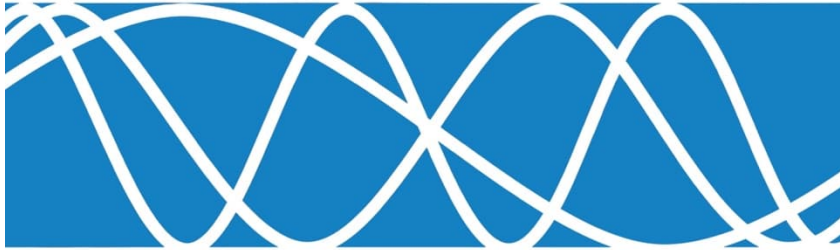


Noise Impact Assessment
Drain Bros. Excavating Limited
Norwood Pit Extension
Township of Douro-Dummer
Ontario

August 20, 2026
HGC Project #: 02400268



Prepared for:

Drain Bros. Excavating Limited
2130 8th Line Road North Dummer
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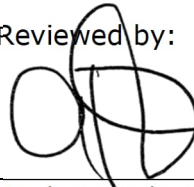
August 20, 2026

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Association of Professional Engineers of Ontario

Howe Gastmeier Chapnik Limited

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1 INTRODUCTION

HGC Noise Vibration Acoustics (HGC) was retained by Drain Bros. Excavating Limited to assess the noise impact from the proposed extension of their Norwood Pit in the Township of Douro-Dummer, Ontario. The study is required to support an application to the Ministry of Natural Resources (MNR) for a Class 'A' Licence under the Aggregate Resources Act (ARA) and its regulations, as well for amendments to the County's Official Plan and the Township's Zoning By-Law.

The existing pit and associated equipment operate in accordance with licences issued under the ARA and, per Ontario Regulation 524/98, are exempt from requiring an Environmental Compliance Approval (ECA) from the Ontario Ministry of the Environment, Conservation and Parks (MECP). The site also hosts a hot-mix asphalt plant operated by Miller Paving Limited, which operates under ECA number 1729-BCTRKZ, a copy of which is included in Appendix F. HGC prepared the most recent Acoustic Assessment Report (AAR) for Miller Paving Limited, dated July 13, 2018, a copy of which is also included in Appendix F.

The principles and methods of assessing the proposed pit extension, including identifying points of reception, establishing applicable criteria, acoustical modelling, etc., have been completed in accordance with the guidelines of the MECP and are the same as presented in the 2018 AAR. The acoustical analysis was based on a review of the operational site plan of the proposed extension prepared by MHBC, dated May 2026, a digital terrain model of the existing pit and surrounding area, and equipment sound levels measured by HGC at the site.

The assessment considers all operations of the pit, including extraction activities in the proposed extension areas, material processing and shipping within the existing pit (such as the existing wash plant), and the Miller hot-mix asphalt plant. Overall sound levels from the future activities including the extension



were assessed against the noise limits stipulated in MECP Publication NPC-300 [1]. The results of the analysis indicate that, with the benefit of noise control measures integral to the site design and summarized in Appendix C, the sound emissions from the site comply with the MECP noise limits. Details of the analysis are outlined below.

2 DESCRIPTION OF SITE & SURROUNDING AREA

The existing Norwood Pit is located on the north side of the Trans-Canada Highway (Highway 7), approximately four kilometres northeast of Norwood, Ontario. A scaled location map is included as Figure 1. The existing pit is comprised of two ARA licences, #3270 and #624922. Drain Bros. also owns the other adjacent licenced properties: #3340, #7686, and #624924, which are outlined in Figure 2.

The Extension is to be located northeast of the existing Norwood Pit, on portions of parcels at addresses 4818 Highway 7, as well as 89, 145, and 159 Twelfth Line Road-Dummer, south of the intersection of Simpson Road and Twelfth Line Road-Dummer. The proposed licence area is 36.7 hectares, and the extraction area is 28.1 hectares, with a maximum annual extraction of 227,000 tonnes in combination with adjacent license #624922. Aggregate extraction and shipping within and from the Extension will take place Monday through Saturday between 06:00 and 19:00, and processing will take place between 07:00 and 19:00.

Existing points of reception surrounding the site are labelled in Figure 2 and designated as locations R1 through R16 and R15A. Locations R1 through R16 represent residential homes; the outdoor living area of the most potentially impacted home is represented by location R15A (located within 30 metres of R15, in the direction of the Extension). Most points of reception representing single storey homes were conservatively placed as outdoor living areas, within 30 metres of the dwelling in the direction of the pit, where applicable. The outdoor living spaces of raised bungalows or two storey homes are not explicitly reported because the elevated plane-of-window locations were found to have greater exposure to the sound levels of the pit.

Also considered herein are currently vacant lots near the Extension on which noise sensitive uses are permitted by the Zoning By-laws of Asphodel-Norwood and Havelock-Belmont-Methuen, labelled as locations VL1 through VL3 in Figure 2. The specific locations of VL1 through VL3 were selected in accordance with the guidance provided in MECP Publication NPC-300, and with consideration to the existing built form.

Based on observations by HGC during a visit to the site and surrounding area, the background sound (excluding the existing Norwood Pit and hot-mix asphalt plant) in the vicinity of R1 through R8, VL1, and VL2 was dominated by road traffic on the nearby Trans-Canada Highway, therefore this area has been categorized as a Class 2 acoustical environment under MECP noise assessment guidelines. The background sound in the vicinity of R9 through R16, R15A, and VL3 were dominated by natural sounds, meaning this area has been categorized as a Class 3 acoustical environment.

3 CRITERIA FOR ACCEPTABLE SOUND LEVELS

NPC-300 is the pertinent guideline for developing sound level limits for the assessment of aggregate operations, which are classified as stationary sources of sound. The acceptability limits for stationary sources are based on the existing background sound levels in the area of the subject site. In essence, sound from the stationary source is evaluated against (i.e., compared to) the typical background sound at neighbouring noise sensitive points of reception (e.g., residences). Background sound is considered to include road traffic sound, natural sound, and other typical sounds; but excludes the sound of the site under assessment.

NPC-300 stipulates that the sound level limits for a stationary source operating in a Class 2 or 3 acoustical environment are the greater of the minimum one-hour energy-equivalent (L_{EQ-1hr}) background sound level, or the exclusionary minimum limits outlined in Table 1 below.

Table 1: Exclusionary Minimum Sound Level Limits [L_{EQ-1hr} dBA]

Point of Reception	Daytime 07:00 – 19:00	Evening 19:00 – 23:00	Nighttime 23:00 – 07:00
R1 – R8, VL1, VL2	50	50	45
R15A	45	40	--
R9 – R16, R15, VL3	45	40	40

The MECP guidelines also stipulate that the noise assessment shall consider a predictable worst-case hour, which is defined as an hour when typically busy operation of the stationary sources under consideration could coincide with an hour of low background sound.

Observations in the vicinity of the Extension indicate that background sound levels may fall as low as the exclusionary minimum limits above during the quietest hours of the day and night. Therefore, the assessment criteria in Table 1 apply at all receptor locations.

Compliance with MECP criteria generally results in acceptable levels of sound at residential receptors, although there may be residual audibility during periods of low background sound. Publication NPC-300 applies to sound from the ongoing day-to-day operations of the subject site, but not to the temporary sound produced during the preparation and rehabilitation of extraction areas, the sound produced by highway trucks on public roadways, or by auditory warning devices required / authorized by law or in accordance with good safety practices (including ‘back up beepers’). Within each phase of extraction, the initial operations of building access roadways, stripping topsoil, building noise berms and/or localized shielding, as well as the final operations of rehabilitation (and removal of noise berms/localized shielding) are defined as construction activities. To satisfy Provincial Standards, the sound emission levels of equipment involved in those construction activities must comply with MECP Publication NPC-115 [2].



4 DESCRIPTION OF PIT OPERATIONS

On behalf of Drain Bros., MHBC has prepared operational plans for the Extension, included as Appendix A, which were used to evaluate sound emissions from the planned extraction and processing operations. The Extension will be operated in two phases, with materials extracted in one lift, approximately 7-metres in depth, to an elevation of approximately 221.5 metres above sea level. In both phases, a front-end loader will be used to extract material, which will be processed on site and shipped by highway trucks via the existing Norwood Pit main entrance on Asphodel 11th Line. Material will be transported between the working face and the processing equipment by front-end loader. The following subsections describe the planned operations in each phase, which are depicted in Appendix A.

4.1 Phase 1

Operations will commence below grade at the southwest edge of the Extension, (adjacent to the existing Norwood Pit) with the processing equipment (e.g., crusher, screener, generator, etc.) established in the southwest corner. Extraction will take place throughout the balance of Phase 1, in a northeasterly direction, with the processing equipment following the working face as required.

4.2 Phase 2

Material extraction within Phase 2 will continue progressing northeast until the aggregate resources within the Extension are exhausted. The processing equipment will follow the active working face as required.

5 ASSESSMENT METHODOLOGY

The predictive model used for this study (*CadnaA, version 2025, build 209.5501*) is based on the methods from ISO Standard 9613-2.2 [3] which accounts for reductions in sound levels due to geometrical spreading, air absorption, ground attenuation and acoustical shielding by intervening structures, including the extraction face, topographic features, and foliage,



where applicable. The ISO method tends to be conservative, as it assumes a moderate downwind condition (favourable for the propagation of sound from the source to a receiver) in all directions, at all times. This modelling technique is acceptable to the MNR and MECP.

Details of the acoustical modelling assumptions are included as Appendix B. The recommended noise control measures are included as Appendix C.

6 ASSESSMENT RESULTS

Using the pit operational plan as described in Section 4 and included as Appendix A, the modelling assumptions detailed in Appendix B, along with the noise control recommendations detailed in Appendix C and Figure 3, the sound levels of the Extension (including the Miller hot-mix asphalt plant) were predicted at each of the selected receptors under predictable worst-case conditions. The results are summarized in the table below, with sample calculations provided in Appendix D.



Table 2: Predicted Pit Sound Levels at Selected Receptors, $L_{EQ,1-Hr}$ [dBA]

Point of Reception	Worst-Case Sound Level		Sound Level Limit		Within Limits?
	Daytime (07:00 – 19:00)	Early Morning (06:00 – 07:00)	Daytime (07:00 – 19:00)	Early Morning (06:00 – 07:00)	
R1	40	38	50	45	Yes
R2	46	44	50	45	Yes
R3	50	42	50	45	Yes
R4	47	38	50	45	Yes
R5	46	35	50	45	Yes
R6	44	33	50	45	Yes
R7	36	27	50	45	Yes
R8	36	26	50	45	Yes
R9	40	30	50	45	Yes
R10	43	32	45	40	Yes
R11	41	31	45	40	Yes
R12	40	31	45	40	Yes
R13	41	32	45	40	Yes
R14	42	33	45	40	Yes
R15	45	40	45	40	Yes
R15A	44	40	45	--	Yes
R16	43	35	45	40	Yes
VL1	46	37	50	45	Yes
VL2	46	37	50	45	Yes
VL3	43	32	45	40	Yes

The analysis results summarized above indicate that, under worst-case operating scenarios, the predicted sound levels of the Extension comply with MECP guideline limits at all existing points of reception as well as all vacant lots (VL1 through VL3) where potential future homes could be constructed.



7 CONCLUSIONS & RECOMMENDATIONS

The acoustical analysis indicates that sound levels from the proposed Norwood Pit Extension, predicted under worst-case operating scenarios and with the noise control measures recommended herein, comply with MECP guideline limits at all existing and potential future neighbouring receptors.

The noise control measures specified in Appendix C should be incorporated into the operational plans for the pit. Any changes proposed for the Extension plans that may affect offsite sound levels should be reviewed by a Professional Engineer qualified to provide Acoustical Engineering services in the Province of Ontario, and any necessary modifications to the noise control measures be incorporated into the pit plans if/as appropriate.



8 REFERENCES

1. Ontario Ministry of the Environment, Conservation and Parks Publication NPC-300, *“Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning”*, August, 2013.
2. Ontario Ministry of the Environment, Conservation and Parks Publication NPC-115, *“Construction Equipment”*, August, 1978.
3. International Organization for Standardization, *“Acoustics – Attenuation of Sound during Propagation Outdoors – Part 2: General Method of Calculation”*, ISO-9613-2, Switzerland, 1996.



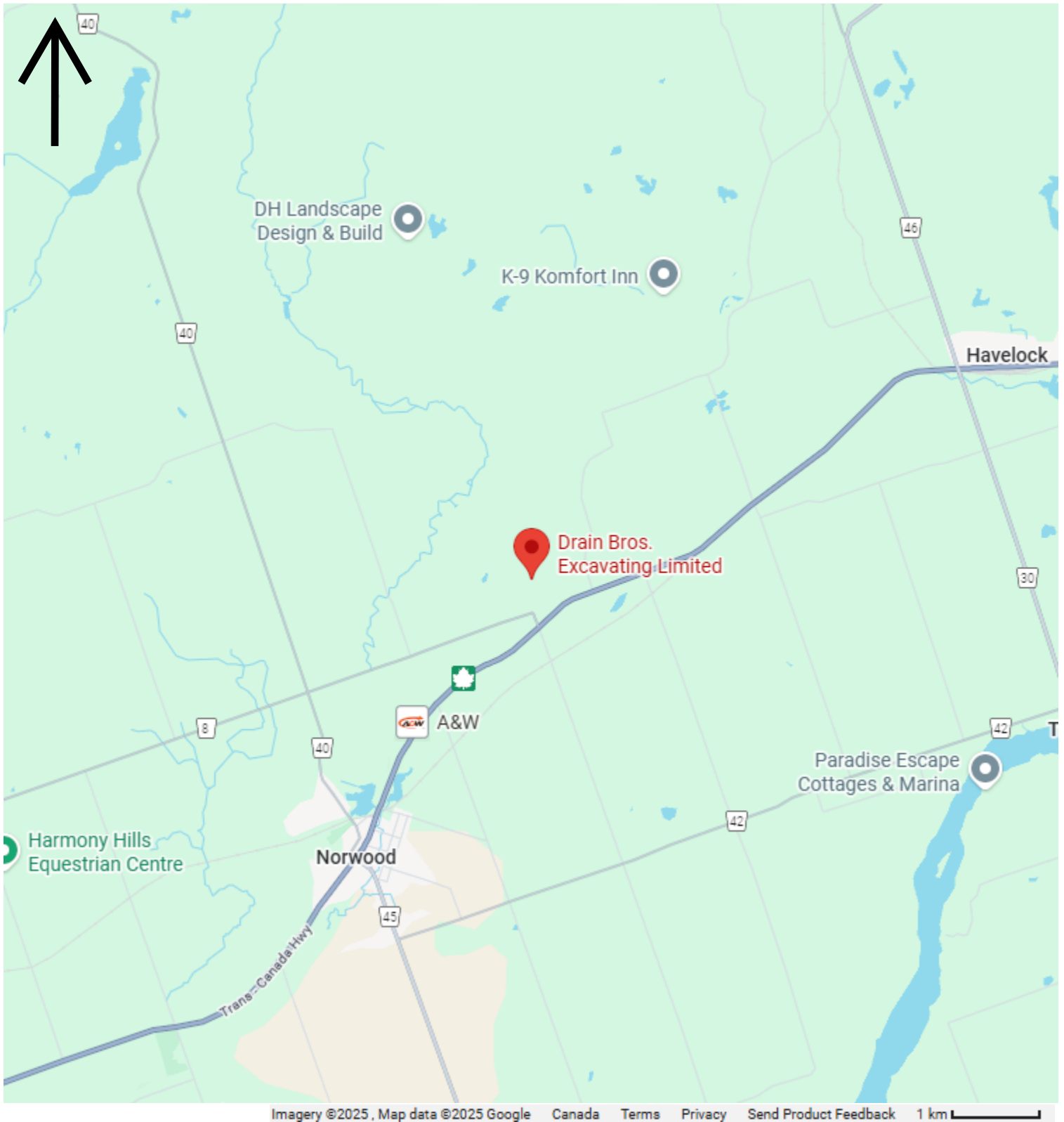


Figure 1: Location Map

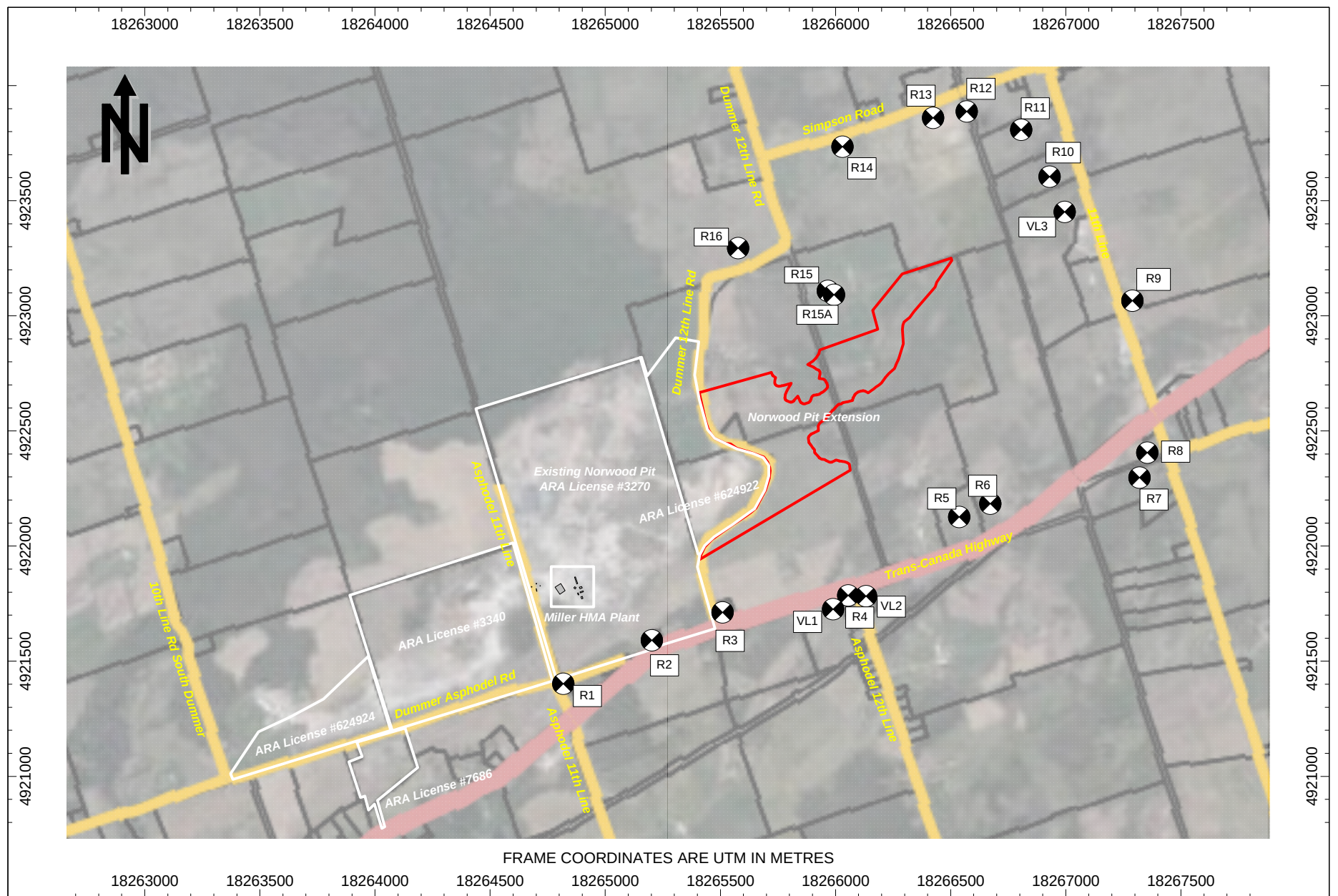


Figure 2: Points of Reception

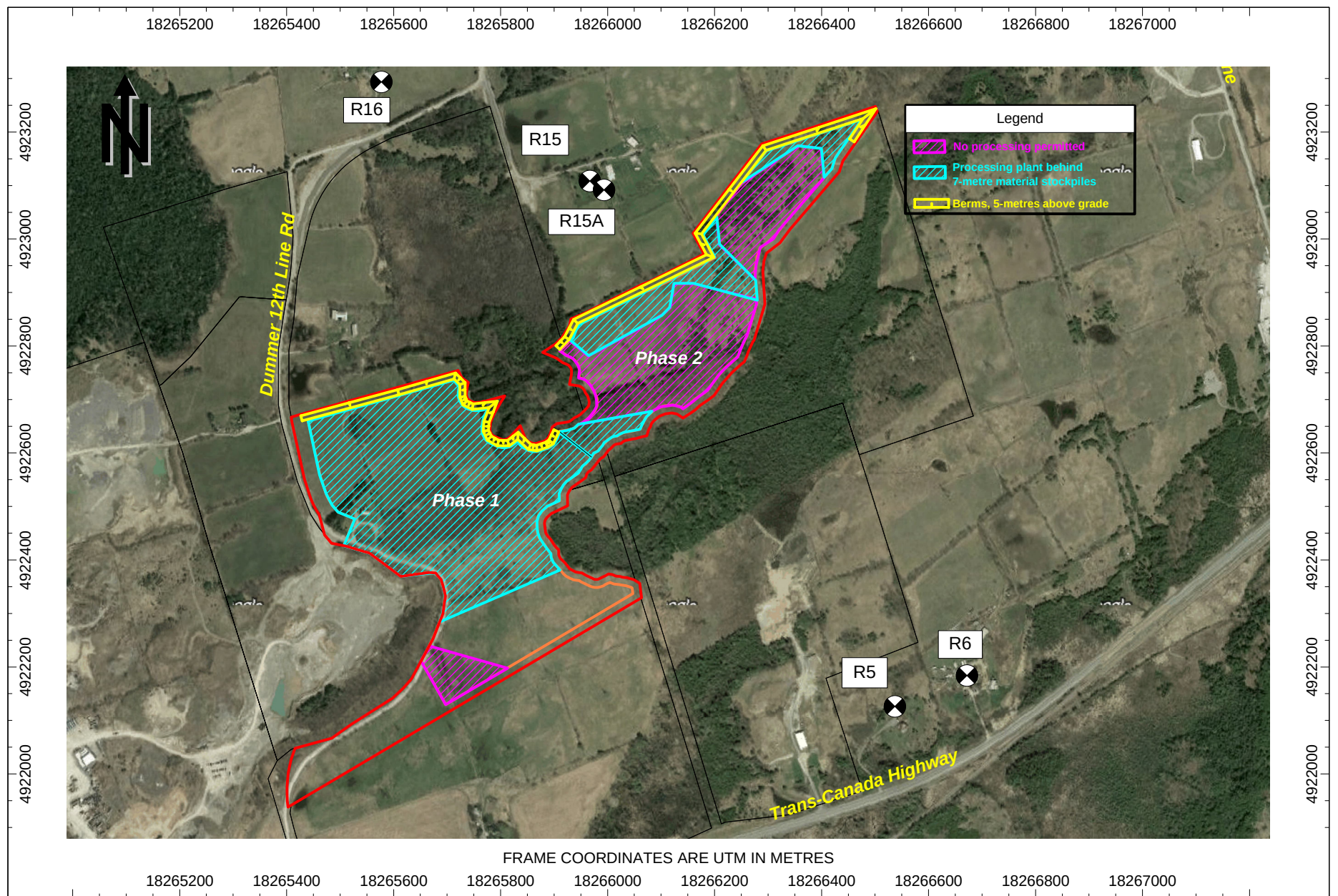


Figure 3: Noise Control Measures

Appendix A

Site Plan



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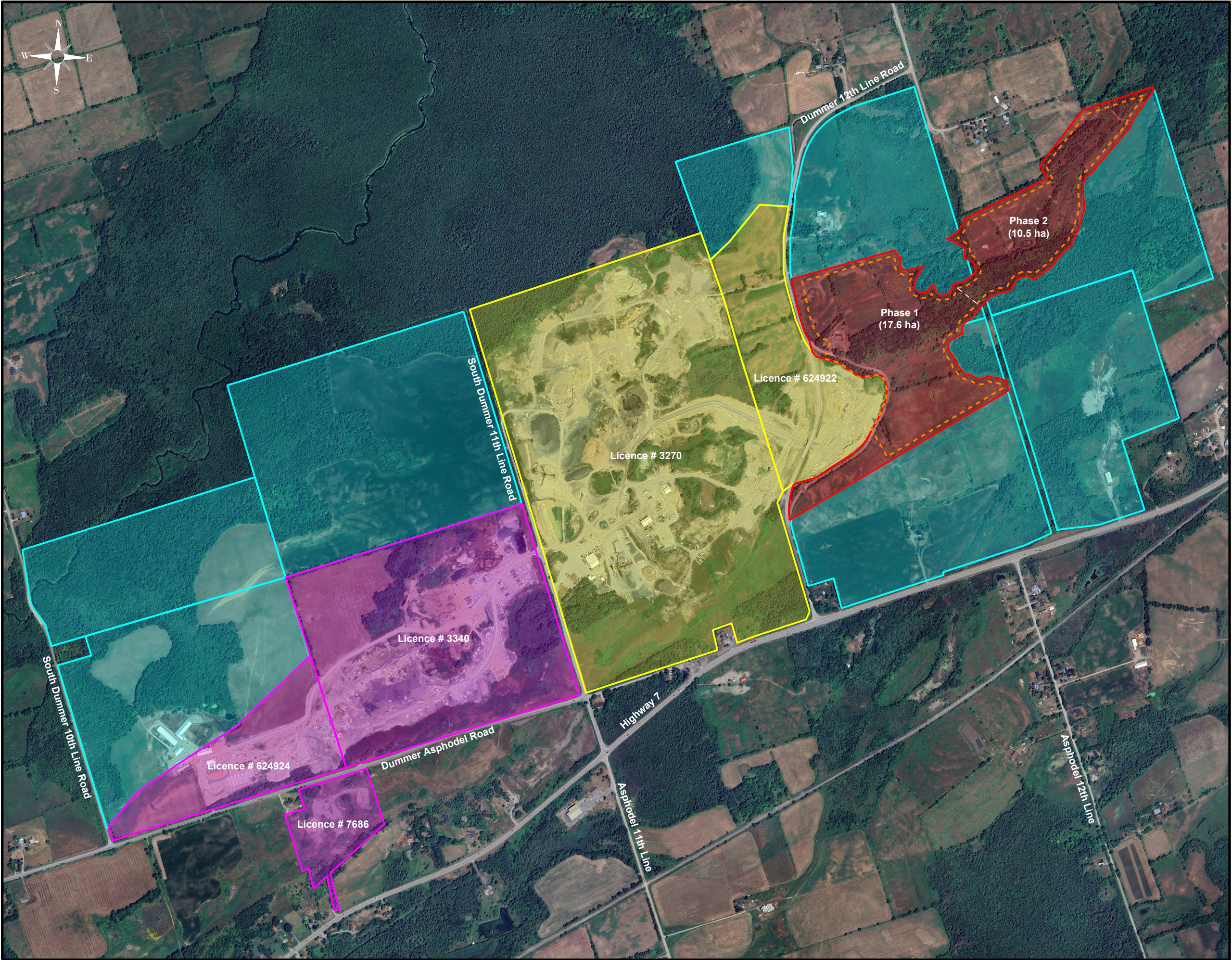


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Proposed Norwood Pit Extension

Part of Lots 1 & 2, Concession 11 and Part of Lot 2, Concession 12
Part of Road Allowance Between Concessions 11 and 12
(former geographic Township of Dummer)
Township of Douro-Dummer
County of Peterborough

Legend

- Norwood Pit Extension Licence Boundary - 36.7 ha
- Norwood Pit Extension Limit of Extraction - 28.1 ha
- Norwood Pit Extension Phase Boundary (white)
- Existing Norwood Pit Licence Boundary
- Other Licences Owned by Drain Bros.
- Other Land Owned or to be Owned by Drain Bros.

Date	May 2026
Sources	Google Earth Pro aerial photography captured on July 15, 2025
Scale - 1:11,000	0180360 Metres

B:\Bran\211008 Drain Brothers - Norwood Expansion\Drawings\Figures\Graphic for Project Team - May 2026\CAD\211008 - Project Team Graphic.dwg

Appendix B

Summary of Assessed Operations



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In the development of worst-case hour operational scenarios with respect to each of the selected points of reception, the following assumptions were made:

- Extraction, loading, and shipping activities within the Extension occur during the hours of 06:00 and 19:00, while all processing activities within the Extension will occur during daytime hours only (07:00 to 19:00).
- The front-end loader used for extraction and the processing equipment were assumed to be operating at worst-case locations in terms of sound level impact at each of the neighbouring receptors.
- One front-end loader was assumed to operate on the pit floor when extracting material from the working face.
- The following table presents the equipment sound emission levels employed in the analysis. All equipment was assumed to operate continuously during a predictable worst-case hour.

Table B1: Source Sound Power Levels [dBA re: 10^{-12} Watts]

Source Type / Name	Sound Power Level
Extraction Front-End Loader (qty. 1)	106
Processing Equipment (crusher, screener, generator, etc.)	119
Highway Trucks (each)	102

- The processing/loading area will include general-use front-end loaders or excavators, however these were not explicitly included in the analysis given their acoustical insignificance relative to the balance of the processing equipment.
- A predictable worst-case hour of shipping was assumed to include 20 inbound and outbound highway trucks, each assumed to travel along the access route between the main entrance and the processing equipment at an average speed of 30 km/hr (which is the posted speed limit on site).

Appendix C

Noise Control Measures



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Hours of Operation

The Extension shall be limited to the following hours of operation:

- Extraction and shipping activities shall be permitted Monday to Saturday between 06:00 and 19:00.
- Processing activities shall be permitted Monday to Saturday between 07:00 and 19:00.
- No operations shall be permitted on Sundays or statutory holidays.

Noise Berms

Prior to commencement of extraction activities within each of the two phases of the proposed extension, Drain Bros. shall implement and maintain noise berms as follows:

Table B1: Summary of Noise Berm Dimensions, m

Berm	Height	Length
Phase 1	5	630
Phase 2	5	825

Note: All heights are expressed relative to the natural grade on which the berms will be located, which differs along the length of a given berm.

The berms noted above shall be constructed of any earthen material (i.e., overburden or extracted/processed aggregate materials) and shall be constructed prior to commencement of each corresponding phase. The locations of the berms are depicted in Figure 3.

Localized Acoustical Shielding

Processing equipment, when located within the cyan areas in Figure 3, shall have acoustical shielding. The acoustical shielding shall be oriented along the north side of the processing equipment and completely break the line-of-sight between the processing equipment and R15/R15A, and R16. The shielding shall be a minimum of 7 metres tall, and the peak shall be located not more than 30-metres away from the processing equipment. The acoustical shielding shall be



constructed of any earthen material (i.e., overburden or extracted/processed aggregate materials).

Equipment Restrictions

The processing equipment shall not be operated within the magenta shaded areas in Figure 3, and the sound power levels shall not be greater than those in Table B1.

Extraction shall be conducted with a maximum of one extraction loader.

In Phase 1, a maximum of 20 trucks can enter/exit the site for shipping.

In Phase 2, a maximum of 9 trucks can enter/exit the site for shipping between 06:00 and 07:00, and a maximum of 20 trucks can enter/exit the site for shipping between 07:00 and 19:00.

All mobile construction equipment used to prepare for, rehabilitate, or maintain the operations shall produce sound levels which comply with MECP Publication NPC-115.

Variations

It is recognized that advancements of equipment or different configurations may allow additional equipment or equipment to be substituted for certain activities while still meeting MECP guidelines. Variations to the noise control measures may be permitted, provided that the sound level revisions can demonstrably meet the applicable MECP limits as confirmed through documentation by a professional engineer. Prior to modification, notification shall be given to the MNR.

Vacant Lots

An updated Noise Impact Assessment, prepared by a Professional Engineer qualified to provide Acoustical Engineering services in the Province of Ontario, shall be submitted to the MNR within 12 months following the pit operator receiving notification of a building permit issued for a noise-sensitive use on the



properties designated as VL1, VL2, or VL3. If the updated study concludes that the sound levels of the pit will not comply with the applicable limits, the report shall include the following:

- Details regarding the noise control measures required to reduce the sound levels of the pit to comply with the applicable limits;
- A timetable for implementation of the noise control measures, including dates for achieving compliance with specific milestones;
- A timetable for submitting further assessments to demonstrate compliance with the applicable sound level limits at the properties designated as VL1, VL2, and VL3.



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APPENDIX D

Results and Sample Calculations



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R1 - Single-Storey Residential Home at 3713 Dummer-Asphodel Road				18264818	4921402	219.8												
Src Name	X	Y	Z	LxD	LxN	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahaus	Cmet	Reft	LrD	LrN	
Arriving/Departing Aggregate Trucks	18264928	4921840	224.3	100	100	63.7	0	0.0	5.3	8.2	1.1	0.0	0.0	0.0	0.0	21	21	
Unloading Aggregate Trucks	18265024	4921755	222.7	91	91	62.7	0	0.0	3.0	14.3	2.1	0.0	0.0	0.0	0.0	9	9	
Arriving/Departing Liquid-Asphalt Trucks	18264834	4921842	224.3	90	90	63.7	0	0.0	3.3	10.3	1.6	0.0	0.0	0.0	0.0	11	11	
Conveyor System at Storage Silos	18264866	4921791	223.0	96	96	62.9	0	0.0	6.3	7.3	0.7	0.0	0.0	0.0	0.0	19	19	
Arriving/Departing HMA Trucks	18264844	4921842	224.3	102	102	63.7	0	0.0	3.3	10.5	1.6	0.0	0.0	0.0	0.0	23	23	
Front End Loader	18264914	4921804	223.7	106	106	63.3	0	0.0	4.9	9.0	1.3	0.0	0.0	0.0	0.0	28	28	
Burner	18264882	4921788	224.5	96	96	62.9	3	0.0	2.9	9.3	0.8	0.0	0.0	0.0	0.0	23	23	
Burner Air-Inlet	18264882	4921788	224.5	83	83	62.8	0	0.0	1.7	10.7	0.8	0.0	0.0	0.0	0.0	7	7	
Mixer Drum	18264882	4921796	223.0	101	101	63.0	0	0.0	3.5	17.5	2.2	0.0	0.0	0.0	0.0	15	15	
Mixer Drum Motor	18264880	4921796	224.0	106	106	63.0	3	0.0	3.0	15.2	2.0	0.0	0.0	0.0	0.0	26	26	
Dust Collector Fan & Motors	18264906	4921804	222.5	92	92	63.3	0	0.0	5.3	13.8	2.1	0.0	0.0	0.0	0.0	8	8	
Dust Collector Stack Outlet	18264906	4921803	220.9	93	93	63.3	0	0.0	6.6	12.3	1.6	0.0	0.0	0.0	0.0	9	9	
Dust Collector Blower	18264898	4921802	222.0	111	111	63.2	0	0.0	7.0	10.4	1.3	0.0	0.0	0.0	0.0	29	29	
Opening Gate at Storage Silo	18264866	4921792	225.0	116	116	62.9	0	0.0	0.9	17.1	4.3	0.0	0.0	0.0	0.0	31	31	
HMA Trucks Idling at Loading Point	18264864	4921797	222.5	95	95	63.0	0	0.0	4.0	10.6	1.6	0.0	0.0	0.0	0.0	16	16	
Wash Plant Genset	18264622	4922047	225.0	110	110	67.6	0	0.0	3.7	4.3	2.5	0.0	0.0	0.0	0.0	32	32	
Wash Plant	18264658	4922077	228.0	107	107	67.8	0	0.0	0.4	7.9	6.5	0.0	0.0	0.0	0.0	24	24	
P1 Extraction - Worst-Case R1	18265694	4922150	225.5	106	106	72.2	0	0.0	4.1	3.1	2.9	0.0	0.0	0.0	0.0	24	24	
P1 Processing - Worst-Case R1	18265698	4922240	226.0	119	--	72.7	0	0.0	3.4	3.2	3.9	0.0	0.0	0.0	0.0	36	--	
P1 Arriving/Departing Shipping Trucks	18265750	4922233	226.6	107	107	69.7	0	0.0	4.3	4.3	2.8	0.0	0.0	0.0	0.0	25	25	

R2 - Single-Storey Residential Home at 4792 Highway 7				18265202	4921591	222.5											
Src Name	X	Y	Z	LxD	LxN	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahaus	Cmet	Refl	LrD	LrN
Arriving/Departing Aggregate Trucks	18264802	4921836	224.2	100	100	63.2	0	0.0	3.4	5.1	1.5	0.0	0.0	0.0	0.0	26	26
Unloading Aggregate Trucks	18265026	4921756	222.7	91	91	59.8	0	0.0	2.3	10.8	2.3	0.0	0.0	0.0	0.0	16	16
Arriving/Departing Liquid-Asphalt Trucks	18264830	4921841	224.1	90	90	63.6	0	0.0	1.6	7.2	2.1	0.0	0.0	0.0	0.0	16	16
Conveyor System at Storage Silos	18264866	4921790	223.0	96	96	62.8	0	0.0	4.2	3.1	1.1	0.0	0.0	0.0	0.0	25	25
Arriving/Departing HMA Trucks	18264832	4921843	224.2	102	102	63.6	0	0.0	1.6	7.3	2.1	0.0	0.0	0.0	0.0	27	27
Front End Loader	18264936	4921783	223.4	106	106	61.2	0	0.0	3.2	5.9	1.3	0.0	0.0	0.0	0.0	34	34
Burner	18264882	4921788	224.5	96	96	62.5	3	0.0	1.6	5.8	1.3	0.0	0.0	0.0	0.0	28	28
Burner Air-Inlet	18264882	4921788	224.5	83	83	62.5	0	0.0	0.9	6.8	1.5	0.0	0.0	0.0	0.0	11	11
Mixer Drum	18264882	4921796	223.0	101	101	62.6	0	0.0	2.2	13.8	1.8	0.0	0.0	0.0	0.0	21	21
Mixer Drum Motor	18264880	4921796	224.0	106	106	62.6	3	0.0	1.7	19.6	2.3	0.0	0.0	0.0	0.0	23	23
Dust Collector Fan & Motors	18264906	4921804	222.5	92	92	62.2	0	0.0	3.0	6.0	2.8	0.0	0.0	0.0	0.0	18	18
Dust Collector Stack Outlet	18264906	4921803	220.9	93	93	62.2	0	0.0	5.9	13.0	1.5	0.0	0.0	0.0	0.0	10	10
Dust Collector Blower	18264898	4921802	222.0	111	111	62.3	0	0.0	5.4	3.1	1.5	0.0	0.0	0.0	0.0	39	39
Opening Gate at Storage Silo	18264866	4921792	225.0	116	116	62.8	0	0.0	-0.4	9.7	4.6	0.0	0.0	0.0	0.0	40	40
HMA Trucks Idling at Loading Point	18264864	4921797	222.5	95	95	62.9	0	0.0	2.4	9.8	1.7	0.0	0.0	0.0	0.0	18	18
Wash Plant Genset	18264622	4922047	225.0	110	110	68.4	0	0.0	4.5	7.9	2.1	0.0	0.0	0.0	0.0	27	27
Wash Plant	18264658	4922077	228.0	107	107	68.2	0	0.0	-0.6	4.6	7.9	0.0	0.0	0.0	0.0	27	27
P1 Extraction - Worst-Case R2	18265704	4922138	225.5	106	106	68.4	0	0.0	1.8	3.4	3.5	0.0	0.0	0.0	0.0	29	29
P1 Processing - Worst-Case R2	18265694	4922240	226.0	119	--	69.2	0	0.0	3.2	3.3	2.7	0.0	0.0	0.0	0.0	41	--
P1 Arriving/Departing Shipping Trucks	18265780	4922233	226.6	107	107	67.5	0	0.0	3.0	3.1	2.8	0.0	0.0	0.0	0.0	30	30

R3 - Raised Bungalow at 11 Twelfth Line Road				18265510	4921712	223.5											
Src Name	X	Y	Z	LxD	LxN	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahaus	Cmet	Refl	LrD	LrN
Arriving/Departing Aggregate Trucks	18264816	4921823	224.4	100	100	67.4	0	0.0	1.3	4.4	2.6	0.0	0.0	0.0	0.0	24	24
Unloading Aggregate Trucks	18265026	4921755	222.7	91	91	65.6	0	0.0	0.2	6.6	5.3	0.0	0.0	0.0	0.0	13	13
Arriving/Departing Liquid-Asphalt Trucks	18264860	4921826	224.2	90	90	67.8	0	0.0	-0.1	5.4	3.7	0.0	0.0	0.0	0.0	13	13
Conveyor System at Storage Silos	18264866	4921788	223.0	96	96	67.2	0	0.0	3.0	5.7	1.6	0.0	0.0	0.0	0.0	18	18
Arriving/Departing HMA Trucks	18264856	4921826	224.1	102	102	67.9	0	0.0	0.0	5.8	3.6	0.0	0.0	0.0	0.0	25	25
Front End Loader	18264946	4921778	223.3	106	106	66.2	0	0.0	0.9	5.3	2.4	0.0	0.0	0.0	0.0	31	31
Burner	18264882	4921788	224.5	96	96	67.0	3	0.0	1.0	5.3	2.0	0.0	0.0	0.0	0.0	24	24
Burner Air-Inlet	18264882	4921788	224.5	83	83	67.0	0	0.0	0.2	6.2	2.4	0.0	0.0	0.0	0.0	7	7
Mixer Drum	18264882	4921796	223.0	101	101	67.0	0	0.0	0.0	8.5	3.3	0.0	0.0	0.0	0.0	22	22
Mixer Drum Motor	18264880	4921796	224.0	106	106	67.1	3	0.0	0.4	19.3	2.9	0.0	0.0	0.0	0.0	19	19
Dust Collector Fan & Motors	18264906	4921804	222.5	92	92	66.7	0	0.0	1.9	8.6	3.3	0.0	0.0	0.0	0.0	12	12
Dust Collector Stack Outlet	18264906	4921803	220.9	93	93	66.7	0	0.0	3.8	17.5	2.4	0.0	0.0	0.0	0.0	2	2
Dust Collector Blower	18264898	4921802	222.0	111	111	66.8	0	0.0	2.9	5.9	2.0	0.0	0.0	0.0	0.0	33	33
Opening Gate at Storage Silo	18264866	4921792	225.0	116	116	67.2	0	0.0	-1.1	9.7	6.6	0.0	0.0	0.0	0.0	34	34
HMA Trucks Idling at Loading Point	18264864	4921797	222.5	95	95	67.3	0	0.0	2.2	13.7	2.0	0.0	0.0	0.0	0.0	10	10
Wash Plant Genset	18264622	4922047	225.0	110	110	70.6	0	0.0	3.0	7.3	2.8	0.0	0.0	0.0	0.0	26	26
Wash Plant	18264658	4922077	228.0	107	107	70.3	0	0.0	-1.2	5.0	9.4	0.0	0.0	0.0	0.0	24	24
P1 Extraction - Worst-Case R3	18265704	4922138	225.5	106	106	64.4	0	0.0	0.9	0.0	2.2	0.0	0.0	0.0	0.0	39	39
P1 Processing - Worst-Case R3	18265694	4922240	226.0	119	--	65.9	0	0.0	0.2	0.3	3.2	0.0	0.0	0.0	0.0	49	--
P1 Arriving/Departing Shipping Trucks	18265782	4922225	226.6	107	107	66.7	0	0.0	1.2	3.7	2.8	0.0	0.0	0.0	0.0	32	32

R4 - Single-Storey Residence at 2582 Asphodel 12th Line				18266054	4921786	224.5											
Src Name	X	Y	Z	LxD	LxN	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahaus	Cmet	Refl	LrD	LrN
Arriving/Departing Aggregate Trucks	18264824	4921817	224.3	100	100	72.6	0	0.0	0.4	3.7	4.4	0.0	0.0	0.0	0.0	19	19
Unloading Aggregate Trucks	18265024	4921755	222.7	91	91	71.7	0	0.0	0.0	4.8	8.6	0.0	0.0	0.0	0.0	6	6
Arriving/Departing Liquid-Asphalt Trucks	18264852	4921822	224.2	90	90	72.8	0	0.0	-0.2	4.9	5.2	0.0	0.0	0.0	0.0	7	7
Conveyor System at Storage Silos	18264866	4921790	223.0	96	96	72.5	0	0.0	1.9	4.6	2.9	0.0	0.0	0.0	0.0	14	14
Arriving/Departing HMA Trucks	18264850	4921821	224.2	102	102	72.8	0	0.0	-0.2	5.0	5.2	0.0	0.0	0.0	0.0	19	19
Front End Loader	18264944	4921778	223.3	106	106	72.0	0	0.0	0.1	4.6	4.3	0.0	0.0	0.0	0.0	25	25
Burner	18264882	4921788	224.5	96	96	72.4	3	0.0	0.1	4.2	3.8	0.0	0.0	0.0	0.0	18	18
Burner Air-Inlet	18264882	4921788	224.5	83	83	72.4	0	0.0	-0.6	4.4	5.1	0.0	0.0	0.0	0.0	2	2
Mixer Drum	18264882	4921796	223.0	101	101	72.4	0	0.0	-0.5	4.6	6.5	0.0	0.0	0.0	0.0	18	18
Mixer Drum Motor	18264880	4921796	224.0	106	106	72.4	3	0.0	0.1	21.2	4.7	0.0	0.0	0.0	0.0	11	11
Dust Collector Fan & Motors	18264906	4921804	222.5	92	92	72.2	0	0.0	0.7	4.0	6.9	0.0	0.0	0.0	0.0	9	9
Dust Collector Stack Outlet	18264906	4921803	220.9	93	93	72.2	0	0.0	3.6	12.8	4.1	0.0	0.0	0.0	0.0	--	--
Dust Collector Blower	18264898	4921802	222.0	111	111	72.3	0	0.0	2.1	3.2	3.5	0.0	0.0	0.0	0.0	30	30
Opening Gate at Storage Silo	18264866	4921792	225.0	116	116	72.5	0	0.0	-1.0	4.8	12.1	0.0	0.0	0.0	0.0	28	28
HMA Trucks Idling at Loading Point	18264864	4921797	222.5	95	95	72.5	0	0.0	1.0	10.1	4.3	0.0	0.0	0.0	0.0	7	7
Wash Plant Genset	18264622	4922047	225.0	110	110	74.3	0	0.0	1.0	4.0	4.6	0.0	0.0	0.0	0.0	26	26
Wash Plant	18264658	4922077	228.0	107	107	74.1	0	0.0	-1.2	4.7	12.0	0.0	0.0	0.0	0.0	17	17

Src Name	X	Y	Z	LxD	LxN	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahaus	Cmet	Refl	LrD	LrN
P1 Extraction - Worst-Case R4	18265768	4922176	225.5	106	106	64.7	0	0.0	1.3	3.5	2.3	0.0	0.0	0.0	0.0	34	34
P1 Processing - Worst-Case R4	18265758	4922225	226.0	119	--	65.5	0	0.0	0.4	4.0	3.1	0.0	0.0	0.0	0.0	46	--
P1 Arriving/Departing Shipping Trucks	18265762	4922234	226.7	107	107	68.9	0	0.0	0.3	3.8	3.2	0.0	0.0	0.0	0.0	30	30

R5 - Two-Storey Residence at 4882 Highway 7				18266538	4922126	231.7												
Src Name	X	Y	Z	LxD	LxN	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahaus	Cmet	Refl	LrD	LrN	
Arriving/Departing Aggregate Trucks	18264830	4921815	224.3	100	100	75.7	0	0.0	0.6	4.3	4.7	0.0	0.0	0.0	0.0	14	14	
Unloading Aggregate Trucks	18265024	4921755	222.7	91	91	75.1	0	0.0	0.1	4.5	10.3	0.0	0.0	0.0	0.0	1	1	
Arriving/Departing Liquid-Asphalt Trucks	18264846	4921819	224.3	90	90	75.8	0	0.0	0.1	4.5	6.6	0.0	0.0	0.0	0.0	3	3	
Conveyor System at Storage Silos	18264866	4921793	223.0	96	96	75.6	0	0.0	2.5	5.8	3.3	0.0	0.0	0.0	0.0	9	9	
Arriving/Departing HMA Trucks	18264844	4921819	224.2	102	102	75.8	0	0.0	0.1	4.5	6.6	0.0	0.0	0.0	0.0	15	15	
Front End Loader	18264944	4921778	223.3	106	106	75.3	0	0.0	0.3	4.7	5.3	0.0	0.0	0.0	0.0	21	21	
Burner	18264882	4921788	224.5	96	96	75.5	3	0.0	0.2	4.1	4.9	0.0	0.0	0.0	0.0	14	14	
Burner Air-Inlet	18264882	4921788	224.5	83	83	75.5	0	0.0	-0.6	4.3	6.1	0.0	0.0	0.0	0.0	--	--	
Mixer Drum	18264882	4921796	223.0	101	101	75.5	0	0.0	0.5	17.6	6.2	0.0	0.0	0.0	0.0	1	1	
Mixer Drum Motor	18264880	4921796	224.0	106	106	75.6	3	0.0	0.4	21.9	6.4	0.0	0.0	0.0	0.0	5	5	
Dust Collector Fan & Motors	18264906	4921804	222.5	92	92	75.4	0	0.0	1.1	3.8	8.4	0.0	0.0	0.0	0.0	4	4	
Dust Collector Stack Outlet	18264906	4921803	220.9	93	93	75.4	0	0.0	4.0	15.7	5.4	0.0	0.0	0.0	0.0	--	--	
Dust Collector Blower	18264898	4921802	222.0	111	111	75.5	0	0.0	2.4	3.0	5.0	0.0	0.0	0.0	0.0	25	25	
Opening Gate at Storage Silo	18264866	4921792	225.0	116	116	75.6	0	0.0	-1.0	4.8	14.6	0.0	0.0	0.0	0.0	22	22	
HMA Trucks Idling at Loading Point	18264864	4921797	222.5	95	95	75.6	0	0.0	0.9	5.8	6.6	0.0	0.0	0.0	0.0	6	6	
Wash Plant Genset	18264622	4922047	225.0	110	110	76.7	0	0.0	1.4	3.8	5.6	0.0	0.0	0.0	0.0	23	23	
Wash Plant	18264658	4922077	228.0	107	107	76.5	0	0.0	-1.1	4.7	13.9	0.0	0.0	0.0	0.0	13	13	
P1 Extraction - Worst-Case R5	18266046	4922339	225.8	106	106	65.6	0	0.0	1.4	3.5	2.5	0.0	0.0	0.0	0.0	33	33	
P1 Processing - Worst-Case R5	18266046	4922338	226.3	119	--	65.6	0	0.0	1.0	3.3	3.3	0.0	0.0	0.0	0.0	46	--	
P1 Arriving/Departing Shipping Trucks	18265748	4922231	226.7	107	107	70.8	0	0.0	0.4	4.0	3.7	0.0	0.0	0.0	0.0	28	28	

R6 - Two-Storey Residence at 4900 Highway 7				18266672	4922184	230.5												
Src Name	X	Y	Z	LxD	LxN	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahaus	Cmet	Reff	LrD	LrN	
Arriving/Departing Aggregate Trucks	18264838	4921816	224.3	99	99	76.4	0	0.0	0.7	4.2	5.0	0.0	0.0	0.0	0.0	13	13	
Unloading Aggregate Trucks	18265024	4921755	222.7	91	91	75.9	0	0.0	0.1	4.5	10.7	0.0	0.0	0.0	0.0	0	0	
Arriving/Departing Liquid-Asphalt Trucks	18264864	4921817	224.2	90	90	76.5	0	0.0	0.1	4.4	7.0	0.0	0.0	0.0	0.0	2	2	
Conveyor System at Storage Silos	18264866	4921792	223.0	96	96	76.3	0	0.0	2.4	4.9	3.7	0.0	0.0	0.0	0.0	9	9	
Arriving/Departing HMA Trucks	18264852	4921814	224.2	102	102	76.5	0	0.0	0.2	4.5	6.9	0.0	0.0	0.0	0.0	14	14	
Front End Loader	18264944	4921778	223.3	106	106	76.0	0	0.0	0.4	4.6	5.6	0.0	0.0	0.0	0.0	19	19	
Burner	18264882	4921788	224.5	96	96	76.3	3	0.0	0.3	4.1	5.1	0.0	0.0	0.0	0.0	13	13	
Burner Air-Inlet	18264882	4921788	224.5	83	83	76.3	0	0.0	-0.6	4.3	6.4	0.0	0.0	0.0	0.0	--	--	
Mixer Drum	18264882	4921796	223.0	101	101	76.3	0	0.0	0.5	16.8	6.6	0.0	0.0	0.0	0.0	1	1	
Mixer Drum Motor	18264880	4921796	224.0	106	106	76.3	3	0.0	0.5	21.6	6.7	0.0	0.0	0.0	0.0	4	4	
Dust Collector Fan & Motors	18264906	4921804	222.5	92	92	76.1	0	0.0	1.2	3.8	8.8	0.0	0.0	0.0	0.0	2	2	
Dust Collector Stack Outlet	18264906	4921803	220.9	93	93	76.1	0	0.0	4.1	15.1	5.8	0.0	0.0	0.0	0.0	--	--	
Dust Collector Blower	18264898	4921802	222.0	111	111	76.2	0	0.0	2.5	2.9	5.3	0.0	0.0	0.0	0.0	24	24	
Opening Gate at Storage Silo	18264866	4921792	225.0	116	116	76.3	0	0.0	-1.0	4.8	15.2	0.0	0.0	0.0	0.0	21	21	
HMA Trucks Idling at Loading Point	18264864	4921797	222.5	95	95	76.3	0	0.0	0.7	4.1	7.3	0.0	0.0	0.0	0.0	7	7	
P1 Extraction - Worst-Case R6	18266030	4922339	225.8	106	106	67.4	0	0.0	1.3	3.4	3.0	0.0	0.0	0.0	0.0	31	31	
P1 Processing - Worst-Case R6	18266024	4922338	226.3	119	--	67.4	0	0.0	1.1	3.6	3.6	0.0	0.0	0.0	0.0	43	--	
P1 Arriving/Departing Shipping Trucks	18265750	4922237	226.7	106	106	71.9	0	0.0	0.5	4.1	4.0	0.0	0.0	0.0	0.0	26	26	

R7 - Two Storey Residence at 638 Belmont Twp 11th Line				18267320	4922298	229.4												
Src Name	X	Y	Z	LxD	LxN	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahaus	Cmet	Reff	LrD	LrN	
Arriving/Departing Aggregate Trucks	18264836	4921813	224.2	100	100	79.1	0	0.0	4.7	3.0	5.5	0.0	0.0	0.0	0.0	8	8	
Unloading Aggregate Trucks	18265024	4921755	222.7	91	91	78.6	0	0.0	2.8	5.3	10.4	0.0	0.0	0.0	0.0	--	--	
Arriving/Departing Liquid-Asphalt Trucks	18264828	4921827	224.2	90	90	79.1	0	0.0	3.6	3.9	7.5	0.0	0.0	0.0	0.0	--	--	
Conveyor System at Storage Silos	18264866	4921791	223.0	96	96	79.0	0	0.0	7.1	7.3	3.5	0.0	0.0	0.0	0.0	--	--	
Arriving/Departing HMA Trucks	18264826	4921825	224.2	102	102	79.1	0	0.0	3.6	4.0	7.5	0.0	0.0	0.0	0.0	8	8	
Front End Loader	18264944	4921778	223.3	106	106	78.7	0	0.0	4.7	4.6	5.7	0.0	0.0	0.0	0.0	12	12	
Burner	18264882	4921788	224.5	96	96	78.9	3	0.0	2.7	4.5	4.8	0.0	0.0	0.0	0.0	8	8	
Burner Air-Inlet	18264882	4921788	224.5	83	83	78.9	0	0.0	1.2	4.7	6.1	0.0	0.0	0.0	0.0	--	--	
Mixer Drum	18264882	4921796	223.0	101	101	78.9	0	0.0	5.5	17.1	8.4	0.0	0.0	0.0	0.0	--	--	
Mixer Drum Motor	18264880	4921796	224.0	106	106	78.9	3	0.0	5.2	18.3	8.9	0.0	0.0	0.0	0.0	--	--	
Dust Collector Fan & Motors	18264906	4921804	222.5	92	92	78.8	0	0.0	5.9	4.4	8.3	0.0	0.0	0.0	0.0	--	--	
Dust Collector Stack Outlet	18264906	4921803	220.9	93	93	78.8	0	0.0	8.6	11.9	7.3	0.0	0.0	0.0	0.0	--	--	
Dust Collector Blower	18264898	4921802	222.0	111	111	78.9	0	0.0	4.9	4.0	7.2	0.0	0.0	0.0	0.0	16	16	
Opening Gate at Storage Silo	18264866	4921792	225.0	116	116	79.0	0	0.0	1.6	5.6	16.6	0.0	0.0	0.0	0.0	14	14	
HMA Trucks Idling at Loading Point	18264864	4921797	222.5	95	95	79.0	0	0.0	5.4	10.5	5.9	0.0	0.0	0.0	0.0	--	--	
P2 Processing - Worst-Case R7	18266232	4922918	228.5	119	--	73.0	0	0.0	3.7	3.1	4.0	0.0	0.0	0.0	0.0	35	--	
P2 Extraction - Worst-Case R7	18266246	4922801	228.0	106	106	72.5	0	0.0	4.1	3.1	3.1	0.0	0.0	0.0	0.0	23	23	
Wash Plant Genset	18264622	4922047	225.0	110	110	79.7	0	0.0	4.9	2.5	6.4	0.0	0.0	0.0	0.0	17	17	
Wash Plant	18264658	4922077	228.0	107	107	79.5	0	0.0	1.9	3.7	15.6	0.0	0.0	0.0	0.0	6	6	
P2 Arriving/Departing Shipping Trucks	18265906	4922905	228.5	107	103	74.9	0	0.0	4.9	3.7	3.2	0.0	0.0	0.0	0.0	20	17	

R8 - Single-Storey Residence at 646 Belmont Twp 11th Line				18267354	4922406	224.1												
Src Name	X	Y	Z	LxD	LxN	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahaus	Cmet	Refl	LrD	LrN	
Arriving/Departing Aggregate Trucks	18264836	4921813	224.2	100	100	79.3	0	0.0	4.9	3.7	5.3	0.0	0.0	0.0	0.0	7	7	
Unloading Aggregate Trucks	18265024	4921755	222.7	91	91	78.9	0	0.0	2.7	6.3	10.6	0.0	0.0	0.0	0.0	--	--	
Arriving/Departing Liquid-Asphalt Trucks	18264828	4921827	224.2	90	90	79.3	0	0.0	3.8	4.6	7.4	0.0	0.0	0.0	0.0	--	--	
Conveyor System at Storage Silos	18264866	4921791	223.0	96	96	79.2	0	0.0	7.1	8.9	3.5	0.0	0.0	0.0	0.0	--	--	
Arriving/Departing HMA Trucks	18264826	4921825	224.2	102	102	79.3	0	0.0	3.8	4.8	7.4	0.0	0.0	0.0	0.0	6	6	
Front End Loader	18264944	4921778	223.3	106	106	78.9	0	0.0	5.4	6.2	5.2	0.0	0.0	0.0	0.0	10	10	
Burner	18264882	4921788	224.5	96	96	79.1	3	0.0	2.9	5.4	4.2	0.0	0.0	0.0	0.0	7	7	
Burner Air-Inlet	18264882	4921788	224.5	83	83	79.1	0	0.0	1.3	7.2	3.9	0.0	0.0	0.0	0.0	--	--	
Mixer Drum	18264882	4921796	223.0	101	101	79.1	0	0.0	5.5	17.3	8.7	0.0	0.0	0.0	0.0	--	--	
Mixer Drum Motor	18264880	4921796	224.0	106	106	79.1	3	0.0	5.2	18.3	9.1	0.0	0.0	0.0	0.0	--	--	
Dust Collector Fan & Motors	18264906	4921804	222.5	92	92	79.0	0	0.0	6.7	11.4	6.4	0.0	0.0	0.0	0.0	--	--	
Dust Collector Stack Outlet	18264906	4921803	220.9	93	93	79.0	0	0.0	8.6	11.8	7.5	0.0	0.0	0.0	0.0	--	--	
Dust Collector Blower	18264898	4921802	222.0	111	111	79.1	0	0.0	7.9	8.0	6.0	0.0	0.0	0.0	0.0	10	10	
Opening Gate at Storage Silo	18264866	4921792	225.0	116	116	79.2	0	0.0	1.8	6.5	16.7	0.0	0.0	0.0	0.0	12	12	

Src Name	X	Y	Z	LxD	LxN	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahaus	Cmet	Refl	LrD	LrN
HMA Trucks Idling at Loading Point	18264864	4921797	222.5	95	95	79.2	0	0.0	4.5	4.9	7.2	0.0	0.0	0.0	0.0	--	--
P2 Processing - Worst-Case R8	18266312	4923166	228.5	119	--	73.2	0	0.0	3.4	3.4	4.1	0.0	0.0	0.0	0.0	35	--
P2 Extraction - Worst-Case R8	18266246	4922801	228.0	106	106	72.4	0	0.0	4.1	3.1	3.0	0.0	0.0	0.0	0.0	23	23
Wash Plant Genset	18264622	4922047	225.0	110	110	79.8	0	0.0	4.9	2.6	6.5	0.0	0.0	0.0	0.0	16	16
Wash Plant	18264658	4922077	228.0	107	107	79.7	0	0.0	1.8	3.9	15.7	0.0	0.0	0.0	0.0	6	6
P2 Arriving/Departing Shipping Trucks	18265906	4922905	228.5	107	103	75.3	0	0.0	5.4	2.9	5.0	0.0	0.0	0.0	0.0	18	15

R9 - Two-Storey Residence at 779 Belmont Twp 11th Line

Src Name	X	Y	Z	LxD	LxN	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahaus	Cmet	Refl	LrD	LrN
Arriving/Departing Aggregate Trucks	18264834	4921813	224.2	100	100	79.8	0	0.0	0.8	4.1	6.7	0.0	0.0	0.0	0.0	8	8
Unloading Aggregate Trucks	18265024	4921755	222.7	91	91	79.5	0	0.0	-0.2	4.1	12.6	0.0	0.0	0.0	0.0	--	--
Arriving/Departing Liquid-Asphalt Trucks	18264828	4921827	224.2	90	90	79.8	0	0.0	0.3	4.3	8.9	0.0	0.0	0.0	0.0	--	--
Conveyor System at Storage Silos	18264866	4921791	223.0	96	96	79.7	0	0.0	2.1	3.4	5.0	0.0	0.0	0.0	0.0	6	6
Arriving/Departing HMA Trucks	18264826	4921825	224.2	102	102	79.8	0	0.0	0.4	4.4	8.9	0.0	0.0	0.0	0.0	8	8
Front End Loader	18264944	4921778	223.3	106	106	79.6	0	0.0	0.4	4.4	7.7	0.0	0.0	0.0	0.0	14	14
Burner	18264882	4921788	224.5	96	96	79.7	3	0.0	-0.3	13.2	2.6	0.0	0.0	0.0	0.0	4	4
Burner Air-Inlet	18264882	4921788	224.5	83	83	79.7	0	0.0	-0.9	4.3	7.6	0.0	0.0	0.0	0.0	--	--
Mixer Drum	18264882	4921796	223.0	101	101	79.7	0	0.0	-0.1	4.5	11.3	0.0	0.0	0.0	0.0	6	6
Mixer Drum Motor	18264880	4921796	224.0	106	106	79.7	3	0.0	0.7	20.4	8.6	0.0	0.0	0.0	0.0	--	--
Dust Collector Fan & Motors	18264906	4921804	222.5	92	92	79.6	0	0.0	1.7	5.0	10.6	0.0	0.0	0.0	0.0	--	--
Dust Collector Stack Outlet	18264906	4921803	220.9	93	93	79.6	0	0.0	4.2	12.6	8.1	0.0	0.0	0.0	0.0	--	--
Dust Collector Blower	18264898	4921802	222.0	111	111	79.6	0	0.0	2.6	3.6	7.5	0.0	0.0	0.0	0.0	18	18
Opening Gate at Storage Silo	18264866	4921792	225.0	116	116	79.7	0	0.0	-1.2	4.7	18.5	0.0	0.0	0.0	0.0	14	14
HMA Trucks Idling at Loading Point	18264864	4921797	222.5	95	95	79.7	0	0.0	0.9	3.9	9.5	0.0	0.0	0.0	0.0	1	1
P2 Processing - Worst-Case R9	18266366	4923178	228.5	119	--	70.4	0	0.0	0.3	4.4	4.0	0.0	0.0	0.0	0.0	40	--
P2 Extraction - Worst-Case R9	18266362	4923179	228.0	106	106	70.4	0	0.0	0.2	4.0	3.9	0.0	0.0	0.0	0.0	28	28
Wash Plant Genset	18264622	4922047	225.0	110	110	80.1	0	0.0	1.9	3.5	7.3	0.0	0.0	0.0	0.0	17	17
Wash Plant	18264658	4922077	228.0	107	107	80.0	0	0.0	-1.0	4.7	17.0	0.0	0.0	0.0	0.0	6	6
P2 Arriving/Departing Shipping Trucks	18265908	4922905	228.5	107	103	74.0	0	0.0	1.5	4.3	4.5	0.0	0.0	0.0	0.0	22	19

R10 - Raised Bungalow ay 910 Belmont Twp 11th Line

Src Name	X	Y	Z	LxD	LxN	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahaus	Cmet	Refl	LrD	LrN
Arriving/Departing Aggregate Trucks	18264834	4921813	224.2	100	100	79.8	0	0.0	2.2	3.9	5.8	0.0	0.0	0.0	0.0	8	8
Unloading Aggregate Trucks	18265024	4921755	222.7	91	91	79.6	0	0.0	0.3	4.1	12.2	0.0	0.0	0.0	0.0	--	--
Arriving/Departing Liquid-Asphalt Trucks	18264828	4921827	224.2	90	90	79.8	0	0.0	1.0	4.3	8.4	0.0	0.0	0.0	0.0	--	--
Conveyor System at Storage Silos	18264866	4921791	223.0	96	96	79.8	0	0.0	3.4	3.2	4.4	0.0	0.0	0.0	0.0	5	5
Arriving/Departing HMA Trucks	18264826	4921825	224.2	102	102	79.8	0	0.0	0.9	4.3	8.5	0.0	0.0	0.0	0.0	8	8
Front End Loader	18264944	4921778	223.3	106	106	79.6	0	0.0	1.7	4.3	6.7	0.0	0.0	0.0	0.0	14	14
Burner	18264882	4921788	224.5	96	96	79.7	3	0.0	0.1	15.7	2.3	0.0	0.0	0.0	0.0	1	1
Burner Air-Inlet	18264882	4921788	224.5	83	83	79.7	0	0.0	-0.3	8.5	4.2	0.0	0.0	0.0	0.0	--	--
Mixer Drum	18264882	4921796	223.0	101	101	79.7	0	0.0	0.2	4.5	10.9	0.0	0.0	0.0	0.0	6	6
Mixer Drum Motor	18264880	4921796	224.0	106	106	79.7	3	0.0	2.1	18.7	8.9	0.0	0.0	0.0	0.0	--	--
Dust Collector Fan & Motors	18264906	4921804	222.5	92	92	79.7	0	0.0	2.9	5.7	9.5	0.0	0.0	0.0	0.0	--	--
Dust Collector Stack Outlet	18264906	4921803	220.9	93	93	79.7	0	0.0	4.7	7.7	7.6	0.0	0.0	0.0	0.0	--	--
Dust Collector Blower	18264898	4921802	222.0	111	111	79.7	0	0.0	2.8	2.7	7.3	0.0	0.0	0.0	0.0	19	19
Opening Gate at Storage Silo	18264866	4921792	225.0	116	116	79.8	0	0.0	-1.3	4.7	18.4	0.0	0.0	0.0	0.0	15	15
HMA Trucks Idling at Loading Point	18264864	4921797	222.5	95	95	79.8	0	0.0	1.4	4.3	9.0	0.0	0.0	0.0	0.0	1	1
P2 Processing - Worst-Case R10	18266402	4923166	228.5	119	--	67.7	0	0.0	1.0	4.3	3.4	0.0	0.0	0.0	0.0	43	--
P2 Extraction - Worst-Case R10	18266390	4923150	228.0	106	106	68.0	0	0.0	1.0	3.7	3.1	0.0	0.0	0.0	0.0	30	30
Wash Plant Genset	18264622	4922047	225.0	110	110	79.9	0	0.0	3.4	3.3	6.6	0.0	0.0	0.0	0.0	17	17
Wash Plant	18264658	4922077	228.0	107	107	79.7	0	0.0	0.0	4.5	16.3	0.0	0.0	0.0	0.0	6	6
P2 Arriving/Departing Shipping Trucks	18265906	4922905	228.5	107	103	72.8	0	0.0	1.9	3.8	4.4	0.0	0.0	0.0	0.0	24	21

R11 - Two-Storey Residential Dwelling at 932 Belmont Twp 11th Line

Src Name	X	Y	Z	LxD	LxN	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahaus	Cmet	Refl	LrD	LrN
Arriving/Departing Aggregate Trucks	18264834	4921813	224.2	100	100	79.9	0	0.0	0.8	4.0	6.8	0.0	0.0	0.0	0.0	8	8
Unloading Aggregate Trucks	18265024	4921755	222.7	91	91	79.8	0	0.0	-0.4	4.1	12.8	0.0	0.0	0.0	0.0	--	--
Arriving/Departing Liquid-Asphalt Trucks	18264828	4921827	224.2	90	90	80.0	0	0.0	0.4	4.3	9.0	0.0	0.0	0.0	0.0	--	--
Conveyor System at Storage Silos	18264866	4921791	223.0	96	96	79.9	0	0.0	2.0	3.4	5.1	0.0	0.0	0.0	0.0	6	6
Arriving/Departing HMA Trucks	18264826	4921825	224.2	102	102	80.0	0	0.0	0.4	4.3	9.0	0.0	0.0	0.0	0.0	8	8
Front End Loader	18264944	4921778	223.3	106	106	79.8	0	0.0	0.3	4.3	7.9	0.0	0.0	0.0	0.0	14	14
Burner	18264882	4921788	224.5	96	96	79.9	3	0.0	-0.7	16.3	2.3	0.0	0.0	0.0	0.0	1	1
Burner Air-Inlet	18264882	4921788	224.5	83	83	79.9	0	0.0	-1.2	8.8	4.5	0.0	0.0	0.0	0.0	--	--
Mixer Drum	18264882	4921796	223.0	101	101	79.9	0	0.0	-0.2	4.5	11.5	0.0	0.0	0.0	0.0	5	5
Mixer Drum Motor	18264880	4921796	224.0	106	106	79.9	3	0.0	0.6	19.6	8.7	0.0	0.0	0.0	0.0	0	0
Dust Collector Fan & Motors	18264906	4921804	222.5	92	92	79.8	0	0.0	1.4	4.0	10.9	0.0	0.0	0.0	0.0	--	--
Dust Collector Stack Outlet	18264906	4921803	220.9	93	93	79.8	0	0.0	3.7	4.8	8.8	0.0	0.0	0.0	0.0	--	--
Dust Collector Blower	18264898	4921802	222.0	111	111	79.8	0	0.0	2.4	2.8	7.8	0.0	0.0	0.0	0.0	18	18
Opening Gate at Storage Silo	18264866	4921792	225.0	116	116	79.9	0	0.0	-1.2	4.7	18.7	0.0	0.0	0.0	0.0	14	14
HMA Trucks Idling at Loading Point	18264864	4921797	222.5	95	95	79.9	0	0.0	0.9	4.0	9.6	0.0	0.0	0.0	0.0	1	1
P2 Processing - Worst-Case R11	18266424	4923151	228.5	119	--	68.7	0	0.0	0.3	5.7	3.3	0.0	0.0	0.0	0.0	41	--
P2 Extraction - Worst-Case R11	18266406	4923121	228.0	106	106	69.0	0	0.0	0.1	4.4	3.3	0.0	0.0	0.0	0.0	29	29
Wash Plant Genset	18264622	4922047	225.0	110	110	80.0	0	0.0	2.2	3.4	7.2	0.0	0.0	0.0	0.0	17	17
Wash Plant	18264658	4922077	228.0	107	107	79.8	0	0.0	-0.7	4.7	16.8	0.0	0.0	0.0	0.0	6	6
P2 Arriving/Departing Shipping Trucks	18265906	4922905	228.5	107	103	73.7	0	0.0	0.6	4.6	4.6	0.0	0.0	0.0	0.0	23	20

R12 - Raised Bungalow at 2009 North School Road

12 - Raised Bungalow at 2505 North School Road				18265036	4925006	227.2											
Src Name	X	Y	Z	LxD	LxN	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahaus	Cmet	Reft	LrD	LrN
Arriving/Departing Aggregate Trucks	18264834	4921813	224.2	100	100	79.6	0	0.0	2.5	3.8	5.8	0.0	0.0	0.0	0.0	8	8
Unloading Aggregate Trucks	18265024	4921755	222.7	91	91	79.5	0	0.0	0.5	4.1	12.1	0.0	0.0	0.0	0.0	--	--
Arriving/Departing Liquid-Asphalt Trucks	18264828	4921827	224.2	90	90	79.6	0	0.0	1.4	4.3	8.3	0.0	0.0	0.0	0.0	--	--
Conveyor System at Storage Silos	18264866	4921791	223.0	96	96	79.6	0	0.0	3.8	3.1	4.3	0.0	0.0	0.0	0.0	5	5
Arriving/Departing HMA Trucks	18264826	4921825	224.2	102	102	79.6	0	0.0	1.3	4.3	8.4	0.0	0.0	0.0	0.0	8	8
Front End Loader	18264944	4921778	223.3	106	106	79.5	0	0.0	2.0	4.3	6.7	0.0	0.0	0.0	0.0	14	14
Burner	18264882	4921788	224.5	96	96	79.6	3	0.0	0.5	15.6	2.2	0.0	0.0	0.0	0.0	1	1
Burner Air-Inlet	18264882	4921788	224.5	83	83	79.6	0	0.0	-0.8	13.9	2.1	0.0	0.0	0.0	0.0	--	--
Mixer Drum	18264882	4921796	223.0	101	101	79.6	0	0.0	0.8	4.6	10.7	0.0	0.0	0.0	0.0	5	5

Src Name	X	Y	Z	LxD	LxN	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahaus	Cmet	Refl	LrD	LrN
Mixer Drum Motor	18264880	4921796	224.0	106	106	79.6	3	0.0	2.7	18.2	8.6	0.0	0.0	0.0	0.0	--	--
Dust Collector Fan & Motors	18264906	4921804	222.5	92	92	79.5	0	0.0	2.5	3.4	10.3	0.0	0.0	0.0	0.0	--	--
Dust Collector Stack Outlet	18264906	4921803	220.9	93	93	79.5	0	0.0	4.9	6.2	7.7	0.0	0.0	0.0	0.0	--	--
Dust Collector Blower	18264898	4921802	222.0	111	111	79.5	0	0.0	3.3	2.4	7.2	0.0	0.0	0.0	0.0	19	19
Opening Gate at Storage Silo	18264866	4921792	225.0	116	116	79.6	0	0.0	-0.8	4.7	18.3	0.0	0.0	0.0	0.0	14	14
HMA Trucks Idling at Loading Point	18264864	4921797	222.5	95	95	79.6	0	0.0	1.7	3.9	9.0	0.0	0.0	0.0	0.0	1	1
P2 Processing - Worst-Case R12	18266304	4923151	228.5	119	--	68.9	0	0.0	2.0	4.7	3.5	0.0	0.0	0.0	0.0	40	--
P2 Extraction - Worst-Case R12	18266362	4923092	228.0	106	106	69.3	0	0.0	1.1	3.4	3.6	0.0	0.0	0.0	0.0	29	29
Wash Plant Genset	18264622	4922047	225.0	110	110	79.6	0	0.0	3.4	3.3	6.4	0.0	0.0	0.0	0.0	17	17
Wash Plant	18264658	4922077	228.0	107	107	79.4	0	0.0	0.0	4.5	16.0	0.0	0.0	0.0	0.0	7	7
P2 Arriving/Departing Shipping Trucks	18265906	4922905	228.5	107	103	73.3	0	0.0	2.0	3.7	4.7	0.0	0.0	0.0	0.0	23	20

R13 - Two-Storey Residential Building at 1953 Simpson Road

Src Name	X	Y	Z	LxD	LxN	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahaus	Cmet	Refl	LrD	LrN
Arriving/Departing Aggregate Trucks	18264834	4921813	224.2	100	100	79.2	0	0.0	0.9	4.1	6.4	0.0	0.0	0.0	0.0	9	9
Unloading Aggregate Trucks	18265024	4921755	222.7	91	91	79.2	0	0.0	-0.3	4.1	12.5	0.0	0.0	0.0	0.0	--	--
Arriving/Departing Liquid-Asphalt Trucks	18264828	4921827	224.2	90	90	79.3	0	0.0	0.4	4.4	8.5	0.0	0.0	0.0	0.0	--	--
Conveyor System at Storage Silos	18264866	4921791	223.0	96	96	79.3	0	0.0	2.2	3.6	4.7	0.0	0.0	0.0	0.0	6	6
Arriving/Departing HMA Trucks	18264826	4921825	224.2	102	102	79.3	0	0.0	0.4	4.4	8.5	0.0	0.0	0.0	0.0	9	9
Front End Loader	18264944	4921778	223.3	106	106	79.1	0	0.0	0.4	4.6	7.4	0.0	0.0	0.0	0.0	15	15
Burner	18264882	4921788	224.5	96	96	79.2	3	0.0	-0.6	17.1	2.1	0.0	0.0	0.0	0.0	1	1
Burner Air-Inlet	18264882	4921788	224.5	83	83	79.2	0	0.0	-1.9	15.7	2.0	0.0	0.0	0.0	0.0	--	--
Mixer Drum	18264882	4921796	223.0	101	101	79.2	0	0.0	0.0	5.3	10.8	0.0	0.0	0.0	0.0	6	6
Mixer Drum Motor	18264880	4921796	224.0	106	106	79.2	3	0.0	0.7	20.6	8.3	0.0	0.0	0.0	0.0	0	0
Dust Collector Fan & Motors	18264906	4921804	222.5	92	92	79.2	0	0.0	1.4	3.6	10.6	0.0	0.0	0.0	0.0	--	--
Dust Collector Stack Outlet	18264906	4921803	220.9	93	93	79.2	0	0.0	4.0	7.6	8.0	0.0	0.0	0.0	0.0	--	--
Dust Collector Blower	18264898	4921802	222.0	111	111	79.2	0	0.0	2.6	3.0	7.2	0.0	0.0	0.0	0.0	19	19
Opening Gate at Storage Silo	18264866	4921792	225.0	116	116	79.3	0	0.0	-1.1	4.7	18.0	0.0	0.0	0.0	0.0	15	15
HMA Trucks Idling at Loading Point	18264864	4921797	222.5	95	95	79.3	0	0.0	0.9	4.0	9.1	0.0	0.0	0.0	0.0	2	2
P2 Processing - Worst-Case R13	18266206	4922992	228.5	119	--	70.1	0	0.0	0.3	3.9	4.4	0.0	0.0	0.0	0.0	40	--
P2 Extraction - Worst-Case R13	18266304	4923092	228.0	106	106	68.8	0	0.0	0.2	4.1	3.3	0.0	0.0	0.0	0.0	30	30
Wash Plant Genset	18264622	4922047	225.0	110	110	79.2	0	0.0	2.0	3.5	6.7	0.0	0.0	0.0	0.0	19	19
Wash Plant	18264658	4922077	228.0	107	107	79.0	0	0.0	-0.8	4.7	16.0	0.0	0.0	0.0	0.0	8	8
P2 Arriving/Departing Shipping Trucks	18265906	4922905	228.5	107	103	72.9	0	0.0	0.6	4.8	4.2	0.0	0.0	0.0	0.0	24	21

R14 - Two-Storey Residential Building at 1953 Simpson Road

Src Name	X	Y	Z	LxD	LxN	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahaus	Cmet	Refl	LrD	LrN
Arriving/Departing Aggregate Trucks	18264834	4921813	224.2	100	100	78.1	0	0.0	0.7	4.1	5.8	0.0	0.0	0.0	0.0	11	11
Unloading Aggregate Trucks	18265024	4921755	222.7	91	91	78.0	0	0.0	-0.1	4.1	11.8	0.0	0.0	0.0	0.0	--	--
Arriving/Departing Liquid-Asphalt Trucks	18264828	4921827	224.2	90	90	78.1	0	0.0	0.2	4.4	7.8	0.0	0.0	0.0	0.0	--	--
Conveyor System at Storage Silos	18264866	4921791	223.0	96	96	78.1	0	0.0	2.0	3.5	4.3	0.0	0.0	0.0	0.0	8	8
Arriving/Departing HMA Trucks	18264826	4921825	224.2	102	102	78.1	0	0.0	0.2	4.4	7.8	0.0	0.0	0.0	0.0	11	11
Front End Loader	18264944	4921778	223.3	106	106	78.0	0	0.0	0.3	4.4	6.7	0.0	0.0	0.0	0.0	17	17
Burner	18264882	4921788	224.5	96	96	78.1	3	0.0	-0.5	16.5	2.0	0.0	0.0	0.0	0.0	3	3
Burner Air-Inlet	18264882	4921788	224.5	83	83	78.1	0	0.0	-1.6	14.8	2.0	0.0	0.0	0.0	0.0	--	--
Mixer Drum	18264882	4921796	223.0	101	101	78.1	0	0.0	-0.2	4.6	10.0	0.0	0.0	0.0	0.0	9	9
Mixer Drum Motor	18264880	4921796	224.0	106	106	78.1	3	0.0	0.5	20.3	7.5	0.0	0.0	0.0	0.0	3	3
Dust Collector Fan & Motors	18264906	4921804	222.5	92	92	78.0	0	0.0	1.3	3.7	9.8	0.0	0.0	0.0	0.0	--	--
Dust Collector Stack Outlet	18264906	4921803	220.9	93	93	78.0	0	0.0	3.7	5.0	7.3	0.0	0.0	0.0	0.0	--	--
Dust Collector Blower	18264898	4921802	222.0	111	111	78.0	0	0.0	2.5	2.9	6.4	0.0	0.0	0.0	0.0	21	21
Opening Gate at Storage Silo	18264866	4921792	225.0	116	116	78.1	0	0.0	-1.1	4.8	16.8	0.0	0.0	0.0	0.0	18	18
HMA Trucks Idling at Loading Point	18264864	4921797	222.5	95	95	78.1	0	0.0	0.8	4.0	8.4	0.0	0.0	0.0	0.0	4	4
P2 Processing - Worst-Case R14	18266210	4922946	228.5	119	--	69.2	0	0.0	0.1	4.1	4.1	0.0	0.0	0.0	0.0	42	--
P2 Extraction - Worst-Case R14	18266318	4923106	228.0	106	106	67.8	0	0.0	0.5	4.0	3.0	0.0	0.0	0.0	0.0	31	31
Wash Plant Genset	18264622	4922047	225.0	110	110	77.8	0	0.0	1.6	3.7	6.1	0.0	0.0	0.0	0.0	21	21
Wash Plant	18264658	4922077	228.0	107	107	77.7	0	0.0	-1.0	4.7	14.9	0.0	0.0	0.0	0.0	11	11
P2 Arriving/Departing Shipping Trucks	18265906	4922906	228.5	107	103	72.1	0	0.0	0.6	4.4	4.0	0.0	0.0	0.0	0.0	26	23

R15 - Two Storey Residence at 159 Twelfth Line Road

Src Name	X	Y	Z	LxD	LxN	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahaus	Cmet	Refl	LrD	LrN
Arriving/Departing Aggregate Trucks	18264834	4921813	224.2	100	100	75.6	0	0.0	0.1	4.2	4.8	0.0	0.0	0.0	0.0	15	15
Unloading Aggregate Trucks	18265024	4921755	222.7	91	91	75.5	0	0.0	-0.6	4.3	10.7	0.0	0.0	0.0	0.0	1	1
Arriving/Departing Liquid-Asphalt Trucks	18264870	4921809	224.0	90	90	75.7	0	0.0	-0.4	4.5	6.6	0.0	0.0	0.0	0.0	4	4
Conveyor System at Storage Silos	18264866	4921791	223.0	96	96	75.7	0	0.0	1.3	3.8	3.4	0.0	0.0	0.0	0.0	12	12
Arriving/Departing HMA Trucks	18264864	4921807	224.0	102	102	75.7	0	0.0	-0.4	4.5	6.6	0.0	0.0	0.0	0.0	15	15
Front End Loader	18264940	4921783	223.4	106	106	75.5	0	0.0	-0.4	4.6	5.5	0.0	0.0	0.0	0.0	21	21
Burner	18264882	4921788	224.5	96	96	75.6	3	0.0	-0.6	16.1	1.9	0.0	0.0	0.0	0.0	6	6
Burner Air-Inlet	18264882	4921788	224.5	83	83	75.7	0	0.0	-1.6	13.6	2.1	0.0	0.0	0.0	0.0	--	--
Mixer Drum	18264882	4921796	223.0	101	101	75.6	0	0.0	-0.8	4.6	8.4	0.0	0.0	0.0	0.0	13	13
Mixer Drum Motor	18264880	4921796	224.0	106	106	75.6	3	0.0	-0.2	20.0	6.2	0.0	0.0	0.0	0.0	7	7
Dust Collector Fan & Motors	18264906	4921804	222.5	92	92	75.5	0	0.0	0.6	4.1	8.5	0.0	0.0	0.0	0.0	4	4
Dust Collector Stack Outlet	18264906	4921803	220.9	93	93	75.5	0	0.0	2.9	4.8	5.7	0.0	0.0	0.0	0.0	4	4
Dust Collector Blower	18264898	4921802	222.0	111	111	75.5	0	0.0	1.8	3.3	5.1	0.0	0.0	0.0	0.0	25	25
Opening Gate at Storage Silo	18264866	4921792	225.0	116	116	75.7	0	0.0	-1.5	4.8	14.6	0.0	0.0	0.0	0.0	23	23
HMA Trucks Idling at Loading Point	18264864	4921797	222.5	95	95	75.7	0	0.0	0.1	4.3	7.0	0.0	0.0	0.0	0.0	8	8
P2 Processing - Worst-Case R15	18266366	4923178	228.5	119	--	63.1	0	0.0	1.1	10.2	1.5	0.0	0.0	0.0	0.0	43	--
P2 Extraction - Worst-Case R15	18266246	4923048	228.0	106	106	60.1	0	0.0	0.8	4.3	1.4	0.0	0.0	0.0	0.0	39	39
Wash Plant Genset	18264622	4922047	225.0	110	110	75.7	0	0.0	1.2	3.9	5.2	0.0	0.0	0.0	0.0	24	24
Wash Plant	18264658	4922077	228.0	107	107	75.4	0	0.0	-1.1	3.0	13.1	0.0	0.0	0.0	0.0	17	17
P2 Arriving/Departing Shipping Trucks	18264566	4923012	228.4	107	103	65.9	0	0.0	0.1	4.3	2.4	0.0	0.0	0.0	0.0	34	31

R15A - Outdoor Amenity Space of R15

Src Name				X	Y	Z	LxD	LxN	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahaus	Cmet	Reft	LrD	LrN
Arriving/Departing Aggregate Trucks				18264834	4921813	224.2	100	100	75.7	0	0.0	3.6	2.9	4.0	0.0	0.0	0.0	0.0	14	14
Unloading Aggregate Trucks				18265024	4921755	222.7	91	91	75.5	0	0.0	2.1	3.9	9.1	0.0	0.0	0.0	1	1	1

Src Name	X	Y	Z	LxD	LxN	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahaus	Cmet	Refl	LrD	LrN
Arriving/Departing Liquid-Asphalt Trucks	18264866	4921807	224.0	90	90	75.7	0	0.0	2.3	3.5	5.8	0.0	0.0	0.0	0.0	3	3
Conveyor System at Storage Silos	18264866	4921791	223.0	96	96	75.7	0	0.0	4.7	2.3	2.8	0.0	0.0	0.0	0.0	11	11
Arriving/Departing HMA Trucks	18264856	4921810	224.0	102	102	75.7	0	0.0	2.3	3.6	5.8	0.0	0.0	0.0	0.0	14	14
Front End Loader	18264940	4921783	223.4	106	106	75.5	0	0.0	2.9	3.6	4.4	0.0	0.0	0.0	0.0	20	20
Burner	18264882	4921788	224.5	96	96	75.7	3	0.0	1.7	14.0	1.7	0.0	0.0	0.0	0.0	6	6
Burner Air-Inlet	18264882	4921788	224.5	83	83	75.7	0	0.0	1.3	7.0	3.4	0.0	0.0	0.0	0.0	--	--
Mixer Drum	18264882	4921796	223.0	101	101	75.6	0	0.0	1.4	4.1	7.3	0.0	0.0	0.0	0.0	13	13
Mixer Drum Motor	18264880	4921796	224.0	106	106	75.7	3	0.0	3.7	16.6	6.4	0.0	0.0	0.0	0.0	7	7
Dust Collector Fan & Motors	18264906	4921804	222.5	92	92	75.5	0	0.0	3.7	3.3	7.2	0.0	0.0	0.0	0.0	3	3
Dust Collector Stack Outlet	18264906	4921803	220.9	93	93	75.5	0	0.0	4.8	5.4	4.8	0.0	0.0	0.0	0.0	2	2
Dust Collector Blower	18264898	4921802	222.0	111	111	75.6	0	0.0	5.2	3.2	3.7	0.0	0.0	0.0	0.0	23	23
Opening Gate at Storage Silo	18264866	4921792	225.0	116	116	75.7	0	0.0	0.1	4.4	14.1	0.0	0.0	0.0	0.0	22	22
HMA Trucks Idling at Loading Point	18264864	4921792	222.5	95	95	75.7	0	0.0	2.5	3.9	5.8	0.0	0.0	0.0	0.0	7	7
P2 Processing - Worst-Case R15A	18266370	4923178	228.5	119	--	62.9	0	0.0	4.3	9.0	1.4	0.0	0.0	0.0	0.0	41	--
P2 Extraction - Worst-Case R15A	18266258	4923048	228.0	106	106	59.6	0	0.0	2.8	2.7	1.4	0.0	0.0	0.0	0.0	40	40
Wash Plant Genset	18264622	4922047	225.0	110	110	75.7	0	0.0	4.0	3.1	4.4	0.0	0.0	0.0	0.0	23	23
Wash Plant	18264658	4922077	228.0	107	107	75.5	0	0.0	0.4	1.7	12.9	0.0	0.0	0.0	0.0	17	17
P2 Arriving/Departing Shipping Trucks	18264494	4923018	228.4	107	103	65.2	0	0.0	3.0	3.0	2.3	0.0	0.0	0.0	0.0	33	30

R16 - Two-Storey Residential Building at 172 Twelfth Line Road				18265576	4923294	237.5												
Src Name	X	Y	Z	LxD	LxN	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahaus	Cmet	Reft	LrD	LrN	
Arriving/Departing Aggregate Trucks	18264834	4921813	224.2	100	100	75.4	0	0.0	0.0	3.3	4.8	0.0	0.0	0.0	0.0	16	16	
Unloading Aggregate Trucks	18265024	4921755	222.7	91	91	75.4	0	0.0	-0.2	4.2	10.5	0.0	0.0	0.0	0.0	1	1	
Arriving/Departing Liquid-Asphalt Trucks	18264870	4921804	224.0	90	90	75.4	0	0.0	-0.5	3.3	6.5	0.0	0.0	0.0	0.0	5	5	
Conveyor System at Storage Silos	18264866	4921791	223.0	96	96	75.4	0	0.0	1.4	3.7	3.3	0.0	0.0	0.0	0.0	12	12	
Arriving/Departing HMA Trucks	18264868	4921806	224.0	102	102	75.4	0	0.0	-0.6	3.2	6.6	0.0	0.0	0.0	0.0	17	17	
Front End Loader	18264940	4921783	223.4	106	106	75.3	0	0.0	-0.2	4.5	5.4	0.0	0.0	0.0	0.0	21	21	
Burner	18264882	4921788	224.5	96	96	75.4	3	0.0	-0.3	13.4	2.1	0.0	0.0	0.0	0.0	8	8	
Burner Air-Inlet	18264882	4921788	224.5	83	83	75.4	0	0.0	-0.9	7.0	4.5	0.0	0.0	0.0	0.0	--	--	
Mixer Drum	18264882	4921796	223.0	101	101	75.4	0	0.0	-0.7	4.6	8.2	0.0	0.0	0.0	0.0	14	14	
Mixer Drum Motor	18264880	4921796	224.0	106	106	75.4	3	0.0	-0.1	19.6	6.0	0.0	0.0	0.0	0.0	8	8	
Dust Collector Fan & Motors	18264906	4921804	222.5	92	92	75.3	0	0.0	0.7	4.0	8.4	0.0	0.0	0.0	0.0	4	4	
Dust Collector Stack Outlet	18264906	4921803	220.9	93	93	75.3	0	0.0	2.6	3.2	6.0	0.0	0.0	0.0	0.0	6	6	
Dust Collector Blower	18264898	4921802	222.0	111	111	75.3	0	0.0	2.0	3.2	4.9	0.0	0.0	0.0	0.0	26	26	
Opening Gate at Storage Silo	18264866	4921792	225.0	116	116	75.4	0	0.0	-1.3	4.8	14.4	0.0	0.0	0.0	0.0	23	23	
HMA Trucks Idling at Loading Point	18264864	4921797	222.5	95	95	75.4	0	0.0	0.2	4.3	6.8	0.0	0.0	0.0	0.0	8	8	
Wash Plant Genset	18264622	4922047	225.0	110	110	74.9	0	0.0	0.0	0.0	5.8	0.0	0.0	0.0	0.0	29	29	
Wash Plant	18264658	4922077	228.0	107	107	74.7	0	0.0	-1.3	2.0	12.5	0.0	0.0	0.0	0.0	19	19	
P1 Extraction - Worst-Case R16	18265490	4922502	225.5	106	106	69.0	0	0.0	0.0	4.0	3.4	0.0	0.0	0.0	0.0	30	30	
P1 Processing - Worst-Case R16	18265504	4922538	226.0	119	--	68.6	0	0.0	-0.1	4.2	3.9	0.0	0.0	0.0	0.0	42	--	
P1 Arriving/Departing Shipping Trucks	18265720	4922235	226.7	107	103	70.8	0	0.0	0.2	3.4	3.8	0.0	0.0	0.0	0.0	28	25	

VL1 - Vacant Lot 1				18265990	4921727	221.5												
Src Name	X	Y	Z	LxD	LxN	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahaus	Cmet	Refl	LrD	LrN	
Arriving/Departing Aggregate Trucks	18264816	4921820	224.4	100	100	72.2	0	0.0	3.6	3.4	2.5	0.0	0.0	0.0	0.0	18	18	
Unloading Aggregate Trucks	18265024	4921755	222.7	91	91	71.2	0	0.0	2.2	4.7	7.1	0.0	0.0	0.0	0.0	6	6	
Arriving/Departing Liquid-Asphalt Trucks	18264854	4921823	224.2	90	90	72.4	0	0.0	2.3	4.1	4.1	0.0	0.0	0.0	0.0	7	7	
Conveyor System at Storage Silos	18264866	4921791	223.0	96	96	72.0	0	0.0	3.2	4.9	3.0	0.0	0.0	0.0	0.0	13	13	
Arriving/Departing HMA Trucks	18264854	4921823	224.2	102	102	72.4	0	0.0	2.3	4.3	4.1	0.0	0.0	0.0	0.0	19	19	
Front End Loader	18264944	4921778	223.3	106	106	71.4	0	0.0	3.0	3.8	2.6	0.0	0.0	0.0	0.0	25	25	
Burner	18264882	4921788	224.5	96	96	71.9	3	0.0	1.9	4.0	2.8	0.0	0.0	0.0	0.0	18	18	
Burner Air-Inlet	18264882	4921788	224.5	83	83	71.9	0	0.0	1.1	4.2	4.0	0.0	0.0	0.0	0.0	2	2	
Mixer Drum	18264882	4921796	223.0	101	101	71.9	0	0.0	1.5	4.2	5.3	0.0	0.0	0.0	0.0	18	18	
Mixer Drum Motor	18264880	4921796	224.0	106	106	71.9	3	0.0	3.8	18.6	4.8	0.0	0.0	0.0	0.0	10	10	
Dust Collector Fan & Motors	18264906	4921804	222.5	92	92	71.7	0	0.0	3.4	3.7	5.4	0.0	0.0	0.0	0.0	8	8	
Dust Collector Stack Outlet	18264906	4921803	220.9	93	93	71.7	0	0.0	7.4	11.3	3.8	0.0	0.0	0.0	0.0	--	--	
Dust Collector Blower	18264898	4921802	222.0	111	111	71.8	0	0.0	4.9	3.2	2.2	0.0	0.0	0.0	0.0	29	29	
Opening Gate at Storage Silo	18264866	4921792	225.0	116	116	72.0	0	0.0	0.2	4.5	11.3	0.0	0.0	0.0	0.0	28	28	
HMA Trucks Idling at Loading Point	18264864	4921797	222.5	95	95	72.0	0	0.0	4.5	8.2	4.0	0.0	0.0	0.0	0.0	6	6	
Wash Plant Genset	18264622	4922047	225.0	110	110	74.0	0	0.0	3.6	3.3	3.6	0.0	0.0	0.0	0.0	26	26	
Wash Plant	18264658	4922077	228.0	107	107	73.8	0	0.0	0.6	4.3	11.1	0.0	0.0	0.0	0.0	17	17	
P1 Extraction - Worst-Case VL1	18265704	4922138	225.5	106	106	65.0	0	0.0	1.6	3.2	2.7	0.0	0.0	0.0	0.0	34	34	
P1 Processing - Worst-Case VL1	18265784	4922214	226.0	119	--	65.5	0	0.0	3.0	1.9	3.3	0.0	0.0	0.0	0.0	45	--	
P1 Arriving/Departing Shipping Trucks	18265774	4922229	226.7	107	103	69.0	0	0.0	3.4	3.4	1.7	0.0	0.0	0.0	0.0	29	26	

VL2 - Vacant Lot 2				18266132	4921783	225.5												
Src Name	X	Y	Z	LxD	LxN	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahaus	Cmet	Refl	LrD	LrN	
Arriving/Departing Aggregate Trucks	18264824	4921817	224.3	100	100	73.2	0	0.0	0.4	4.3	3.8	0.0	0.0	0.0	0.0	18	18	
Unloading Aggregate Trucks	18265024	4921755	222.7	91	91	72.3	0	0.0	0.1	4.7	8.9	0.0	0.0	0.0	0.0	5	5	
Arriving/Departing Liquid-Asphalt Trucks	18264852	4921822	224.2	90	90	73.4	0	0.0	-0.1	4.8	5.4	0.0	0.0	0.0	0.0	7	7	
Conveyor System at Storage Silos	18264866	4921790	223.0	96	96	73.0	0	0.0	1.9	4.3	3.1	0.0	0.0	0.0	0.0	14	14	
Arriving/Departing HMA Trucks	18264850	4921821	224.2	102	102	73.4	0	0.0	-0.1	4.9	5.4	0.0	0.0	0.0	0.0	18	18	
Front End Loader	18264944	4921778	223.3	106	106	72.5	0	0.0	0.1	4.2	4.6	0.0	0.0	0.0	0.0	25	25	
Burner	18264882	4921788	224.5	96	96	72.9	3	0.0	0.1	4.2	4.0	0.0	0.0	0.0	0.0	18	18	
Burner Air-Inlet	18264882	4921788	224.5	83	83	72.9	0	0.0	-0.5	4.4	5.3	0.0	0.0	0.0	0.0	1	1	
Mixer Drum	18264882	4921796	223.0	101	101	72.9	0	0.0	-0.5	4.6	6.8	0.0	0.0	0.0	0.0	17	17	
Mixer Drum Motor	18264880	4921796	224.0	106	106	73.0	3	0.0	0.2	21.0	4.9	0.0	0.0	0.0	0.0	10	10	
Dust Collector Fan & Motors	18264906	4921804	222.5	92	92	72.8	0	0.0	0.8	4.0	7.1	0.0	0.0	0.0	0.0	8	8	
Dust Collector Stack Outlet	18264906	4921803	220.9	93	93	72.8	0	0.0	3.6	12.3	4.3	0.0	0.0	0.0	0.0	--	--	
Dust Collector Blower	18264898	4921802	222.0	111	111	72.8	0	0.0	2.2	3.2	3.8	0.0	0.0	0.0	0.0	29	29	
Opening Gate at Storage Silo	18264866	4921792	225.0	116	116	73.0	0	0.0	-1.0	4.8	12.5	0.0	0.0	0.0	0.0	27	27	
HMA Trucks Idling at Loading Point	18264864	4921797	222.5	95	95	73.1	0	0.0	1.0	9.3	4.6	0.0	0.0	0.0	0.0	7	7	
Wash Plant Genset	18264622	4922047	225.0	110	110	74.7	0	0.0	1.1	4.0	4.8	0.0	0.0	0.0	0.0	26	26	
Wash Plant	18264658	4922077	228.0	107	107	74.5	0	0.0	-1.1	4.7	12.4	0.0	0.0	0.0	0.0	16	16	
P1 Extraction - Worst-Case VL2	18265754	4922176	225.5	106	106	65.7	0	0.0	1.3	3.5	2.5	0.0	0.0	0.0	0.0	33	33	
P1 Processing - Worst-Case VL2	18265890	4922264	226.3	119	--	65.6	0	0.0	1.0	4.0	3.0	0.0	0.0	0.0	0.0	45	--	
P1 Arriving/Departing Shipping Trucks	18265762	4922232	226.7	107	103	69.5	0	0.0	0.4	3.6	3.4	0.0	0.0	0.0	0.0	30	27	

VL3 - Vacant Lot 3				18266996	4923451	224.5												
Src Name	X	Y	Z	LxD	LxN	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahous	Cmet	Refl	LrD	LrN	
Arriving/Departing Aggregate Trucks	18264834	4921813	224.2	100	100	79.6	0	0.0	4.1	2.6	6.0	0.0	0.0	0.0	0.0	8	8	
Unloading Aggregate Trucks	18265024	4921755	222.7	91	91	79.4	0	0.0	2.2	3.8	11.0	0.0	0.0	0.0	0.0	--	--	
Arriving/Departing Liquid-Asphalt Trucks	18264828	4921827	224.2	90	90	79.7	0	0.0	2.8	3.2	8.2	0.0	0.0	0.0	0.0	--	--	
Conveyor System at Storage Silos	18264866	4921791	223.0	96	96	79.6	0	0.0	5.1	1.8	4.6	0.0	0.0	0.0	0.0	5	5	
Arriving/Departing HMA Trucks	18264826	4921825	224.2	102	102	79.7	0	0.0	2.8	3.2	8.2	0.0	0.0	0.0	0.0	8	8	
Front End Loader	18264944	4921778	223.3	106	106	79.5	0	0.0	3.6	3.1	6.6	0.0	0.0	0.0	0.0	13	13	
Burner	18264882	4921788	224.5	96	96	79.6	3	0.0	1.4	13.8	2.2	0.0	0.0	0.0	0.0	2	2	
Burner Air-Inlet	18264882	4921788	224.5	83	83	79.6	0	0.0	0.8	4.5	6.5	0.0	0.0	0.0	0.0	--	--	
Mixer Drum	18264882	4921796	223.0	101	101	79.6	0	0.0	2.1	3.8	10.1	0.0	0.0	0.0	0.0	5	5	
Mixer Drum Motor	18264880	4921796	224.0	106	106	79.6	3	0.0	4.4	16.2	8.8	0.0	0.0	0.0	0.0	0	0	
Dust Collector Fan & Motors	18264906	4921804	222.5	92	92	79.5	0	0.0	4.9	3.6	9.1	0.0	0.0	0.0	0.0	--	--	
Dust Collector Stack Outlet	18264906	4921803	220.9	93	93	79.5	0	0.0	6.6	6.3	6.6	0.0	0.0	0.0	0.0	--	--	
Dust Collector Blower	18264898	4921802	222.0	111	111	79.5	0	0.0	5.8	2.7	6.2	0.0	0.0	0.0	0.0	17	17	
Opening Gate at Storage Silo	18264866	4921792	225.0	116	116	79.6	0	0.0	0.6	4.1	17.7	0.0	0.0	0.0	0.0	14	14	
HMA Trucks Idling at Loading Point	18264864	4921797	222.5	95	95	79.6	0	0.0	3.2	3.6	8.2	0.0	0.0	0.0	0.0	0	0	
P2 Processing - Worst-Case VL3	18266370	4923178	228.5	119	--	67.6	0	0.0	2.8	2.9	3.5	0.0	0.0	0.0	0.0	42	--	
P2 Extraction - Worst-Case VL3	18266376	4923136	228.0	106	106	67.8	0	0.0	3.0	1.9	3.3	0.0	0.0	0.0	0.0	30	30	
Wash Plant Genset	18264622	4922047	225.0	110	110	79.8	0	0.0	4.7	2.5	6.5	0.0	0.0	0.0	0.0	17	17	
Wash Plant	18264658	4922077	228.0	107	107	79.7	0	0.0	1.7	3.8	15.7	0.0	0.0	0.0	0.0	6	6	
P2 Arriving/Departing Shipping Trucks	18265906	4922906	228.5	107	103	72.5	0	0.0	4.0	3.4	3.2	0.0	0.0	0.0	0.0	24	21	

Where: Lr = Lx - Adiv + K0 + Dc - Agnd - Abar - Aatm - Afol - Ahous + Cmet + Refl

APPENDIX E

Consultant Curriculum Vitae



NOISE



VIBRATION



ACOUSTICS

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Education

McMaster University, Bachelor of Civil Engineering
George Brown College, Certificate for Building Official Fundamentals

Professional Memberships

Professional Engineers Ontario (PEO)
Institute of Noise Control Engineering USA (INCE)

Professional History

2022 to Present – Project Consultant, HGC Noise Vibration Acoustics, Toronto, ON

Experience

Danielle Mota's experience includes the measurement, analysis, and mitigation of environmental noise found in various industrial scenarios and for government approvals. She is also proficient in conducting workplace noise studies for provincial requirements. She has conducted acoustic audits and assessments of pits/quarries and complex industrial developments, and is proficient with a variety of measurement and analysis techniques for stationary and transportation sources.

Selected Projects

Enbridge Gas, ON (Province-wide)
Oxy Vinyls Canada Inc., Niagara Falls, ON
HERC Rentals, Fort McMurray, AB
Green Infrastructure Partners Paving Inc., Hamilton, ON
Howmet Aerospace, Georgetown, ON
Amazon Fulfillment Centers, ON
Mars Petcare, Bolton, ON
GreenFirst Forest Products, Chapleau, ON
Lafarge Canada Inc., Sault Ste. Marie, ON
Walker Durham Pit, Durham, ON
The Miller Group, Mount Forest, ON
Stubbe's Redi-Mix, Harley, ON
Viola Ready Mix, Halton Hills, ON
Shell Sarnia Manufacturing Centre, Corunna, ON
INEOS Styrolution, Sarnia, ON
Thermo Fisher Scientific, Mississauga, ON

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Education

University of Waterloo, Bachelor of Science, 2006
Recording Arts Canada (Digital Arts), 2007

Professional Memberships

Professional Engineers Ontario (PEO), Limited Engineering Licensee
Ontario Society of Professional Engineers (OSPE)
Institute of Noise Control Engineering USA (INCE)
Canadian Acoustical Association (CAA)
Ontario Mining Association (OMA), Environment Committee

Professional History

2007 to 2014: Acoustical Consultant, HGC Engineering
2014 to 2023: Senior Acoustical Consultant, Associate, HGC Engineering
2023 to present: Senior Associate, HGC Engineering

Experience

Andrew Dobson has widespread experience in the assessment of noise, vibration, and mitigation of industrial and commercial facilities, and has been involved in a wide variety of projects related to acoustics, noise, and vibration over the past 17 years. He has a comprehensive understanding of the Ministry of Environment guidelines regarding noise/vibration, along with the associated requirements and methods for the prediction of noise from industrial, aggregate, and commercial facilities. He specializes in the use of advanced sound intensity instrumentation and techniques and has extensive experience conducting computer aided modelling of environmental noise using CadnaA prediction software. The accurate measurement of large power transformers and noise control of mine ventilation systems have been two of his recent areas of innovation and study, having authored several papers and presentations on these topics, in conjunction with industry.

Selected Projects

Hydro One Networks, 70+ Transmission Stations and 30+ Distribution Stations
New Brunswick Power, Various substations in the Moncton area
Guelph Hydro Systems Inc., Various Distribution Stations, Rockwood, Ontario
Vale Canada Limited, Numerous facilities in the Sudbury Basin, Ontario
Evolution Mining, Red Lake Operations and Cochenour Complex, Ontario
Air Liquide, Birmingham ASU Oxygen Plant, Hamilton, Ontario
Epiroc, ST1030 Electric Mine Scoop Project, Lively, Ontario
Norgalv Limited, North Bay, Ontario
West Lincoln Township, Spring Creek Heights Secondary Plan, Smithville, Ontario
Metrolinx, Eglinton Crosstown West Extension, Toronto, Ontario
Goldcorp, Hollinger Pit, Timmins, Ontario
Suncor Energy Products, Various terminals in Ontario
Interfor Timber Corporation, Various lumber mills in northern Ontario
SNOLAB Deep Underground Research Lab, Creighton, Ontario
ARAUCO Wood Products, Sault Ste. Marie, Ontario
Midhurst Land Owners Group, Midhurst Water Treatment Plant, Ontario
Convertus Group, Organic Waste Treatment Plant, London, Ontario
Vi-Lux Building Products Inc., Napanee, Ontario
Weir ESCO, Porth Hope, Ontario
Port Royal Mills / Grainboys, Uxbridge, Ontario
Voyant Beauty, Etobicoke, Ontario

APPENDIX F

Acoustic Assessment Report & Environmental Compliance Approval



NOISE



VIBRATION



ACOUSTICS

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ACOUSTIC ASSESSMENT REPORT

Miller Paving Limited

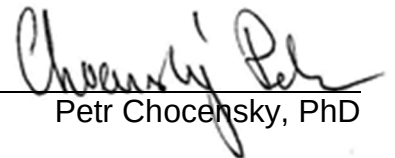
Hot Mix Asphalt Plant

Norwood, Ontario

Prepared for

Miller Paving Limited
505 Miller Avenue
Markham, Ontario
L6G 1B2

Prepared by



Petr Chocensky, PhD

Reviewed by



C.D. KINART
100079326
13-Jul-18
Corey Kinart, MBA, PEng

July 13, 2018

HGC Engineering Project No. 01604063

VERSION CONTROL

Miller Norwood HMA Plant, Douro-Dummer Township, Ontario

Ver.	Date	Version Description	Prepared By
0	August 2011	Original AAR to support an application to amend Environmental Compliance Approval 8-4069-98-006; application withdrawn	Others
1	13-Jul-2018	Updated AAR to update Environmental Compliance Approval 8-4069-98-006	P. Chocensky



EXECUTIVE SUMMARY

Miller Paving Limited retained HGC Engineering to prepare an updated Acoustic Assessment Report (“AAR”) for the Miller Paving Hot Mix Asphalt (“HMA”) plant near Norwood, Ontario. The study is required in support of an application to the Ontario Ministry of the Environment and Climate Change (“MOECC”), to amend the existing Environmental Compliance Approval (“ECA”) for the facility, number 8-4069-98-006.

The amended approval is needed to address several equipment upgrades installed at the plant.

HGC Engineering visited the site and the surrounding area on December 9, 2016, to measure noise from the site at the nearest assessment location. Sound levels were also measured near each stationary source associated with the HMA plant. The source sound levels were used to develop a computational acoustical model of the facility, in order to prepare a sound source inventory, and thereby determine the contribution of each individual source to the overall offsite sound levels.

Acoustic assessment criteria were established in accordance with the sound level limits in MOECC guideline NPC-300.

The measurements and analysis indicate that the sound emissions of the facility are currently within the MOECC noise limits. If a noise-sensitive use were to be developed on the nearest vacant lot, the operation of the facility would be limited to daytime hours only (7:00 – 19:00) to meet the applicable noise limits. Given the absence of any sources of ground-borne vibration at the site, the facility also complies with the applicable vibration limits of the MOECC.



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Figures 1 through 4

APPENDIX A – Acoustic Assessment Summary Tables
APPENDIX B – Zoning Maps
APPENDIX C – Measurement Methods and Instrumentation
APPENDIX D – Details of Computational Acoustical Modelling
APPENDIX E – Acoustic Assessment Criteria
APPENDIX F – Sample Calculation Results – Condensed, Overall dBA Format
APPENDIX G – Sample Calculation Results – Octave Band Format



ACOUSTIC ASSESSMENT REPORT CHECK-LIST

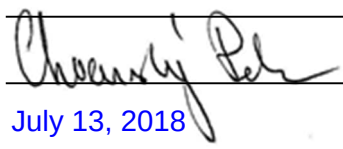
Company Name: Miller Paving Limited

Company Address: 505 Miller Avenue
Markham, Ontario L6G 1B2

Location of Facility: Lot 1, Concession 11
Douro-Dummer Township, County of Peterborough, Ontario

The attached Acoustic Assessment Report was prepared in accordance with the guidance in the ministry document "Information to be Submitted for Approval of Stationary Source of Sound" (NPC 233) dated October 1995 and the minimum required information identified in the check-list on the reverse of this sheet has been submitted.

Company Contact:	
Name:	<u>Bill Kasper</u>
Title:	<u>Vice-President, Engineering and Facilities</u>
Phone Number:	<u>905-415-7340</u>
Signature:	<u></u>
Date:	<u>July 13, 2018</u>

Technical Contact:	
Name:	<u>Petr Chocensky, PhD</u>
Representing:	<u>HGC Engineering</u>
Phone Number:	<u>905-826-4044</u>
Signature:	<u></u>
Date:	<u>July 13, 2018</u>

ACOUSTIC ASSESSMENT REPORT CHECK-LIST

	Required Information	Submitted	Explanation/Reference
1.0	Introduction (Project Background and Overview)	☒ Yes	Section 1
2.0	Facility Description		
	2.1 Operating hours of facility and significant Noise Sources	☒ Yes	Section 2
	2.2 Site Plan identifying all significant Noise Sources	☒ Yes	Figure 3
3.0	Noise Source Summary		
	3.1 <i>Noise Source Summary Table</i>	☒ Yes	Table A1
	3.2 Source noise emissions specifications	☒ Yes	Table A1
	3.3 Source power/capacity ratings	☒ Yes	Table A1
	3.4 Noise control equipment description and acoustical specifications	☐ Yes	N/A
4.0	Point of Reception Noise Impact Calculations		
	4.1 <i>Point of Reception Noise Impact Table</i>	☒ Yes	Table A3
	4.2 Point(s) of Reception (POR) list and description	☒ Yes	Section 4
	4.3 Land-use Zoning Plan	☒ Yes	Appendix B
	4.4 Scaled Area Location Plan	☒ Yes	Figure 1
	4.5 Procedure used to assess noise impacts at each POR	☒ Yes	Appendix D
	4.6 List of parameters/assumptions used in calculations	☒ Yes	Appendix D
5.0	Acoustic Assessment Summary		
	5.1 <i>Acoustic Assessment Summary Table</i>	☒ Yes	Appendix A
	5.2 Rationale for selecting applicable noise guideline limits	☒ Yes	Appendix E
	5.3 Predictable Worst Case Impacts Operating Scenario	☒ Yes	Table 1, Figure 4
6.0	Conclusions		
	6.1 Statement of compliance with selected noise performance limits	☒ Yes	Sections 6 & 7
7.0	Appendices (provide details such as)	☒ Yes	
	Listing of Insignificant Noise Sources	☐ Yes	N/A
	Manufacturer's Noise Specifications	☐ Yes	N/A
	Calculations	☒ Yes	Appendices F & G
	Instrumentation	☒ Yes	Appendix C
	Meteorology during Sound Level Measurements	☒ Yes	Appendix C
	Raw Data from Measurements	☒ Yes	Appendices F & G
	Drawings (Facility / Equipment)	☒ Yes	Figure 3

1 INTRODUCTION

The subject site is located at Lot 1, Concession 11 in Douro-Dummer Township, County of Peterborough, Ontario. A scaled location map of the surrounding area is included as Figure 1.

This report has been prepared in accordance with the MOECC guideline documents NPC-233 “Information to be Submitted for Approval of Stationary Sources of Sound” [1], and “Supporting Information for the Preparation of an Acoustic Assessment Report” [2]. The Acoustic Assessment Summary Tables are presented in the standardized format required by the MOECC in Appendix A. The purpose of this assessment is to evaluate the overall sound emissions of the facility during a predictable worst-case hour, which is defined as an hour when typical busy operation of the stationary sources under consideration could coincide with an hour of low background sound.

Zoning maps identifying the land uses surrounding the facility, obtained from Douro-Dummer and Asphodel-Norwood Townships, are included as Appendix B. The lands on which the subject site is located, as well as the surrounding lands, are zoned for extractive industrial use, which do not permit noise-sensitive uses. The nearest noise-sensitive points of reception are residential homes south of the facility, on lands zoned for residential and agricultural use, marked as locations R1 and R2 in Figure 2.

One additional point of reception, marked as VL1, has been included to represent a vacant lot on agriculturally zoned land to the northwest of the plant, on which noise sensitive uses are permitted by the zoning by-law.

During the site visit by HGC Engineering on December 9, 2016, the background sound in the vicinity of locations R1 and R2 was dominated by traffic noise from the adjacent Trans-Canada Highway. In that regards, the acoustic environment in the vicinity of locations R1 and R2 is best characterized as a “Class 2” area, under MOECC noise assessment guidelines. The acoustic environment near location VL1 is a “Class 3” area. The subject facility was inaudible at the assessment locations.



2 FACILITY DESCRIPTION

The HMA plant receives liquid asphalt cement by road tankers which transfer the material into storage tanks adjacent to the plant using a plant-based pump (negligible sound emissions). Aggregate materials (limestone, gravel and sand) and recycled materials (i.e. reclaimed asphalt pavement) delivered by trucks are transferred via a front-end loader to hoppers which deposit the materials onto a conveyor system for delivery to the dryer. The dryer consists of a rotating cylindrical drum heated by a natural gas fired burner at one end through which the aggregate materials are tumbled to remove moisture and to heat the aggregate. The heated aggregate is conveyed by a bucket elevator to a continuous paddle mixer, where liquid asphalt cement and recycled aggregate products (if required) are added to produce HMA, which is then transferred by a drag slat conveyor to the top of three hot storage silos. The product is then batched directly into asphalt trucks. Once loaded, the asphalt trucks leave the site.

The primary sound sources associated with the site are the dryer and baghouse equipment, as well as the various vehicles that visit the site, either to deliver aggregate materials, or to take away asphalt. There are no significant sources of ground-borne vibration at the site.

Although the site typically operates during daytime hours only, from 7:00 to 19:00, the facility was conservatively assumed to operate during any time of day or night.

3 SOUND SOURCE SUMMARY

A Sound Source Summary is included as Table A1 in Appendix A, which lists the sound sources associated with the facility, in the standard format required by the MOECC. Each noise source has been assigned an identification number of the form NS-## (e.g. NS-01).

Figure 3 shows the location of each source. Except where noted otherwise, sound levels of the individual sources were measured on-site on December 9, 2016. The details of the measurement methods used to quantify the sound power of each source are listed in Appendix C. The primary sources of sound at the facility are described below, all of which were assumed to operate continuously, unless noted otherwise.



3.1 Aggregate Shipping/Deliveries

Aggregate materials are delivered to the HMA plant via trucks from the entrance on 11th Line (NS-01). The trucks unload materials (NS-02) into storage piles on the southeast sides of the HMA plant, and then exit the site back onto 11th Line.

No aggregate trucks were present on-site during the visit of December 9, 2016. Therefore, truck sound emissions were based on measurements for similar past projects by HGC Engineering.

Based on input from Miller Paving personnel, a predictable worst-case hour of operation was assumed to include seven trucks visiting the plant to deliver aggregate materials. Unloading of aggregate materials was assumed to take 30 seconds per truck, based on observations at other sites.

3.2 Liquid Asphalt Trucks

Liquid asphalt trucks (NS-03) travel to the storage tanks on the south side of the plant where they unload (negligible sound), and the trucks exit the property. Miller Paving personnel indicate that one asphalt cement truck can enter and exit the site during a predictable worst-case hour. No asphalt trucks visited the site during the visit by HGC Engineering; therefore, truck sound levels were based on measurements conducted by HGC Engineering for similar past projects.

3.3 Dryer System & Baghouse

Aggregate materials are transferred by a conveyor (with negligible sound emissions) to the north end of the dryer. The dryer drum is heated by a natural gas fired burner (NS-04) located at the south end of the drum, which is supplied with combustion air through an open air-inlet (NS-05).

This assessment also considers sound radiated from the surface of the aggregate dryer (NS-06) and the dryer drive motor (NS-07).

The exhaust of the dryer is ducted to a baghouse with an induced-draft fan (NS-08), which discharges air to atmosphere through an exhaust stack (NS-09) on the east side of the baghouse. Also included are sound emissions from a dust blower (NS-10) used to transfer residual materials captured by the baghouse to a silo on the north side of the plant.



3.4 Bucket Elevators and Storage Silos

Hot aggregate exiting the dryer system is transferred by a drag conveyor (negligible sound) and horizontal conveyor (NS-11) to the storage silos. The finished product is then batched from the silos by a pneumatic gate system (NS-12) into trucks waiting at the loading point.

The sound from the gate system is intermittent and occurs only as the gates open and close, which occurs for approximately 30 seconds per truck, based on observations on-site.

3.5 Hot-Mix Asphalt Trucks

Hot mix asphalt trucks (NS-13) enter the property via the main gate and travel to the weigh scale and a spray rack, where a water-based release agent is applied to the bed of the truck to prevent fresh HMA from sticking. From here, the trucks travel under the loading point where they idle while being loaded (NS-14).

Miller personnel indicate that, during a predictable worst-case hour, up to 15 HMA trucks can enter and exit the facility. Truck sound levels were based on measurements conducted by HGC Engineering for similar past projects.

3.6 Front-end Loader

Also included is one front-end loader (NS-15) used to feed aggregate and recycled materials into respective hoppers, from which they are delivered to the dryer. The loader was assumed to operate continuously during a predictable worst-case hour.

3.7 Equipment Operating Times

The following table summarizes the predictable worst-case hour of operation at the facility considered for the purposes of this assessment.



Table 1: Summary of Predictable Worst-Case Hour of Operation

Source ID	Source Description	Quantity or Operating Time/Hr
NS-01	Arriving/Departing Aggregate Trucks - HMA Plant	7 trucks/hr at 10 km/hr
NS-02	Unloading Aggregate - HMA Plant	3.5 min/hr (30 secs per truck)
NS-03	Arriving/Departing Liquid-Asphalt Trucks	1 truck/hr at 10 km/hr
NS-04	Burner	60 min/hr
NS-05	Burner Air-Inlet	60 min/hr
NS-06	Aggregate Dryer	60 min/hr
NS-07	Aggregate Dryer Drive Motor	60 min/hr
NS-08	Baghouse Fan – Casing & Motor	60 min/hr
NS-09	Baghouse Stack - Outlet	60 min/hr
NS-10	Baghouse Blower	60 min/hr
NS-11	Horizontal Silo Conveyor	60 min/hr
NS-12	Pneumatic Loading Gates	7.5 mins/hr (30 secs per truck)
NS-13	Arriving/Departing HMA Trucks	15 trucks/hr at 10 km/hr
NS-14	Idling Truck - Loading Point	60 min/hr
NS-15	Front-End Loader	60 min/hr

The source sound levels were used to develop the sound source inventory included as Table A1 in Appendix A, and input to a computational computer model (see Appendix D) to determine contribution of each individual source to the overall sound emissions of the facility during the predictable worst-case hour outlined in Table 1, above.

4 POINT OF RECEPTION SUMMARY

The most-potentially impacted noise-sensitive points of reception are marked as locations R1, R2, and VL1 in Figure 2.

Locations R1 and R2 represent single-storey residential dwellings to the south and southeast, approximately 300 metres from the plant. The assessment locations represent the potentially most impacted points of reception at the respective properties.

Location VL1 represents a vacant lot approximately 500 metres to the northwest of the facility on which a noise-sensitive use is permitted by the zoning by-law. The receptor location within the lot has been selected where a home previously existed, assuming that any new residential development would be built at the same location.



The selected points of reception are described briefly in Table A3, the Acoustic Assessment Summary Table.

5 ASSESSMENT CRITERIA

The applicable sound level limits for this assessment are the minimum exclusion limits of MOECC publication NPC-300 [3]. These limits are summarized in the table below.

Table 2: Applicable Sound Level Limits [dBA]

Location	Acoustical Environment	Daytime (7:00 – 19:00)	Night-time (19:00 – 7:00)
Existing residences (R1 and R2)	Class 2	50	45
Vacant Lot (VL1)	Class 3	45	40

Details of how these limits were established are provided in Appendix E.

Some types of sound have a special quality which may tend to increase their audibility and potential for disturbance or annoyance. For tonal sound, MOECC guideline NPC-104 [4] stipulates that that an adjustment of 5 dBA is to be added to the measured source level. A tonal sound is defined as one which has a “pronounced audible tonal quality such as a whine, screech, buzz or hum”. In the subsequent analysis, a tonal adjustment has been applied to the dryer drum motor (NS-07) and the baghouse blower (NS-10), based on observations on-site.

6 IMPACT ASSESSMENT AND CONTINGENT NOISE CONTROL MEASURES

HGC Engineering measured sound levels in the vicinity of locations R1, R2, and VL1, but the facility was entirely inaudible and unmeasurable traffic noise on the surrounding roadways. Therefore, the computational acoustical model was used to quantify the sound levels of the facility.

The modelling results indicate that the sound levels of the facility at locations R1 and R2 are 40 dBA or less, which are well within the applicable noise criteria.



The sound level of the facility at location VL1 are 45 dBA, which meets the daytime noise limit, but would exceed the night-time criterion by 5 dBA. Because location VL1 represents a vacant lot, noise control measures would be required only in the event that a noise sensitive use were to be added to the property in the future. In that case, the operation of the HMA plant would be limited to daytime hours only (7:00 – 19:00).

The results of the computational modeling are summarized in Tables A1, A2 and A3 in Appendix A and are shown graphically in Figure 4 in the form of sound level contours, L_{EQ} [dBA].

Details of the prediction methods are summarized in Appendix D, and sample calculation results are included as Appendices F and G.

7 CONCLUSIONS

The acoustical measurements and analysis indicate that the sound levels of the facility are currently within the applicable sound level limits set out in NPC-300 [3]. If the nearest vacant lot is developed in the future, the facility will restrict operation to daytime hours only to achieve the applicable noise criteria in NPC-300. Given the absence of any sources of ground-borne vibration at the site, the facility also complies with the impulse vibration limits set out in NPC-207 [4].



REFERENCES

1. Ontario Ministry of the Environment and Climate Change Publication NPC-233, *Information to be Submitted for Approval of Stationary Sources of Sound*, October, 1995.
2. Ontario Ministry of the Environment and Climate Change Guide, *Basic Comprehensive Certificates of Approval (Air): User Guide*, March, 2011.
3. Ontario Ministry of the Environment and Climate Change Publication NPC-300, *Environmental Noise Guideline, Stationary and Transportation Sources - Approval and Planning*, August, 2013.
4. Ontario Ministry of the Environment and Climate Change Publication NPC-207, *Impulse Vibration in Residential Buildings*, November, 1983.
5. International Organization for Standardization, *Acoustics – Determination of sound power levels of noise sources using sound intensity – Part 2: Measurement by scanning*, ISO-9614-2, Switzerland, 1996.
6. International Organization for Standardization, *Acoustics – Attenuation of Sound during Propagation Outdoors – Part 2: General Method of Calculation*, ISO-9613-2, Switzerland, 1996.
7. Google Maps Aerial Imagery, Internet application: maps.google.com





Figure 1: Location Map

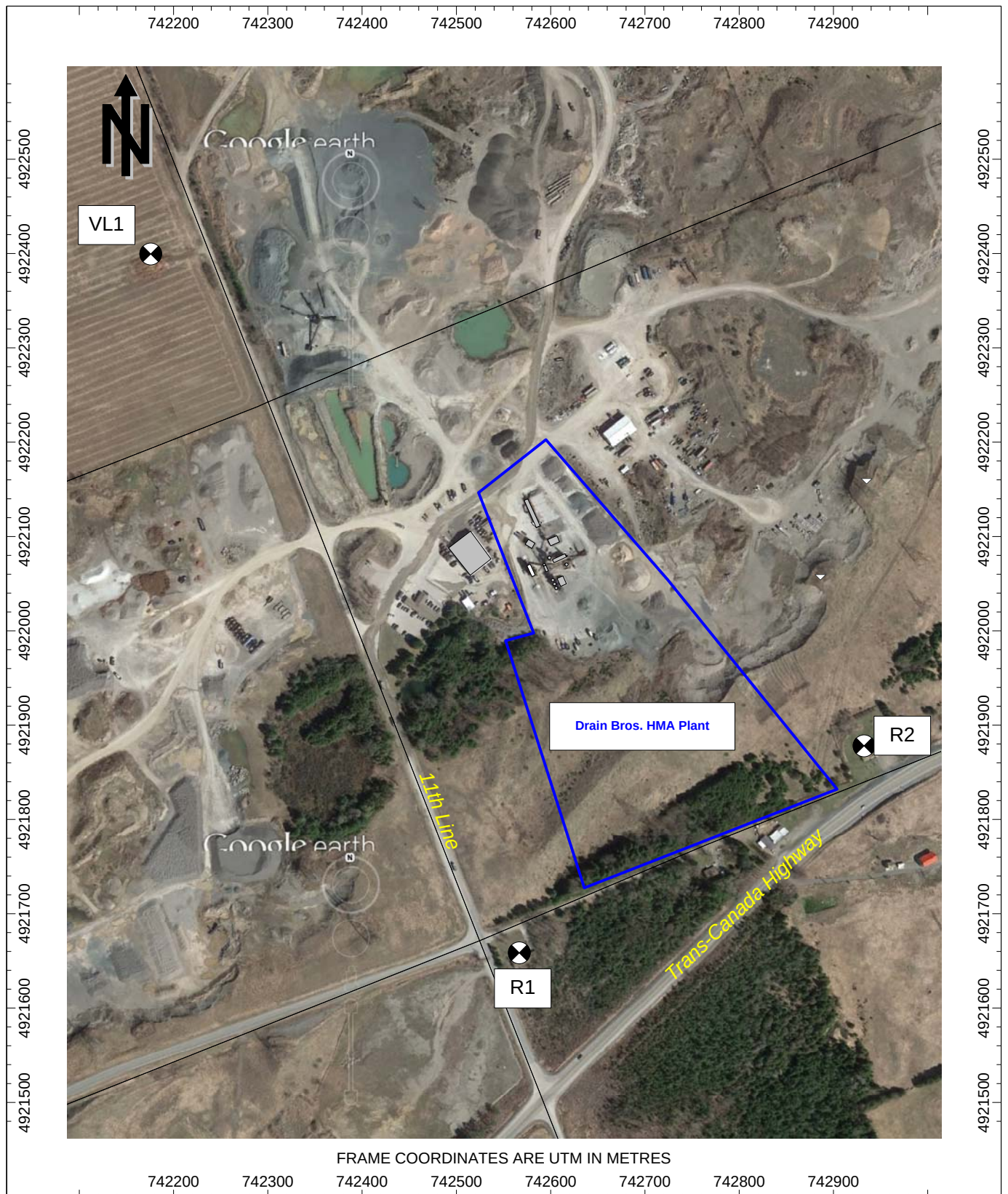


Figure 2: Locations of Points of Reception

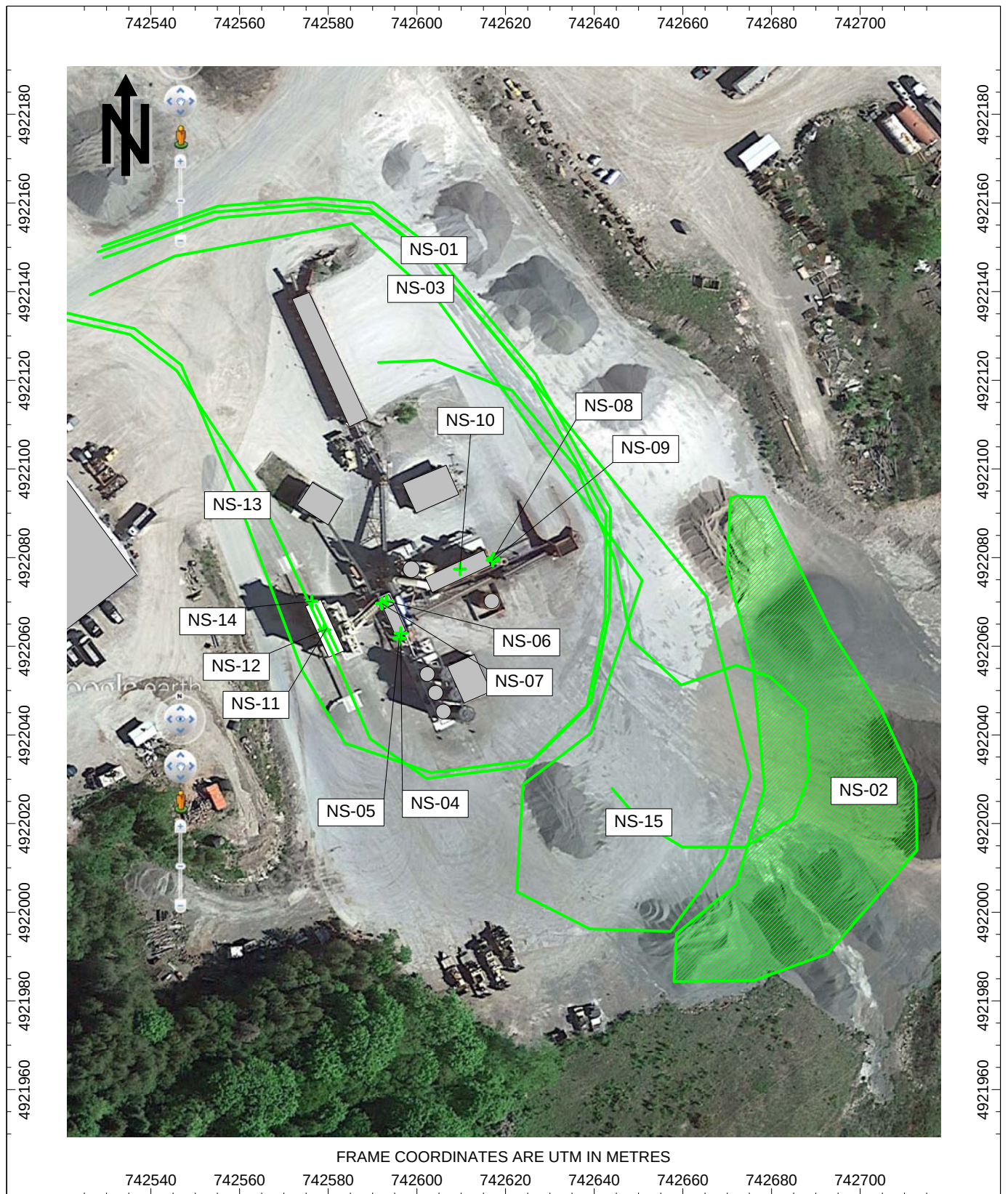


Figure 3: Locations of Sound Sources

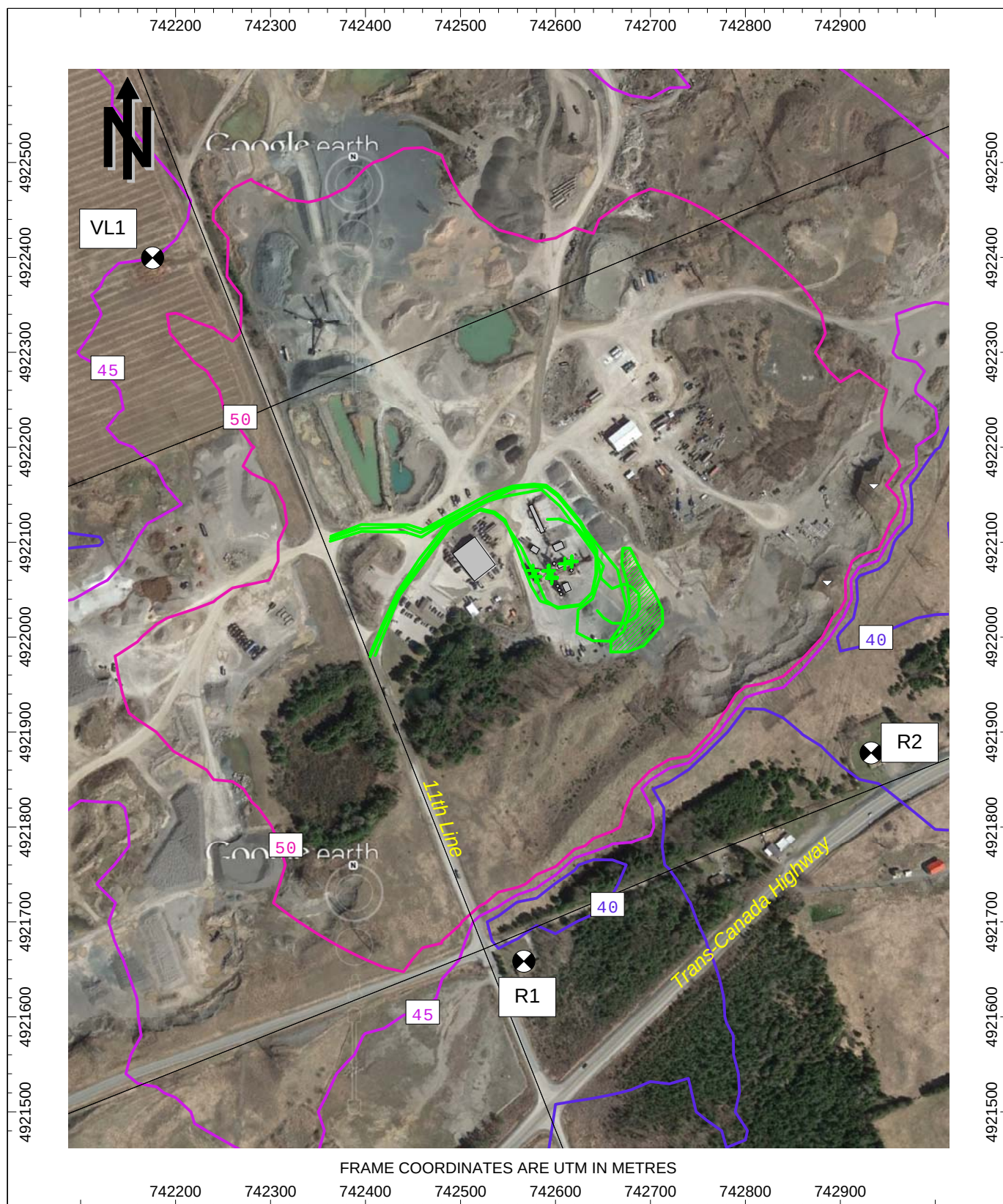


Figure 4: Sound Level Contours, Leq [dBA] at 4.5 m Above Grade

APPENDIX A

Acoustic Assessment Summary Tables



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ACOUSTIC ASSESSMENT SUMMARY TABLES

VERSION CONTROL

Miller Paving HMA Plant, Douro-Dummer Township, Ontario

Ver.	Date	Issued as Part of AAR?	Version Description	Prepared By
0.0	August 2011	Y	Original version of tables as part of Ver. 1 of Acoustic Assessment Report	Others
1.0	13-Jul-18	Y	Updated version of tables as part of Ver. 2 of Acoustic Assessment Report	P. Chocensky



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Table A1: Noise Source Summary Table

Source ID	Source Description	Sound Power Level [dBA re 10 ⁻¹² W]	Source Location	Sound Characteristic	Noise Control Measure
NS-01	Arriving/Departing Aggregate Trucks (each)	102*	O	S	U
NS-02	Unloading Aggregate Trucks	104*	O	S	U
NS-03	Arriving/Departing Liquid-Asphalt Trucks (each)	101*	O	S	U
NS-04	Burner	96	O	S	U
NS-05	Burner Air-Inlet	83	O	S	U
NS-06	Mixer Drum	101	O	S	U
NS-07	Mixer Drum Motor	106	O	S, T	U
NS-08	Dust Collector Fan & Motors	92	O	S	U
NS-09	Dust Collector Stack Outlet	93	O	S	U
NS-10	Dust Collector Blower	111	O	S, T	U
NS-11	Conveyor System at Storage Silos	96	O	S	U
NS-12	Opening Gate at Storage Silo	125*	O	S	U
NS-13	Arriving/Departing HMA Trucks (each)	101*	O	S	U
NS-14	HMA Trucks Idling at Loading Point	95	O	S	U
NS-15	Front End Loader	106	O	S	U

Legend**Sound Characteristics**

S: Steady
 Q: Quasi-steady impulsive
 I: Impulsive
 B: Buzzing
 T: Tonal (+5 dBA penalty applied)
 C: Cyclically varying
 O: Occasional

Noise Control Measures

S: Silencer, Acoustic Louvre, Muffler
 A: Acoustic Lining, Plenum
 B: Barrier, Berm, Screening
 L: Lagging (Acoustical Wrapping)
 E: Acoustic Enclosure
 O: Other
 U: Currently Uncontrolled

Source Location

O: Outdoors
 I: Indoors

* Time weighted source. Reported sound power level does not include time weighted factor.



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Table A2: Point of Reception Noise Impact Table

Source ID	Source Name	Point of Reception					
		R1		R2		VL1	
		Dist [m]	LEQ [dBA]	Dist [m]	LEQ [dBA]	Dist [m]	LEQ [dBA]
NS-01	Arriving/Departing Aggregate Trucks	451	23	459	26	534	32
NS-02	Unloading Aggregate Trucks	390	12	292	15	563	13
NS-03	Arriving/Departing Liquid-Asphalt Trucks	453	12	456	15	512	22
NS-04	Burner	406	24	384	27	538	17
NS-05	Burner Air-Inlet	405	8	383	10	539	4
NS-06	Mixer Drum	412	16	390	20	532	29
NS-07	Mixer Drum Motor	412	30	390	24	531	37
NS-08	Dust Collector Fan & Motors	425	8	374	16	545	--
NS-09	Dust Collector Stack Outlet	424	21	374	22	545	20
NS-10	Dust Collector Blower	421	27	379	37	540	39
NS-11	Conveyor System at Storage Silos	404	22	398	22	527	27
NS-12	Opening Gate at Storage Silo	405	33	399	32	525	40
NS-13	Arriving/Departing HMA Trucks	450	24	455	26	514	34
NS-14	HMA Trucks Idling at Loading Point	412	17	404	21	519	23
NS-15	Front End Loader	433	30	335	33	598	34

Note: Reported sound levels include all adjustment factors (time weighting, tonal penalty), as applicable.



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Table A3a: Acoustic Assessment Summary Table - Existing

Point of Reception	Point of Reception Description	Sound Level at Point of Reception, LEQ [dBA] (Day/Night)	Performance Limit, LEQ [dBA] (Day/Night)	Compliance with Performance Limit (Day/Night)	Acoustical Classification Area	Verified by Acoustic Audit
R1	Single-Storey Residential Home	38 / 38	50 / 45	Yes / Yes	Class 2	No
R2	Single-Storey Residential Home	41 / 41	50 / 45	Yes / Yes	Class 2	No
VL1	Two-Storey Residential Home	45 / 45	45 / 40	Yes / No	Class 3	No

Table A3b: Acoustic Assessment Summary Table - Only If Vacant Lot VL1 Developed

Point of Reception	Point of Reception Description	Sound Level at Point of Reception, LEQ [dBA] (Day/Night)	Performance Limit, LEQ [dBA] (Day/Night)	Compliance with Performance Limit (Day/Night)	Acoustical Classification Area	Verified by Acoustic Audit
R1	Single-Storey Residential Home	38 / --	50 / --	Yes / --	Class 2	No
R2	Single-Storey Residential Home	41 / --	50 / --	Yes / --	Class 2	No
VL1	Two-Storey Residential Home	45 / --	45 / --	Yes / --	Class 3	No



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APPENDIX B

Zoning Maps



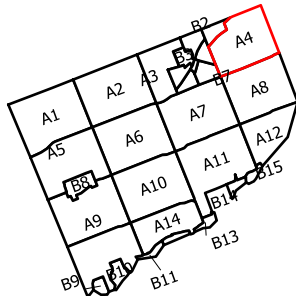
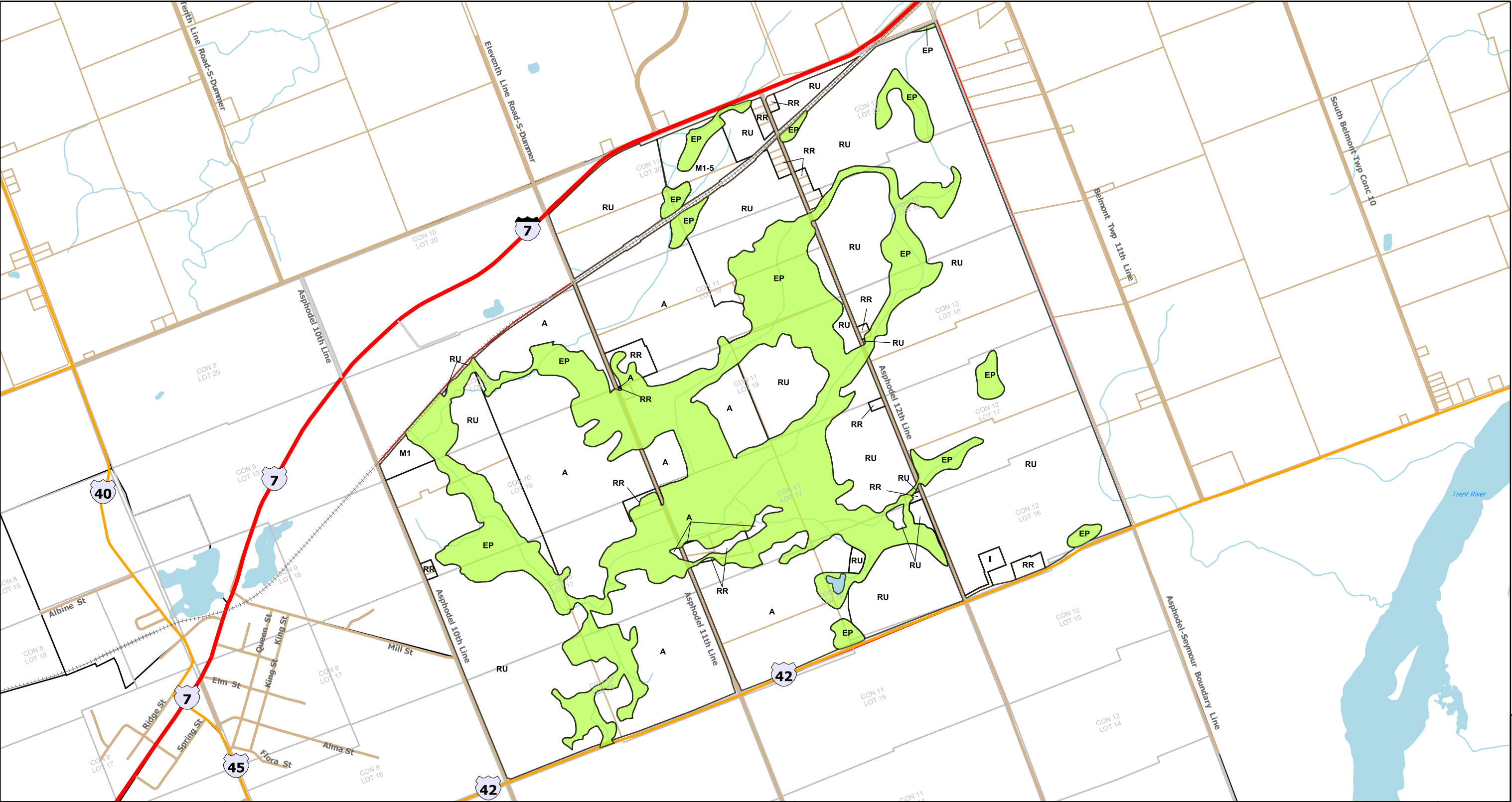
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1:21000

Print Date:10/16/2013

Schedule A4

Asphodel - Norwood Zoning By-Law
2009-08, as amended

Schedule A8

ZONE DESCRIPTION	
A - Agricultural	M2 - Extractive Industrial
C1 - Commercial	M3 - Waste Management
C2 - Recreational Commercial	OS - Open Space
EP - Environmental Protection	R1 - Residential One
LSR - Limited Service Residential	R2 - Residential Two
M1 - General Industrial	R3 - Residential Three
I - Institutional	RR - Rural Residential
	RU - Rural

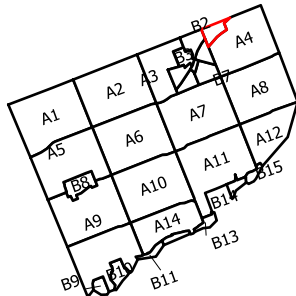
Legend	
	Parcel Boundary
	Flood Fringe
	101.5 Elevation (m) Area
	Roads
	Kings Hwy
	County Rd
	Township Rd
	Private Rd
	Railway
	Multi use Trail



Schedule B1

Schedule A4

Schedule B2



1:8600

Print Date:10/16/2013

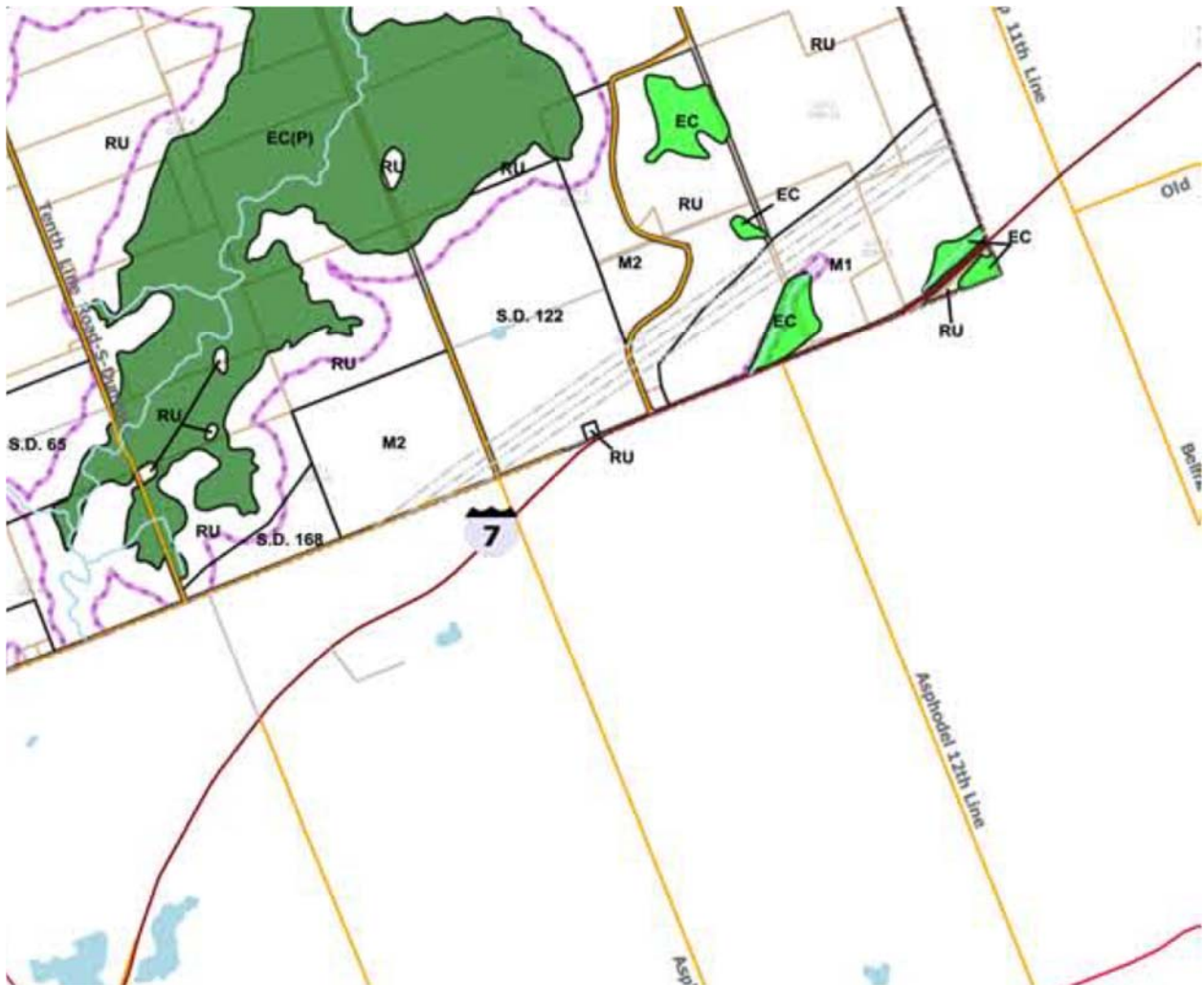
Schedule B2

Asphodel - Norwood Zoning By-Law
2009-08, as amended

Schedule A4

ZONE DESCRIPTION	
A - Agricultural	M2 - Extractive Industrial
C1 - Commercial	M3 - Waste Management
C2 - Recreational Commercial	OS - Open Space
EP - Environmental Protection	R1 - Residential One
LSR - Limited Service Residential	R2 - Residential Two
M1 - General Industrial	R3 - Residential Three
I - Institutional	RR - Rural Residential
	RU - Rural

Legend	
	Parcel Boundary
Flood Fringe	
	Elevation (m)
	Area
Roads	
	Kings Hwy
	County Rd
	Township Rd
	Private Rd
	Railway
	Multi use Trail



1:35000

Zoning By-Law #
2010-55

C1 - Local Commercial
C2 - Highway Commercial
CT - Commercial Tourist
CT - 1 - Commercial Tourist - Trailer Park
CTR - 1 - Restricted Commercial Tourist
D - Development
HR - Hamlet Residential
I - Institutional
IR - Island Residential
LSR - Limited Service Residential
M1 - Restricted Industrial
M2 - Extractive Industrial
M3 - Disposal Industrial
NR - Native Reserve
OS - Open Space
OSR - Restricted Open Space
R - Residential
RU - Rural
SD - Special District
SR - Shoreline Residential



APPENDIX C

Measurement Methods and Instrumentation



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All instrumentation was within its laboratory calibration period. Field checks of correct calibration were made before and after the measurements. Weather conditions during the site visit were suitable for outdoor acoustical measurements.

Source Sound Intensity Measurements

Sound power levels for each source were obtained in order to develop an acoustical inventory of the facility. Sound intensity measurement techniques were employed to measure the sound power of the majority of sources. Methods from ISO 9614-2 “Acoustics - Determination of sound power levels of noise sources using sound intensity - Part 2: Measurement by scanning” [5] were employed in this regard. Sound intensity measurement instrumentation has a high inherent ability to reject extraneous sounds originating from outside the measurement control-volume, and can therefore separate the sound emitted by each component. The measurements were conducted in 1/3 octave bands using a Brüel & Kjær Hand-held Analyzer Type 2270, equipped with Sound Intensity software BZ-7233, a Brüel & Kjær model 3654 Sound Intensity Probe and a pair of phase-matched model 4197 microphones.

Sound Pressure Measurements

Using the same instrumentation as above, sound pressure level measurements were conducted in the vicinity of locations R1, R2, and VL1, and at numerous locations on the property of the subject facility, the results of which were used to validate the results of the acoustic model (see Appendix D).



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APPENDIX D

Details of Computational Acoustical Modelling



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The computational model used for this Assessment (*Cadna-A version 2018 MR1*) is based on the methods from ISO Standard 9613-2.2 “Acoustics - Attenuation of Sound During Propagation Outdoors” [6], which accounts for reduction in sound level with distance due to geometrical spreading, air absorption, ground attenuation and acoustical shielding by intervening structures (or by topography and foliage where applicable). This modelling technique is acceptable to the MOECC.

Topographical terrain information for the site and surrounding area, including the elevated terrain features to the south of the site was included in the analysis. Ground attenuation was assumed to be spectral for all sources, with the ground factor (G) assumed to be 0.4 on the subject site, representative of areas covered with sand/gravel, and 1.0 in all other areas, representative of soft ground. The temperature and relative humidity were assumed to be 10° C and 70%, respectively.

The computational modelling considered one order of reflection, the sufficiency of which was verified through an iterative convergence analysis, using successively increasing orders of reflection. Shielding/reflections by structures was modelled with spectral absorptive characteristics applied to each structure as appropriate, with values representative of concrete, brick, or steel.

Most mechanical equipment was modeled as point sources of sound (shown as crosses in Figures 3 and 4). Movement of trucks, front-end loader, and material elevators/conveyors were modeled as line sources (shown as lines in Figures 3 and 4), and the unloading aggregate trucks were modeled as an area source (shown as hatched polygon in Figures 3 and 4). Time-weighting factors were applied to the sound from on-site vehicles based on a speed of 10 km/h.



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APPENDIX E

Acoustic Assessment Criteria



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According to MOECC Publication NPC-300 [3], sound level limits for stationary sources apply at noise sensitive points of reception, and are set as the greater of either the applicable exclusion limits, or the minimum one-hour energy equivalent (L_{EQ}) background sound level that occurs during the time period corresponding to the operation of the source under assessment.

The exclusion limits applicable to Class 2 and 3 areas are summarized below.

Table E1: Minimum Exclusion Limits [dBA]

Location	Acoustical Environment	Daytime (7:00 – 19:00)	Night-time (19:00 – 7:00)
Existing residences (R1 and R2)	Class 2	50	45
Vacant Lot (VL1)	Class 3	45	40

Based on observations and noise measurements in the vicinity of locations R1, R2, and VL1, the background sound levels are likely to be as low as the exclusion limits above during the quietest hours of the day and night. Therefore, the exclusion limits above are the applicable limits for this assessment.



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APPENDIX F

Sample Calculation Results - Condensed, Overall dBA Format

In the following tables of calculation results, the column headings for the various sound attenuation mechanisms follow the terminology of ISO Standard 9613-2. LxD and LxN are the A-weighted, one-hour energy-equivalent (or logarithmic-mean impulse) source sound power levels for day and night, respectively, which include the effects of any source-abatement measures included in the model, and any time-averaging effects for intermittent sources. LrD and LrN are the A-weighted, one-hour energy-equivalent (or logarithmic-mean impulse) sound levels at the point of reception. The results are presented in terms of overall A-weighted results, at the most impacted off-site point of reception.



VL1		Vacant Lot			742176	4922400	225.5																	
Src ID	Src Name	X	Y	Z	LxD	LxE	LxN	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahou	CmetD	CmetE	CmetN	RefID	RefIE	RefIN	LrD	LrE	LrN
NS-01	Arriving/Departing Aggregate Trucks	742601	4922076	224.1	100	100	100	63.9	0	0.0	-0.6	2.7	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	32	32	32
NS-02	Unloading Aggregate Trucks	742668	4922127	222.7	91	91	91	66.9	0	0.0	-1.5	5.6	6.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13	13	13
NS-03	Arriving/Departing Liquid-Asphalt Trucks	742575	4922080	224.2	90	90	90	63.5	0	0.0	-1.0	2.5	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22	22	22
NS-04	Burner	742596	4922064	224.0	96	96	96	65.6	3	0.0	-0.9	16.4	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17	17	17
NS-05	Burner Air-Inlet	742596	4922062	224.0	83	83	83	65.6	0	0.0	-1.5	13.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4	4	4
NS-06	Mixer Drum	742593	4922070	222.6	101	101	101	65.5	0	0.0	-1.6	4.6	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29	29	29
NS-07	Mixer Drum Motor	742592	4922070	223.5	106	106	106	65.5	3	0.0	-1.6	4.6	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37	37	37
NS-08	Dust Collector Fan & Motors	742617	4922080	222.9	92	92	92	65.7	0	0.0	-0.7	23.3	4.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--	--	
NS-09	Dust Collector Stack Outlet	742617	4922080	233.4	93	93	93	65.7	0	0.0	-0.9	4.7	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20	20	20
NS-10	Dust Collector Blower	742610	4922078	221.9	111	111	111	65.7	0	0.0	0.1	3.6	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	39	39	39
NS-11	Conveyor System at Storage Silos	742581	4922063	233.7	96	96	96	65.4	0	0.0	-0.3	2.2	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27	27	27
NS-12	Opening Gate at Storage Silo	742579	4922064	224.5	116	116	116	65.4	0	0.0	-1.6	4.5	7.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40	40	40
NS-13	Arriving/Departing HMA Trucks	742577	4922079	224.2	102	102	102	63.6	0	0.0	-1.0	2.4	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34	34	34
NS-14	HMA Trucks Idling at Loading Point	742576	4922070	222.1	95	95	95	65.3	0	0.0	-1.2	4.4	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23	23	23
NS-15	Front End Loader	742660	4922048	224.3	106	106	106	66.2	0	0.0	-1.4	4.7	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34	34	34

R1		Single-Storey Residential Home			742567	4921659	221.5																	
Src ID	Src Name	X	Y	Z	LxD	LxE	LxN	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahou	CmetD	CmetE	CmetN	RefID	RefIE	RefIN	LrD	LrE	LrN
NS-01	Arriving/Departing Aggregate Trucks	742581	4922110	225.0	100	100	100	63.8	0	0.0	4.8	6.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23	23	23
NS-02	Unloading Aggregate Trucks	742683	4922031	223.7	91	91	91	62.9	0	0.0	2.9	10.3	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12	12	12
NS-03	Arriving/Departing Liquid-Asphalt Trucks	742572	4922111	225.0	90	90	90	63.9	0	0.0	3.1	9.1	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12	12	12
NS-04	Burner	742596	4922064	224.0	96	96	96	63.2	3	0.0	3.0	7.4	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	24	24
NS-05	Burner Air-Inlet	742596	4922062	224.0	83	83	83	63.1	0	0.0	1.9	8.7	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8	8	8
NS-06	Mixer Drum	742593	4922070	222.6	101	101	101	63.3	0	0.0	3.2	16.5	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16	16	16
NS-07	Mixer Drum Motor	742592	4922070	223.5	106	106	106	63.3	3	0.0	2.7	10.5	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30	30	30
NS-08	Dust Collector Fan & Motors	742617	4922080	222.9	92	92	92	63.6	0	0.0	4.5	14.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8	8	8
NS-09	Dust Collector Stack Outlet	742617	4922080	233.4	93	93	93	63.5	0	0.0	1.6	4.4	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21	21	21
NS-10	Dust Collector Blower	742610	4922078	221.9	111	111	111	63.5	0	0.0	5.0	13.9	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27	27	27
NS-11	Conveyor System at Storage Silos	742580	4922062	232.8	96	96	96	63.2	0	0.0	4.4	5.6	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22	22	22
NS-12	Opening Gate at Storage Silo	742579	4922064	224.5	116	116	116	63.2	0	0.0	0.9	14.9	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33	33	33
NS-13	Arriving/Departing HMA Trucks	742570	4922108	224.9	102	102	102	63.9	0	0.0	3.2	9.1	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	24	24
NS-14	HMA Trucks Idling at Loading Point	742576	4922070	222.1	95	95	95	63.3	0	0.0	3.3	9.6	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17	17	17
NS-15	Front End Loader	742632	4922087	224.6	106	106	106	63.3	0	0.0	4.2	6.6	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30	30	30

R2		Single-Storey Residential Home			742932	4921878	224.1																	
Src ID	Src Name	X	Y	Z	LxD	LxE	LxN	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahou	CmetD	CmetE	CmetN	RefID	RefIE	RefIN	LrD	LrE	LrN
NS-01	Arriving/Departing Aggregate Trucks	742532	4922103	224.8	100	100	100	63.5	0	0.0	3.7	5.3	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26	26	26
NS-02	Unloading Aggregate Trucks	742683	4922030	223.7	91	91	91	60.3	0	0.0	2.6	11.4	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15	15	15
NS-03	Arriving/Departing Liquid-Asphalt Trucks	742538	4922106	224.4	90	90	90	64.1	0	0.0	1.9	7.4	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15	15	15
NS-04	Burner	742596	4922064	224.0	96	96	96	62.7	3	0.0	1.9	6.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27	27	27
NS-05	Burner Air-Inlet	742596	4922062	224.0	83	83	83	62.7	0	0.0	1.1	7.4	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10	10	10
NS-06	Mixer Drum	742593	4922070	222.6	101	101	101	62.8	0	0.0	2.0	13.8	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20	20	20
NS-07	Mixer Drum Motor	742592	4922070	223.5	106	106	106	62.8	3	0.0	1.6	18.3	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	24	24
NS-08	Dust Collector Fan & Motors	742617	4922080	222.9	92	92	92	62.5	0	0.0	3.3	7.6	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16	16	16
NS-09	Dust Collector Stack Outlet	742617	4922080	233.4	93	93	93	62.5	0	0.0	1.5	4.6	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22	22	22
NS-10	Dust Collector Blower	742610	4922078	221.9	111	111	111	62.6	0	0.0	5.3	4.4	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37	37	37
NS-11	Conveyor System at Storage Silos	742580	4922063	233.6	96	96	96	63.0	0	0.0	3.8	5.8	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22	22	22
NS-12	Opening Gate at Storage Silo	742579	4922064	224.5	116	116	116	63.0	0	0.0	-0.1	17.3	4.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	32	32	32
NS-13	Arriving/Departing HMA Trucks	742538	4922104	224.4	102	102	102	64.0	0	0.0	1.9	7.5	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26	26	26
NS-14	HMA Trucks Idling at Loading Point	742576	4922070	222.1	95	95	95	63.1	0	0.0	2.1	7.1	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21	21	21
NS-15	Front End Loader	742652	4922061	224.5	106	106	106	61.7	0	0.0	3.7	6.1	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33	33	33

Where: Lr = Lx - Adiv + K0 + Dc - Agnd - Abar - Aatm - Afol - Ahous + Cmet + Refl



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APPENDIX G

Sample Calculation Results - Octave Band Format

In the following tables of calculation results, the column headings for the various sound attenuation mechanisms follow the terminology of ISO Standard 9613-2. LxD and LxN are the A-weighted, one-hour energy-equivalent (or logarithmic-mean impulse) source sound power levels for day and night, respectively, which include the effects of any source-abatement measures included in the model, and any time-averaging effects for intermittent sources. LrD and LrN are the A-weighted, one-hour energy-equivalent (or logarithmic-mean impulse) sound levels at the point of reception. The results are presented in terms of full octave band sound levels, at the most impacted off-site point of reception.



Where: $L_r = L_x - A_{div} + K_0 + D_c - A_{end} - A_{bar} - A_{atm} - A_{fol} - A_{hous} + C_{met} + Ref$



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NS-14	HMA Trucks Idling at Loading Point	63	742576	4922070	222.1	70	70	70	65.3	0	0.0	-5.0	4.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5	5	5	63.0
NS-14	HMA Trucks Idling at Loading Point	125	742576	4922070	222.1	75	75	75	65.3	0	0.0	2.8	2.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5	5	5	125.0
NS-14	HMA Trucks Idling at Loading Point	250	742576	4922070	222.1	79	79	79	65.3	0	0.0	2.3	2.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9	9	9	250.0
NS-14	HMA Trucks Idling at Loading Point	500	742576	4922070	222.1	85	85	85	65.3	0	0.0	0.1	4.7	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14	14	14	500.0
NS-14	HMA Trucks Idling at Loading Point	1000	742576	4922070	222.1	91	91	91	65.3	0	0.0	-1.6	4.8	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21	21	21	1000.0
NS-14	HMA Trucks Idling at Loading Point	2000	742576	4922070	222.1	91	91	91	65.3	0	0.0	-1.9	4.8	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18	18	18	2000.0
NS-14	HMA Trucks Idling at Loading Point	4000	742576	4922070	222.1	82	82	82	65.3	0	0.0	-1.9	4.8	17.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--	--	4000.0
NS-14	HMA Trucks Idling at Loading Point	8000	742576	4922070	222.1	69	69	69	65.3	0	0.0	-1.9	4.8	60.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--	--	8000.0
NS-15	Front End Loader	31.5	742660	4922050	224.3	63	63	63	66.3	0	0.0	-4.9	4.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--	--	31.5
NS-15	Front End Loader	63	742660	4922050	224.3	75	75	75	66.2	0	0.0	-4.9	4.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9	9	9	63.0
NS-15	Front End Loader	125	742660	4922050	224.3	84	84	84	66.2	0	0.0	2.9	1.9	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12	12	12	125.0
NS-15	Front End Loader	250	742660	4922050	224.3	95	95	95	66.2	0	0.0	1.4	3.5	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	24	24	250.0
NS-15	Front End Loader	500	742660	4922050	224.3	99	99	99	66.2	0	0.0	-1.6	5.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28	28	28	500.0
NS-15	Front End Loader	1000	742660	4922050	224.3	102	102	102	66.2	0	0.0	-1.9	5.1	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31	31	31	1000.0
NS-15	Front End Loader	2000	742660	4922050	224.3	100	100	100	66.1	0	0.0	-1.9	5.1	5.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25	25	25	2000.0
NS-15	Front End Loader	4000	742660	4922050	224.3	94	94	94	66.0	0	0.0	-1.9	5.2	18.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5	5	5	4000.0
NS-15	Front End Loader	8000	742660	4922050	224.3	86	86	86	65.6	0	0.0	-1.9	5.5	65.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--	--	8000.0

Where: $L_r = L_x - A_{div} + K_0 + D_c - A_{gnd} - A_{bar} - A_{atm} - A_{fol} - A_{hous} + C_{met} + Refl$ 

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AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 1729-BCTRKZ

Issue Date: June 13, 2019

Miller Paving Limited
505 Miller Ave
Post Office Box, No. 1480
Markham, Ontario
L6G 1B2

Site Location: Norwood Asphalt Facility
25 11th Line Road South Dummer
Asphodel-Norwood Township, County of Peterborough

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act , R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

One (1) Hot-Mix Asphalt (HMA) plant, operating at a maximum production rate of 272 tonnes of HMA per hour, 3,300 tonnes of HMA per day, and 175,000 tonnes of HMA per year, consisting of the following:

One (1) no. 2 fuel oil fired rotary drum dryer/mixer, having a maximum heat input of 87 million kilojoules per hour, controlled by a baghouse dust collector equipped with 1,008 square metres of filter material and a pulse-jet cleaning mechanism, discharging to the air at a volumetric flow rate of 28.2 cubic metres per second through a stack having an exit diameter of 1.3 metres and extending 14.2 metres above grade;

One (1) baghouse dust collector controlling emissions from a dust silo, equipped with 21.6 square metres of filter material and a pulse-jet cleaning mechanism, discharging to the air at a volumetric flow rate of 0.3 cubic metre per second through a stack having an equivalent exit diameter of 0.24 metre and extending 18 metres above grade;

Three (3) liquid asphalt cement storage tanks, each having a capacity of 113.8 cubic metres and operating at a maximum tank temperature of 163 degrees celsius, served by one (1) no. 2 fuel oil fired hot oil heater having a maximum heat input 2.6 million kilojoules per hour, discharging to the air through a vent having an exit diameter of 0.4 metre and extending 5.5 metres above grade;

Three (3) HMA storage silos, each having a capacity of 180 tonnes and operating at a maximum tank temperature of 163 degrees celsius;

One (1) aggregate screener operating at a maximum processing rate of 990 tonnes of washed coarse aggregate per day and 1,188 tonnes of sand per day;

One (1) Reclaimed Asphalt Pavement (RAP) screener operating at a maximum processing rate of 990 tonnes of RAP per day;

Fugitive dust emissions resulting from the storage, delivery and handling of coarse aggregate, sand and RAP materials associated with the HMA plant operations .

All in accordance with the application for Environmental Compliance Approval application signed by Bill Kasper, dated July 11, 2018, and submitted by the *Company* , the Emission Summary and Dispersion Modelling Report dated July 2018, prepared by Megan Ostronic EIT of BCX Environmental Consulting, reviewed by Xiaoxi Song P.Eng. of BCX Environmental Consulting, and submitted in support of the application; the Acoustic Assessment Report dated July 13, 2018 prepared by Petr Chocensky of HGC Engineering; and all other supporting information and documentation submitted in support of the application.

For the purpose of this environmental compliance approval, the following definitions apply:

1. "*Acoustic Assessment Report*" means the report, prepared in accordance with *Ministry Publication NPC-233*, by Petr Chocensky of HGC Engineering and dated July 13, 2018 submitted in support of the application that documents all sources of noise emissions and *Noise Control Measures* present at the *Facility*;
2. "*Approval*" means this Environmental Compliance Approval, including the application and supporting documentation listed above;
3. "*Best Management Practices Plan*" means a document or a set of documents which describe measures to minimize dust emissions from the *Facility* and/or *Equipment*;
4. "*Company*" means Miller Paving Limited, that is responsible for the construction or operation of the *Facility* and includes any successors and assigns;
5. "*Director*" means a person appointed for the purpose of section 20.3 of the *EPA* by the *Minister* pursuant to section 5 of the *EPA*;
6. "*District Manager*" means the District Manager of the appropriate local district office of the *Ministry*, where the *Facility* is geographically located;
7. "*EPA*" means the Environmental Protection Act, R.S.O. 1990, c.E.19, as

amended;

8. "*Equipment*" means the equipment and processes described in the *Company's* application, this *Approval* and in the supporting documentation submitted with the application, to the extent approved by this *Approval*;
9. "*Facility*" means the entire operation located on the property where the *Equipment* is located;
10. "*Manual*" means a document or a set of documents that provide written instructions to staff of the *Company*;
11. "*Minister*" means the Minister of the Environment, Conservation and Parks or such other member of the Executive Council as may be assigned the administration of the *EPA* under the Executive Council Act;
12. "*Ministry*" means the ministry of the *Minister*;
13. "*Noise Control Measures*" means measures to reduce the noise emissions from the *Facility* and/or *Equipment* including, but not limited to, silencers, barriers and enclosures;
14. "*Publication NPC-233*" means the *Ministry* Publication NPC-233, "Information to be Submitted for Approval of Stationary Sources of Sound", October, 1995 as amended;
15. "*Publication NPC-300*" means the *Ministry* Publication NPC-300, "Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning, Publication NPC-300", August 2013, as amended; and
16. "*Technical Bulletin: Management Approaches for Industrial Fugitive Dust Sources*" means the *Ministry* publication "Technical Bulletin: management approaches for industrial fugitive dust sources", March 8, 2017, as amended;

You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. OPERATION AND MAINTENANCE

1. The *Company* shall ensure that the *Equipment* is properly operated and maintained at all times. The *Company* shall:
 - a. prepare, not later than three (3) months after the date of this *Approval*, and update, as necessary, a *Manual* outlining the operating procedures and a maintenance program for the *Equipment*, including:

- i. routine operating and maintenance procedures in accordance with good engineering practices and as recommended by the *Equipment* suppliers;
 - ii. emergency procedures, including spill clean-up procedures;
 - iii. procedures for any record keeping activities relating to operation and maintenance of the *Equipment*;
 - iv. all appropriate measures to minimize noise and odorous emissions from all potential sources; and
 - v. the frequency of inspection and replacement of the filter material in the *Equipment*; and
 - vi. procedures for monitoring and recording the temperatures of the liquid asphalt cement storage tanks and HMA silos;
 - b. implement the recommendations of the *Manual*.
2. The *Company* shall ensure that the maximum temperatures for the liquid asphalt cement storage tanks and HMA silo mentioned above in this *Approval* are not exceeded.
 3. The *Company* shall, at all times, ensure that the noise emissions from the *Facility* comply with the limits set out in *Ministry Publication NPC 300*.
 4. The *Company* shall restrict the operation of the *Equipment* to the daytime hours of 7:00 am to 7:00 pm after the issuance of an above grade building permit under the Building Code Act, 1992, for a building on the vacant land located approximately 500 metres North-West of the *Facility*, as depicted in Figure 2 of the *Acoustic Assessment Report*.

2. FUGITIVE DUST CONTROL

1. The *Company* shall develop in consultation with the *District Manager*, a *Best Management Practices Plan* for the control of fugitive dust emissions. This *Best Management Practices Plan* shall:
 - a. at minimum, be prepared in accordance with *Ministry Technical Bulletin: Management Approaches for Industrial Fugitive Dust Sources*;
 - b. include procedures for assessing the moisture level of coarse aggregate and sand, and application of liquid dust suppressant to dry coarse aggregate and sand;
 - c. include a list of all *Ministry* comments received, if any, on the development of the *Best Management Practices Plan*, and a description of how each *Ministry* comment was addressed in the *Best Management Practices Plan*.

2. The *Company* shall submit the *Best Management Practices Plan* to the *District Manager* not later than three months after the date of this *Approval* or as otherwise indicated by the *District Manager*.
3. Upon acceptance of the *Best Management Practices Plan* by the *District Manager*, the *Company* shall immediately implement the *Best Management Practices Plan* for the control of fugitive dust emissions to provide effective dust suppression measures to any potential sources of fugitive dust emissions resulting from the operation of the *Facility*.
4. The *Company* shall update the *Best Management Practices Plan* as necessary or at the direction of the *District Manager*.

3. RECORD RETENTION

1. The *Company* shall retain, for a minimum of two (2) years from the date of their creation, all records and information related to or resulting from the recording activities required by this *Approval*, and make these records available for review by staff of the *Ministry* upon request. The *Company* shall retain:
 - a. all records on the maintenance, repair and inspection of the *Equipment*;
 - b. all records on the temperatures of the liquid asphalt cement tanks and HMA silo.
 - c. all records of any environmental complaints, including:
 - i. a description, time and date of each incident to which the complaint relates;
 - ii. wind direction at the time of the incident to which the complaint relates; and
 - iii. a description of the measures taken to address the cause of the incident to which the complaint relates and to prevent a similar occurrence in the future.

4. NOTIFICATION OF COMPLAINTS

1. The *Company* shall notify the *District Manager*, in writing, of each environmental complaint within two (2) business days of the complaint. The notification shall include:
 - a. a description of the nature of the complaint; and
 - b. the time and date of the incident to which the complaint relates.

The reasons for the imposition of these terms and conditions are as follows:

1. Conditions No. 1 and 2 are included to emphasize that the *Equipment* must be maintained and operated according to a procedure that will result in compliance with the *EPA*, the regulations and this *Approval*.
2. Condition No. 3 is included to require the *Company* to keep records and to provide information to staff of the *Ministry* so that compliance with the *EPA*, the Regulations and this *Approval* can be verified.
3. Condition No. 4 is included to require the *Company* to notify staff of the *Ministry* so as to assist the *Ministry* with the review of the site's compliance.

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 8-4069-98-006 issued on June 22, 1998

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me, the Environmental Review Tribunal and in accordance with Section 47 of the Environmental Bill of Rights, 1993, the Minister of the Environment, Conservation and Parks, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Minister of the Environment, Conservation and Parks will place notice of your appeal on the Environmental Registry. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

- a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
- b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Minister of the Environment,
Conservation and Parks
777 Bay Street, 5th Floor
Toronto, Ontario
M7A 2J3

AND

The Director appointed for the purposes of
Part II.1 of the Environmental Protection Act
Ministry of the Environment, Conservation
and Parks
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca**

This instrument is subject to Section 38 of the Environmental Bill of Rights, 1993, that allows residents of Ontario to seek leave to appeal the decision on this instrument. Residents of Ontario may seek leave to appeal within 15 days from the date this decision is placed on the Environmental Registry. By accessing the Environmental Registry at www.ebr.gov.on.ca, you can determine when the leave to appeal period ends.

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 13th day of June,
2019

Jeffrey McKerrall, P.Eng.
Director
appointed for the purposes of Part
II.1 of the *Environmental Protection
Act*

NR/
c: District Manager, MECP Peterborough
Megan Ostronic EIT, BCX Environmental Consulting