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HAUL ROUTE
NOISE IMPACT ASSESSMENT REPORT FOR THE PROPOSED DEWDNEY MOUNTAIN FARMS QUARRY

'NO MITIGATION' OPTION

MUNICIPALITY OF TRENT LAKES

Prepared for

Dewdney Mountain Farms Ltd.

Prepared by

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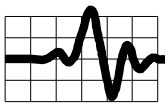
1.0 Introduction

This report addresses noise impacts from a proposed Haul Route for the proposed Dewdney Mountain Farms Quarry, DMF Quarry, a matter which has been before the Local Planning Appeals Tribunal, LPAT, Case No. PL130149. At the most recent LPAT Hearing on this matter in 2018, the practicality of proposed noise mitigation measures along the Haul Route was questioned, see LPAT Decision 2018[5]. This report shows that by controlling DMF truck traffic and speed limit along the proposed Haul Route, a 'no mitigation option' is feasible and available. This analysis of noise on the proposed External Haul Route has been carried out by Hugh Williamson Associates Inc. at the request of Dewdney Mountain Farms Ltd.

The proposed DMF Quarry is to be located on Ledge Road in the Municipality of Trent Lakes, approximately 10 km northwest of Bobcaygeon, Ontario. Planned production from the Quarry includes aggregates and dimension stone. A more detailed description of the Quarry and proposed on-site operations is contained in the 2014 Acoustic Assessment Report[1], 2014 AAR. The 2014 Acoustic Assessment Report deals with noise impacts of all on-site quarry operations, whereas the current report considers the noise impact of the proposed External Haul Route. The External Haul Route connects the proposed main entrance of the DMF Quarry to County Road 36, a major transportation corridor located approximately 4 km to the south as shown in Figure 1. The External Haul Route consists of the following two portions.

- Ledge Road Portion: Along Ledge Road from the DMF Quarry main entry south to the intersection of Ledge Road with Quarry Road, see Figures 1 and 2. This includes receptors (residences and hunt camps) identified as HR1 to HR11.

- Quarry Road Portion: Along Quarry Road from the intersection with Ledge Road south to County Road 36, see Figures 1 and 3. The Quarry Road Portion is an existing Haul Route for the Emerald Group Quarry on Ties Mountain Road. This includes receptors (residences) located along the existing Haul Route, i.e. HR12 to HR18.



Previous Reports & the Rationale of the Current Report

There are two previous reports on noise impact of the proposed External Haul Route.

- 2014 HR Report: *Haul Route Noise Impact Report for the Proposed Dewdney Mountain Farms Quarry*[2], 2 August 2014. This report was presented as evidence to the 2014 OMB Hearing[3] into the DMF Quarry.

- 2018 HR Report: *Noise Mitigation Report, Dewdney Mountain Farms Quarry*[4], 5 March 2018. This report was presented as evidence to the 2018 LPAT Hearing[5] into the DMF Quarry.

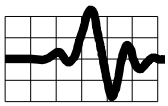
Both previous reports, 2014 HR Report and 2018 HR Report, assumed that the volume of truck traffic on the haul route due to production from the DMF Quarry would be such that noise mitigation would be required for a number of the residences located along the route. The total 2-way hourly truck volume from the DMF Quarry assumed in these previous studies was 41 trucks, say 20 trucks in and 21 trucks out, during the busiest hour of shipping.

'No Mitigation Option': The current report considers a substantially reduced volume of truck traffic from the DMF Quarry. The maximum 2-way hourly truck volume from the DMF Quarry is assumed in this report to be 14 trucks, say 6 trucks in and 8 trucks out, in the busiest hour. As shown in this report, this volume of truck activity allows the haul route to be used with essentially no noise mitigation. The word 'essentially' is used in the previous sentence because one hunt camp, HR3, located on Ledge Road is only 18 m from the road centerline, and some form of noise impact accommodation will be required for HR3. This noise impact accommodation for HR3 is discussed later in this report. For all other residences and hunt camps along the haul route, the proposed DMF truck volumes will be such that no noise mitigation will be required.

In all analyses, previous and current, it is assumed that DMF Quarry production occurs only during the daytime, 7 a.m. to 7 p.m. Actual hours may be less.

To summarize, the assumed 2-way truck volumes in the busiest hour on the haul route due to the DMF Quarry are as follows.

Previous studies (2014 HR Report & 2018 HR Report)	**41 Trucks**
Current report	**14 Trucks**



Methodology for Noise Impact Calculation and Assessment

Noise impact analysis methodology in this and previous reports[2, 4] is based on the Ministry of Environment, Conservation and Parks, MECP, *Noise Guidelines for Landfill Sites (Draft)*[6], October 1998, and the Ministry of Transportation, MTO, *Environmental Guide for Noise*[7], October 2006. This methodology was presented in detail and accepted at the 2014 OMB Hearing[3]. Pertinent details of the methodology are as follows.

- The *Noise Guidelines for Landfill Sites (Draft)*[6] states that noise impact should be calculated at residential points of reception along the haul route during the busiest hour.

- The *Noise Guidelines for Landfill Sites (Draft)*[6] also states that noise levels are calculated from traffic volumes using the MECP traffic noise model STAMSON[8,9].

- The *Environmental Guide for Noise*[7] states that where no dominant nose source currently exists, then 45 dBA should be assumed as the ambient sound level in a quiet rural area. The 2014 OMB Hearing[3] established that, with the addition of DMF Quarry traffic, (daytime) noise levels up to 53 dBA calculated on the above basis are acceptable without noise mitigation.

To assess noise impacts, traffic volumes have been forecast 10 years into the future, to 2030. Basing noise mitigation on traffic volumes forecast 10 years into the future is established practice according to current MECP Guidelines[10].

The 2030 traffic volumes for the Haul Route used in this study are based on a study[11] conducted by traffic engineering specialist, Tranplan Associates. A summary of the assumptions used in this study are as follows.

- The level of anticipated activity on the Haul Route proposed by the proponent of the DMF Quarry. Note that the level of DMF activity on the Haul Route has been significantly reduced compared to previous studies[2,4]. The level of anticipated activity over the day is set out in Appendix 1: Exhibits 2 to 4 for various peak hours,, and for the whole day, see the Dewdney Mountain Quarry Trip Generation Profile. DMF Quarry traffic volumes includes employee vehicles and service trucks, as well as haul trucks.

- Anticipated traffic generated by the Emerald Group Quarry located on Ties Mountain Road, see Figures 1, 2, 3 and 5. The Emerald Group Quarry is a dimension stone quarry which shares the use of the Quarry Road portion of the Haul route. For a dimension stone quarry of this size it is estimated that up to three trucks would be loaded per day, generating 6 truck trips per day, 3 in and 3 out.

- The level of background traffic forecast[11] to the year 2030. Background traffic is traffic generated by local residents.

Further details are available in Appendix 1 and the Tranplan Report[11].

The posted speed limit on Quarry Road is 50 kph whereas there is currently no posted speed limit on Ledge Road. The proposed speed limit on whole of the proposed Haul Route is 40 kph.

According to *Noise Guidelines for Landfill Sites (Draft)*[6] worst case hour noise impacts should be assessed. Accordingly, this report considers the following three peak hours as identified in the Tranplan Report.

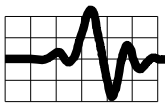
- AM Peak Hour (7 – 8 AM), see Exhibit 3, Appendix 1.
- PM Peak Hour (4 – 5 PM), see Exhibit 4, Appendix 1.
- Early AM Hour (6 – 7 AM), see Exhibit 2, Appendix 1. The DMF Quarry starts operations at 7 AM, however, it is anticipated that up to four trucks will arrive at the gates of the Quarry prior to 7 AM ready for loading to start at 7 AM. Prior to 7 AM is considered to be nighttime by the MECP, hence the no-mitigation sound level limit is reduced by 5 dBA, from 53 dBA applicable during the day, as established in the 2014 OMB Hearing[3], to 48 dBA for the early AM hour (6 – 7 AM).

2.0 Haul Route Points of Reception and Assessment Details

Sound levels are calculated with the MECP STAMSON[9] software using the peak 1-hour traffic volumes, Appendix 1, taken from the Tranplan Report[11]. In calculating the sound level at a point of reception, STAMSON considers various factors including the following.

- Distance between the road and the point of reception.
- The speed limit on the road.
- Vehicle classification: Cars, Medium Trucks & Heavy Trucks
- Sound attenuation provided by wooded areas (of depth greater than 30 m) between the road and the point of reception.
- Changes in elevation between the road and the point of reception.
- Uphill road gradients causing an increase in vehicle noise.
- Presence of barriers between the road and the point of reception where applicable. No barriers have been assumed in the calculations presented in this report.

Residences/dwellings along the proposed Haul Route are considered as noise sensitive in this analysis, consistent with MECP guidelines[10] for the assessment of transportation noise. In the current assessment we have included all permanent residences and the hunt camps. However, the municipal Zoning By-law[12] strictly limits the time period for the use of the hunt camps, and hence, an argument could be made that hunt camps should not be considered as noise sensitive under MECP guidelines.



For a residence/dwelling the location of the point of reception, POR, is an outdoor location 3 m closer to the road from the most exposed part of the dwelling and 1.5 m above ground. This is consistent with the definition of points of reception for assessment of transportation noise in MTO[7] and MECP[10] guidelines. (Using 1.5 m above ground as in the MECP guideline, rather than 1.2 m above ground as used in the MTO Guide for Noise, is more conservative because 1.5 m will give slightly higher sound levels.)

Twenty residences along the External Haul Route, including Hunt Camps, have been identified as noise sensitive points of reception, being potentially impacted by noise. (Two new residences, designated as HR5A and HR10A, constructed since 2014 have been added.) The corresponding points of reception, labelled HR1 to HR18, are listed in Table 1 and shown in Figures 1 to 5. Table 1 provides the parameters used in STAMSON to calculate sound levels at each of the points of reception.

The residence which is furthest from the Haul Route is HR17, 164 m from the centreline of the Haul Route.

HR1 to HR10A are located along the Ledge Road Portion of the Haul Route.

HR12 to HR18 are located along the Quarry Road Portion of the Haul Route.

HR11, a residence on Ties Mountain Road and near the intersection of Ledge and Quarry Roads.

H11 to H18 are also located on the haul route for the Emerald Group Quarry.

Distances from the points of reception to the centreline of the existing roads have been obtained either from Google Earth images or from measurements made by Lakeview Engineering.

The MECP traffic noise methodology[8], and the SAMSON[9] software, classifies vehicles into the following three categories.

C	(Cars) All vehicles having two axles and four wheels designed primarily for the transportation of nine or fewer passengers or the transportation of cargo (e.g. vans and light trucks). Generally, the gross vehicle weight is less than 4,500 kg.
MT	Medium Trucks. All vehicles having two axles and six wheels designed for the transportation of cargo. Generally, the gross vehicle weight is greater than 4,500 kg but less than 12,000 kg. City buses are also included in this category.
HT	Heavy Trucks. All vehicles having three or more axles and designed for the transportation of cargo. Generally, gross vehicle weight is greater than 12,000 kg. Intercity buses are also included in this category.

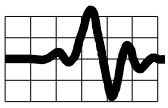


Table 1: Receptor Details

Receptor No.	Civic Address 2020	Description	Distance, Dwelling to HR, m	Distance Measure-ment Method	Point of Reception (POR) Distance to HR, m	Approx. Dwelling Relative Elevation, m	Road Grade %	Vegetation to Dwelling	Speed Limit, kph
			Note 1	Note 1	Note 2		Note 3		
HR1	380 Ledge Rd.	Hunt Camp	146	G	143	0	insig.	Wooded	40
HR2	248 Ledge Rd.	Hunt Camp	111	G	108	0	insig.	Wooded	40
HR3	251 Ledge Rd.	Hunt Camp	18	L	15	0	insig.	Open	40
HR4	130 Ledge Rd.	Residence	133	G	130	0	insig.	Wooded	40
HR5	125 Ledge Rd.	Residence	51.8	L	48.8	2	insig.	Open	40
HR5A	97 Ledge Rd.	Residence	65	G	62	0	Insig.	Open	40
HR6	91 Ledge Rd.	Hunt Camp	167	L	164	0	insig.	Wooded	40
HR7	91 Ledge Rd.	Residence	41.8	L	38.8	0	insig.	Open	40
HR8	61 Ledge Rd.	Residence	77	G	74	0	insig.	Wooded	40
HR9	39 Ledge Rd.	Residence	64	G	61	0	insig.	Wooded	40
HR10	21 Ledge Rd.	Residence	80	G	77	0	insig.	Open	40
HR10A	19 Ledge Rd.	Residence	101	G	98	0	insig.	Wooded	40

Continued

Table 1 Notes:
1. Distance measuring method: G - measured by Google Earth, L - measured by Lakeview Engineering. HR = Haul Route centre line.
2. Point of reception is an outdoor location taken to be 3 m from the dwelling facade and at a height of 1.5 m.
3. Insig. = road grade adjustment in STAMSON is zero when the grade is less than 2% and the change in elevation is less than 6 m. Applies only to trucks travelling uphill. This effect only applies at HR15 and HR16, in which cases the impacts for uphill and downhill traffic are calculated separately then combined.
4. HR11 receives noise both from Ledge Road, HR11L, and Ties Mountain Road, HR11T. Noise impacts at HR11 are calculated separately for Ledge Road and Ties Mountain Road, then combined in the noise results shown.

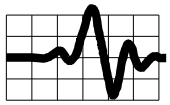


Table 1: Receptor Details (continued)

Receptor No.	Civic Address 2020	Description	Distance, Dwelling to HR, m	Distance Measure-ment Method	Point of Reception (POR) Distance to HR, m	Approx. Dwelling Relative Elevation, m	Road Grade %	Vegetation to Dwelling	Speed Limit, kph
			Note 1	Note 1	Note 2		Note 3		
HR11L[4]	1 Ties Mtn. Rd.	Residence	75.4	L	72.4	0	insig.	Open	40
HR11T[4]	1 Ties Mtn. Rd.	Residence	18	G	15	0	Insig.	Open	40
HR12	120 Quarry Rd.	Residence	55	G	52	-1.5	insig.	Open	40
HR13	111 Quarry Rd.	Residence	49	G	46	-1.5	insig.	Wooded	40
HR14	110 Quarry Rd.	Residence	68	G	65	-1.5	insig.	Open	40
HR15	76 Quarry Rd.	Residence	47.3	L	44.3	-1.5	4	wood < 30m	40
HR16	71 Quarry Rd.	Residence	50.0	L	47	2	4	wood < 30m	40
HR17	61 Quarry Rd.	Residence	164	G	161	-1.5	insig.	Wooded	40
HR18	20 Quarry Rd.	Residence	43.6	L	40.6	-1.5	insig.	Open	40

Table 1 Notes:
1. Distance measuring method: G - measured by Google Earth, L - measured by Lakeview Engineering. HR = Haul Route centre line.
2. Point of reception is an outdoor location taken to be 3 m from the dwelling facade and at a height of 1.5 m.
3. Insig. = road grade adjustment in STAMSON is zero when the grade is less than 2% and the change in elevation is less than 6 m. Applies only to trucks travelling uphill. This effect only applies at HR15 and HR16, in which cases the impacts for uphill and downhill traffic are calculated separately then combined.
4. HR11 receives noise both from Ledge Road, HR11L, and Ties Mountain Road, HR11T. Noise impacts at HR11 are calculated separately for Ledge Road and Ties Mountain Road, then combined in the noise results shown.

3.0 Sound Level Results and Assessment

Calculated sound levels at the points of reception are presented in Tables 2, 3 and 4 for forecast 2030 traffic levels for the three peak hours under consideration. The calculations are based on the MECP Draft Landfill Guidelines[6], where the evaluation period is the busiest 1-hour. The limit criteria, where noise mitigation would be required, are as follows.

53 dBA as established in the 2014 OMB Decision[3] for daytime impacts

48 dBA for nighttime impacts, 5 dBA below the daytime limit as per MECP practice[10]

Results are presented for the three peak hour periods in the following Tables.

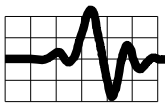
- Table 2, AM Peak Hour, 7 – 8 AM, see Exhibit 3 for 2030 traffic data
- Table 3, PM Peak Hour, 4 – 5 PM, see Exhibit 4 for 2030 traffic data
- Table 4, Early AM Peak Hour, 6 – 7 AM, see Exhibit 2 for 2030 traffic data

The results in Table 2, 3 and 4 show the following.

- Calculated noise impacts at all receptors, except HR3 which is discussed below, are slightly greater during the morning peak hour than the afternoon peak hour, but calculated noise levels in both daytime peak hours, AM and PM, are below the daytime no mitigation limit of 53 dBA, see Tables 2 and 3.
- The calculated noise impacts at all receptors, except HR3 which is discussed below, for the early morning peak hour, 6 – 7 AM, are below the nighttime no mitigation limit of 48 dBA, see Table 4.
- The four greatest calculated noise impacts, apart from HR3 discussed below, occur at HR7, HR15, FR16 and HR18. The sound levels at these four points of reception are similar and all below the no mitigation limits.

Accommodation for noise impact at HR3

As shown in Tables 2, 3 and 4, the calculated sound levels at HR3 are above the no mitigation limits (daytime 53 dBA and nighttime 48 dBA). Some form of accommodation will be required with the Owner of the lands at HR3 in recognition to the location of this Haul Route and the level of noise impacting this HR3 sensitive receptor.



It is observed that the hunt camp at HR3 is not a large building. This hunt camp could be relocated or re-built further from Ledge Road. If the relocated building were to be 50 m from the centre line of Ledge Road, the sound levels would be similar to HR5 and no noise mitigation works would be required.

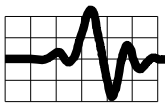


Table 2 Calculated Sound Levels for the AM Peak Hour (7 – 8 AM) based on MECP Draft Landfill Guidelines[6]

Receptor No.	Description	Distance Dwelling to HR, m	Morning Peak, 7 am to 8 am, Exhibit 2								
			Traffic Volumes[a]							Sound Level 1-hour Leq	
			in C	in MT	in HT	out C	out MT	out HT	2-way Total	Calculated dBA	Limit[b] dBA
HR1	Hunt Camp, R5	146	3	1	6	6	1	8	25	36.37	53
HR2	Hunt Camp, R6	111	3	1	6	6	1	8	25	37.99	53
HR3	Hunt Camp, R7	18	3	1	6	6	1	8	25	**58.85**	53
HR4	Residence	133	3	1	6	6	1	8	25	36.92	53
HR5	Residence	51.8	3	1	6	6	1	8	25	50.89	53
HR5A	Residence	62	3	1	6	6	1	8	25	48.79	53
HR6	Hunt Camp	167	3	1	6	6	1	8	25	35.57	53
HR7	Residence	41.8	3	1	6	6	1	8	25	**52.11**	53
HR8	Residence	77	3	1	6	6	1	8	25	45.18	53
HR9	Residence	64	3	1	6	6	1	8	25	46.30	53
HR10	Residence	80	3	1	6	6	1	8	25	47.25	53
HR10A	Residence	101	3	1	6	6	1	8	25	43.55	53
HR11[c]	Residence	75.4	3	1	6	6	1	8	25	50.15	53
HR12	Residence	55	6	1	7	12	1	8	35	50.67	53
HR13	Residence	49	6	1	7	12	1	8	35	48.57	53
HR14	Residence	68	6	1	7	12	1	8	35	49.13	53
HR15	Residence	47.3	6	1	7	12	1	8	35	**52.31**	53
HR16	Residence	50.0	6	1	7	12	1	8	35	**51.96**	53
HR17	Residence	164	6	1	7	12	1	8	35	36.56	53
HR18	Residence	43.6	6	1	7	12	1	8	35	**52.38**	53

Notes:

a. Traffic volumes: C = Cars, MT = Medium Trucks, HT = Heavy Trucks (MECP definitions for STAMSON).
b. Limit for no mitigation.
c. Calculated noise at HR11 includes traffic on Ties Mountain Road as well as the DMF Haul Route.

Table 3 Calculated Sound Levels for the PM Peak Hour (4 – 5 PM) based on MECP Draft Landfill Guidelines[6]

Receptor No.	Description	Distance Dwelling to HR, m	Afternoon Peak, 4 pm to 5 pm, Exhibit 3								
			Traffic Volumes[a]							Sound Level 1-hour Leq	
			in C	in MT	in HT	out C	out MT	out HT	2-way Total	Calculated dBA	Limit[b] dBA
HR1	Hunt Camp, R5	146	7	1	6	4	1	6	25	35.73	53
HR2	Hunt Camp, R6	111	7	1	6	4	1	6	25	37.36	53
HR3	Hunt Camp, R7	18	7	1	6	4	1	6	25	**58.21**	53
HR4	Residence	133	7	1	6	4	1	6	25	36.28	53
HR5	Residence	51.8	7	1	6	4	1	6	25	50.26	53
HR5A	Residence	62	7	1	6	4	1	6	25	48.15	53
HR6	Hunt Camp	167	7	1	6	4	1	6	25	34.94	53
HR7	Residence	41.8	7	1	6	4	1	6	25	**51.47**	53
HR8	Residence	77	7	1	6	4	1	6	25	44.54	53
HR9	Residence	64	7	1	6	4	1	6	25	45.66	53
HR10	Residence	80	7	1	6	4	1	6	25	46.61	53
HR10A	Residence	101	7	1	6	4	1	6	25	42.92	53
HR11[c]	Residence	75.4	7	1	6	4	1	6	25	49.77	53
HR12	Residence	55	14	1	6	7	1	7	36	50.09	53
HR13	Residence	49	14	1	6	7	1	7	36	47.99	53
HR14	Residence	68	14	1	6	7	1	7	36	48.55	53
HR15	Residence	47.3	14	1	6	7	1	7	36	**51.71**	53
HR16	Residence	50.0	14	1	6	7	1	7	36	**51.36**	53
HR17	Residence	164	14	1	6	7	1	7	36	35.98	53
HR18	Residence	43.6	14	1	6	7	1	7	36	**51.79**	53

Notes:

a. Traffic volumes: C = Cars, MT = Medium Trucks, HT = Heavy Trucks (MECP definitions for STAMSON).
b. Limit for no mitigation.
c. Calculated noise at HR11 includes traffic on Ties Mountain Road as well as the DMF Haul Route.

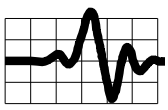


Table 4 Calculated Sound Levels for the Early AM Peak Hour (6 – 7 AM) based on MECP Draft Landfill Guidelines[6]

Receptor No.	Description	Distance Dwelling to HR, m	Early am, 6 am to 7 am, Exhibit 1								
			Traffic Volumes[a]							Sound Level 1-hour Leq	
			in C	in MT	in HT	out C	out MT	out HT	2-way Total	Calculated dBA	Limit[b] dBA
HR1	Hunt Camp, R5	146	5	0	4	4	0	0	13	30.88	48
HR2	Hunt Camp, R6	111	5	0	4	4	0	0	13	32.50	48
HR3	Hunt Camp, R7	18	5	0	4	4	0	0	13	**53.37**	48
HR4	Residence	133	5	0	4	4	0	0	13	31.43	48
HR5	Residence	51.8	5	0	4	4	0	0	13	45.41	48
HR5A	Residence	62	5	0	4	4	0	0	13	43.30	48
HR6	Hunt Camp	167	5	0	4	4	0	0	13	30.08	48
HR7	Residence	41.8	5	0	4	4	0	0	13	**46.63**	48
HR8	Residence	77	5	0	4	4	0	0	13	39.69	48
HR9	Residence	64	5	0	4	4	0	0	13	40.81	48
HR10	Residence	80	5	0	4	4	0	0	13	41.76	48
HR10A	Residence	101	5	0	4	4	0	0	13	38.07	48
HR11[c]	Residence	75.4	5	0	4	4	0	0	13	42.70	48
HR12	Residence	55	9	0	4	8	0	0	21	44.91	48
HR13	Residence	49	9	0	4	8	0	0	21	42.81	48
HR14	Residence	68	9	0	4	8	0	0	21	43.36	48
HR15	Residence	47.3	9	0	4	8	0	0	21	**47.55**	48
HR16	Residence	50.0	9	0	4	8	0	0	21	**46.21**	48
HR17	Residence	164	9	0	4	8	0	0	21	30.75	48
HR18	Residence	43.6	9	0	4	8	0	0	21	**46.63**	48

Notes:

a. Traffic volumes: C = Cars, MT = Medium Trucks, HT = Heavy Trucks (MECP definitions for STAMSON).
b. Limit for no mitigation.
c. Calculated noise at HR11 includes traffic on Ties Mountain Road as well as the DMF Haul Route.

4.0 Alternative Noise Analysis using NPC-300

The MECP issued NPC-300[10], *Stationary and Transportation Sources - Approval and Planning*, in August 2013. Previously, the 1998 MECP Draft Landfill Noise Guidelines[6] were often used in the analysis of aggregate haul routes, however, a more recent review[13] of an aggregate haul route by the MECP has established that the methodology and criteria set out in Part 3 of NPC-300 is now the most appropriate assessment methodology. Two aspects of the NPC-300 methodology which differ from the Draft Landfill Noise Guidelines are the following.

- NPC-300 uses two evaluation periods for the assessment of noise from road transportation.
    - For Daytime impacts, the evaluation period is 7 AM to 11 PM, 16 hours.
    - For Nighttime impacts, the evaluation period is 11 PM to 7 AM, 8 hours.

- NPC-300 sets the following no mitigation limits.
    - Daytime 55 dBA
    - Nighttime 50 dBA

Note that the DMF Quarry proposes to operate only during the hours 7 AM to 7 PM. The anticipated DMF related daily heavy truck traffic will be as follows.

- 74 trucks inbound and 74 trucks outbound are anticipated each 24-hour day, see Appendix 1, DMF Trip Generation Profile.
- It is anticipated that up to 4 trucks may arrive at the DMF Quarry site between 6 and 7 AM, awaiting operations and truck loading to start at 7 AM. This is during the MECP nighttime period.
- Otherwise all DMF related heavy truck traffic will be during the MECP daytime.

The results of an alternative analysis, using on NPC-300, are shown in Tables 5 and 6 for daytime and nighttime respectively.

The results in Tables 5 and 6 show that calculated noise impacts at all points of reception along the Haul Route, apart from HR3, are well below the NPC-300 no-mitigation limits of 55 dBA daytime and 50 dBA nighttime. The highest daytime level, at HR15, is 50.25 dBA, significantly below the NPC-300 daytime no-mitigation limit of 55 dBA. The calculated nighttime noise impacts, including HR3, are all well below the nighttime no-mitigation noise limit of 50 dBA.

Using NPC-300 as the basis of noise impact assessment, Receptor HR3 will require noise accommodation in relation to daytime impacts, as discussed in the previous section.

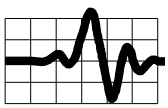


Table 5 Calculated Sound Levels for Daytime Traffic (7 AM – 11 PM) based on MECP Guideline NPC-300[10]

Receptor No.	Description	Distance Dwelling to HR, m	Daytime, 16 hours, 7 am to 11 pm, Exhibit 4								
			Traffic Volumes[a]							Sound Level 16-hour Leq	
			in C	in MT	in HT	out C	out MT	out HT	2-way Total	Calculated dBA	Limit[b] dBA
HR1	Hunt Camp, R5	146	48	3	70	51	3	74	249	34.37	55
HR2	Hunt Camp, R6	111	48	3	70	51	3	74	249	35.99	55
HR3	Hunt Camp, R7	18	48	3	70	51	3	74	249	**56.85**	55
HR4	Residence	133	48	3	70	51	3	74	249	34.92	55
HR5	Residence	51.8	48	3	70	51	3	74	249	48.90	55
HR5A	Residence	62	48	3	70	51	3	74	249	46.79	
HR6	Hunt Camp	167	48	3	70	51	3	74	249	33.58	55
HR7	Residence	41.8	48	3	70	51	3	74	249	**50.11**	55
HR8	Residence	77	48	3	70	51	3	74	249	43.18	55
HR9	Residence	64	48	3	70	51	3	74	249	44.30	55
HR10	Residence	80	48	3	70	51	3	74	249	45.25	55
HR10A	Residence	101	48	3	70	51	3	74	249	41.56	55
HR11[c]	Residence	75.4	48	3	70	51	3	74	249	47.39	55
HR12	Residence	55	92	4	73	95	4	77	345	48.57	55
HR13	Residence	49	92	4	73	95	4	77	345	46.47	55
HR14	Residence	68	92	4	73	95	4	77	345	47.03	55
HR15	Residence	47.3	92	4	73	95	4	77	345	**50.26**	55
HR16	Residence	50.0	92	4	73	95	4	77	345	**49.86**	55
HR17	Residence	164	92	4	73	95	4	77	345	34.46	55
HR18	Residence	43.6	92	4	73	95	4	77	345	**50.28**	55

Notes:

a. Traffic volumes: C = Cars, MT = Medium Trucks, HT = Heavy Trucks (MECP definitions for STAMSON).
b. Limit for no mitigation.
c. Calculated noise at HR11 includes traffic on Ties Mountain Road as well as the DMF Haul Route.

Table 6 Calculated Sound Levels for Nighttime Traffic (11 PM – 7 AM) based on MECP Guideline NPC-300[10]

Receptor No.	Description	Distance Dwelling to HR, m	Nighttime, 8 hours, 11 pm to 7 am, Exhibit 5								
			Traffic Volumes[a]							Sound Level 8-hour Leq	
			in C	in MT	in HT	out C	out MT	out HT	2-way Total	Calculated dBA	Limit[b] dBA
HR1	Hunt Camp, R5	146	8	0	4	5	0	0	17	21.84	50
HR2	Hunt Camp, R6	111	8	0	4	5	0	0	17	23.47	50
HR3	Hunt Camp, R7	18	8	0	4	5	0	0	17	**44.38**	50
HR4	Residence	133	8	0	4	5	0	0	17	22.39	50
HR5	Residence	51.8	8	0	4	5	0	0	17	36.40	50
HR5A	Residence	62	8	0	4	5	0	0	17	34.28	50
HR6	Hunt Camp	167	8	0	4	5	0	0	17	21.04	50
HR7	Residence	41.8	8	0	4	5	0	0	17	**37.62**	50
HR8	Residence	77	8	0	4	5	0	0	17	30.67	50
HR9	Residence	64	8	0	4	5	0	0	17	31.79	50
HR10	Residence	80	8	0	4	5	0	0	17	32.74	50
HR10A	Residence	101	8	0	4	5	0	0	17	29.04	50
HR11[c]	Residence	75.4	8	0	4	5	0	0	17	33.68	50
HR12	Residence	55	14	0	4	11	0	0	29	35.94	50
HR13	Residence	49	14	0	4	11	0	0	29	33.84	50
HR14	Residence	68	14	0	4	11	0	0	29	34.39	50
HR15	Residence	47.3	14	0	4	11	0	0	29	**38.55**	50
HR16	Residence	50.0	14	0	4	11	0	0	29	**37.23**	50
HR17	Residence	164	14	0	4	11	0	0	29	21.75	50
HR18	Residence	43.6	14	0	4	11	0	0	29	**37.66**	50

Notes:

a. Traffic volumes: C = Cars, MT = Medium Trucks, HT = Heavy Trucks (MECP definitions for STAMSON).
b. Limit for no mitigation.
c. Calculated noise at HR11 includes traffic on Ties Mountain Road as well as the DMF Haul Route.

5.0 Discussion and Summary

This noise impact assessment of the proposed Haul Route for the Dewdney Mountain Farms Quarry presents a 'no mitigation' option for the operation of the haul route. The 'no mitigation' option is based on a proposed level of DMF Quarry related activity on the Haul Route which is described in detail in the Tranplan Associates Report[11] and is summarised below. The proposed level of DMF Quarry related activity on the Haul Route is significantly less that the levels considered in previous noise studies which were carried out in 2014[2] and 2018[4].

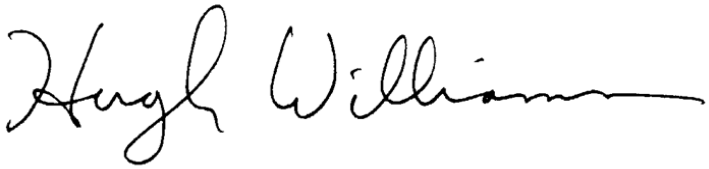
- The maximum hourly DMF related two-way heavy truck traffic is 14, say 6 trucks in and 8 trucks out.

- The 24-hour daily total DMF related two-way heavy truck traffic is 148, 74 trucks in and 74 trucks out. (In the assessment, 4 empty trucks are assumed to arrive at the entry to the DMF quarry between 6 and 7 a.m., the remaining 144 two-way truck traffic is assumed to take place during the operating hours of the Quarry, 7 a.m. to 7 p.m.)

- The speed limit on the proposed Haul Route is to be 40 km/hour.

For the proposed level of DMF activity, no noise mitigation is required at any of the receptors along the haul route, except for one hunt camp designated as HR3 in this study. Accommodating the noise impacts at HR3 is discussed in Section 3.0 of this report.

The analysis of traffic noise impacts is based MECP Draft Landfill Noise Guidelines[10] and the daytime no-mitigation limit of 53 dBA established in the 2014 OMB Decision[3]. However, the MECP currently use their guideline NPC-300[10], *Stationary and Transportation Sources - Approval and Planning*, for the assessment of noise from transportation sources, such as aggregate haul routes. An analysis based on NPC-300 is presented in Section 4.0 of this report and shows that the currently proposed level of DMF Quarry related activity[11] on the Haul Route will readily meet the no mitigation noise limits.



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Member, Canadian Acoustical Society

References

1. Hugh Williamson Associates Inc., *Acoustic Assessment of the Proposed Dewdney Mountain Farms Quarry*, July 2014. 2014 AAR

2. Hugh Williamson Associates Inc., *Haul Route Noise Impact Report for the Proposed Dewdney Mountain Farms Quarry*, 2 August 2014. 2014 HR Report

3. Ontario Municipal Board, Case No. PL130149, *Decision and Order*, issued 5 February 2015. 2014 OMB Decision

4. WSP Canada Inc., *Noise Mitigation Report, Dewdney Mountain Farms Quarry*, 5 March 2018. 2018 HR Report

5. Local Planning Appeal Tribunal, Case No. PL130149, Decision and Order, issued 18 April 2018. 2018 LPAT Decision

6. Ministry of Environment Publication, *Noise Guidelines for Landfill Sites (Draft)*, October 1998.

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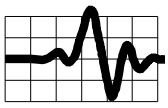
10. Ministry of Environment Publication NPC-300, *Stationary and Transportation Sources - Approval and Planning*, August 2013.

11. Tranplan Associates, *Noise Study Traffic Report for a Proposed Haul Route, Dewdney Mountain Farms Quarry*, March 2020.

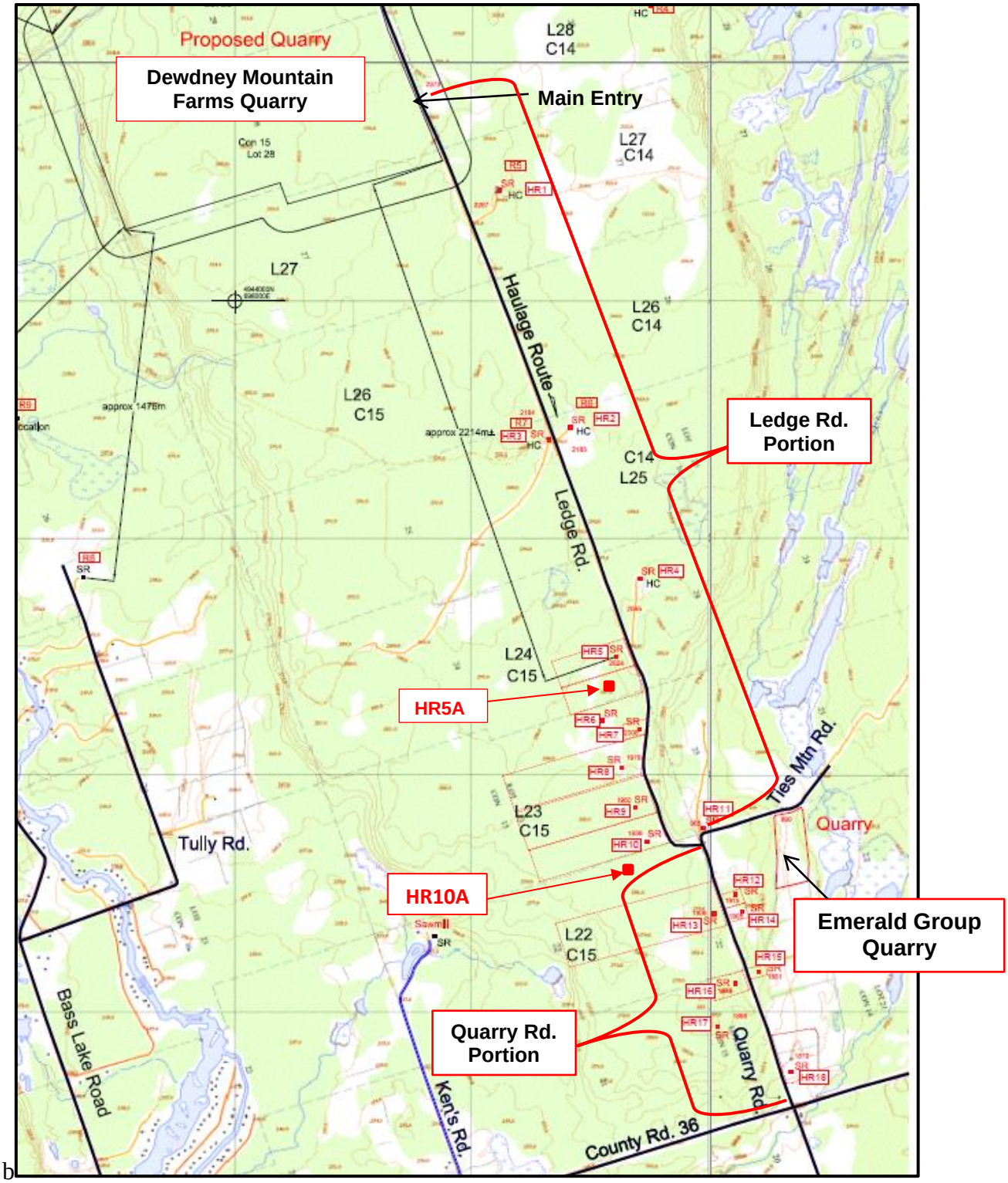
12. Municipality of Trent Lakes, *Zoning By-law B2014-070*, Section 3.41, July 15, 2014.

13. Correspondence, MECP review of the haul route for the proposed Lippa Quarry, 2018.



Figures

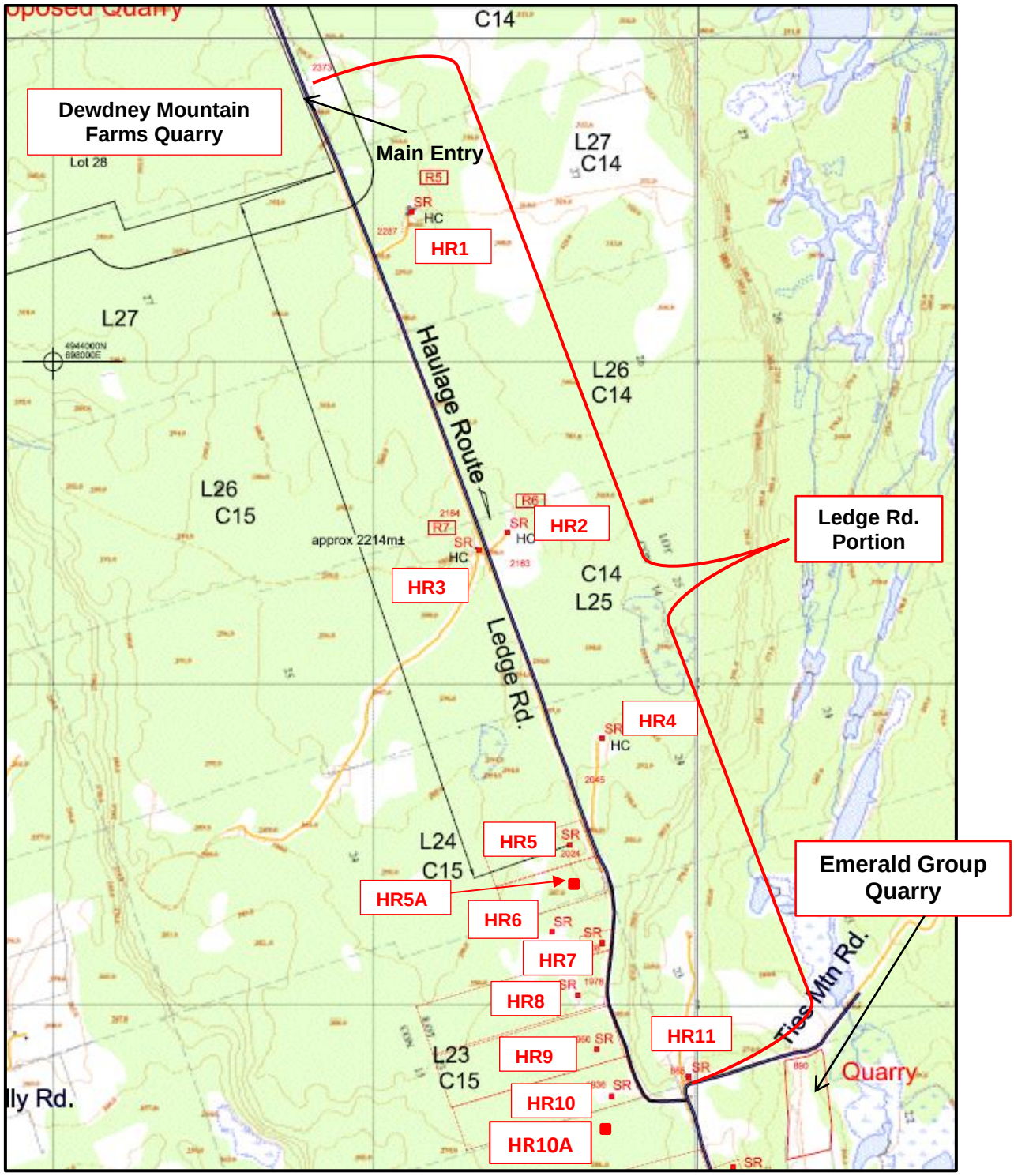
Figure 1: Overview of Proposed External Haul Route



b

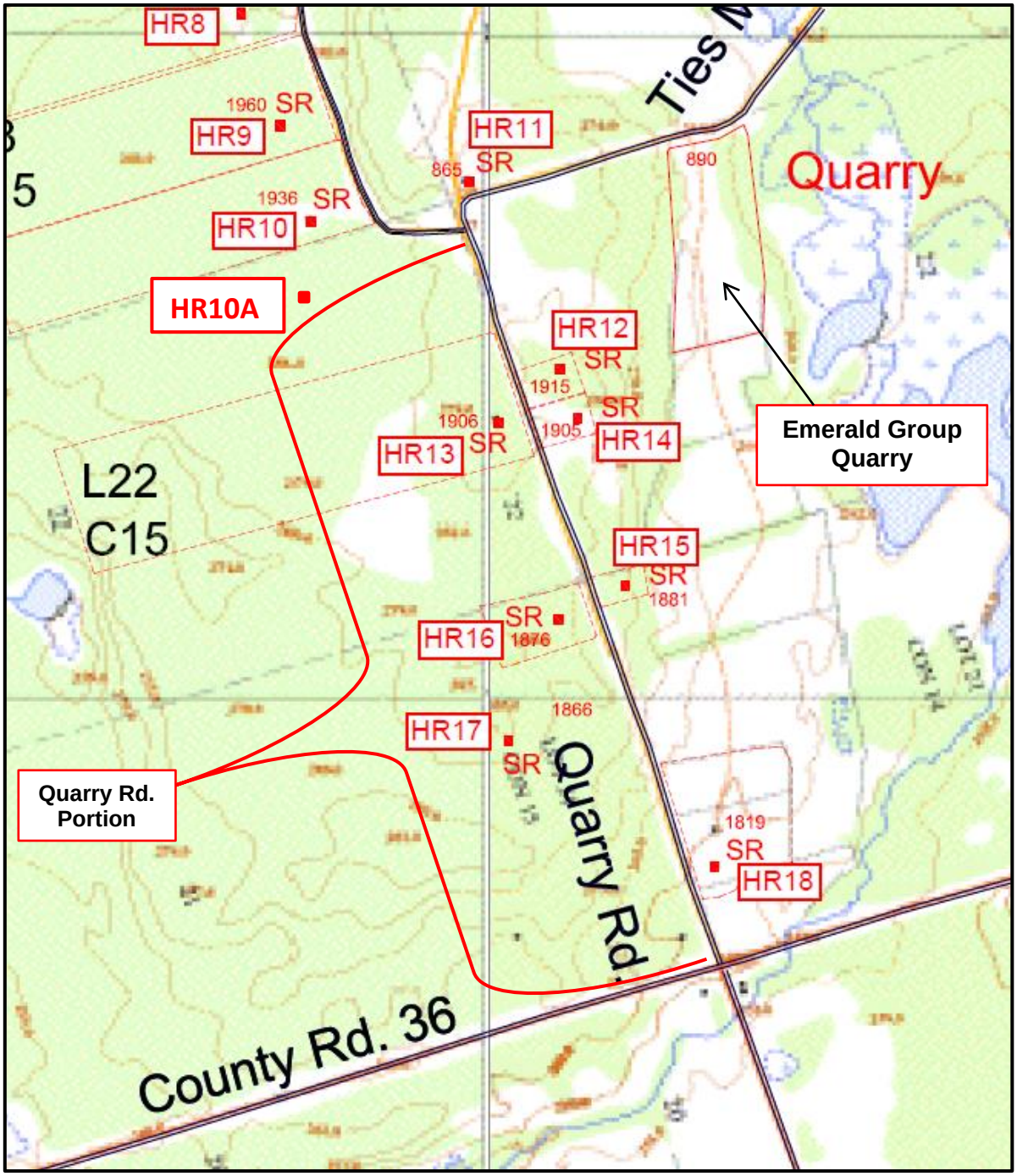
Grid spacing: 1 km X 1 km

Figure 2: Proposed External Haul Route, Ledge Road Portion



Grid spacing: 1 km X 1 km **Noise sensitive receptors (HRx)**

Figure 3: Proposed External Haul Route, Quarry Road Portion



Grid spacing: 1 km X 1 km **Noise sensitive receptors (SR)**

Figure 4: Google Earth Image, External Haul Route – Northern Part

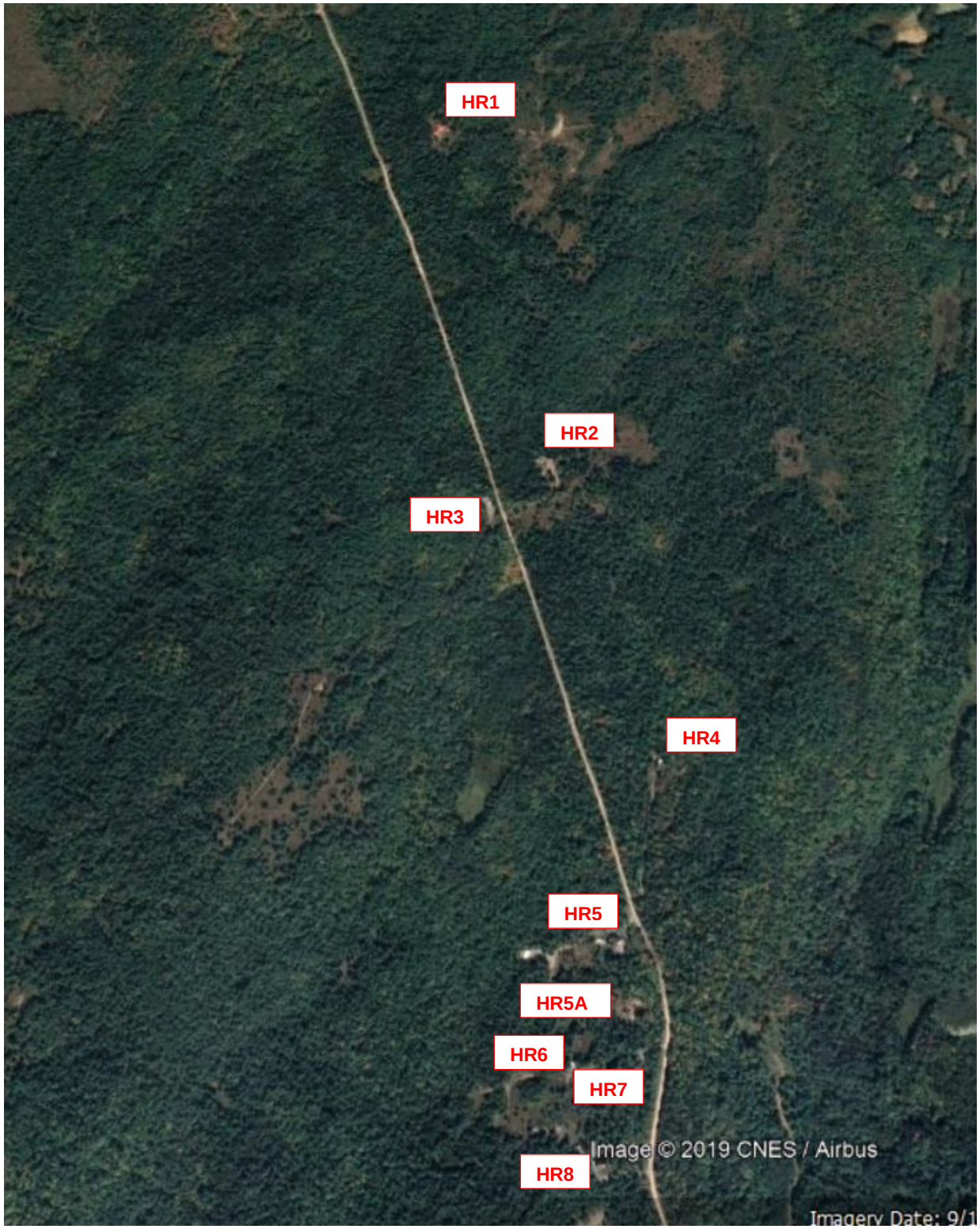


Figure 5: Google Earth Image, External Haul Route – Southern Part

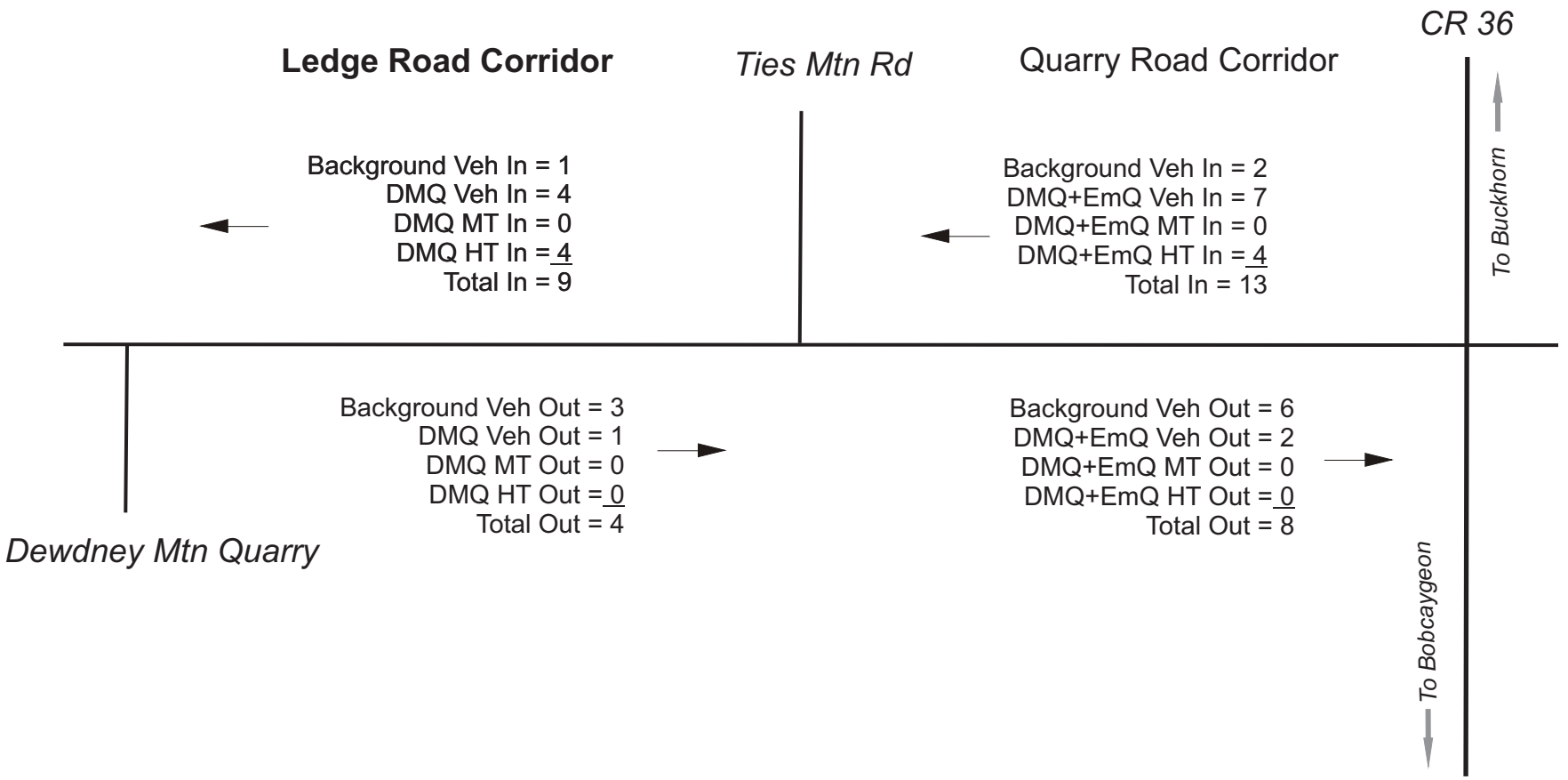
Appendix 1

Forecast Traffic Volumes

Extracted from 2020 Tranplan Traffic Report

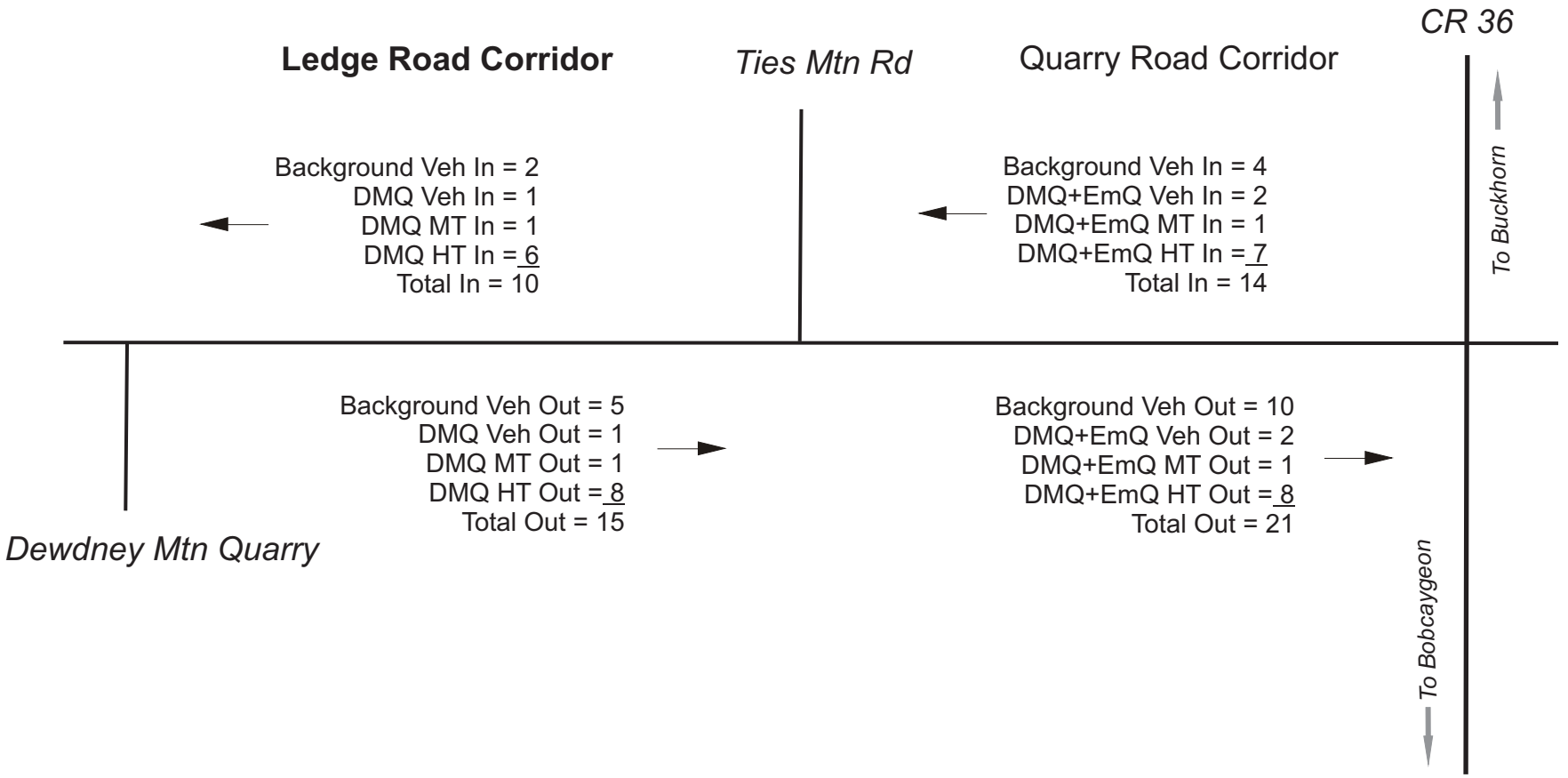
Contents:

Exhibit 2
2030 Night Peak Hour (6 - 7 AM)
Traffic Stream - Ledge/Quarry Corridors



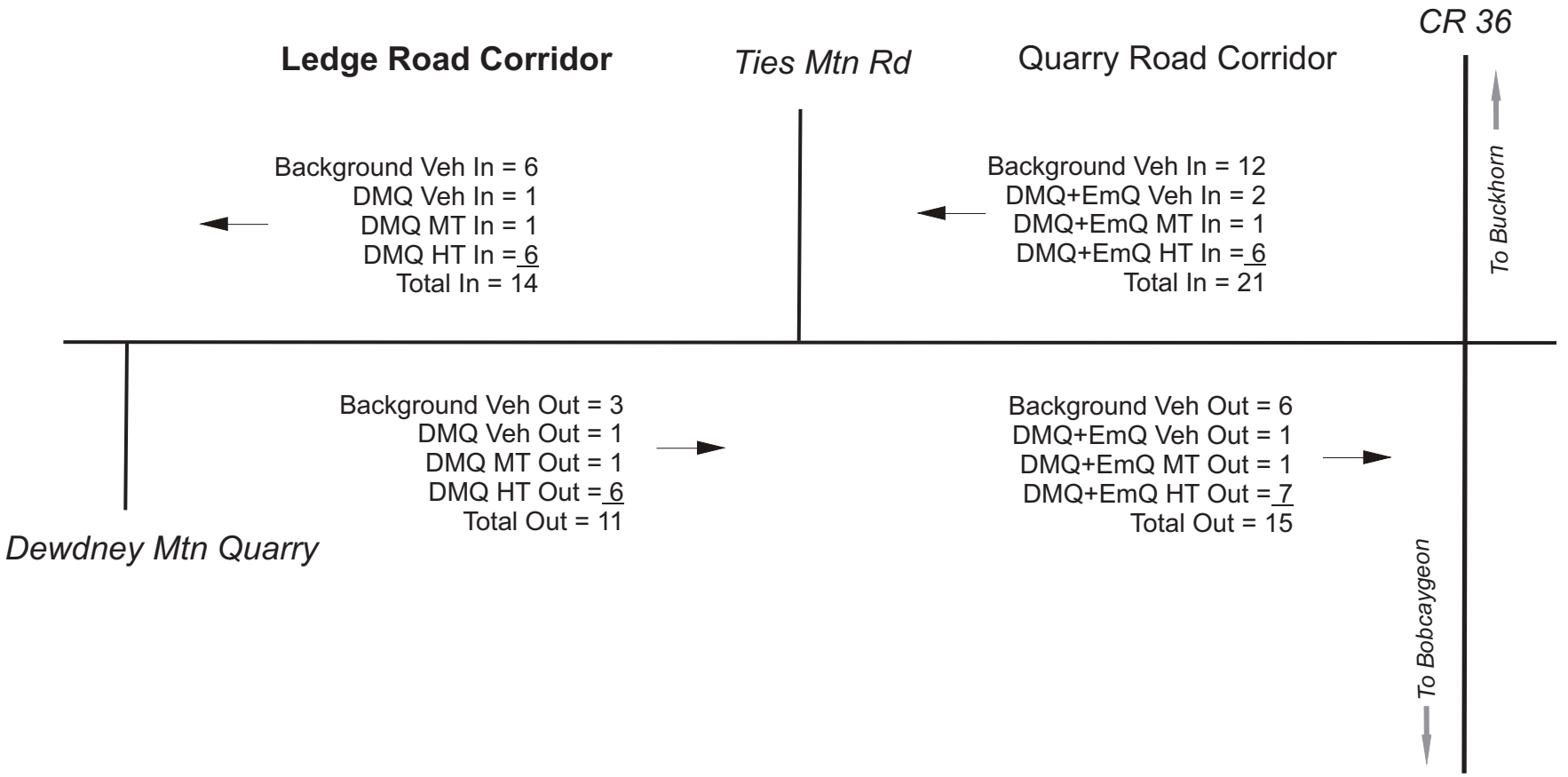
Veh - Cars + PU Trucks
MT - Medium Trucks + School Buses
HT - Heavy Trucks

Exhibit 3
2030 AM Peak Hour (7 - 8 AM)
Traffic Stream - Ledge/Quarry Corridors



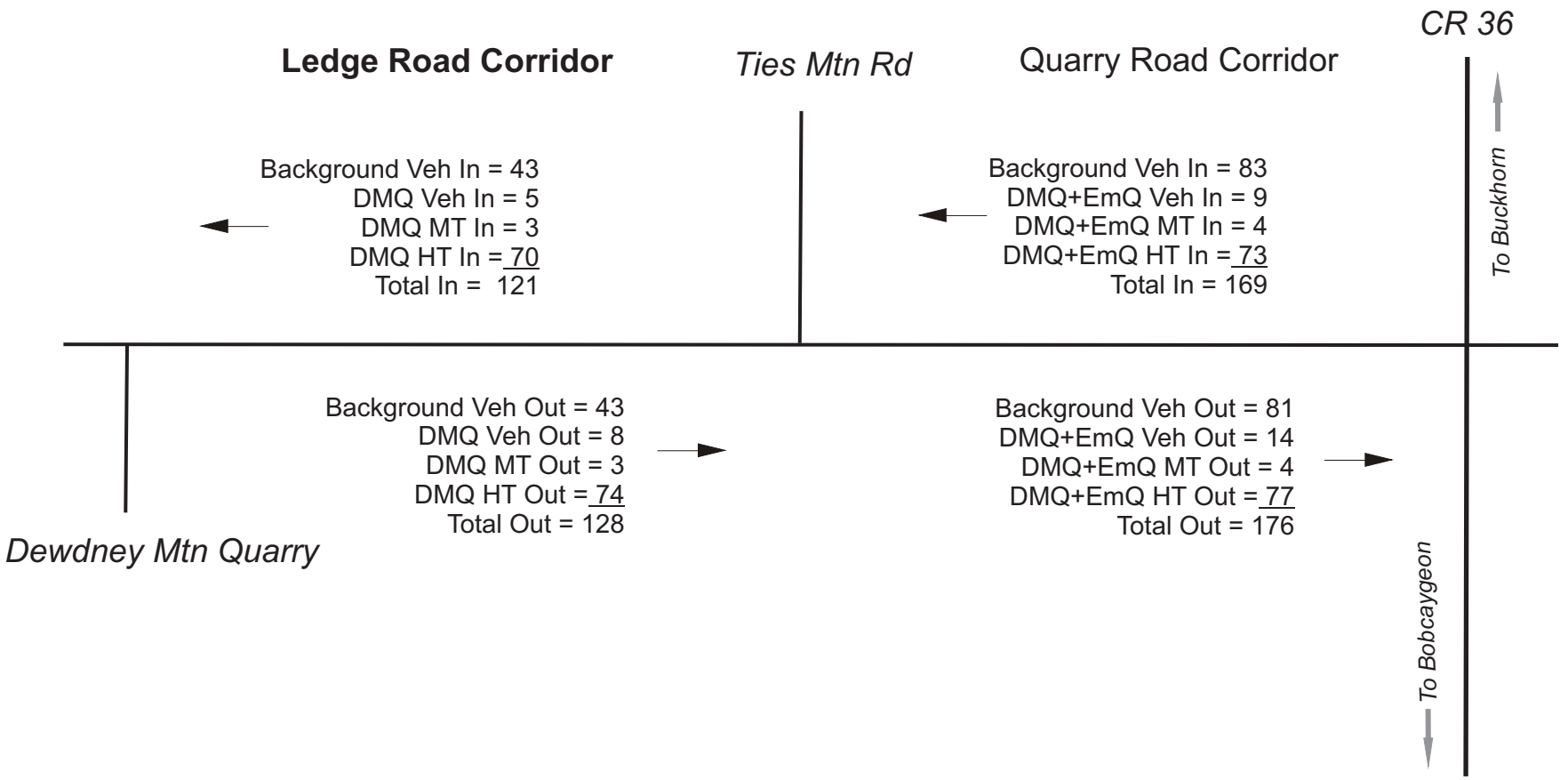
Veh - Cars + PU Trucks
MT - Medium Trucks + School Buses
HT - Heavy Trucks

Exhibit 4
2030 PM Peak Hour (4 - 5 PM)
Traffic Stream - Ledge/Quarry Corridors



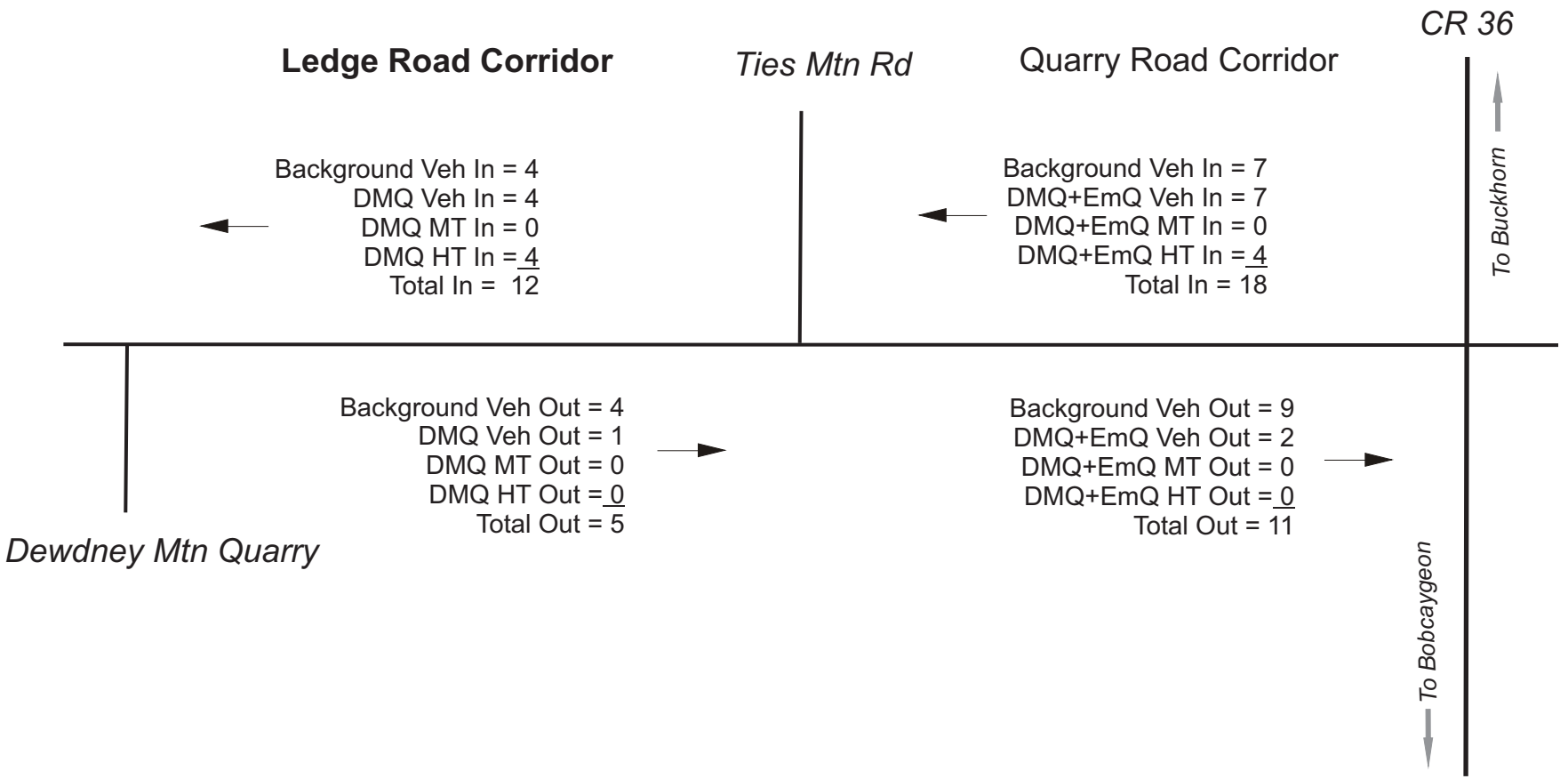
Veh - Cars + PU Trucks
MT - Medium Trucks + School Buses
HT - Heavy Trucks

Exhibit 5
2030 16 Hr Day Total (7 AM - 11 PM)
Traffic Stream - Ledge/Quarry Corridors



Veh - Cars + PU Trucks
MT - Medium Trucks + School Buses
HT - Heavy Trucks

Exhibit 6
2030 8 Hr Night Total (11 PM - 7 AM)
Traffic Stream - Ledge/Quarry Corridors



Veh - Cars + PU Trucks
MT - Medium Trucks + School Buses
HT - Heavy Trucks

24 Hour Distribution of Background Ledge Road Traffic

Ledge Rd

Hour	% Total	% In	% Out	Hr Tot	In	Out	
12-1 AM	0.25%	90%	10%	**1**	**1**	0	
1-2 AM	0.20%	90%	10%	0	0	0	
2-3 AM	0.10%	80%	20%	0	0	0	
3-4 AM	0.30%	50%	50%	0	0	0	
4-5 AM	0.83%	40%	60%	1	**1**	0	
5-6 AM	1.93%	30%	70%	2	1	1	
6-7 AM	**4.78%**	**25%**	**75%**	**4**	**1**	**3**	
7-8 AM	**7.30%**	**25%**	**75%**	**7**	**2**	**5**	
8-9 AM	5.48%	25%	75%	**6**	**2**	4	
9-10 AM	4.30%	30%	70%	4	1	3	
10-11 AM	4.90%	30%	70%	5	1	3	
11-12 PM	5.05%	45%	65%	5	2	3	
12-1 PM	5.60%	50%	50%	5	3	3	
1-2 PM	6.03%	50%	50%	6	3	3	
2-3 PM	6.75%	55%	45%	6	3	3	
3-4 PM	8.08%	60%	40%	8	5	3	
4-5 PM	**9.90%**	**63%**	**37%**	**9**	**6**	**3**	
5-6 PM	8.40%	63%	37%	8	5	3	
6-7 PM	6.82%	60%	40%	6	4	3	
7-8 PM	4.80%	50%	50%	5	2	2	
8-9 PM	4.20%	50%	50%	**3**	2	**1**	
9-10 PM	2.40%	60%	40%	2	1	1	
10-11 PM	1.20%	80%	20%	1	1	0	
11PM-12	0.40%	90%	10%	0	0	0	
24 Hr Tot	100.00%			94	47	47	94

**** Adjusted Number to Account for Rounding**

Ledge Road			**Total**	**In**	**Out**
	Daily	7AM-11 PM	86	43	43
	Night	11 PM-7 AM	8	4	4
		Total	**94**	**47**	**47**

24 Hour Distribution of Background Quarry Road Traffic

Quarry Rd

Hour	% Total	% In	% Out	Hr Tot	In	Out	
12-1 AM	0.25%	90%	10%	0	0	0	
1-2 AM	0.20%	90%	10%	0	0	0	
2-3 AM	0.10%	80%	20%	0	0	0	
3-4 AM	0.30%	50%	50%	0	0	0	
4-5 AM	0.83%	40%	60%	1	0	1	
5-6 AM	1.93%	30%	70%	2	1	1	
6-7 AM	**4.78%**	**25%**	**75%**	4	1	3	
7-8 AM	**7.30%**	**25%**	**75%**	**7**	2	**5**	
8-9 AM	5.48%	25%	75%	5	1	4	
9-10 AM	4.30%	30%	70%	4	1	3	
10-11 AM	4.90%	30%	70%	4	1	3	
11-12 PM	5.05%	45%	65%	4	2	**2**	
12-1 PM	5.60%	50%	50%	5	3	**2**	
1-2 PM	6.03%	50%	50%	5	3	**2**	
2-3 PM	6.75%	55%	45%	6	3	3	
3-4 PM	8.08%	60%	40%	7	4	3	
4-5 PM	**9.90%**	**63%**	**37%**	9	6	3	
5-6 PM	8.40%	63%	37%	7	4	3	
6-7 PM	6.82%	60%	40%	6	4	2	
7-8 PM	4.80%	50%	50%	**3**	2	**1**	
8-9 PM	4.20%	50%	50%	**3**	2	**1**	
9-10 PM	2.40%	60%	40%	2	1	1	
10-11 PM	1.20%	80%	20%	1	1	0	
11PM-12	0.40%	90%	10%	**1**	**1**	0	
24 Hr Tot	100.00%			86	43	43	**86**

**** Adjusted Number to Account for Rounding**

Quarry Road		**Total**	**In**	**Out**
Daily	7AM-11 PI	78	40	38
Night	11 PM-7 A	8	3	5
	Total	**86**	**43**	**43**

Dewdney Mountain Quarry Noise Study

16 Hr Trip Generation Profiles

Based on 16 Hour Day

DMQ 16 Hr Vehicle Trip Generation Profile

		Vehicle Trip Generation			Medium Truck Trip Generation			Heavy Truck Trip Generation			Total DMQ Trip Generation			
	Peak Hr	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
	6-7AM	4	1	5	0	0	0	4	0	4	8	1	9	**Nite Pk Hr**
1	**7-8 AM**	**1**	**1**	**2**	**1**	**1**	**2**	**6**	**8**	**14**	**8**	**10**	**18**	**AM Pk Hr**
2	8-9 AM	0	0	0	0	0	0	6	6	12	6	6	12	
3	9-10 AM	0	0	0	0	0	0	6	6	12	6	6	12	
4	10-11 AM	1	1	2	0	0	0	6	6	12	7	7	14	
5	11-12 PM	0	0	0	0	0	0	6	6	12	6	6	12	
6	12-1 PM	1	1	2	0	0	0	6	6	12	7	7	14	
7	1-2 PM	0	0	0	1	1	2	6	6	12	7	7	14	
8	2-3 PM	0	0	0	0	0	0	6	6	12	6	6	12	
9	3-4 PM	0	0	0	0	0	0	6	6	12	6	6	12	
10	**4-5 PM**	**1**	**1**	**2**	**1**	**1**	**2**	**6**	**6**	**12**	**8**	**8**	**16**	**PM Pk**
11	5-6 PM	1	2	3	0	0	0	6	6	12	7	8	15	
12	6-7 PM	0	2	2	0	0	0	4	6	10	4	8	12	
13	7-8 PM	0	0	0	0	0	0	0	0	0	0	0	0	
14	8-9 PM	0	0	0	0	0	0	0	0	0	0	0	0	
15	9-10 PM	0	0	0	0	0	0	0	0	0	0	0	0	
16	10-11 PM	0	0	0	0	0	0	0	0	0	0	0	0	
	16 HrTotal	**5**	**8**	**13**	**3**	**3**	**6**	**70**	**74**	**144**	**78**	**85**	**163**	
	Daily Total	**9**	**9**	**18**	**3**	**3**	**6**	**74**	**74**	**148**	**86**	**86**	**172**	***Daily Total Traffic Accessing DMQ***

6

Emerald Quarry 16 Hr Profile

		Vehicle Trip Generation			Medium Truck Trip Generation			Heavy Truck Trip Generation			Total Emerald Trip Generation			
	Peak Hr	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
	6-7AM	**3**	**1**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**1**	**4**	**Nite Pk Hr**
1	**7-8 AM**	**1**	**1**	**2**	**0**	**0**	**0**	**1**	**0**	**1**	**2**	**1**	**3**	**AM Pk Hr**
2	8-9 AM	0	0	0	0	0	0	0	0	0	0	0	0	
3	9-10 AM	0	0	0	0	0	0	0	1	1	0	1	1	
4	10-11 AM	0	0	0	0	0	0	1	0	1	1	0	1	
5	11-12 PM	0	0	0	0	0	0	0	0	0	0	0	0	
6	12-1 PM	1	2	3	0	0	0	0	1	1	1	3	4	
7	1-2 PM	0	0	0	1	1	2	1	0	1	2	1	3	
8	2-3 PM	0	0	0	0	0	0	0	0	0	0	0	0	
9	3-4 PM	0	0	0	0	0	0	0	0	0	0	0	0	
10	**4-5 PM**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**1**	**1**	**1**	**2**	**PM Pk**
11	5-6 PM	1	2	3	0	0	0	0	0	0	1	2	3	
12	6-7 PM	0	1	1	0	0	0	0	0	0	0	1	1	
13	7-8 PM	0	0	0	0	0	0	0	0	0	0	0	0	
14	8-9 PM	0	0	0	0	0	0	0	0	0	0	0	0	
15	9-10 PM	0	0	0	0	0	0	0	0	0	0	0	0	
16	10-11 PM	0	0	0	0	0	0	0	0	0	0	0	0	
	16 HrTotal	**4**	**6**	**10**	**1**	**1**	**2**	**3**	**3**	**6**	**8**	**10**	**18**	
	Daily Total	**7**	**7**	**14**	**1**	**1**	**2**	**3**	**3**	**6**	**11**	**11**	**22**	***Daily Total Traffic Accessing Emerald Q***

Appendix 2

Sample STAMSON Outputs

Note:

To meet the STAMSON limitation of a minimum 40 vehicles per hour, traffic volumes have been increased by a factor of 100. The sound level results are then corrected by reducing the raw result as follows.

Correction factor to account for vehicle volumes x100:
reduce raw result by $10 \times Log_{10}(100) = 20$ dBA

STAMSON 5.0 NORMAL REPORT Date: 27-02-2020 12:51:07
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: hr3amp.te Time Period: 1 hours
Description: HR3 AM Peak, 7-8 AM, 2030
(Vehicle volumes X100)

Road data, segment # 1: Ledge Rd.

Car traffic volume : 900 veh/TimePeriod
Medium truck volume : 200 veh/TimePeriod
Heavy truck volume : 1400 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Ledge Rd.

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 15.00 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Ledge Rd.

Source height = 2.40 m

ROAD (0.00 + 78.85 + 0.00) = 78.85 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-90 90 0.63 80.26 0.00 0.00 -1.41 0.00 0.00 0.00 78.85

Segment Leq : 78.85 dBA

Total Leq All Segments: 78.85 dBA

TOTAL Leq FROM ALL SOURCES: 78.85 dBA
Corrected for vehicle volumes (-20 dBA) 58.85 dBA

STAMSON 5.0 NORMAL REPORT Date: 27-02-2020 15:41:17
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: hr7amp.te Time Period: 1 hours
Description: HR7 AM Peak, 7-8 AM, 2030
(Vehicle volumes X100)

Road data, segment # 1: Ledge Rd.

Car traffic volume : 900 veh/TimePeriod
Medium truck volume : 200 veh/TimePeriod
Heavy truck volume : 1400 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Ledge Rd.

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 38.80 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Ledge Rd.

Source height = 2.40 m

ROAD (0.00 + 72.11 + 0.00) = 72.11 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-90 90 0.63 80.26 0.00 -6.74 -1.41 0.00 0.00 0.00 72.11

Segment Leq : 72.11 dBA

Total Leq All Segments: 72.11 dBA

TOTAL Leq FROM ALL SOURCES: 72.11
Corrected for vehicle volumes (-20 dBA) 52.11 dBA

STAMSON 5.0 NORMAL REPORT Date: 27-02-2020 15:57:58
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: hr11lamp.te Time Period: 1 hours
Description: HR11L Ledge AM Peak, 7-8 AM, 2030
Noise from Ledge Road
(Vehicle volumes X100)

Road data, segment # 1: Ledge Rd.

Car traffic volume : 900 veh/TimePeriod
Medium truck volume : 200 veh/TimePeriod
Heavy truck volume : 1400 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Ledge Rd.

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 72.40 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Ledge Rd.

Source height = 2.40 m

ROAD (0.00 + 67.69 + 0.00) = 67.69 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-90 90 0.63 80.26 0.00 -11.16 -1.41 0.00 0.00 0.00 67.69

Segment Leq : 67.69 dBA

Total Leq All Segments: 67.69 dBA

Noise from Ledge Road:

TOTAL Leq FROM ALL SOURCES: 67.69
Corrected for vehicle volumes (-20 dBA) 47.69 dBA

STAMSON 5.0 NORMAL REPORT Date: 27-02-2020 16:01:35
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: hr11tamp.te Time Period: 1 hours
Description: HR11T Ties Mtn Rd AM Peak, 7-8 AM, 2030
Noise from Ties Mountain Road
(Vehicle volumes X100)

Road data, segment # 1: Ties Mtn. Rd

Car traffic volume : 200 veh/TimePeriod
Medium truck volume : 0 veh/TimePeriod
Heavy truck volume : 100 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Ties Mtn. Rd

Angle1 Angle2 : -45.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 15.00 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Ties Mtn. Rd

Source height = 2.40 m

ROAD (0.00 + 66.50 + 0.00) = 66.50 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-45 90 0.63 68.75 0.00 0.00 -2.26 0.00 0.00 0.00 66.50

Segment Leq : 66.50 dBA

Total Leq All Segments: 66.50 dBA

Noise from Ties Mountain Road:
TOTAL Leq FROM ALL SOURCES: 66.50
Corrected for vehicle volumes (-20 dBA) 46.50 dBA

Combining noise from Ledge and Ties Mountain Roads:

Ledge	47.69 dBA
Ties Mountain	46.50 dBA
Combined	**50.15 dBA**

(logarithmic addition)

STAMSON 5.0 NORMAL REPORT Date: 27-02-2020 16:15:47
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: hr15amp.te Time Period: 1 hours
Description: HR15 AM Peak, 7-8 AM, 2030
(Vehicle volumes X100)

Road data, segment # 1: Quarry NB

Car traffic volume : 600 veh/TimePeriod
Medium truck volume : 100 veh/TimePeriod
Heavy truck volume : 700 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 4 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Quarry NB

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 40.80 m
Receiver height : 1.50 m
Topography : 3 (Elevated; no barrier)
Elevation : 1.50 m
Reference angle : 0.00

Road data, segment # 2: Quarry SB

Car traffic volume : 1200 veh/TimePeriod
Medium truck volume : 100 veh/TimePeriod
Heavy truck volume : 800 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Quarry SB

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 47.80 m
Receiver height : 1.50 m
Topography : 3 (Elevated; no barrier)
Elevation : 1.50 m
Reference angle : 0.00

Results segment # 1: Quarry NB

Source height = 2.40 m

ROAD (0.00 + 69.96 + 0.00) = 69.96 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-90 90 0.59 78.20 0.00 -6.90 -1.33 0.00 0.00 0.00 69.96

Segment Leq : 69.96 dBA

Results segment # 2: Quarry SB

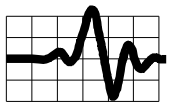
Source height = 2.40 m

ROAD (0.00 + 68.53 + 0.00) = 68.53 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-90 90 0.59 77.86 0.00 -7.99 -1.33 0.00 0.00 0.00 68.53

Segment Leq : 68.53 dBA

Total Leq All Segments: 72.31 dBA

TOTAL Leq FROM ALL SOURCES: 72.31
Corrected for vehicle volumes (-20 dBA) 52.31 dBA



STAMSON 5.0 NORMAL REPORT Date: 27-02-2020 16:26:37
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: hr18amp.te Time Period: 1 hours
Description: HR18 AM Peak, 7-8 AM, 2030
(Vehicle volumes X100)

Road data, segment # 1: Quarry Rd.

Car traffic volume : 1800 veh/TimePeriod
Medium truck volume : 200 veh/TimePeriod
Heavy truck volume : 1500 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Quarry Rd.

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 40.60 m
Receiver height : 1.50 m
Topography : 3 (Elevated; no barrier)
Elevation : 1.50 m
Reference angle : 0.00

Results segment # 1: Quarry Rd.

Source height = 2.40 m

ROAD (0.00 + 72.38 + 0.00) = 72.38 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-90 90 0.59 80.58 0.00 -6.87 -1.33 0.00 0.00 0.00 72.38

Segment Leq : 72.38 dBA

Total Leq All Segments: 72.38 dBA

TOTAL Leq FROM ALL SOURCES: 72.38
Corrected for vehicle volumes (-20 dBA) 52.38 dBA

STAMSON 5.0 NORMAL REPORT Date: 29-02-2020 15:23:50
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: hr18_dn.te Time Period: Day/Night 16/8 hours
Description: HR18 Day/Night Analysis 2030 (NPC-300)
(Vehicle volumes X100)

Road data, segment # 1: Quarry Rd. (day/night)

Car traffic volume : 18700/2500 veh/TimePeriod
Medium truck volume : 800/0 veh/TimePeriod
Heavy truck volume : 15000/400 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Quarry Rd. (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 40.60 / 40.60 m
Receiver height : 1.50 / 1.50 m
Topography : 3 (Elevated; no barrier)
Elevation : 1.50 m
Reference angle : 0.00

Results segment # 1: Quarry Rd. (day)

Source height = 2.40 m

ROAD (0.00 + 70.28 + 0.00) = 70.28 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-90 90 0.59 78.48 0.00 -6.87 -1.33 0.00 0.00 0.00 70.28

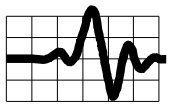
Segment Leq : 70.28 dBA

Total Leq All Segments: 70.28 dBA

Results segment # 1: Quarry Rd. (night)

Source height = 1.93 m

ROAD (0.00 + 57.66 + 0.00) = 57.66 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-90 90 0.60 65.95 0.00 -6.93 -1.36 0.00 0.00 0.00 57.66



Segment Leq : 57.66 dBA

Total Leq All Segments: 57.66 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 70.28
(NIGHT): 57.66

Corrected for vehicle volumes (-20 dBA)
(Day): 50.28 dBA
(Night): 57.66 dBA

HUGH WILLIAMSON ASSOCIATES INC.
Ottawa, Ontario, Canada

RESUMÉ: Dr. HUGH WILLIAMSON, P.Eng.

QUALIFICATIONS:

Ph.D. Mechanical Engineering, University of New South Wales, 1972
B.Sc. Mechanical Engineering, (with Distinction), University of Alberta, 1967
Licensed Professional Engineer, Professional Engineers Ontario
Member, Canadian Acoustical Association

KEY COMPETENCIES:

- Environmental noise and vibration assessments, Environmental Compliance Certificates. Noise assessment for land use planning
- Noise impact assessments for the Aggregates Industry.
- Architectural and building acoustics, acoustics of office spaces, meeting rooms, auditoriums and studios, noise and vibration control of building mechanical services.
- Industrial noise and vibration assessment and control.
- Noise and vibration aspects of Occupational Health and Safety (OH&S).

PROFESSIONAL EXPERIENCE:

Hugh Williamson is a professional engineer with many years of experience in the measurement, assessment, analysis and control of noise and vibration. Hugh Williamson Associates was incorporated in 1997 and provides consulting services in architectural, industrial and environmental acoustics and vibration. Dr. Williamson has many years of specialist experience in noise assessment for the aggregates industry in Ontario. Clients include aggregate producers, architects, engineering firms, industrial firms, governments and private citizens. Prior to establishing Hugh Williamson Associates, his career included extensive periods in industry as well as university level research and teaching. He is a former Director of the Acoustics and Vibration Unit at the Australian Defence Force Academy. He has published over 50 engineering and scientific papers and has been an invited speaker on noise and vibration at national and international conferences. He has more than 30 years of experience as a consultant.

CLIENT LIST:

Hugh Williamson Associates provides consulting services to a wide variety of clients. In the aggregates industry this includes: R. W. Tomlinson Limited, Miller Paving, Tackaberry Construction, and Cavanagh Construction. Other clients include the City of Ottawa, Atkinson Schroeter Design Group, Skelton Brumwell Associates, KWC Architects, J. L. Richards, PWGSC, National Research Council Canada and various School Boards.

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Phone: 613 747 0983, Email: hugh@hwacoustics.ca, Web: http://www.hwacoustics.ca

Aggregates Industry Experience

Dr. Hugh Williamson has more than 20 years of experience undertaking noise impact assessment for the aggregates industry in Ontario. Projects typically involve assessing the noise impacts of aggregate operations on nearby residential and rural properties. Noise impacts area assessed according to Ontario Ministry of Environment and Climate Change, and, the Ministry of Natural Resources Guidelines and regulations. Some recent projects are listed below.

1. H & H Aggregates, *Acoustic Assessment of the Mielke Quarry*
2. Blair Construction, *Acoustic Assessment of the Lapensee Quarry*
3. Municipality of Tweed, *Acoustic Assessment of the Esker Road Pit*
4. R. W. Tomlinson Limited. *Noise Impact Assessment of the Rideau Road Quarry*
5. Miller Paving Limited. *Acoustical Study of the Expansion of the Braeside Quarry*
6. George Tackaberry Construction. *Acoustical Assessment of the Perth Quarry*
7. Skelton Brumwell, *Acoustic Assessment of the Lippa Quarry*
8. Thomas Cavanagh Construction. *Noise Impact Assessment of Asphalt Plant at the Henderson Quarry*
9. Thomas Cavanagh Construction. *Noise Impact Assessment of Mobile Crushing Equipment*
10. Algonquin Granite. *Acoustic Assessment of the Algonquin Granite Quarry*
11. R. W. Tomlinson Limited. *Acoustical Study of the Rideau Road Quarry*
12. George Tackaberry Construction. *Acoustic Assessment of the Sly-Dunkin Pit*

Other Recent Environmental Noise Assessment Projects

1. Township of Greater Madawaska. Provision of training of By-law officers in noise measurement and assessment.
2. National Research Council Canada. Various projects for the assessment of community noise impacts and the control of noise from equipment and facilities.
3. City of Ottawa. Noise impact assessment of snowmobile noise from rural pathways.