TM Crowley & Associates
Attn: Keith Demchinski
11312 Hazel Dell Pkwy
Carmel, IN 46280

February 7, 2022

Dear Mr. Demchinski:

ACS has been asked to assess the potential noise impact from the proposed PetSuites project (located at 9017 Taylorville Road, Louisville, KY) to the nearby residential properties. (See attached Site Location and Site Plan exhibits.)

**TECHNICAL TERMS:**

*Decibel* - A unit for measuring the intensity of sound. The human hearing range is from 0 dB (the theoretical threshold of audibility) to 130 dB (the average pain threshold). {The sound pressure level in decibels is equal to 10 times the logarithm (to the base 10) of the ratio between the pressure squared divided by the reference pressure squared. The reference pressure used in acoustics is 20 microPascals.}

*dBA* - Sound pressure level expressed in decibels, filtered or weighted at the various frequencies to approximate the response of the human ear.

| Changes in Intensity Level, dBA | Changes in Apparent Loudness |
|---|---|
| 1 | Almost imperceptible |
| 3 | Barely noticeable |
| 5 | Clearly noticeable |
| 10 | Twice (or half) as loud |

*Leq* - The equivalent (average) sound level, that is the constant sound level in a given time that conveys the same sound energy as the actual time-varying, A-weighted sound.

**NOISE STANDARDS:**

Louisville, KY

4. Prohibited Uses on Commercial — Light Manufacturing — Industrial zoned property:

(a) No person shall cause, suffer, allow, or permit the operation of any source of sound on a particular category of property or any public space or right of way, commercial or industrial, in such a manner as to create a sound level that exceeds the particular sound level limits set forth in Table 1 when measured at or within the real property line of the receiving property.

**Table 1, Maximum Permissible Sound Levels by Receiving Property Category, in dBA**

| | Receiving Property Category and Time Periods | | | |
|---|---|---|---|---|
| | Residential | Residential | Commercial | Industrial |
| Sound Source Property Category | 7am-10pm | 10pm-7am | all times | all times |
| Commercial | 65 | 50 | 65 | 75 |
| Industrial | 65 | 50 | 65 | 75 |

## FINDINGS:

### General

ACS has been informed that:

- Typically, as many as 50 (maximum of 107) dogs could be in the facility overnight.
- A maximum of 150 dogs could be inside during the daytime hours.
- A maximum of 75 dogs could be in the outdoor play area at a time.
- Acoustically absorptive ceiling treatment will be installed in the kennel areas.
- In addition to the 7' high barrier around the outdoor play area, there will be a 7' to 8' high CMU wall along the entire length northeast property line (setback 25' from the property line).
- Hours are 6:30am – 8:00pm.

### Ambient Noise Levels

ACS performed ambient noise level measurements at the nearest residential property line (the north corner of the site). The results were as follows:

| Date | Time | Noise Level | | |
|---|---|---|---|---|
| | | Minimum | "Average" Leq (10) | Maximum |
| Saturday 1/22/22 | ~2:30pm | 47.0 dBA | 55.7 Leq | 69.6 dBA |
| Monday 1/24/22 | ~6:30am | 51.0 dBA | 56.9 Leq | 73.6 dBA |
| Monday 1/24/22 | ~4:30pm | 52.9 dBA | 62.3 Leq | 81.4 dBA |
| Monday 1/24/22 | ~7:00pm | 50.3 dBA | 58.8 Leq | 76.9 dBA |

### Noise Source Measurements and Projections

ACS measured the mocked* maximum noise levels at the existing PetSuites facility in Middleton, KY. These measurements were conducted to represent the two noise scenarios: noise of the dogs within the facility at night and noise of the dogs in the yard during the day. Additionally, source level measurements were performed at the PetSuites facility in Bradenton, FL. The Bradenton measurements were used for this analysis since they better represented worst-case conditions (with the number of dogs approaching or exceeding the maximum number of dogs at the proposed Louisville facility).

*Noise levels were measured with all of the dogs incited to bark and extrapolated for the maximum number of potential dogs at full capacity.

***Dogs Inside at Night*** – Source level measurements were conducted at the Bradenton facility with all of the dogs inside at night on 12/28/21. At the time, there were approximately 120 dogs inside the facility. This is more dogs than would ever be overnight in the proposed Louisville facility.

Unlike most other animal facilities, it was very difficult to incite the entire group at this facility to bark. Each row of kennels is divided by a CMU wall. Because of the separation of these rows, when the dogs were incited to bark, only the nearby group would bark. Additionally, the dogs did not tend to bark at the staff. To incite the dogs to bark we had someone run a dog back and forth in the kennel row. Again, this only incited the nearby dogs. To mock the worst-case condition, a dog was run back and forth in each kennel row simultaneously. These worst-case* source level measurements (extrapolated for the maximum of 150 dogs – however, there would not be more than 107 dogs during the nighttime hours) were used for the projection calculations.

NOTE: It is highly unlikely that the mocked "worst-case" conditions would ever actually occur.

The measured noise level was ≤50* dBA approximately 40' from the building (without any barriers). The projected maximum noise level at the nearest residential property line is ≤48 dBA (without any barriers). This complies with the nighttime noise level limit of 55 dBA (without any barrier). The proposed barriers will further reduce the potential noise impact.

*Note: The measured source noise levels were biased by the traffic noise. It is highly likely the barking noise (without the inclusion of the traffic noise) would have been quieter than the noise levels used for this assessment.

In addition to the analysis conducted for this location, ACS had the opportunity to review the noise studies (prepared by other acoustic engineering firms) for two other PetSuites facilities. Their conclusions for the potential nighttime noise impact were as follows:

The test results demonstrate that the interior dog barking sound is not perceptible at the site property lines. (7/20, Vernon Hills, IL)

There was no audible barking noted by the sound level meters or the engineering firm personnel throughout the entire night at the various monitoring positions (approximately 50' from the PetSuites' building). (7/18, Roswell, GA)

***Dogs in the Play Yard During the Day*** - Source level measurements were conducted with approximately 50 dogs in the play yard incited to bark. The maximum noise levels were extrapolated for the maximum of 75 dogs and projected to the nearest residential property line. The potential maximum noise level from the play yards to the nearest residential property line is 63 dBA. This complies with the daytime residential noise level limit.

The noise from dogs barking outside could exceed the "nighttime" noise limit for the half hour between 6:30am and 7:00am. However, it is highly unlikely that the maximum number of dogs would be outside at this time. Additionally, the average ambient noise level at 6:30am already exceeds the noise limit. Even the minimum ambient noise level exceeded the noise limit during the entire test period. The typical maximum ambient noise level was more than 20 decibels louder (subjectively four times louder) than the nighttime noise limit.

**CONCLUSIONS:**

The projected maximum noise level from the dogs inside the facility is in compliance with the daytime and nighttime noise level limits at the nearest residential property line. The projected maximum noise level from the dogs in the outdoor yard is in compliance with the daytime noise level limits at the nearest residential property line. All other residential properties are farther away and will be even quieter.

| | Projected Maximum | Noise Limit |
|---|---|---|
| Dogs Inside | ≤ 48 dBA | 50 dBA (Nighttime) |
| Dogs Outside | 63 dBA | 65 dBA (Daytime) |

It is highly likely that the projected noise levels used in this analysis are overstated for the following reasons:

- The source noise level measurements used for this assessment were biased by traffic noise.
- ACS extrapolated the maximum noise level for the dogs inside the facility assuming a maximum of 150 dogs inside during the day. However, the maximum number of overnight dogs at the proposed facility is 107.
- It is highly unlikely that the "mocked" worst-case indoor/nighttime scenario would ever actually occur.

Please contact me if you have any questions or need additional information.

Respectfully,

**Tony Sola**
Acoustical Consulting Services

Site Location


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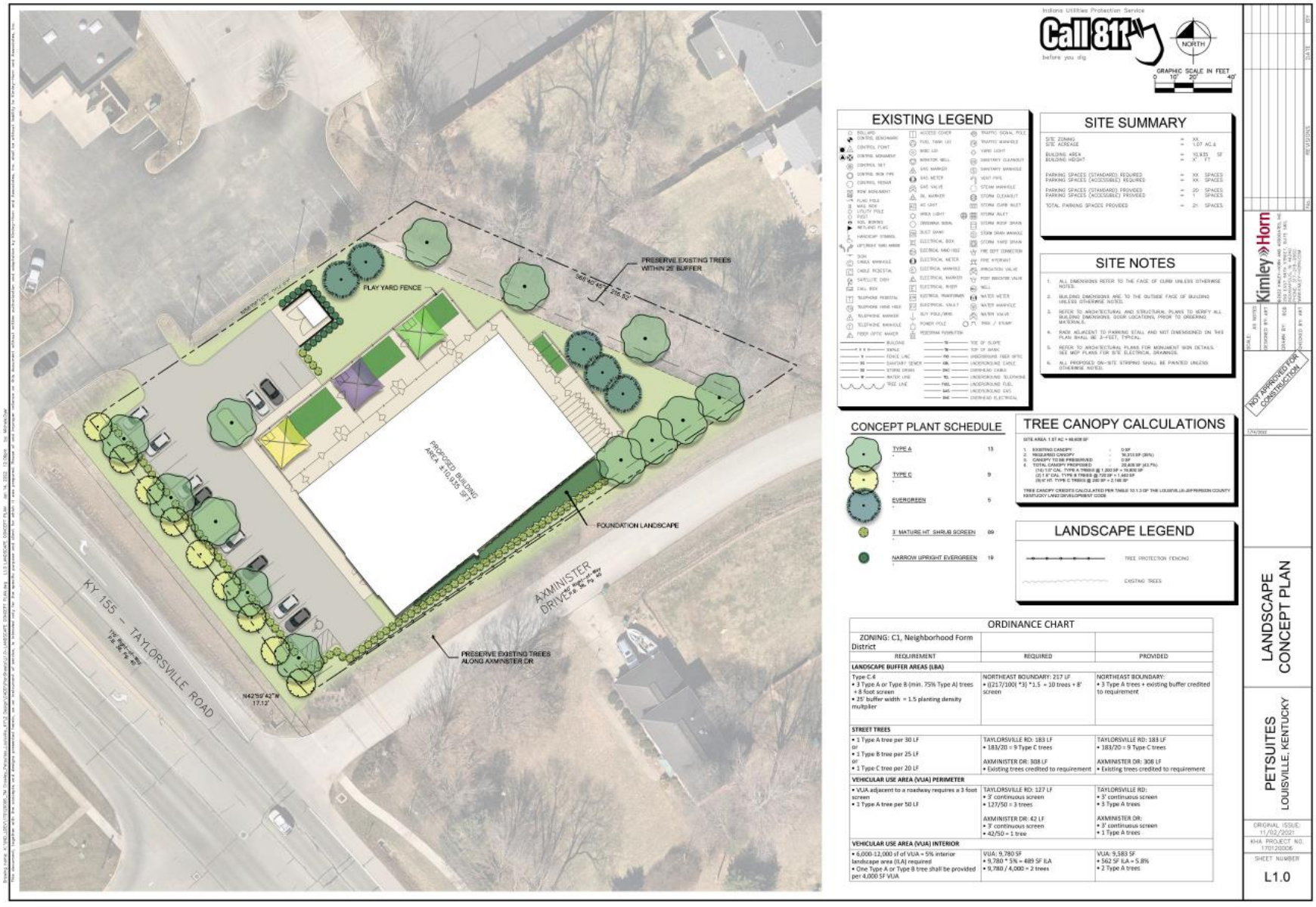
# Site Plan





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