



PROJECT SUMMARY

Date: 15 September 2020

To: Thomas D'Eri

Rising Tide Car Wash
7201 N SR-7
Parkland, Florida 33067

From: Sam Shroyer, ASA INCE
Edward Dugger, FAIA ASA NCAC INCE

Re: **Noise Impact Study – City of Coral Springs**
Rising Tide Car Wash
10340 Royal Palm Boulevard
Coral Springs, Florida 33063
ED+A 201226

Thomas,

Edward Dugger + Associates (ED+A) submitted a Noise Impact Study for the development application for 10340 Royal Palm Boulevard on July 22, 2020. This study utilized the results of acoustical measurements and standard acoustical modeling procedures to calculate the anticipated reductions in sound level between the proposed facility and nearby residential properties. This document summarizes the study's methods, analyses, and conclusions.

Please contact ED+A with any further questions or comments regarding the contents and conclusions of this document.

KEY FINDINGS

1. Ambient sound levels measured in the area are consistently greater than the Ordinance limits as it currently exists.
2. LA₅₀ vary considerably based on blower operation duration, which is directly associated with the number of vehicles passing through the car wash tunnel over a given period.
3. The silencer devices to be used at the proposed facility were found to reduce sound levels by 9 dB when compared to those at an existing facility.
4. Sound levels emanating from the tunnel entrance were 5 dB less than those at the exit.
5. Though Maplewood Isles and Cobblestone Walk are closer to the proposed tunnel, they are less likely to be impacted than Addison Estates due to barrier structures and reduced sound levels at the tunnel entrance.
 - a. The barrier at the tunnel exit effectively shields Cobblestone Walk from the direct path of sound.
 - b. The existing 8 ft barrier near the south end of the property will provide satisfactory levels of attenuation and increasing its height will yield little-to-no improvement due to the distance between the source and the barrier.
6. If the facility complies at Addison Estates, it will inherently comply at these other locations.
7. Modeled Addison Estates levels in excess of 55 dBA can be directly attributed to periods of increased traffic volume at the existing Rising Tide Car Wash which will not be realized at the proposed facility, according to the traffic study prepared for this project.

SUMMARY

Long-term acoustical measurements were conducted at the vacant project site to document current ambient sound level conditions in the area. Ten-minute L_{A50} measured between 7:00 a.m. and 7:00 p.m. ranged from 46 to 70 dBA with an overall average of 57 dBA, consistently exceeding the Noise Ordinance's 55 dBA threshold for daytime sound levels.

As L_{A50} is a time-based statistical metric and the Noise Ordinance limits are not based simply on the sound level generated by a sound source alone, long-term acoustical measurements were also performed at an existing Rising Tide Car Wash in Margate, Florida to document sound levels associated with their typical operations. Measured L_{A50} varied considerably during operating hours between 7:00 a.m. and 7:00 p.m. with the number of vehicles utilizing the car wash.

The addition of blower silencer devices was proposed by the Applicant to reduce sound levels generated in the tunnel. ED+A performed acoustical measurements at Monster Express Car Wash in Stuart, Florida to determine the efficacy of these devices and to establish a difference in generated sound levels that could be used to more accurately model sound levels at neighboring properties. The silencers were found reduce levels by 9 dB compared to those measured at the existing location. Sound levels emanating from the tunnel entrance were consistently 5 dB less than those measured at a comparable distance from the tunnel exit. Therefore, to account for differences in sound level produced by the proposed equipment, adjustments of -9 dB and -14 dB were included in calculations modeling sound levels emanating from the tunnel exit and entrance, respectively.

In most cases, distance is the primary factor of sound level attenuation between two locations. Sound level reductions between the tunnel exit and entrance and the nearest residential property boundaries were determined following basic acoustical calculation procedures with a reference measurement distance of 41 ft. Per the inverse square law, sound level reductions of roughly 14 dB would be expected at the nearest Addison Estates property, 216 ft to the northeast and at Cobblestone Walk, 195 ft to the east. A reduction of 12 dB was calculated for the 166 ft distance between the northeast corner of Maplewood Isles and the tunnel entrance.

For each path including structures between the source and receiving locations, barrier attenuation was calculated following the procedures of ISO 9613-2:1996 and ANSI/ASA S12.62-2012. A concrete block wall extending 21 ft beyond the

tunnel exit will effectively block the line-of-sight between the exit and the Cobblestone Walk property to provide an additional 14 dB of sound level attenuation over this path. There is an existing 8 ft solid wall near the south boundary of 10340 Royal Palm Boulevard; Dr. Cuschieri concurred that this structure would provide an additional 5 dB of attenuation at minimum. This is the general rule for a screening object that obstructs the line-of-sight between source and receiver locations, but ED+A's calculations following the standard procedures yielded an average insertion loss of 17 dB. Due to the distance between the tunnel and this structure, increasing its height to 11 ft would have a negligible effect on the level of attenuation provided.

Reduced sound levels at the tunnel's entrance, obstructing barriers, and diminished sightlines between the tunnel and the Maplewood Isles and Cobblestone Walk properties will ultimately result in lower sound levels than what would be observed at the nearest Addison Estates property, which lies 216 ft to the northeast with an unobstructed line-of-sight to the tunnel exit. Sound levels projected for this location were detailed and discussed in ED+A's original Noise Impact Study. Modeled ten-minute L_{A50} at this location ranged from 42 to 62 dBA. Out of 567 data points between 7:00 a.m. and 7:00 p.m., 22% exceeded the 55 dBA threshold. Comparatively, 88% of ten-minute L_{A50} measured on the opposite side of Royal Palm Boulevard (i.e., the current ambient sound levels) during the same periods exceeded this limit.

Review of Margate's hourly vehicle count data during the measurement period revealed the maximum L_{A50} to correspond with traffic volumes nearly three times greater than those projected for the proposed facility. This relationship is demonstrated by time-history plots included in ED+A's original Noise Impact Study. Sound levels modeled for periods with traffic volumes similar to those projected for the proposed facility resulted in levels below the 55 dBA limit. This distinction must be made when analyzing statistical measures such as L_{A50} , which are dependent not only on the sound level produced over an observation period but also the cumulative duration over which the level is produced. It follows that a car wash with a significant volume of traffic (i.e., the existing Rising Tide Car Wash in Margate) would inherently generate greater L_{A50} than a facility with less traffic—such as the proposed facility. Sound levels modeled using data obtained during periods of greater traffic are not representative of anticipated sound levels at the nearby residential properties, and therefore, most of the modeled levels at all locations are greater than would be expected given the facility's projected traffic volumes, further supporting ED+A's conclusion that the proposed Rising Tide Car Wash facility could operate within the bounds of the Coral Springs Noise Ordinance.