Brittany Gada

From: Peter Allen <pallen@abdengineering.com>
Sent: Tuesday, January 24, 2023 10:48 AM
To: Brittany Gada
Cc: Melinda Miller; pchuong.hoang@gmail.com
Subject: [EXTERNAL] Queenz Asian Cuisine - DEQ Sound Limits
Attachments: table7,8.pdf; table9,10.pdf

Brittany,

Per our phone conversation this morning, there are several provisions within the DEQ noise limits that could apply to Queenz Asian Cuisine, including:

1) Statistical noise levels (L_{50} and L_{10}) – OAR 340-035-0035 1.b.A (See Table 8 attached). These are the main DEQ noise criteria and are the criteria we addressed in our report. The current sound levels generated by Queenz meet these levels at the closest noise-sensitive properties. Per our report, if the sound levels measured inside Queenz restaurant at the edge of the dance floor do not exceed a level of 105 dBC, these limits will be met.
2) Impulsive sound levels – OAR 340-035-0035 1.d.B. I haven't seen bass from music characterized as impulsive sound in terms of community noise regulations in the past. However, if that argument were made, the existing sound levels from Queenz measured at the nearest noise-sensitive property are very close to meeting this requirement. The requirement is an unweighted peak level of 80 dBpk. The measured level was ~81 dBpk, so the existing levels are only slightly louder than the impulsive limit.
3) Octave band limits – OAR 340-035-0035 1.e.A. These limits are not part of the standard DEQ noise regulation but can be imposed "When the Director [of the Department of Environment Quality] has reasonable cause to believe that the requirements of [the DEQ regulations] … do not adequately protect the health, safety, or welfare of the public". The limits are listed in Table 10 (attached). The measured levels at the nearest noise-sensitive property near Queenz exceeded the octave band limits in the 63 Hz octave band by approximately 8 dB. Therefore, if the octave band limits are imposed, the measured levels inside Queenz restaurant would need to be reduced from 105 dBC to 97 dBC to meet the limits at the nearest noise-sensitive property.

To visualize what we talked about regarding frequency weighting responses, a graph of the A, B, and, C weighting curves are shown below. At low frequencies, the A-weighting curve reduces the contribution of low-frequency noise significantly. The C-weighting curve is therefore a better metric for addressing low-frequency noise, as there is much less low-frequency reduction included in this metric.

Significantly reducing the low-frequency noise transmitted from Queenz to neighboring residential properties is likely to be cost-prohibitive, so if the octave band criteria are imposed, the best solution would likely be to turn down the volume of the music (or at least the bass frequencies) rather than to try to mitigate the sound with architectural improvements or a noise barrier.

If you have any questions, please let me know.

Thanks,
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TABLE 7
(340-35-035)

Existing Industrial and Commercial Noise Source Standards

Allowable Statistical Noise Levels in Any One Hour

7am – 10 pm	10 pm – 7am
L_{50} – 55 dBA	L_{50} – 50 dBA
L_{10} – 60 dBA	L_{10} – 55 dBA
L_{1} – 75dBA	L_{1} – 60 dBA

TABLE 8
(340-35-035)

New Industrial and Commercial Noise Source Standards

Allowable Statistical Noise Levels in Any One Hour

7 am – 10 pm	10 pm – 7am
L_{50} – 55 dBA	L_{50} – 50 dBA
L_{10} – 60 dBA	L_{10} – 55 dBA
L_{1} - 75 dBA	L_{1} – 60 dBA

TABLE 9
(340-35-035)

Industrial and Commercial Noise Source Standards for Quiet Areas

Allowable Statistical Noise Levels in Any One Hour

7 am – 10 pm	10 pm – 7 am
L_{50} – 50 dBA	L_{50} – 45 dBA
L_{10} – 55 dBA	L_{10} – 50 dBA
L_1 – 60 dBA	L_1 – 55 dBA

TABLE 10
(340-35-035)

Median Octave Band Standards for Industrial and Commercial Noise Sources

Allowable Octave Band Sound Pressure Levels

Octave Band Center Frequency, Hz	7am – 10 pm	10 pm – 7 am
31.5	68	65
63	65	62
125	61	56
250	55	50
500	52	46
1000	49	43
2000	46	40
4000	43	37
8000	40	34