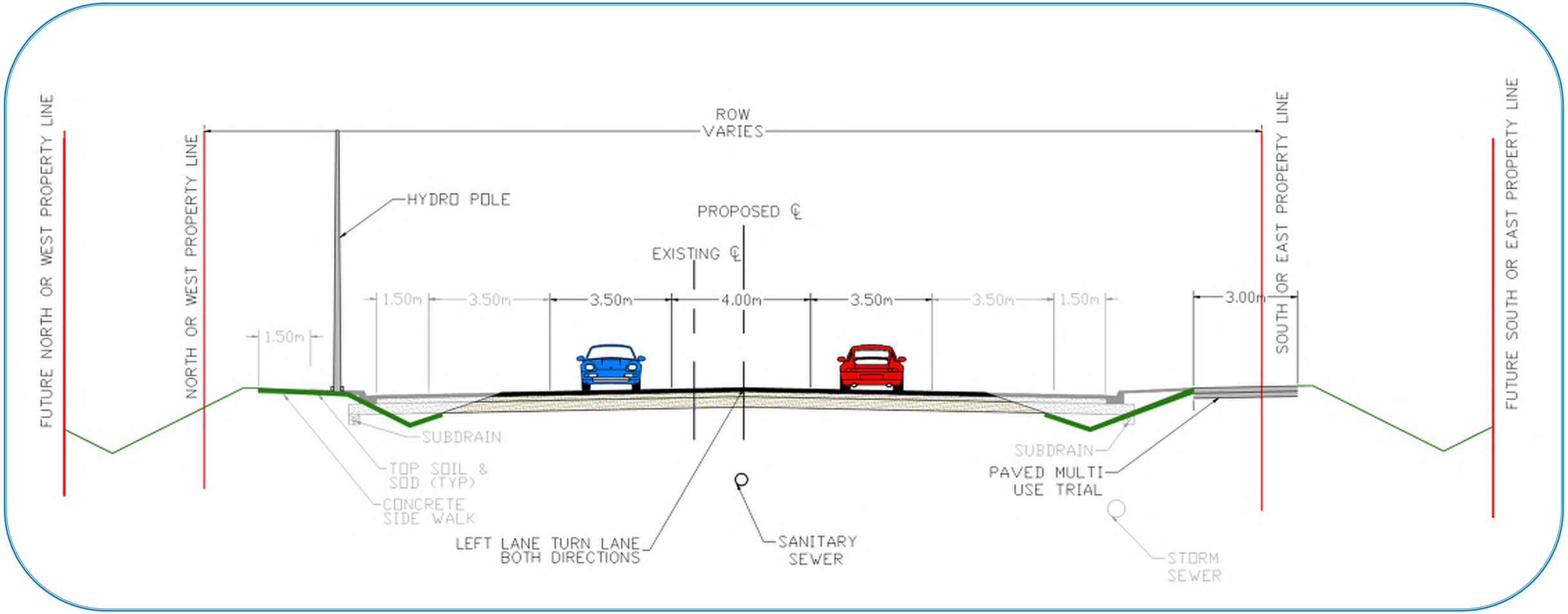
- ✓ Reconstruct Mountain Road to an urban cross-section providing:
  - Four 3.50 m wide travel lanes and one 4.00 m wide continuous centre turn lane
  - 3.0 m wide paved multi-use trail on south side of corridor
  - 1.5 m wide bicycle lane on both sides of corridor
  - 1.5 m sidewalk on north side of corridor

- ✓ Reconstruct Tenth Line to an urban cross-section providing:
  - Two 3.50 m wide travel
  - 1.5 m wide bicycle lane on both sides of corridor
  - 1.5 m wide paved sidewalk on both sides of corridor

- ✓ Intersection improvements (additional turn lanes with signalization or roundabouts)
- ✓ Servicing Improvements (i.e. sanitary, water, and storm drainage)
- ✓ Bridge replacement

IMPLEMENATION OPTIONS

PHASING OF MOUNTAIN ROAD



- ✓ Mountain Road 3 lane rural cross section will be designed so that the alignment and profile will work for the future 5 lane urban cross section. The storm sewer system will also be built in the 5 lane stage including all the pipes, curbs and gutters.

DESIGN OPTIONS DEVELOPED FOR PREFERRED SOLUTION

As part of Phase 3 of the Class EA process various Design Options are developed to implement the Preferred Solution. Below are the Design Options currently under consideration:

DESIGN OPTIONS	Mountain Road Cross-section	Tenth Line Cross-section	Mountain Road Active Transportation	Tenth Line Active Transportation	Bridge Improvements
DESIGN OPTION 1A	▪ 5 Lanes with road and bridge reconstructed on existing centre line	▪ Two lanes reconstructed on existing centre line	▪ 3.0 m paved multi-use trail on south side of corridor ▪ 1.5 m bicycle lane on both sides of corridor ▪ 1.5 m sidewalk on north side of corridor	▪ 1.5 m wide bicycle lanes on both sides of corridor ▪ 1.5 m wide paved sidewalk on both sides of corridor	▪ Rehabilitate and widen Black Ash Creek Bridge both sides
DESIGN OPTION 1B	▪ Same as above	▪ Same as above	▪ Same as above	▪ Same as above	▪ Replace Black Ash Creek Bridge
DESIGN OPTION 2A	▪ 5 Lanes with road and bridge centre line shifted south	▪ Same as above	▪ Same as above	▪ Same as above	▪ Rehabilitate and widen Black Ash Creek Bridge south side only
DESIGN OPTION 2B	▪ Same as above	▪ Same as above	▪ Same as above	▪ Same as above	▪ Replace Black Ash Creek Bridge
DESIGN OPTION 3A	▪ 5 Lanes with road centre line shifted south and bridge centre line shifted north	▪ Same as above	▪ Same as above	▪ Same as above	▪ Rehabilitate and widen Black Ash Creek Bridge north side only
DESIGN OPTION 3B	▪ Same as above	▪ Same as above	▪ Same as above	▪ Same as above	▪ Replace Black Ash Creek Bridge

EVALUATION MATRIX

The table below utilizes a simplified scoring approach to demonstrate the advantages and disadvantages of each Design Option and the potential for each Design Option to impact the physical, natural, social, cultural and economic environment.

Not Acceptable	Least Preferred	Most Preferred
0	1	3
Does not address key issues		

EVALUATION CRITERIA	1A	1B	2A	2B	3A	3B	DESCRIPTION OF EFFECTS
PHYSICAL ENVIRONMENT							
Future Traffic Capacity	3	3	3	3	3	3	All Design Options propose five lanes which will fully accommodate future traffic capacity requirements.
Geometrics	2	2	1	1	3	3	Design Options 3A & 3B propose a shift in the road centreline to the south and a shift in the bridge centreline to the north. This will optimize the road design in comparison to the other options.
Hydraulic Capacity	0	3	0	3	1	3	Rehabilitation of the existing bridge as proposed with Design Options 1A and 2A will decrease the existing hydraulic capacity of the structure. Widening on the north as proposed with Design Option 3A will not decrease the existing hydraulic capacity of the structure; however, the existing structure does not provide the required hydraulic capacity. A new bridge as proposed with Design Options 1B, 2B & 3B can fully accommodate hydraulic capacity requirements.
Safety	3	3	3	3	3	3	All Design Options will equally provide safety improvements.
Municipal Services	3	3	3	3	3	3	All Design Options will equally provide servicing improvements.
Utilities	1	1	3	3	3	3	Design Options 2A, 2B, 3A & 3B will create the least amount of impact to the newly installed hydro poles on the north side of the corridor. Design Options 1A &1B are least preferred in this regard because the construction footprint will impact the north side of the corridor.
Constructability	1	1	3	3	3	3	Construction of the bridge on the existing centreline as proposed with Design Options 1A & 1B is least preferred from a constructability standpoint since it may only allow one lane of traffic to be maintained during construction. The remaining design options can make use of the existing structure during construction and potentially maintain 2 lanes of traffic.
NATURAL ENVIRONMENT							
Terrestrial Wildlife	2	2	2	2	2	2	All Design Options require construction outside of the corridor and are expected to have a similar potential for impact.
Fisheries / Aquatic	3	2	3	2	3	2	A bridge rehabilitation as proposed with Design Options 1A, 2A and 3A will create less of an impact to fish and fish habitat in comparison to a full replacement as proposed with Design Options 1B, 2B, and 3B.
Vegetation	2	2	2	2	2	2	All Design Options require construction outside of the corridor and are expected to have a similar potential for impact.
Surface Water / Drainage	1	3	1	3	1	3	While all Design Options propose improvements to area drainage Design Options 1A, 2A and 3A propose a rehab of the existing bridge which cannot accommodate hydraulic capacity.
Groundwater	2	2	2	2	2	2	All Design Options will have a similar potential to impact area groundwater during the construction process; however, impacts can be mitigated.
SOCIAL ENVIRONMENT							
Active Transportation	3	3	3	3	3	3	All Design Options will equally provide for active transportation to the same extent.
Property Impacts	3	3	1	1	1	1	Design Option 1A & 1B are the most preferred in this regard since the road would be reconstructed on the existing centreline and therefore all property requirements could be equally taken from both sides of the corridor. Design Options 2A, 2B, 3A & 3B propose a shift in the alignment and therefore the construction footprint and property requirements would need to be acquired all from one side of the corridor.
Residential and Commercial Access	2	2	2	2	2	2	All Design Options will have a similar potential to impact area residences and businesses during the construction period.
Noise	2	2	2	2	2	2	All Design Options will have a similar potential for noise during the construction period; however, this will be temporary and can be mitigated. Any impacts to long term noise would be the same for all options since all propose an increase in the number of lanes to five.
Air Quality	2	2	2	2	2	2	All Design Options will have a similar potential to impact air quality during the construction period; however, this will be temporary and can be mitigated.
Climate Change	2	2	2	2	2	2	All Design Options will accommodate future traffic capacity requirements and therefore minimize vehicle emissions from congestion. All Design Options will incorporate landscaping which will contribute to replacement of vegetative cover necessary to assist in the removal of carbon dioxide. and the Both options are expected to have a similarly low potential to impact climate change. The drainage improvements including the use of Low Impact Development measures (i.e. infiltration galleries) will assist in maintaining infiltration and reducing the impacts from increased temperatures and extreme rain events.
CULTURAL ENVIRONMENT							
Archaeological	2	2	2	2	2	2	The Stage 1 archaeological assessment determined that a Stage 2 assessment will be required in localized areas, outside of the existing right-of-way. Since all Design Options require construction beyond the existing limits of the current right-of-way they will have a similar potential to impact archaeological resources. The Stage 2 assessment will be completed during the detailed design phase when property requirements have been confirmed and acquired.
Built Heritage & Cultural Heritage Landscapes	2	2	2	2	2	2	All Design Options will have a similar low potential to impact built heritage resources and/or cultural heritage landscapes since these resources are not present within the study area.
ECONOMIC ENVIRONMENT							
Property Acquisition Costs	2	2	2	2	2	2	Property will be required with all Design Options.
Construction Costs	2	2	2	2	2	2	Design Options 1B, 2B, & 3B are anticipated to have increased construction costs since these options propose a new bridge. Looking at an overall life cycle cost, the rehabilitation and the cost of a new bridge will be almost equal depending on how staging is preformed.
Operating & Maintenance Costs	1	3	1	3	1	3	Design Options 1A, 2A, & 3A are anticipated to have increased operating and maintenance costs over time since these options propose only a rehabilitation of the existing bridge.
SCORE	46	52	47	53	50	55	

MOST PREFERRED DESIGN OPTION

INTERSECTION IMPROVEMENTS

Improvements at the intersection of Mountain Road / Tenth Line and at the intersection of Tenth Line / Sixth Street are also proposed. There are two types of intersection designs under consideration. These include signalization or roundabouts as detailed below.

SIGNALIZATION

- Movement through the intersection would be controlled through signalization.
- Traffic would be required to stop at the intersection and proceed only when permitted by the appropriate signal.

ROUNDABOUTS

- A roundabout is a circular intersection with two travel lanes where vehicles enter in counterclockwise direction and travel around a center island.
- There are no traffic signals or stop signs. Rather vehicles yield to oncoming traffic and move into the circle when traffic is clear.

Existing Mosely St. / Highway 26 / Sideroad 33 Roundabout Near Wasaga Beach

Existing Mosely St. / Highway 26 / Sideroad 33 Roundabout Near Wasaga Beach

EVALUATION MATRIX – INTERSECTION IMPROVEMENTS

The table below utilizes a simplified scoring approach to demonstrate the potential for each Design Option to impact the physical, natural, social, cultural and economic environment.

Not Acceptable	Least Preferred	Most Preferred
0	1	3
Does not address key issues		

EVALUATION CRITERIA	ROUNDABOUTS	SIGNALIZATION	DESCRIPTION OF EFFECTS
TECHNICAL ENVIRONMENT			
Vehicle Delay	3	1	There are reduced vehicle delays with a roundabout since movement is not signalized.
Vehicle Capacity	3	3	Both types of intersections can equally accommodate vehicle capacity requirements.
Pedestrian Delay	3	1	There are reduced pedestrian delays with a roundabout since movement is not signalized.
Vehicle Ease of Use	2	3	A signalized intersection is easier to use because everyone is familiar with them; however, once users become accustomed to a roundabout they are also easy to use.
Pedestrian / Cyclist Ease of Use	2	2	A signalized intersection is easier to use because everyone is familiar with them; however, once users become accustomed to a roundabout they are also easy to use.
Safety	3	2	While signals require vehicles to stop and therefore provide a safe crossing for pedestrians, roundabouts reduce speed through the intersection and can also provide a safe crossing for pedestrians and cyclists.
NATURAL ENVIRONMENT			
Terrestrial Wildlife	2	3	Roundabouts will result in a slightly larger construction footprint as compared to a signalized intersection and there is an slightly increased potential to impact area vegetation and habitat.
Fisheries / Aquatic	3	3	There are no watercourses in proximity to either intersection and construction associated with each option would result in similar impacts.
Surface Water / Drainage	3	3	Construction associated with each option will have a similar low potential for impact.
Groundwater	2	2	Construction associated with each option will have a similar low potential for impact.
SOCIAL ENVIRONMENT			
Active Transportation	3	3	Both types of intersection control will equally provide for active transportation.
Property Impacts	2	3	Roundabouts will result in a slightly larger construction footprint as compared to a signalized intersection and may have increased property requirements.
Noise	3	1	Roundabouts would result in less noise since there would be a reduced amount of starting and stopping as compared to a signalized intersection.
Climate Change	3	2	Both options are expected to have a similar low potential to impact climate change. However, roundabouts would result in less emissions since there would be a reduced amount of starting and stopping as compared to a signalized intersection. Conversely climate change is expected to have a low potential to impact either intersection design.
CULTURAL ENVIRONMENT			
Archaeological	2	2	The Stage 1 archaeological assessment determined that a Stage 2 assessment will be required in localized areas, for work outside of the existing right-of-way. Since both intersection designs may require construction beyond the existing limits of the current right-of-way they will have a similar potential to impact archaeological resources. The Stage 2 assessment will be completed during the detailed design phase when property requirements have been confirmed and acquired.
Built Heritage & Cultural Heritage Landscapes	2	2	Both intersection options will have a similar low potential to impact built heritage resources and/or cultural heritage landscapes since these resources are not present within the study area.
ECONOMIC ENVIRONMENT			
Property Acquisition	2	3	A signalized intersection would require slightly less property as compared to a roundabout.
Construction & Maintenance Costs	3	2	A roundabout is slightly less costly to construct and maintain as compared to a signalized intersection.
SCORE	46	41	

MOST PREFERRED

PROPOSED MITIGATION

The following mitigation will assist in reducing the potential for the project to impact the area environment.

Potential Impact	Proposed Mitigation
Fish & Fish Habitat	• Detailed design to give consideration to minimizing in-water work; adherence to fisheries timing restrictions; obtain necessary approvals from the Department of Fisheries & Oceans , Nottawasaga Valley Conservation Authority, and the Ministry of Natural Resources and Forestry; application of standard best management practices for working in and around water (i.e. sediment & erosion control; site restoration following construction; equipment refueling and maintenance restrictions etc.).
Terrestrial (Wildlife, Birds etc.)	• Minimize encroachment beyond right-of-way; comply with Migratory Birds Convention Act and Migratory Bird Regulations and avoid impacting migratory birds (including SAR) during the breeding season; obtain input, as required, from Nottawasaga Valley Conservation Authority and Ministry of Natural Resources and Forestry.
Vegetation	• Define limits of construction with fencing to minimize intrusion into unnecessary areas. Design footprint to minimize impacts to area vegetation as much as possible; re-stabilize and re-vegetate exposed surfaces as soon as possible following construction; and minimize disturbance to root systems.
Surface Water/Drainage	• Obtain necessary approval from the Nottawasaga Valley Conservation Authority; application of standard best management practices for working in and around water (i.e. sediment & erosion control; site restoration following construction; equipment refueling and maintenance restrictions etc.); obtain Ministry of the Environment, Conservation and Parks (MECP) Permit To Take Water (surface water), as required.
Groundwater	• Obtain MECP Permit To Take Water (groundwater), as required; utilize standard water conservation measures to minimize the amount of water taken and to terminate the usage as soon as possible.
Property Waste & Contamination	• Reuse and disposal of excess material during construction to be managed in accordance with regulatory requirements and Provincial Specifications for the Management of Excess Materials. • Fill and excess materials will be managed in accordance with MECP regulations, as required.
Archaeological	• Stage I archaeological study completed. Stage II archaeological study of localized areas to be completed during detailed design, prior to construction. Direction to provided in the contract documents regarding steps to be taken if anything of archaeological significance is uncovered during construction.
Noise	• Utilize standard noise mitigation measures to minimize potential for impact (i.e. construction equipment to comply with the noise emission standards; equipment to be in good repair & fitted with functioning mufflers; limit construction activities that create excessive noise to daytime hours; maximize the separation distance between construction staging areas and nearby receptors to the greatest extent possible).
Businesses / Residential	• Maintain property access during construction; utilize traffic management measures (i.e. detours, construction staging etc.) to minimize impacts to traffic flow during construction. Adjust detailed design (slopes, grading, ditching) so as to minimize impacts to adjacent property and to reduce property requirements.
Utilities	• Advance contact with utility companies during detail design process to develop re-location strategies. Ongoing communication with utility companies during construction.
Air Quality	• Dust controlled by the application of dust suppressants; covering of soil stockpiles; and ensuring that all equipment pollution control devices are operational and properly maintained.

PROJECT SCHEDULE AND FUNDING

PRELIMINARY PROJECT SCHEDULE

- EA complete 2018
- Detailed Design complete 2019
- Property Acquisition 2019/2020
- Utility Relocation 2020
- Construction 2020/2021

The above timing will be subject to the progress of area development and the receipt of funding and all necessary approvals.

WHAT'S NEXT?

- The project team will review the comments submitted following the completion of this Public Information Centre and select the Preferred Design Option.

- The project will then move into Phase 4 of the Class EA process. An Environmental Screening Report (ESR) will be prepared to document the Class EA process and will be made available for a 30 day public review period.

- A Notice of Completion will be issued that will identify the final Preferred Design Option, the start of the 30 day review period and viewing locations available to review the document. The notice will also provide instruction for submitting a Part II Order (i.e. bump up) request.

- Once the 30 day public review period ends and there are no further objections or requests for a Part II Order, the Class EA process is considered complete. The project can then move forward to Phase 5 involving detailed design and construction.

COMMENTS

- All PIC material is currently available for download from the Town's website at www.collingwood.ca
- We invite you to provide any comments, in writing, on the Comment Sheet provided.
- All comments are to be submitted by **September 30, 2018** to either of the following members of the Project Team:

Mr. Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5
Tel: 705-445-1292
Fax: 705-445-1286
Email: tharvey@collingwood.ca

Mr. Tom Nollert, C.E.T.
Consultant Project Manager
Ainley Group
280 Pretty River Parkway
Collingwood, ON L9Y 4J5
Tel: 705-445-3460 ext. 156
Fax: 705-445-0968
Email: nollert@ainleygroup.com

Thank you for your attendance at this meeting!

We appreciate your participation.

MUNICIPAL FREEDOM OF INFORMATION & PROTECTION OF PRIVACY ACT
All comments received will be maintained on file for use during the project and may be included in study documentation. Information collected will be used in accordance with the Municipal Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.

Appendix I

Consultation Point No. 3
(Notice of Completion)

TOWN OF COLLINGWOOD
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

BACKGROUND

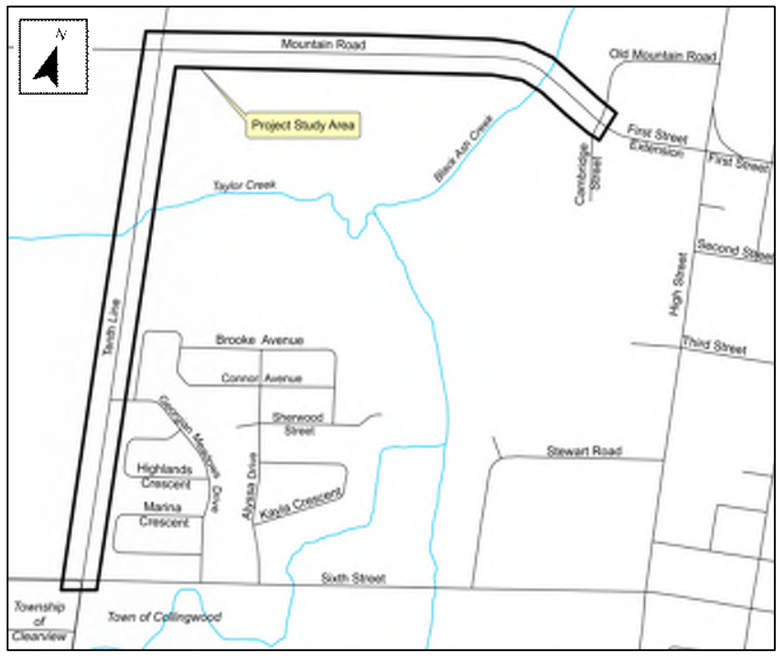
In April 2017, the Town of Collingwood initiated a Municipal Class Environmental Assessment (Class EA) and detailed design study to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project was initiated to address capacity and operational deficiencies and to accommodate future growth. This project is following the Schedule 'C' planning and design process in accordance with the *Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).*

Following the completion of Public Information Centre No. 2 (September 6, 2018) and the receipt of input from interested parties, the Town of Collingwood selected Design Option 3B as the Preferred Design which proposes: a reconstruction of Mountain Road to a 5 lane urban cross-section; the reconstruction of Tenth Line to a 2 lane urban cross-section; and replacement of Black Ash Creek Bridge. Improvements will also be made to intersections, servicing, and landscaping.

ENVIRONMENTAL STUDY REPORT

In accordance with Phase 4 of the Schedule 'C' Municipal Class EA process an Environmental Study Report (ESR) has been prepared to document the Class EA process completed for this undertaking and by this Notice is being placed in the public record for a 30 day public review and comment period. A digital copy of the ESR will be available on the Town of Collingwood's website on or after April 25, 2019 at www.collingwood.ca. A hard copy of the document will also be available for review during regular business hours on or after April 25, 2019 at the following location:

Collingwood Public Library
55 Ste. Marie Street
Collingwood, Ontario L9Y 0W6
Hours: Mon. to Fri. 10:00am – 9:00pm
Friday 10:00am – 8:00pm
Saturday 10:00am – 5:00pm
Sunday 1:00pm – 4:00pm



If you have any outstanding concerns regarding this project, please contact Mr. Trevor Harvey of the Town of Collingwood (contact information below) by **May 25, 2019**. If concerns regarding this project cannot be resolved with the municipality, a person or party may request that the Minister of Environment make an order for the project to comply with Part II of the Environmental Assessment Act (referred to as a Part II Order), which addresses individual environmental assessments. To submit a Part II Order request, please complete the Ministry of the Environment, Conservation and Parks (MECP) *Part II Order Request Form* available on the Town of Collingwood's website on or after April 25, 2019 at www.collingwood.ca. The form must be submitted by **May 25, 2019** to the Minister of Environment, Conservation and Parks and a duplicate copy of the request must also be forwarded to the Director, Environmental Assessment and Permissions Branch and Mr. Trevor Harvey of the Town of Collingwood at the addresses shown below:

Minister
Ministry of the Environment, Conservation and Parks
Ferguson Block, 77 Wellesley St. W, 11th Floor
Toronto ON M7A 2T5
Fax: 416-314-8452
Minister.mecp@ontario.ca

Director, Environmental Assessment and Permissions Branch
Ministry of the Environment, Conservation and Parks
135 St. Clair Ave W, 1st Floor
Toronto ON M4V 1P5
enviropermissions@ontario.ca

Mr. Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5
Tel: 705-445-1292
Fax: 705-445-1286
Email: tharvey@collingwood.ca

If no Part II Order requests are received by 4:00p.m. **May 25, 2019**, the Town of Collingwood intends to proceed with detailed design. Construction is planned for 2020/2021, subject to funding and the receipt of necessary approvals. Please note that ALL personal information included in a Part II Order submission - such as name, address, telephone number and property location - is collected, maintained and disclosed by the Ministry of the Environment, Conservation and Parks for the purpose of transparency and consultation. The information is collected under the authority of the Environmental Assessment Act or is collected and maintained for the purpose of creating a record that is available to the general public as described in s.37 of the Freedom of Information and Protection of Privacy Act. Personal information you submit will become part of a public record that is available to the general public unless you request that your personal information remain confidential. For more information, please contact the Ministry's Freedom of Information and Privacy Coordinator at 416-327-1434. This notice issued April 25, 2019.

Agency and Indigenous Community Contact List and Letters

Town of Collingwood
Tenth Line and Mountain Road Schedule 'C' Class EA
Notice of PIC No. 2
AGENCY CONTACT LIST

Title	First	Last	Title	Company	Address 1	Address 2	Town	PC	Telephone	Email
Provincial & Federal Agencies										
Mr.	Rob	Dobos	Manager, Environmental Assessment Section	Environment Canada - Environmental Protection Operations Division - Ontario Region	867 Lakeshore Road	P.O. Box 5050	Burlington, ON	L7R 4A6	905-336-4953	
Ms.	Chunmei	Liu	Environmental Resource Planner & EA Coordinator - Air, Pesticides and Environmental Planner *(Barrie, Orillia & County of Simcoe)*	Central Region Ministry of Environment, Conservation and Parks	5775 Yonge Street	8th Floor	North York, ON	M2M 4J1	416-326-4886	chunmei.liu@ontario.ca
Ms.	Cindy	Hood	District Manager	Barrie District Office Ministry of Environment, Conservation and Parks	54 Cedar Point Drive	Unit 1201	Barrie, ON	L4N 5R7	705-739-6436	cindy.hood@ontario.ca
Mr.	Shawn	Carey	District Manager	Midhurst District Ministry of Natural Resources and Forestry	2284 Nursery Road		Midhurst, ON	L0L 1X0	705-725-7561	shawn.carey@ontario.ca
Ms.	Karla	Barboza	Team Lead, Heritage	Ministry of Tourism, Culture & Sport	401 Bay Street	Suite 1700	Toronto, ON	M7A 0A7	416-314-7120	karla.barboza@ontario.ca
Ms.	Carol	Neumann	Rural Planner	Ontario Ministry of Agriculture, Food and Rural Affairs	6484 Wellington Rd. 7	Unit 10	Elora, ON	N0B 1S0	519-846-3393	.carol.neumann@ontario.ca
Mr.	Teepu	Khawja	Regional Director	Ministry of Transportation, Central Region	1201 Wilson Avenue		Toronto, ON	M3M 1J8	416-235-5400	teepu.khawja@ontario.ca
Mr.	Chris	Gauer	Executive Vice President Major Projects, Roads & Transit	Infrastructure Ontario	777 Bay Street	6th Floor, Suite 602	Toronto, ON	M5G 2C8	416-327-8037	Chris.Gauer@infrastructureontario.ca
Mr.	Tim	Haldenby	Municipal Planning Advisor - Team Lead Central Ontario	Ministry of Municipal Affairs and Housing	777 Bay Street	13th Floor	Toronto, ON	M5G 2E5	416-585-6559	tim.haldenby@ontario.ca
Local Government, Adjacent Municipalities & Other Agencies										
Mr.	Christian	Meile	Director, Construction & Transportation Maintenance	County of Simcoe	1110 Highway 26 West		Midhurst, ON	L0L 1X0	705-726-9300	christian.meile@simcoe.ca
Mr.	Dave	Parks	Director, Planning, Development & Tourism	County of Simcoe	1110 Highway 26 West		Midhurst, ON	L0L 1X0	705-726-9300	dave.parks@simcoe.ca
Ms.	Nancy	Farrer	Director, Planing Services	Town of Collingwood	545 Tenth Line North	P.O. Box 157	Collingwood, ON	L9Y 3Z5	705-445-1292	nfarrer@collingwood.ca
Mr.	Dean	Collver	Director, Parks, Recreation & Culture	Town of Collingwood	545 Tenth Line North	P.O. Box 157	Collingwood, ON	L9Y 3Z5	705-445-1292	dcollver@collingwood.ca
Mr.	Chris	Hibberd	Director, Watershed Management Services	Nottawasaga Valley Conservation Authority	John Hix Conservation Administration Centre	8195 8th Line	Utopia, ON	L0M 1T0	705-424-1479	c.hibberd@nvca.on.ca
Mr.	Steve	Sage	CAO	Township of Clearview	217 Gideon Street		Stayner, ON	L0M 1S0	705-428-6230 ext. 228	ssage@clearview.ca
Mr.	Troy	Speck	CAO	Town of the Blue Mountains	32 Mill Street	P.O. Box 310	Thornbury, ON	N0H 2P0	519-599-3131 ext. 234	tspeck@thebluemountains.ca
Ms.	Barb	Fox	Planning Officer	Simcoe Muskoka Catholic District School Board	46 Alliance Blvd.		Barrie, ON	L4M 5K3	705-722-3559 ext. 250	bfox.smcdsb.on.ca
Ms.	Holly	Spacek	Planning Officer	Simcoe County District School Board	1170 Highway 26		Midhurst, ON	L0L 1X0	705-728-7570 ext. 11311	hspacek@scdsb.on.ca
Mr.	Miguel	Ladouceur	Director of Building, Maintenance and Planning	Conseil Scolaire Viamonde	116 Cornelius Parkway		Toronto, ON	M6L 2K5	1-416-614-5917	ladouceurm@csviamonde.ca
Ms.	Nathalie	Huard	Transportation Technician, Service de Transport Francobus	Association Franco-Ontarienne Des Conseils Scolaires Catholiques	138 rue Main Est	Bureau 205	Welland, ON	L3B 3W6	1-800-749-0002	huardn@francobus.ca
Mr.	Earl	Elliott	President	Simcoe County Historical Association		P.O. Box 144	Barrie, ON	L4M 4S9	705-796-7649	earl.elliott@rogers.com
Ms.	Bonnie	Branch	Transportation Coordinator	Simcoe County Student Transportation Consortium	64 Cedar Pointe Drive	Unit 1403	Barrie, ON	L4N 5R7	705-733-8965, ext. 107	bbranch@scstc.ca
Ms.	Sara	Almas	Clerk	Accessiblity Advisory Committee Town of Collingwood	97 Hurontario Street	P.O. Box 157	Collingwood, ON	L9Y 3Z5	705-445-1030	almas@collingwood.ca
Emergency Services										
Mr.	JC	Gilbert	Deputy Chief Operations	County of Simcoe Paramedic Services	1110 Highway 26		Midhurst, ON	L0L 1X0	705-726-9300	jc.gilbert@simcoe.ca
Mr.	Ross	Parr	Fire Chief	Town of Collingwood Fire Department	45 High Street		Collingwood, ON	L9Y 4V4	705-445-3920 ext. 7502	rparr@collingwood.ca
Mr.	Colin	Shewell	Fire Chief	Township of Clearview Fire Department	217 Gideon Street		Stayner, ON	L0M 1S0	705-428-6230 ext. 403	cshewell@clearview.ca
Ms.	Mary	Shannon	Inspector	Ontario Provincial Police Collingwood and the Blue Mountains Detachment	201 Ontario Street		Collingwood, ON	L9Y 4M4	705-445-4321	mary.shannon.opp.ca

Town of Collingwood
Tenth Line and Mountain Road Schedule 'C' Class EA
Notice of PIC No. 2
AGENCY CONTACT LIST

Title	First	Last	Title	Company	Address 1	Address 2	Town	PC	Telephone	Email
Member of Parliament										
Mr.	Jim	Wilson	Member of Provincial Parliament	Collingwood Consistuency Ofice	50 Hume Street		Collingwood, ON	L9Y 1V2	1-800-268-7542	
Ms.	Kellie	Leitch	Member of Parliament - Simcoe-Grey	Collingwood Consistuency Ofice	501 Hume Street	#4	Collingwood, ON	L9Y 4H8	705-445-5557	kellie.leitch@parl.gc.ca
Stakeholders										
Mr.	Ken	Hale	Manager of Land Development and Acquistions	Linksview Development Corporation	Harbouredge Centre	40 Huron St., Suite 300	Collingwood, ON	L9Y 4A3	705-446-1660 xt 32	khale@landexcapital.com
Mr.	Kevin	Morris	Senior Project Manager	CF Crozier & Associates		40 Huron St.,	Collingwood, ON	L9Y 4R3	705-446-3510	kmorris@cfcrozier.ca
Attn:	Office Manager			Mairmills Village	160 Southgate Drive		Guelph, ON	N1G 4P5		
Att:	Greg	Goodale		Consar Red Maple Investments Ltd.	64 Shaft Road		Toronto, ON	M9W 4M2		
Mr.	Allan	Brownbridge	Project Manager	C.C. Tatham & Associates Ltd.	115 Sandford Fleming Drive	Suite 200	Collingwood, ON	L9Y 5A6	705-444-2565	abrownridge@cctatham.com
Interest Groups										
Ms.	Trish	Irwin	GM/CEO	Collingwood Chamber of Commerce	115 Hurontario Street	Suite 102	Collingwood, ON	L9Y 2L9	705-445-0221	tirwin@collingwoodchamber.com
Ms.	Kandas	Bondarchuk	Planner - Technician	Collingwood Heritage Committee	55 Ste. Marie Street	Unit 302	Collingwood, ON	L9Y 0W6	705-445-1290 ext. 3275	kbondarchuk@collingwood.ca
Mr.	Jamie	Forsythe		Blue Mountain & Collingwood Snowdrifters Snowmobile Club	453 Oak Street		Collingwood, ON	L9Y 4N1	705-446-1848 705-606-1453	
Mr.	Ben	McNabb		Collingwood Cycling Club	47 Sherwood Street		Collingwood, ON	L9Y0C5		info@collingwoodcyclingclub.ca
Mr.	Murray	Knowles		Black Ash Trail Committee	32 Westwind Drive		Collingwood, ON	L9Y 5J1		knowles.murray@gmail.com
Aboriginal Consultation										
Att: Consultation Unit				Ministry of Indigenous Affairs	160 Bloor St. East	9th Floor	Toronto, ON	M7A 2E6	416-326-4757	maa.ea.review@ontario.ca
(CIRNAC (formerly INAC) not contacted for this project as project is not on Aboriginal lands)				~~Crown-Indigenous Relations and Northern Affairs Canada (formerly Indigenous & Northern Affairs Canada Consultation Unit)~~	~~25 St. Clair Avenue East~~	~~8th Floor~~	~~Toronto, ON~~	~~M4T 1M2~~	~~1 800 567 9604~~	
Mr.	Brian	Tucker	Manager of Way of Life Framework	The Metis Nation of Ontario	500 Old St. Patrick St.	Unit 3	Ottawa, ON	K1N 9G4	807-274-1386 (direct) 613-798-1488 (Secretary)	Prefers digital - briant@metisnation.org **& copy to** consultation@metisnation.org
Mr.	Tony	Muscat	President Interim	Moon River Metis Council	B26360 Cedarhurst Beach Road	R.R. 1	Beaverton, ON	L0K 1A0	705-426-1381	tonymuscat@rogers.com
Mr.	Dave	Dusome	President	Georgian Bay Metis Council	355 Cranston Crescent	P.O. Box 400	Midland, ON	L4R 4K6	705-526-6335	gbmccontact@gmail.com
Ms.	Lynette	Davis	Director of Operations	Metis National Council	4-340 MacLaren Street		Ottawa, ON	K2P 0M6	613-232-3216	info@metisnation.ca
Ms.	Karry	Sandy-Mckenzie	Coordinator / Negotiator	Williams Treaties First Nation						k.a.sandy-mckenzie@rogers.com
First Nation Communities (as per MOECC Email dated June 27, 2017)										
Ms.	Joselyn	Keeshig	Manager	Saugeen Ojibway Nation Environment Office	25 Maadookii Subdivision		Neyaashiinigming, ON	N0H 2T0	519-534-5507	j.keeshig@saugeenojibwaynation.ca
Mr.	Doran	Ritchie	Land Use Planning Coordinator	Saugeen Ojibway Nation Environment Office	25 Maadookii Subdivision		Neyaashiinigming, ON	N0H 2T0	519-534-5507	d.ritchie@saugeenojibwaynation.ca
Chief	Mary	McQue-King		Beausoleil First Nation	General Delivery		Cedar Point, ON	L0K 1C0	705-247-2051	bfnchief@chimnissing.ca
Chief	Donna	Big Canoe		Chippewas of Georgina Island First Nation	R.R. #2	P.O. Box 13	Sutton West, ON	L0E 1R0	705-437-1337	donna.bigcanoe@georginaisland.com
Chief	Greg	Nadjiwon		Chippewas of Nawash First Nation	135 Lakeshore Blvd.		Neyaashiinigmiing, ON	N0H 2T0	519-534-1689	chiefsdesk@nawash.ca cnadministrator@newash.ca
	Sharday	James		Chippewas of Rama First Nation	200-5884-Rama Road		Rama, ON	L3V 6H6	705-325-3611	rodneyn@ramafirstnation.ca
Chief	Lester	Anoquot		Saugeen First Nation	R.R.#1		Southhampton, ON	N0H 2L0	519-797-2781	lanaquot@saugeenfirstnation.ca
Utilities										
Mr.	Ted	Burrell		Collus Powerstream	43 Stewart Road		Collingwood, ON	L9Y 4M7	705-443-1868	tburrell@collus.com
Ms.	Carol	O'Brien		Bell Canada	136 Bayfield Street	2nd Floor	Barrie, ON	L4M 3B1	705-722-2405	carol.obrien@bell.ca
Mr.	Tony	Dominguez		Rogers	1 Sperling Drive		Barrie, ON	L4N 6B8	705-737-4660 xt 6907	tony.dominguez@rci.rogers.com
Mr.	Tom	Jedemann		Enbridge Gas	101 Honda Blvd		Markham, ON	L6C 0M6	905-927-3184	tom.jedemann@enbridge.com

Ainley & Associates Limited
280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

April 15, 2019 'SAMPLE' AGENCY LETTER File #116110

Environment Canada
Environmental Protection Operations Division
867 Lakeshore Road
P.O. Box 5050
Burlington, ON L7R 4A6

Attn: Mr. Rob Dobos
Manager, Environmental Assessment Section

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Dear Mr. Dobos,

Please be advised that the Town of Collingwood has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to address deterioration and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). Please refer to the attached *Notice of Completion* for additional details.

Should you have any questions or concerns regarding this project, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca.

Yours truly,

AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

Tel: 705-445-3460 ext. 156
Email: nollert@ainleygroup.com

pc: T. Harvey Town of Collingwood, Project Coordinator
J. Velick Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski Ainley Group, Project Engineer
J. Marks Ainley Group, Environmental Planning Assistant

Ainley & Associates Limited
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E-mail collingwood@ainleygroup.com

April 15, 2019 File #116110

Ministry of Indigenous Affairs
160 Bloor St. East
9th Floor
Toronto, ON
M7A 2E6

Attn: Consultation Unit

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Please be advised that the Town of Collingwood has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to address deterioration and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). Please refer to the attached *Notice of Completion* for additional details.

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Yours truly,

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Project Manager

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E-mail collingwood@ainleygroup.com

April 15, 2019 File #116110

The Metis Nation of Ontario
500 Old St. Patrick St.
Unit 3
Ottawa, ON
K1N 9G4

Attn: Mr. Brian Tucker
Manager of Way of Life Framework

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Dear Mr. Tucker,

Please be advised that the Town of Collingwood has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to address deterioration and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). Please refer to the attached *Notice of Completion* for additional details.

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Yours truly,

AINLEY & ASSOCIATES LIMITED

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Project Manager

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pc: T. Harvey Town of Collingwood, Project Coordinator
J. Velick Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski Ainley Group, Project Engineer
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Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

April 15, 2019 File #116110

Moon River Metis Council
B26360 Cedarhurst Beach Road
R.R. 1
Beaverton, ON
L0K 1A0

Attn: Mr. Tony Muscat
President Interim

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Dear Mr. Muscat,

Please be advised that the Town of Collingwood has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to address deterioration and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). Please refer to the attached *Notice of Completion* for additional details.

Should you have any questions or concerns regarding this project, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca.

Yours truly,

AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

Tel: 705-445-3460 ext. 156
Email: nollert@ainleygroup.com

pc: T. Harvey Town of Collingwood, Project Coordinator
J. Velick Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski Ainley Group, Project Engineer
J. Marks Ainley Group, Environmental Planning Assistant

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280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

April 15, 2019 File #116110

Georgian Bay Metis Council
355 Cranston Crescent
P.O. Box 400
Midland, ON
L4R 4K6

Attn: Mr. Dave Dusome
President

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Dear Mr. Dusome,

Please be advised that the Town of Collingwood has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to address deterioration and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). Please refer to the attached *Notice of Completion* for additional details.

Should you have any questions or concerns regarding this project, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca.

Yours truly,

AINLEY & ASSOCIATES LIMITED

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Project Manager

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Email: nollert@ainleygroup.com

pc: T. Harvey Town of Collingwood, Project Coordinator
J. Velick Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski Ainley Group, Project Engineer
J. Marks Ainley Group, Environmental Planning Assistant

Ainley & Associates Limited
280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

April 15, 2019 File #116110

Metis National Council
4-340 MacLaren Street
Ottawa, ON
K2P 0M6

Attn: Ms. Lynette Davis
Director of Operations

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Dear Ms. Davis,

Please be advised that the Town of Collingwood has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to address deterioration and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). Please refer to the attached *Notice of Completion* for additional details.

Should you have any questions or concerns regarding this project, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca.

Yours truly,

AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

Tel: 705-445-3460 ext. 156
Email: nollert@ainleygroup.com

pc: T. Harvey Town of Collingwood, Project Coordinator
J. Velick Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski Ainley Group, Project Engineer
J. Marks Ainley Group, Environmental Planning Assistant

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280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

April 15, 2019 File #116110

Williams Treaties First Nation
k.a.sandy-mckenzie@rogers.com

Attn: Ms. Karry Sandy-Mckenzie
Coordinator / Negotiator

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Dear Ms. Sandy-Mckenzie,

Please be advised that the Town of Collingwood has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to address deterioration and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). Please refer to the attached *Notice of Completion* for additional details.

Should you have any questions or concerns regarding this project, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca.

Yours truly,

AINLEY & ASSOCIATES LIMITED

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Project Manager

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Email: nollert@ainleygroup.com

pc: T. Harvey Town of Collingwood, Project Coordinator
J. Velick Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski Ainley Group, Project Engineer
J. Marks Ainley Group, Environmental Planning Assistant

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280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

April 15, 2019 File #116110

Saugeen Ojibway Nation Environment Office
25 Maadookii Subdivision
Neyaashiinigming, ON
N0H 2T0

Attn: Ms. Joselyn Keeshig
Manager

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Dear Ms. Keeshig,

Please be advised that the Town of Collingwood has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to address deterioration and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). Please refer to the attached *Notice of Completion* for additional details.

Should you have any questions or concerns regarding this project, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca.

Yours truly,

AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

Tel: 705-445-3460 ext. 156
Email: nollert@ainleygroup.com

pc: T. Harvey Town of Collingwood, Project Coordinator
J. Velick Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski Ainley Group, Project Engineer
J. Marks Ainley Group, Environmental Planning Assistant

Ainley & Associates Limited
280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

April 15, 2019 File #116110

Saugeen Ojibway Nation Environment Office
25 Maadookii Subdivision
Neyaashiinigming, ON
N0H 2T0

Attn: Mr. Doran Ritchie
Land Use Planning Coordinator

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Dear Mr. Ritchie,

Please be advised that the Town of Collingwood has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to address deterioration and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). Please refer to the attached *Notice of Completion* for additional details.

Should you have any questions or concerns regarding this project, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca.

Yours truly,

AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

Tel: 705-445-3460 ext. 156
Email: nollert@ainleygroup.com

pc: T. Harvey Town of Collingwood, Project Coordinator
J. Velick Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski Ainley Group, Project Engineer
J. Marks Ainley Group, Environmental Planning Assistant

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280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

April 15, 2019 File #116110

Beausoleil First Nation
General Delivery
Cedar Point, ON
L0K 1C0

Attn: Chief Mary McQue-King

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Dear Chief McQue-King,

Please be advised that the Town of Collingwood has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to address deterioration and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). Please refer to the attached *Notice of Completion* for additional details.

Should you have any questions or concerns regarding this project, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca.

Yours truly,

AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

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Email: nollert@ainleygroup.com

pc: T. Harvey Town of Collingwood, Project Coordinator
J. Velick Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski Ainley Group, Project Engineer
J. Marks Ainley Group, Environmental Planning Assistant

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280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

April 15, 2019 File #116110

Chippewas of Georgina Island First Nation
R.R. #2
P.O. Box 13
Sutton West, ON
L0E 1R0

Attn: Chief Donna Big Canoe

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Dear Chief Big Canoe,

Please be advised that the Town of Collingwood has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to address deterioration and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). Please refer to the attached *Notice of Completion* for additional details.

Should you have any questions or concerns regarding this project, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca.

Yours truly,

AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

Tel: 705-445-3460 ext. 156
Email: nollert@ainleygroup.com

pc: T. Harvey Town of Collingwood, Project Coordinator
J. Velick Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski Ainley Group, Project Engineer
J. Marks Ainley Group, Environmental Planning Assistant

Ainley & Associates Limited
280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

April 15, 2019 File #116110

Chippewas of Nawash First Nation
135 Lakeshore Blvd.
Neyaashiinigmiing, ON
N0H 2T0

Attn: Chief Greg Nadjiwon

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Dear Chief Nadjiwon,

Please be advised that the Town of Collingwood has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to address deterioration and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). Please refer to the attached *Notice of Completion* for additional details.

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Yours truly,

AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

Tel: 705-445-3460 ext. 156
Email: nollert@ainleygroup.com

pc: T. Harvey Town of Collingwood, Project Coordinator
J. Velick Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski Ainley Group, Project Engineer
J. Marks Ainley Group, Environmental Planning Assistant

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280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

April 15, 2019 File #116110

Chippewas of Rama First Nation
200-5884-Rama Road
Rama, ON
L3V 6H6

Attn: Ms. Sharday James

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Dear Ms. James,

Please be advised that the Town of Collingwood has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to address deterioration and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). Please refer to the attached *Notice of Completion* for additional details.

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Yours truly,

AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

Tel: 705-445-3460 ext. 156
Email: nollert@ainleygroup.com

pc: T. Harvey Town of Collingwood, Project Coordinator
J. Velick Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski Ainley Group, Project Engineer
J. Marks Ainley Group, Environmental Planning Assistant

Ainley & Associates Limited
280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

April 15, 2019 File #116110

Saugeen First Nation
R.R.#1
Southhampton, ON
N0H 2L0

Attn: Chief Lester Anoquot

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Dear Chief Anoquot,

Please be advised that the Town of Collingwood has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to address deterioration and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). Please refer to the attached *Notice of Completion* for additional details.

Should you have any questions or concerns regarding this project, please contact the undersigned or Mr. Trevor Harvey, BSc, C.E.T., Project Coordinator, Town of Collingwood at 705-445-1292 or via email at tharvey@collingwood.ca.

Yours truly,

AINLEY & ASSOCIATES LIMITED

Tom Nollert, C.E.T.
Project Manager

Tel: 705-445-3460 ext. 156
Email: nollert@ainleygroup.com

pc: T. Harvey Town of Collingwood, Project Coordinator
J. Velick Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski Ainley Group, Project Engineer
J. Marks Ainley Group, Environmental Planning Assistant

Resident Letter

Ainley & Associates Limited
280 Pretty River Parkway, Collingwood, Ontario, L9Y 4J5
Tel: (705) 445-3460 ▪ Fax: (705) 445-0968
E-mail collingwood@ainleygroup.com

April 15, 2019 File #116110

Re: Town of Collingwood
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

Dear Resident / Property Owner / Tenant,

Please be advised that the Town of Collingwood has completed a Schedule 'C' Municipal Class Environmental Assessment (Class EA) to address deterioration and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). Please refer to the attached *Notice of Completion* for additional details.

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Yours truly,

AINLEY & ASSOCIATES LIMITED

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Project Manager

Tel: 705-445-3460 ext. 156
Email: nollert@ainleygroup.com

pc: T. Harvey Town of Collingwood, Project Coordinator
J. Velick Town of Collingwood, Manager, Engineering Services
P. Wojcieszynski Ainley Group, Project Engineer
J. Marks Ainley Group, Environmental Planning Assistant

TOWN OF COLLINGWOOD
Tenth Line and Mountain Road Improvements
Schedule 'C' Municipal Class Environmental Assessment
Notice of Completion

BACKGROUND

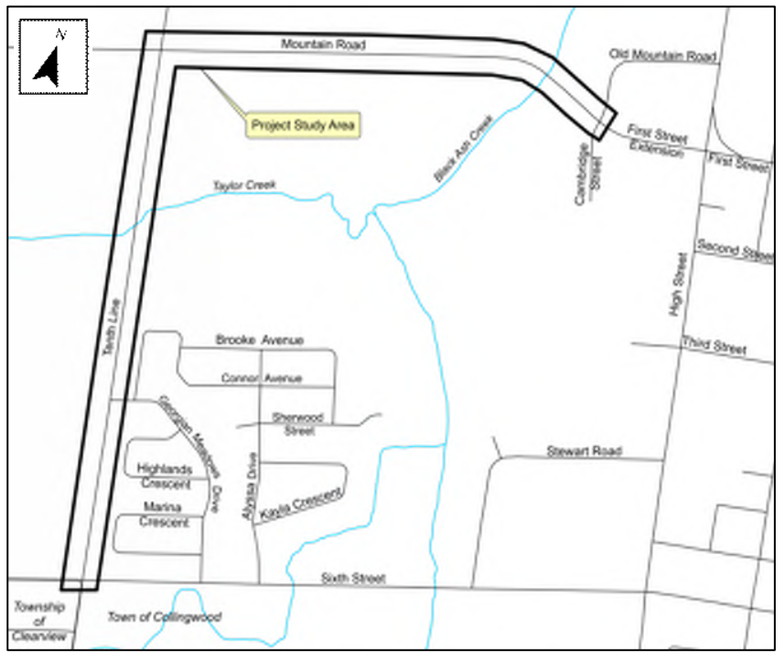
In April 2017, the Town of Collingwood initiated a Municipal Class Environmental Assessment (Class EA) and detailed design study to facilitate road and intersection improvements on the Tenth Line, from Sixth Street to Mountain Road (approximately 1.2 km) and on Mountain Road from Cambridge Street to the Tenth Line (approximately 1.3 km). This project was initiated to address capacity and operational deficiencies and to accommodate future growth. This project is following the Schedule 'C' planning and design process in accordance with the *Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015).*

Following the completion of Public Information Centre No. 2 (September 6, 2018) and the receipt of input from interested parties, the Town of Collingwood selected Design Option 3B as the Preferred Design which proposes: a reconstruction of Mountain Road to a 5 lane urban cross-section; the reconstruction of Tenth Line to a 2 lane urban cross-section; and replacement of Black Ash Creek Bridge. Improvements will also be made to intersections, servicing, and landscaping.

ENVIRONMENTAL STUDY REPORT

In accordance with Phase 4 of the Schedule 'C' Municipal Class EA process an Environmental Study Report (ESR) has been prepared to document the Class EA process completed for this undertaking and by this Notice is being placed in the public record for a 30 day public review and comment period. A digital copy of the ESR will be available on the Town of Collingwood's website on or after April 25, 2019 at www.collingwood.ca. A hard copy of the document will also be available for review during regular business hours on or after April 25, 2019 at the following location:

Collingwood Public Library
55 Ste. Marie Street
Collingwood, Ontario L9Y 0W6
Hours: Mon. to Fri. 10:00am – 9:00pm
Friday 10:00am – 8:00pm
Saturday 10:00am – 5:00pm
Sunday 1:00pm – 4:00pm



If you have any outstanding concerns regarding this project, please contact Mr. Trevor Harvey of the Town of Collingwood (contact information below) by **May 25, 2019**. If concerns regarding this project cannot be resolved with the municipality, a person or party may request that the Minister of Environment make an order for the project to comply with Part II of the Environmental Assessment Act (referred to as a Part II Order), which addresses individual environmental assessments. To submit a Part II Order request, please complete the Ministry of the Environment, Conservation and Parks (MECP) *Part II Order Request Form* available on the Town of Collingwood's website on or after April 25, 2019 at www.collingwood.ca. The form must be submitted by **May 25, 2019** to the Minister of Environment, Conservation and Parks and a duplicate copy of the request must also be forwarded to the Director, Environmental Assessment and Permissions Branch and Mr. Trevor Harvey of the Town of Collingwood at the addresses shown below:

Minister
Ministry of the Environment, Conservation and Parks
Ferguson Block, 77 Wellesley St. W, 11th Floor
Toronto ON M7A 2T5
Fax: 416-314-8452
Minister.mecp@ontario.ca

Director, Environmental Assessment and Permissions Branch
Ministry of the Environment, Conservation and Parks
135 St. Clair Ave W, 1st Floor
Toronto ON M4V 1P5
enviropermissions@ontario.ca

Mr. Trevor Harvey, BSc, C.E.T.
Project Coordinator
Town of Collingwood
545 Tenth Line North, P.O. Box 157
Collingwood, ON L9Y 3Z5
Tel: 705-445-1292
Fax: 705-445-1286
Email: tharvey@collingwood.ca

If no Part II Order requests are received by 4:00p.m. **May 25, 2019**, the Town of Collingwood intends to proceed with detailed design. Construction is planned for 2020/2021, subject to funding and the receipt of necessary approvals. Please note that ALL personal information included in a Part II Order submission - such as name, address, telephone number and property location - is collected, maintained and disclosed by the Ministry of the Environment, Conservation and Parks for the purpose of transparency and consultation. The information is collected under the authority of the Environmental Assessment Act or is collected and maintained for the purpose of creating a record that is available to the general public as described in s.37 of the Freedom of Information and Protection of Privacy Act. Personal information you submit will become part of a public record that is available to the general public unless you request that your personal information remain confidential. For more information, please contact the Ministry's Freedom of Information and Privacy Coordinator at 416-327-1434. This notice issued April 25, 2019.