



January 26, 2024

The Regional Municipality of Niagara
Planning and Development Services
1815 Sir Isaac Brock Way, P.O. Box 1042
Thorold, ON L2V 4T7
Attention: Sean Norman, PMP, MCIP, RPP

Subject: Upper's Quarry Final Peer Review Plain Language Summary - Noise - Revision 1
Summary of revised Acoustic Assessment Report for the Upper's Quarry in Niagara Falls, ON
Prepared by RWDI Air Inc. for Walker Aggregates Inc., dated Aug. 02, 2023 (RWDI #1603157)
Englobe reference: 02105316.000

1 Introduction

Englobe Corp. ("Englobe") was retained by the Regional Municipality of Niagara ("the Municipality") to provide a brief plain language memorandum summarizing the latest Acoustic Assessment Report (AAR) for the proposed Upper's Quarry ("the Quarry") in Niagara Falls, Ontario. The AAR was prepared by RWDI Air Inc. ("RWDI") and presented to the Municipality, with the following primary objectives:

- Determine the worst-case operating scenario for the Quarry from a noise perspective.
- Calculate the noise level impact on nearby noise-sensitive lands (in this case, residences).
- Compare the calculated, worst-case noise level impact with limits provided in provincial guidelines.

Please note that this memorandum was prepared with the purpose of summarizing and simplifying the Quarry's latest AAR and associated studies with respect to noise emission and its potential impact on nearby receptors.

Some of the terminology and concepts were adapted and/or streamlined in an effort to ease a layperson's comprehension of the AAR. Please refer to the original reports for full context and technical terminologies, including descriptions, justifications, and assumptions.

2 Project Background

The proposed Quarry is located east of Thorold Townline Rd, west of Beechwood Rd, north of Upper's Lane (by approximately 400m), and south of Upper's Lane to the power transmission line right-of-way.

Extraction of aggregate materials within the Quarry will be done in phases, with each phase focusing on a limited area of the overall Quarry limits. The initial phase is located in the southwestern area of the Quarry limits, where the distances to nearby residences is the greatest. Each subsequent phase results in Quarry equipment operating gradually closer to nearby residences.

The operating hours for the quarry operations is generally Monday to Saturday, from 7am to 7pm. However, the following specific activities are expected to operate 24/7:

- Hauling aggregate materials within the Quarry.
- Shipping and receiving activities.
- Asphalt plant operations.

3 Noise Level Limits

The applicable noise level limits are defined in the Ministry of the Environment, Conservation and Parks (“the Ministry”) Publication “NPC-300”. For the proposed Quarry and the surrounding area, the acoustical environment is defined as “Class 2”, meaning it is dominated by the activities of people (usually road traffic) during the daytime, whereas evening and night-time noise levels are low and defined by the natural environment and infrequent human activity. For the Class 2 residences surrounding the proposed Quarry, the specific noise level limit at each particular receptor is prescribed by the NPC-300 guidelines, and ranges from 45 dBA to 50 dBA, as outlined in the AAR.

Of note, Class 2 noise level limits presented in the NPC-300 Guidelines should not be considered “inaudible” at the receptors - the limits represent acceptable noise levels for the majority of the population. Expressed differently, it is understood that the noise level limits prescribed by NPC-300 aim to protect the public from excessive noise while allowing for reasonable industrial and commercial activities; these limits are set to accommodate the interests of businesses and residents alike.

Table 1, below, contains various examples of common and relatable noise sources and their approximate expected noise levels. Please note that this table is intended to assist with contextualizing the above noted noise level limits and is not a direct comparison between the noise levels produced by the Quarry and the noise sources listed below.

Table 1: Comparative Examples of Environmental Noise Levels [1] [2] [3] [4]

Subjective Volume	Reference Noise Level, dBA	Source Comparison
VERY LOUD	110+	Live Music Concerts; Sporting Events
	100 - 110	Use of a Snowmobile, Snow Blower, or Jackhammer
	90 - 100	Use of a Power Lawnmower, Power Tools, or Hair Dryer Motorcycle Engine at 7.6 m
LOUD	80 - 90	Typical use of a Ringing Telephone, Alarm Clock, or Food Blender
	70 - 80	Typical use of Vacuum Cleaner TV Audio
MODERATE	60 - 70	Normal Conversation (1.0 - 1.5 m away) Business Office
	50 - 60	Moderate Rainfall
SOFT	40 - 50	Quiet Library
	30 - 40	Whispers

4 Acoustic Assessment Methodology

Industry-standard software package “CadnaA”, developed by Datakustik, was used to calculate and predict the noise level impact of the Quarry on nearby residences. In essence, the software analyses the noise impact based on three main parameters: noise sources (Quarry equipment), noise propagation (terrain, ground absorption, etc.) and sensitive receptors (residences).

4.1 Noise Sources

A list of all significant noise-generating equipment was compiled, including over 30 “steady” noise sources and 1 “impulsive” noise source (short burst-like noise source). The noise level data used for the calculations are based on historical measurement data on file at RWDI. For each phase of the extraction within the Quarry, the associated noise-generating equipment was incorporated into the CadnaA model in locations expected to generate worst-case (ie. highest) noise levels at the residences. Based on the AAR, the loudest equipment associated with the Quarry include the primary and secondary crushers, as well as the impulsive noise associated with the asphalt plant silo.

Of note, noise sources associated with construction activities are not regulated in Ontario, as it is understood that they are “short-term” in nature. For the proposed Quarry, this would include activities related to overburden-clearing and berm construction. Sections 5.3 and 6 of the AAR nonetheless provides an overview of “best practice recommendations” that will help minimize the potential for construction noise impacts.

4.2 Sensitive Receptors

Six (6) worst-case receptors (ie. residences) were selected based on their proximity to the proposed Quarry - residences located further away are expected to experience lower Quarry-related noise levels. Each residence was assessed in two locations: in an outdoor location representative of the backyard, and at the building façade facing the Quarry. For two-storey residences, the façade location was assessed at the 2nd storey, which is typically exposed to higher noise level compared to the 1st storey. The six (6) worst-case receptors assessed as part of the AAR are listed below:

- Residence at 10148 Beaverdams Rd
- Residence at 9722 Beaverdams Rd
- Residence at 9602 Beaverdams Rd
- Residence at 5584 Beaverdams Rd
- Residence at 5769 Beaverdams Rd
- Residence at 9944 Lundy’s Ln

The following two comments pertaining to specific locations in proximity to the Quarry are also provided in Section 4.1 of the AAR:

- *“There is a neighboring church on the southwest corner of the intersection of Upper’s Lane and Beechwood Rd, approximately 60 m from the Quarry boundary. [The Quarry operator] has a special agreement in place with the Church to avoid noise disturbance. Therefore, the Church was not assessed as a noise sensitive receptor.”*
- *“There is a residential-zoned vacant lot for the Rolling Meadows development approximately 420 m west of the Quarry. The vacant lot was not considered as a receptor for this assessment since the*

land developer will be required to mitigating any noise within 500m of the bed rock resource area according to policy B.8.12.3. of the Rolling Meadows Secondary Plan.”

5 Recommendations and Mitigation Measures

In order to comply with the noise level limits referred to in Section 3, the following mitigation measures are recommended by RWDI in the AAR (some of the text below is copied from the AAR; however, please refer to the original report for full details):

- A 3m-tall perimeter berm shall be constructed around the Quarry.
- The primary crusher shall stay within 30m of the working face of the Quarry to maximize the noise-shielding effect of the Quarry terrain.
- Material extracted from the South Extraction Area shall be processed in the Mid Extraction Area.
- While processing in Phases 4 and 5, the licensee shall maintain an 8 m tall barrier at a radius of 40m to the southeast of the processing plant secondary crushers. The barrier can be material stockpiles, noise walls, or a combination of both.

6 Results and Comparison to Applicable Limits

All predicted noise levels at each residence are given in Tables 3a to 3h of the AAR. The predicted, mitigated noise levels are at-or-below the applicable noise level limits outlined in Section 3. As discussed in Section 3, it should be noted that this does not mean that the Quarry activities will be inaudible at nearby residences - instead, it is concluded that, with the implementation of the recommended mitigation measures listed in Section 5, it is reasonable to expect that the Quarry activities will not produce noise levels that will adversely impact the nearby residences.

7 Closure

We trust the foregoing will satisfy your present requirements. If you have any questions regarding this matter, please do not hesitate to contact us.

Yours very truly,

Englobe Corp.



Martin Villeneuve, P. Eng.
Acoustical Engineer

8 References

- [1] Cochary, J. (2021, May 15). *Common noise levels*. Noise Awareness Day. <https://noiseawareness.org/info-center/common-noise-levels/>
- [2] Decibel (Loudness) Comparison Chart. (n.d.). National Hearing Conservation Association. <https://www.hearingconservation.org/assets/Decibel.pdf>
- [3] Decibel levels - Measuring dangerous noise – Hearing Health Foundation. (n.d.). Hearing Health Foundation. <https://hearinghealthfoundation.org/decibel-level>
- [4] Noise Sources and Their Effects. (2000, February). Purdue University. <https://www.chem.purdue.edu/chemsafety/Training/PPETrain/dblevels.htm>

Revisions and publications log

REVISION No.	DATE	DESCRIPTION
0A	November 17, 2023	Final Summary Report
0B	January 26, 2024	Revision 1

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