Acoustic Associates
Specialists in Hearing and Acoustics

12172 Route 47 - #218, Huntley, Illinois 60142
Office: *847-359-1068* • Fax: *847-359-1207*
Website: www.AcousticAssociates.com

Tom Thunder, AuD, FAAA, INCE – *Principal*
Greg Andorka, BSEE - *Senior Field Engineer*
E-mail: info@AcousticAssociates.com

Noise from the Fuller Car Wash in Harwood Heights

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This report addresses noise from the proposed car wash in Harwood Heights on the corner of West Gunnison Street and North Nagle Avenue. To investigate this issue, we visited the Fuller Car Wash at 2146 Rockwell in Chicago to obtain sound data. This facility has the same equipment as proposed for the Harwood Heights car wash. It should also be noted that the surrounding residential area is similar to that found near the Chicago facility.

The blowers used to dry the cars dominate the car wash noise. **Figure 1** shows a view of the Chicago car wash tunnel from the exit door. There are ten (10) centrifugal blowers situated at the exit end of the tunnel. Sound measurements were made near both the exit and the entrance to quantify the difference in noise emissions due to the long tunnel effect. We also made measurements at 0^o azimuth (on axis) and 90^o azimuth to quantify the difference due to the directivity of the tunnel.

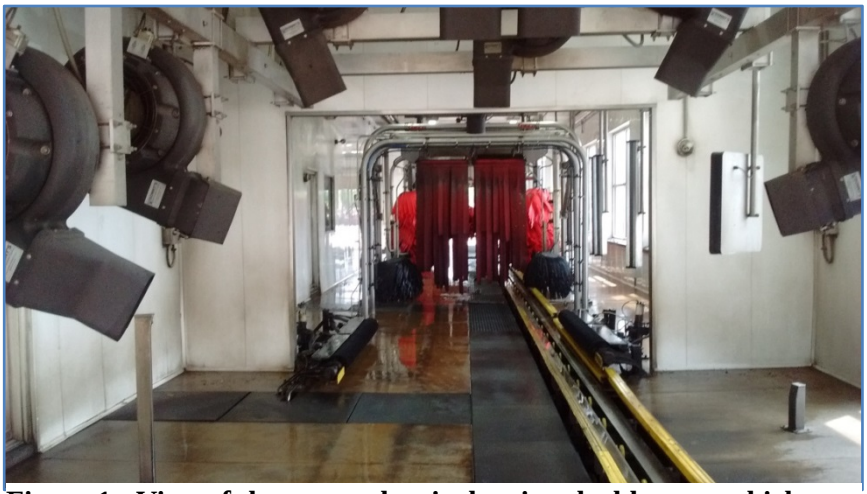

Figure 1 - View of the car wash exit showing the blowers, which are positioned a few feet from the exit door.

We used a precision microphone and a professional grade digital recorder to record the noise. In our lab, we used software to analyze the recording and determine the overall (total) sound level and the frequency spectrum at four measurement locations. **Table 1** gives the results of our study.

Measurement Location	Sound Level at 50 feet
Exit at 0 degrees	83 dB
Exit at 90 degrees	73 dB
Entrance at 0 degrees	68 dB
Entrance at 90 degrees	58 dB

Table 1 - Sound level emissions from the Chicago (Rockwell Street) car wash with ten centrifugal blowers at 50 feet.

Table 1 reveals that the noise is greatest from the exit. The noise from the entrance is 15 dB lower – which is 1/3 as loud as the exit. The table also shows that the noise off to the side (i.e., 90^{o} angle) is lower than directly in front of the exit or the entrance. The difference is 10 dB which is half as loud.

Considerations for the Harwood Heights Project

Based on the population density and proximity to roads, we expect a daytime ambient sound level near the residents of about 60 dB. Because sound drops 6 dB per doubling of distance, the car wash sound levels from the entrance should be comparable to the daytime sound level near the residential homes. Therefore, there should be no significant impact for residents on the east side.

The noisier exit side faces commercial property to the west. Residential property on this side is at an angle to the car wash opening. Sound level projections indicate that the noise emissions would likely be greater than 60 dB.

To reduce the car wash sound level closer to the 60 dB ambient level, we recommend a solid wall made of masonry or composite board material. Both types of material are better than wood because they are heavier and will block more sound. They also require less maintenance as neither material will split or shrink. Furthermore, masonry is held together with grout while tongue-and-groove boards give a tight fit. In both cases, air gaps are eliminated.

The fence must extend to the ground to ensure noise does not leak from the bottom. The fence height should probably extend at least 2 feet higher than the door opening to block the line-of-site. For best results, the fence should be placed on the north curb with a direct connection to the building and extend west to Natchez Avenue. If it were to be installed on the property line next to the alley, it would need to be higher to achieve the same effectiveness as a closer fence. Details of the fence can be worked out as more information on the line-of-site path becomes available.

Submitted,

Thomas Thunder, AuD, FAAA, INCE Bd. Cert.
Principal Audiologist and Acoustical Specialist
Adjunct Faculty – Northern Illinois University and Rush University