TIERRA WEST

January 7, 2025

Mr. Shahab Biazar, P.E.
City Engineer
City of Albuquerque
600 2nd Street. NW
Albuquerque, NM 87103

RE: 2023024.00 PLAYA DEL SUR
SOUND STUDY UPDATE REFERENCE PR-2023-008674

Dear Mr. Biazar:

Tierra West LLC, on behalf of AMREP Southwest Inc, is submitting the following update to the sound study conducted for the Playa Del Sur Subdivision. This update aims to reflect the attenuation of sound at the northeast corner of the subdivision due to the newly constructed CMU wall. DFT requested that an update to the approved study be conducted to show the effects of the constructed wall on the referenced subdivision.

On January 02, 2025, Tierra West visited and updated the sound readings for the project and this supplement is evaluate the effectiveness of the newly constructed CMU wall along the northeastern edge of the development. The same three locations identified by the City in Addendum 1 of this report (Figure 1), were remeasured at the same time and intervals to compare decibel readings pre and post wall construction. Results of these readings can be found in
Table *1* below.

Figure 1 - Sound Measurement Locations

Table 1 - Sound Measurement Field Results

Time	Location 1 (Corner)	Location 2 (North)	Location 3 (East)
5:30 AM	59.4	58.6	54.7
5:45 AM	57.6	61.4	57.1
6:00 AM	55.8	61.7	56.7
6:15 AM	59.7	59.3	55.3
6:30 AM	58.2	60.7	58.5
6:45 AM	62.7	61.8	61.8
7:00 AM	58.7	62.8	62.5
7:15 AM	58.5	60.6	57.8
7:30 AM	61.9	62.1	58.0
7:45 AM	60.4	63.3	58.4
8:00 AM	60.9	61.8	58.5
8:15 AM	59.4	60.5	59.5
8:30 AM	58.9	62.4	60.1
Average	59.4	61.3	58.4

To compare the results from the two field studies, factors to account for the propagation of sound in different temperatures/seasons were established. The development of these factors follows the principle that atmospheric temperature conditions create either “downwind” or “upwind” effects. A “downwind” effect is a condition in which sound waves bend towards the surface of the earth due to temperature inversion that leads to increasing temperatures with an increase in altitude and can be attributed to measurements taken during colder weather. An “upwind" effect is a condition in which sound waves are refracted away from the earth’s surface due to the decreasing temperature with increasing altitude and can be attributed to measurements taken during warmer weather.

In summary, a “downwind” condition can reduce or eliminate some of the sound path attenuation effects that a solid barrier would otherwise intercept. The original field measurements were taken on May 8th, 2024, which had temperatures around 60° F, indicative of an upwind condition. The field measurements taken on January 02, 2024, however, were conducted at a temperature of around 38° F, reflective of a downwind condition.

Furthermore, the magnitude of these effects increases relative to an increasing distance from the source of sound being measured. In this study, the distance from the source of sound to the point of measurement varies and is on average around 275’. Based on Figure 2 below, extracted from Bruel & Kjaer “Environmental Noise” handbook, the anticipated reduction in decibel readings from upwind to downwind conditions at a relative distance of 275’ is about -2 decibels. Adjusted average decibel readings for the three locations of concern can be found in Table 2 below.

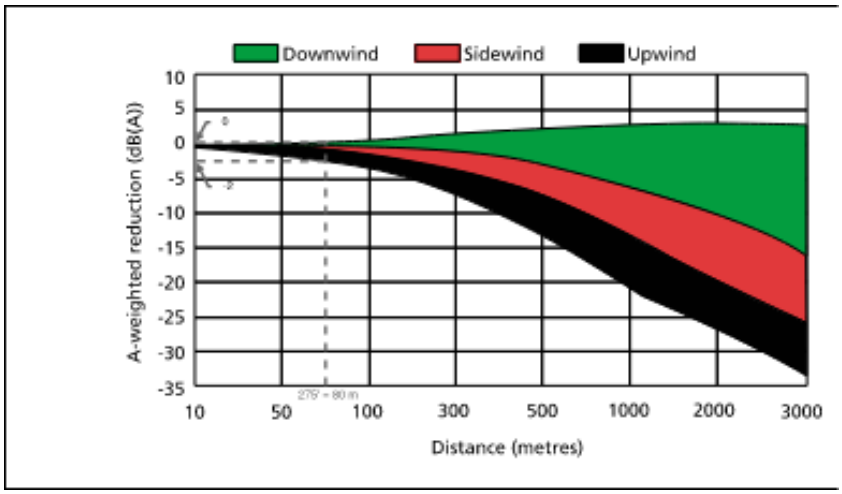

Figure 2 - Upwind vs Downwind Decibel Reduction

Table 2 - Sound Measurement Adjusted Results

Location	Original Avg. Field Reading (dB)	Avg. Field Reading (dB)	Reduction Factor (dB)	Adjusted Reading (dB)
1	65.1	59.4	-2	57.4
2	63.8	61.3	-2	59.3
3	63.2	58.4	-2	56.4

Results from this study reflect the anticipated mitigation of sound in this area with the installation of the CMU wall below the 60 dB as highlighted in Addendum 1. It is my opinion that the wall is an effective mitigation of the sound in this area and I don't recommend any additional mitigation measures.

If you have any questions or need additional information regarding this matter, please do not hesitate to contact me.

Sincerely,

RONALD R. BOHANNAN
NEW MEXICO
7868
PROFESSIONAL ENGINEER

Ronald R. Bohannan, P.E.

01/07/2025

Enclosure/s

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RRB/at/ac