

August 3, 2022

Mr. Gary Stougaard  
PV Scottsdale Hotel Owner SPE, LLC  
5721 Chelsea Avenue  
La Jolla, CA 92037

**Subject: ANdAZ Scottsdale Resort and Bungalows Expansion– Noise Impact Study – Town of Paradise Valley, AZ**

Dear Mr. Stougaard:

MD Acoustics, LLC (MD) is pleased to provide this noise impact study and recommendations report as it relates to proposed operations and events at the ANdAZ Scottsdale Resort and Bungalows Expansion located at 6114 North Scottsdale Road, Scottsdale, AZ. This study has been prepared based on the existing project and based on proposed renovations to the project. The project was assessed with regard to potential operations and event noise, such as noise from the proposed pool areas and noise from the existing Albers Lawn. For your reference, Appendix A contains a glossary of acoustical terms and Appendix B contains the proposed site plan.

### 1.0 Assessment Overview

This assessment evaluates the Project Noise Levels from the proposed pool areas and the existing event lawn and compares the projected noise levels to the Town's noise ordinance. Figure 1 below shows the site location, with a red box around the area under evaluation and a yellow circle indicating locations where a noise monitor was placed during the baseline noise evaluation.

**Figure 1: Site Location and Noise Monitoring Locations**



MD traveled to the project site and performed one (1) long-term noise measurement to measure the existing condition at the property. MD utilized a Type 2 sound level meter that meets ANSI S1.4 engineering standards to record minute-by-minute baseline data

Using acoustical modeling software, MD created acoustical models to show how the noise from the pool areas and event lawn at the resort will propagate to the adjacent uses. The acoustical models are calibrated to real-world measurements. The baseline condition considering noise from the proposed bungalows was modeled with and without event lawn noise.

## **2.0 Local Acoustical Requirements**

MD compared the results of the noise assessment to Section 10-7-3 of the Town of Paradise Valley, Town Code. The Town Code states: “Table 1 sets forth the noise level limits for stationary sources, and it is unlawful to project a sound or noise, except those caused by motor vehicles, from one property into another in excess of the stated limits”.

**Table 1: Limiting Noise Levels for Stationary Sources**

| <u>TIME</u>                                                                | <u>MAXIMUM ALLOWABLE<br/>NOISE LEVEL dB (A)</u> |
|----------------------------------------------------------------------------|-------------------------------------------------|
| 7:00 a.m. to 10:00 p.m.                                                    | 56                                              |
| 10:00 p.m. to 7:00 a.m. and on all<br>Sundays and specified legal holidays | 45                                              |

Therefore, project operations must comply with the Town’s noise limit of 56 dBA during daytime hours (7AM to 10PM) and 45 dBA during nighttime hours (10PM to 7AM).

## **3.0 Study Method and Procedure**

### **3.1 Existing Noise Condition/Baseline**

One (1) long-term (24-hour) noise measurement was conducted at the project site from 12:00 PM, July 22, to 12:00 PM, July 23, 2022. The project site is adjacent to resort property to the north, existing commercial uses to the east, existing residential uses to the south, and Quail Run Road and adjacent residences to the west. Noise data indicate that the ambient noise level ranges from 38 to 52 dBA at the project location considered in this report. Additional field notes and photographs are provided in Appendix C.

### **3.2 Simulated Event Measurement**

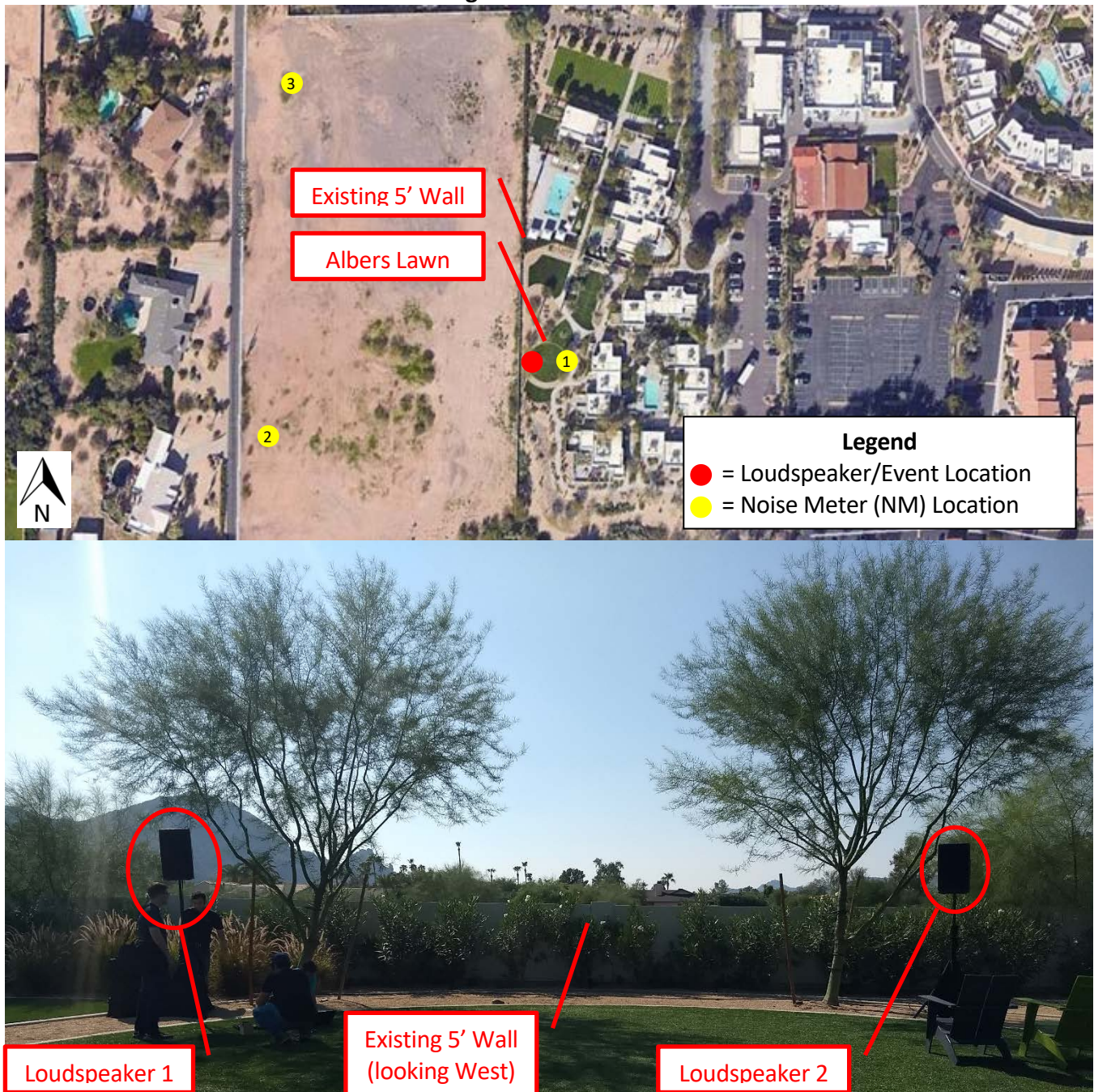
At the Andaz resort, complaints sometimes arise during an amplified speech event when a person speaks too loudly into the microphone. This is difficult to control because people can change the loudness with which they speak or the distance between their mouth and the microphone very quickly.

To understand this issue, MD traveled to the site and measured noise levels during a simulated event using the audio equipment and settings typical of events held on Albers Lawn. The noise was measured at the event lawn and near the western property line of the Andaz resort.

Figure 2 indicates the location of the audio equipment and measurement locations for the experiment performed on Albers Lawn.



Figure 2: Live Event



The noise measured approximately 85-92 dBA at Measurement Location 1 and approximately 52-58 dBA at Measurement Location 2 on Albers Lawn. Although fluctuations in exterior noise levels due to air traffic, car traffic, and other noise events during the measurement period may have impacted measurement results, the measurement data provide an approximation of the noise levels possible during operations at these event lawns.

### 3.3 Stationary Noise Level Prediction Modeling

SoundPlan Acoustic Modeling Software (SP) was utilized to model the operational noise levels from the project site. SP acoustical modeling software is capable of evaluating stationary noise sources (e.g., loudspeakers for live events, DJs, parking lots, crowds, loading/unloading, patios, etc.) and much more. SP's software utilizes algorithms (based on inverse square law) to calculate noise level projections. The software allows the user to input specific noise sources, spectral content, sound barriers, building placement, topography, and sensitive receptor locations. In addition, SP can model the noise sources as point sources, line sources, and area sources.

The future worst-case noise level projections were modeled using measured sound level data for the stationary on-site sources. The live event noise was represented as a point source representing the loudspeakers used for the event. In addition to the live event noise at the event lawn, each proposed pool on the property (where no events are held) was modeled as an area source with a reference noise level of 60 dBA, consistent with measurements performed at another paradise valley resort. The model incorporates the topography at the project site and the building heights, and it shows how sound propagates to the surrounding area. Table 2 below outlines the reference noise levels used to calibrate the models.

**Table 2:**

| Source                                                                                                                                                                                            | Source Type  | Reference Level (dBA) | Distance (ft) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------------|---------------|
| Amplified Speech <sup>1</sup>                                                                                                                                                                     | Point Source | 93                    | 3             |
| Pool Noise <sup>2</sup>                                                                                                                                                                           | Area Source  | 60                    | 3             |
| 1. Based on sound measurements conducted 9/15/2021 at Andaz Resort. In addition, a 7 point reduction was included to account for a noise limit imposed by the resort after the 2021 measurements. |              |                       |               |
| 2. Based on sound measurements conducted 7/8/2022 at Scottsdale Plaza Resort.                                                                                                                     |              |                       |               |

## 4.0 Findings and Recommendations

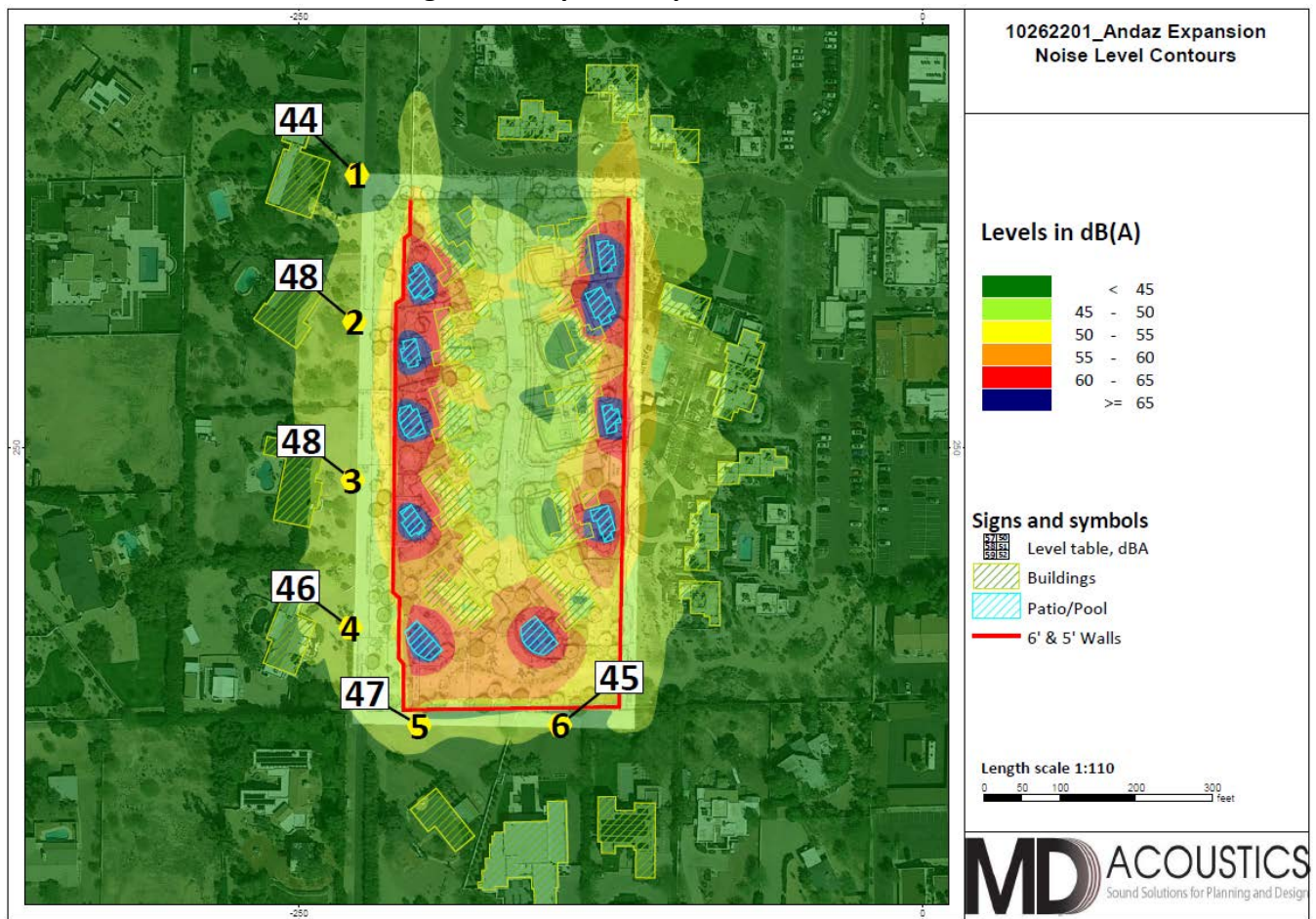
### 4.1 Proposed Expansion – No Event

Figure 3 illustrates the Proposed Expansion – No Event SP model. Each pool on the property was modeled as an area source with a reference noise level of 60 dBA, consistent with measurements conducted in Paradise Valley. The walls along the west and south property lines were modeled at 6' tall, and the existing wall between the proposed expansion and the existing resort was modeled at 5' tall. As shown in Figure 3, the noise levels from the additional pools do not exceed the 56 dBA limit.

<Figure 3, next page>



Figure 3: Proposed Expansion – No Event

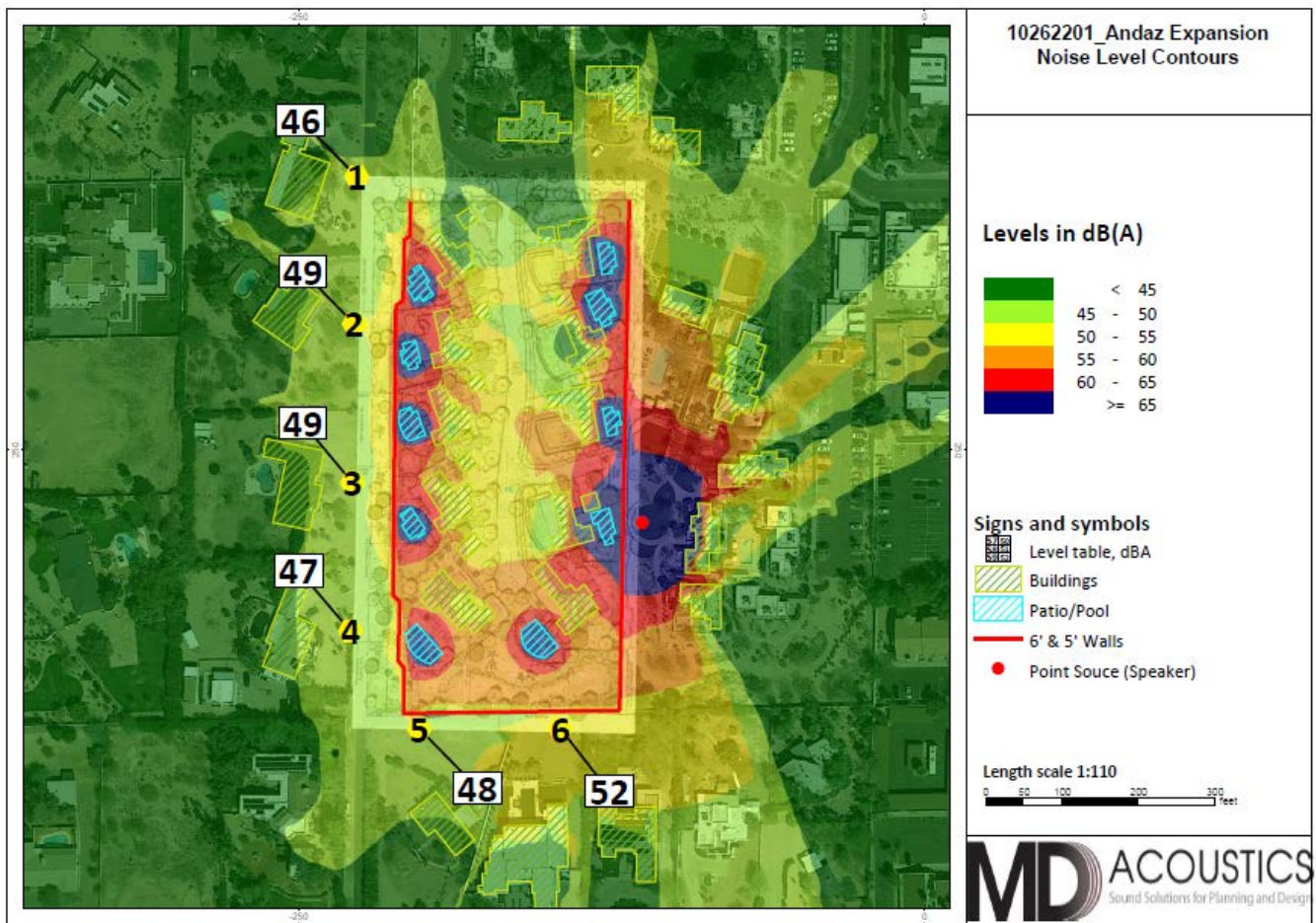


#### 4.2 Proposed Expansion – Event on Albers Lawn

Figure 4 illustrates the Proposed Expansion – Event on Albers Lawn SP model. The reference levels described in Table 2 were used to model the worst case scenario, as if all pools were occupied during an event on Albers Lawn. As shown in Figure 4, the noise levels do not exceed the 56 dBA limit.

<Figure 4, next page>

Figure 4: Proposed Expansion – Event on Albers Lawn



## 5.0 Conclusions

MD is pleased to provide this noise impact study for the ANdAZ Scottsdale Resort Expansion. The background noise level at resort was measured from 7/22/22 to 7/23/2022, and an event was simulated at the Albers Lawn on 9/15/2021 to provide real-world reference sound levels. In addition to the real world measurements, current noise reduction practices in place at the resort were implemented in the model.

The measured noise levels were used to evaluate the potential noise impact of the proposed modifications to the project site using SoundPlan Acoustical Modeling Software. The noise levels from the special events on Albers Lawn and the proposed expansion do not exceed the 56 dBA noise limit and therefore are compliant.

If you have any questions regarding this analysis, please call our office at (602) 774-1950.

Sincerely,  
 MD Acoustics, LLC

Samuel Hord, INCE  
 Acoustical Consultant

## **Appendix A**

### Glossary of Acoustical Terms

## **Glossary of Terms**

**A-Weighted Sound Level:** The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear. A numerical method of rating human judgment of loudness.

**Ambient Noise Level:** The composite of noise from all sources, near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

**C-Weighted Sound Level:** The sound pressure level in decibels as measured on a sound level meter using the C-weighted filter network. The C-weighting filter greatly de-emphasizes very high frequency components of the sound and slightly de-emphasizes the very low frequency components. A numerical method of rating human judgment of loudness.

**Community Noise Equivalent Level (CNEL):** The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of five (5) decibels to sound levels in the evening from 7:00 to 10:00 PM and after addition of ten (10) decibels to sound levels in the night before 7:00 AM and after 10:00 PM.

**Decibel (dB):** A unit for measuring the amplitude of a sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micro-pascals.

**dB(A):** A-weighted sound level (see definition above).

**dB(C):** C-weighted sound level (see definition above).

**dB(Z):** Z-weighted sound level (see definition of dB above).

**Equivalent Sound Level (LEQ):** The sound level corresponding to a steady noise level over a given sample period with the same amount of acoustic energy as the actual time varying noise level. The energy average noise level during the sample period.

**Habitable Room:** Any room meeting the requirements of the Uniform Building Code or other applicable regulations which is intended to be used for sleeping, living, cooking or dining purposes, excluding such enclosed spaces as closets, pantries, bath or toilet rooms, service rooms, connecting corridors, laundries, unfinished attics, foyers, storage spaces, cellars, utility rooms and similar spaces.



**Human Sensitivity to Sound:** In general, the healthy human ear can hear between 20 Hz to 20,000 Hz. Frequencies below 125 Hz are typically associated with low frequencies or bass. Frequencies between 125 Hz and 5,000 Hz are typically associated with mid-range tones. Finally, frequencies between 5,000 and 20,000Hz are typically associated with higher range tones.

The human ear is sensitive to changes in noise levels, depending on the frequency. Generally speaking, the healthy human ear is most sensitive to sounds between 1,000 Hz and 5,000 Hz (A-weighted scale) and perceives a sound within that range as being more intense than a sound with a higher or lower frequency with the same magnitude. At lower and higher frequencies, the ear can become less sensitive depending on a number of factors. Table 1 provides a brief summary of how humans perceive changes in noise levels.

**Table 1: Change in Noise Level Characteristics<sup>1</sup>**

| Changes in Intensity Level, dBA | Changes in Apparent Loudness |
|---------------------------------|------------------------------|
| 1                               | Not perceptible              |
| 3                               | Just perceptible             |
| 5                               | Clearly noticeable           |
| 10                              | Twice (or half) as loud      |

[https://www.fhwa.dot.gov/environMent/noise/regulations\\_and\\_guidance/polguide/polguide02.cfm](https://www.fhwa.dot.gov/environMent/noise/regulations_and_guidance/polguide/polguide02.cfm)

**L(n):** The A-weighted sound level exceeded during a certain percentage of the sample time. For example, L10 in the sound level exceeded 10 percent of the sample time. Similarly, L50, L90 and L99, etc.

**Noise:** Any unwanted sound or sound which is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying. The State Noise Control Act defines noise as "...excessive undesirable sound...".

**Percent Noise Levels:** See L(n).

**Sound Level (Noise Level):** The weighted sound pressure level obtained by use of a sound level meter having a standard frequency-filter for attenuating part of the sound spectrum.

**Sound Level Meter:** An instrument, including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement and determination of noise and sound levels.

**Single Event Noise Exposure Level (SENEL):** The dB(A) level which, if it lasted for one second, would produce the same A-weighted sound energy as the actual event.

**Appendix B**  
Proposed Site Plan







## **Appendix C**

### Long Term Noise Measurement

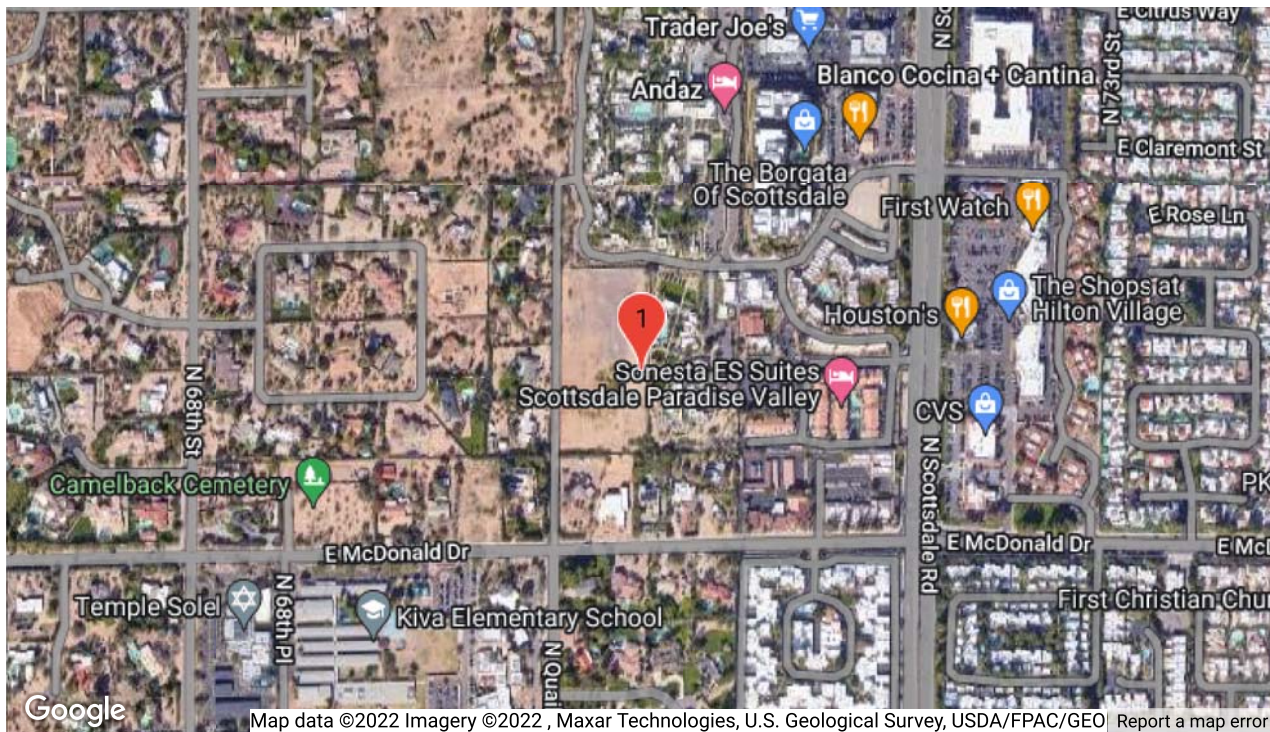


## 24-Hour Continuous Noise Measurement Datasheet

**Project Name:** Andaz Expansion  
**Project: #/Name:** 1026-2022-001  
**Site Address/Location:** 6114 N Scottsdale Rd  
**Date:** 07/22/2022  
**Field Tech/Engineer:** Shon Baldwin

**Site Observations:**  
Mostly cloudy, highs of 111 F, lows of 91 F.

**Sound Meter:** Piccolo 2, Soft dB      **SN:** P0222022803  
**Settings:** A-weighted, slow, 1-min, 24-hour duration  
**Site Id:** NM 1





## 24-Hour Continuous Noise Measurement Datasheet - Cont.

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**Project Name:** Andaz Expansion  
**Site Address/Location:** 6114 N Scottsdale Rd  
**Site Id:** NM 1

Figure 1:





## 24-Hour Continuous Noise Measurement Datasheet - Cont.

|                                                                                                                    |                                                                                                                                                             |                                                                                      |
|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <b>Project Name:</b> Andaz Expansion<br><b>Site Address/Location:</b> 6114 N Scottsdale Rd<br><b>Site Id:</b> NM 1 | <b>Site Topo:</b> Flat<br><b>Meteorological Cond.:</b> Partly cloudy,<br>temperatures ranged from 91-111 F, humidity<br>~10-15%<br><b>Ground Type:</b> Dirt | <b>Day:</b> 1 of 1<br><b>Noise Source(s) w/ Distance:</b><br>Traffic at about 300 ft |
|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|

Table 1: Baseline Noise Measurement Summary

| Date      | Start    | Stop     | Leq  | Lmax | Lmin | L2   | L8   | L25  | L50  | L90  |
|-----------|----------|----------|------|------|------|------|------|------|------|------|
| 7/22/2022 | 12:00 PM | 1:00 PM  | 45.7 | 74.5 | 37.3 | 51.6 | 47.9 | 45.5 | 43.7 | 40.7 |
| 7/22/2022 | 1:00 PM  | 2:00 PM  | 43.4 | 53.5 | 36.8 | 47.5 | 46.9 | 43.6 | 42.4 | 40.3 |
| 7/22/2022 | 2:00 PM  | 3:00 PM  | 42.8 | 58.3 | 36.2 | 46.4 | 45.2 | 43.5 | 42.1 | 39.9 |
| 7/22/2022 | 3:00 PM  | 4:00 PM  | 42.4 | 57   | 37   | 45.8 | 44.5 | 42.8 | 41.9 | 40   |
| 7/22/2022 | 4:00 PM  | 5:00 PM  | 41.8 | 57.4 | 36.4 | 47   | 43.4 | 42.5 | 40.8 | 39.2 |
| 7/22/2022 | 5:00 PM  | 6:00 PM  | 41.8 | 56.3 | 36.8 | 45.2 | 43.8 | 42.4 | 41.3 | 39.5 |
| 7/22/2022 | 6:00 PM  | 7:00 PM  | 42.5 | 57.1 | 36.7 | 47.3 | 45.5 | 42.7 | 41.4 | 39.3 |
| 7/22/2022 | 7:00 PM  | 8:00 PM  | 45.5 | 55.5 | 37.3 | 49.4 | 48.9 | 47.8 | 43   | 41.1 |
| 7/22/2022 | 8:00 PM  | 9:00 PM  | 44   | 57.4 | 36.9 | 49.2 | 48.1 | 44.9 | 41.7 | 40   |
| 7/22/2022 | 9:00 PM  | 10:00 PM | 44.2 | 67.7 | 38.1 | 47.6 | 46.2 | 43.5 | 41.7 | 40.1 |
| 7/22/2022 | 10:00 PM | 11:00 PM | 40.5 | 53.3 | 37.5 | 45.4 | 42.1 | 40.6 | 39.7 | 38.6 |
| 7/22/2022 | 11:00 PM | 12:00 AM | 44.4 | 61.5 | 37.8 | 51.1 | 48.5 | 44.3 | 42.2 | 40.3 |
| 7/23/2022 | 12:00 AM | 1:00 AM  | 42.8 | 59.8 | 37.2 | 48.1 | 45.6 | 43.6 | 41.9 | 39.1 |
| 7/23/2022 | 1:00 AM  | 2:00 AM  | 38.5 | 52.2 | 35.8 | 43.3 | 41   | 38.4 | 37.5 | 36.8 |
| 7/23/2022 | 2:00 AM  | 3:00 AM  | 38.1 | 48.7 | 35.5 | 41.7 | 39.1 | 38   | 37.7 | 36.8 |
| 7/23/2022 | 3:00 AM  | 4:00 AM  | 39.3 | 44.5 | 35.6 | 42.1 | 41.5 | 40.5 | 38.7 | 37   |
| 7/23/2022 | 4:00 AM  | 5:00 AM  | 49.8 | 71.5 | 36.2 | 56.5 | 54.1 | 50.8 | 46.6 | 39   |
| 7/23/2022 | 5:00 AM  | 6:00 AM  | 51.8 | 67.3 | 40.4 | 57.6 | 55.8 | 52.7 | 50.2 | 43.7 |
| 7/23/2022 | 6:00 AM  | 7:00 AM  | 48.1 | 72   | 39.5 | 53.9 | 51.6 | 47.7 | 44.5 | 42.1 |
| 7/23/2022 | 7:00 AM  | 8:00 AM  | 46.7 | 65.5 | 40.7 | 53   | 49.6 | 46.7 | 45.1 | 43.7 |
| 7/23/2022 | 8:00 AM  | 9:00 AM  | 43.8 | 66.9 | 38.4 | 48   | 46.1 | 44.2 | 42.6 | 40.8 |
| 7/23/2022 | 9:00 AM  | 10:00 AM | 45.5 | 65   | 38.1 | 49.9 | 47.6 | 44.9 | 42.6 | 40.7 |
| 7/23/2022 | 10:00 AM | 11:00 AM | 46.6 | 61   | 37.9 | 52.2 | 50.4 | 48.1 | 44.6 | 40.9 |
| 7/23/2022 | 11:00 AM | 12:00 PM | 44.2 | 56.6 | 36.1 | 50.4 | 48.1 | 45   | 41.7 | 39.3 |

|  |     |      |
|--|-----|------|
|  | DNL | 52.2 |
|--|-----|------|

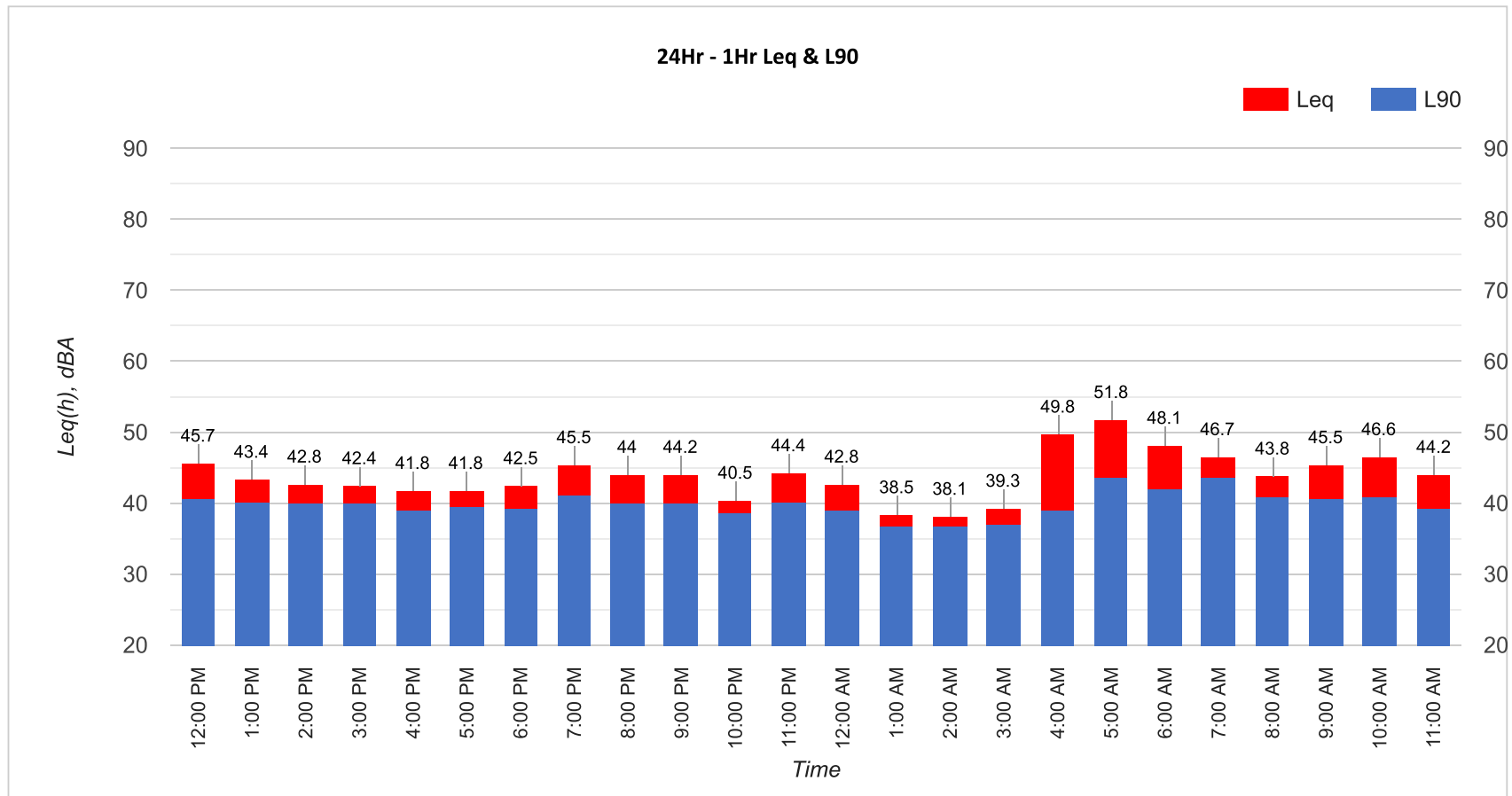


## 24-Hour Continuous Noise Measurement Datasheet - Cont.

**Project Name:** Andaz Expansion  
**Site Address/Location:** 6114 N Scottsdale Rd  
**Site Id:** NM 1

**Site Topo:** Flat  
**Meteorological Cond.:** Partly cloudy,  
 temperatures ranged from 91-111 F, humidity  
 ~10-15%  
**Ground Type:** Dirt

**Day:** 1 of 1  
**Noise Source(s) w/ Distance:**  
 Traffic at about 300 ft



# 24-Hour Continuous Noise Measurement Datasheet - Cont.

|                               |                      |                              |                                                                          |                                     |                         |
|-------------------------------|----------------------|------------------------------|--------------------------------------------------------------------------|-------------------------------------|-------------------------|
| <b>Project Name:</b>          | Andaz Expansion      | <b>Site Topo:</b>            | Flat                                                                     | <b>Day:</b>                         | 1 of 1                  |
| <b>Site Address/Location:</b> | 6114 N Scottsdale Rd | <b>Meteorological Cond.:</b> | Partly cloudy,<br>temperatures ranged from 91-111 F, humidity<br>~10-15% | <b>Noise Source(s) w/ Distance:</b> | Traffic at about 300 ft |
| <b>Site Id:</b>               | NM 1                 | <b>Ground Type:</b>          | Dirt                                                                     |                                     |                         |

