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Manish Ahluwalia
Sunnyvale Carwash
905 East El Camino Real
Sunnyvale, CA 94087
Email: ahluwalia15@gmail.com

Subject: **Sunnyvale Carwash Mechanization Noise, Sunnyvale, CA**
Salter Project: 17-0585

Dear Manish:

As requested, we conducted an acoustical study to quantify the potential change in carwash noise when the wash becomes mechanized. The adjacent mobile home park to the east represents the nearest residential neighbor next to your business. Salter conducted an initial noise study for this site in 2005. The results of the initial study led to the concrete block wall separating the mobile home park from your business. This follow up study presents the existing and future noise levels from your carwash.

EXECUTIVE SUMMARY

1. The existing carwash noise levels comply with the Sunnyvale Noise Ordinance.

2. The addition of the four carwash machines will not increase the existing carwash noise.

3. The relocation of the hand vacuuming station will decrease existing carwash noise.

4. The future carwash noise with machines will comply with the Sunnyvale Noise Ordinance. Therefore, no additional acoustical measures are required.

ACOUSTICAL CRITERIA

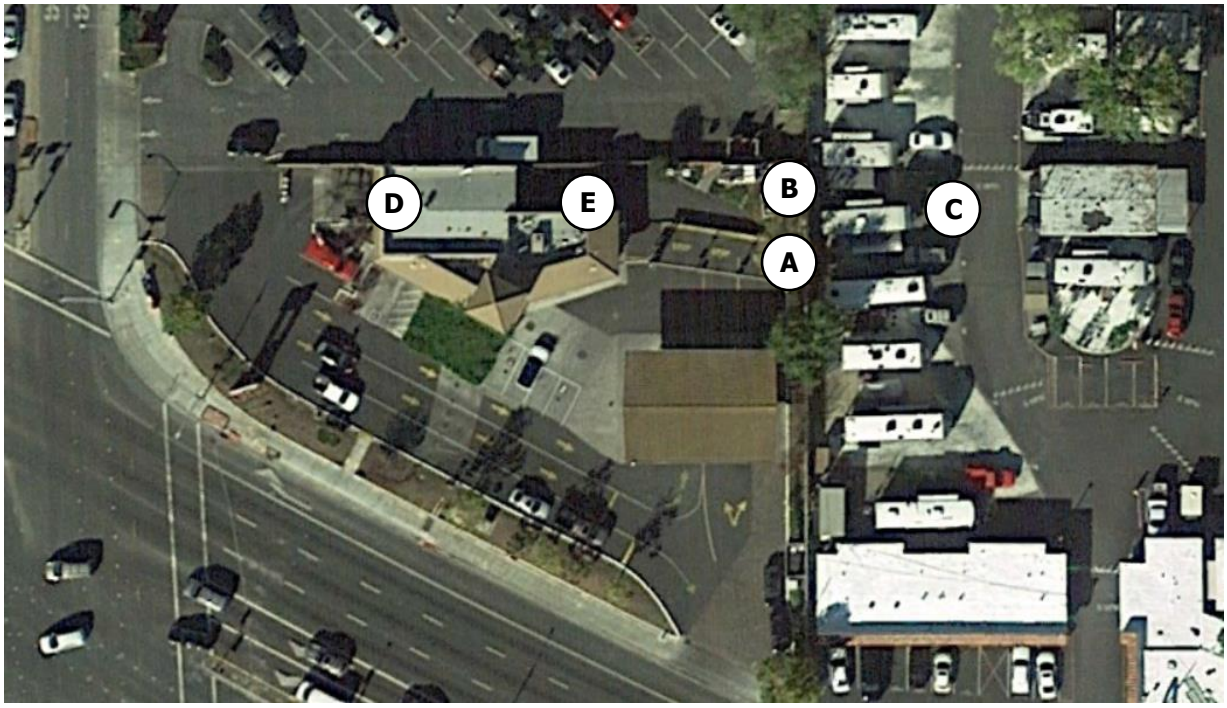
The Sunnyvale municipal code Section 19.42.030 reads as follows:

"The noise or sound level shall not exceed fifty dBA during nighttime or sixty dBA during daytime hours at any point on adjacent residentially zoned property. If the noise occurs during nighttime hours and the enforcing officer has determined that the noise involves a steady, audible tone such as a whine, screech or hum, or is a staccato or intermittent noise (e.g., hammering) or includes music or speech, the allowable noise or sound level shall not exceed forty-five dBA."

MEASUREMENTS

We visited the subject project to measure the existing carwash noise levels at various locations. Measurements lasted between 3 minutes and 10 minutes to accurately capture the noise of specific carwash activities. The table below lists the locations and their corresponding noise level. The Figure after the table shows the locations of these measurements.

Figure Tag	Location	Activity	Measured Level
A	At the property line	Car Vacuum	60 dBA
B	At the property line	All Carwash	59 dBA
C	At mobile home park	All Carwash	47 dBA
		El Camino Real Traffic Noise	47 to 50 dBA
D	Inside Carwash	Jet Dryers	91 dBA
E	Inside Carwash	Carwash and Jet Dryers	71 dBA



In addition to carwash noise, noise from El Camino Real was also measured at the mobile home park. Levels varied from 47 dB to 50 dB depending on the volume, speed, and types of vehicles.

In order to project the future noise levels of the proposed machines, we visited a comparable facility in San Mateo to measure noise from these washing machines. At 3 feet from the machine, we measured 75 dBA for 3 machines simultaneously operating.

OBSERVATIONS AND ANALYSIS

Washing Machine Addition

You intend to add four machines to automate the wash process of your carwash. These machines will be located inside the covered portion of the carwash, approximately 110 feet west of the property line. The calculated noise level of 4 machines operating at 3 feet is 76 dBA. This noise will attenuate at a

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rate of 6 decibels for every doubling of distance. Therefore, the predicted noise of these four machines at the property line (Locations A and B) would be 45 dBA.

The current noise level of the carwash is 59 dBA to 60 dBA depending where along the property line the measurement is taken. Adding the 49 dBA noise level of the machines to the existing carwash noise levels yields 59 dBA to 60 dBA.

Decibels add to one another via logarthimic summation. Where two numbers are 0 to 1 decibels apart, the sum of these numbers are equal to 3 decibels added to the higher value. Where two numbers are 2 to 4 decibels apart, the sum of these numbers are equal to 2 decibels added to the higher value. Where two numbers are 4 to 9 decibels apart, the sum of these numbers are equal to 1 decibel added to the higher value. Where two numbers are 10 or more decibels apart, the sum of these numbers are equal to the higher value. Since the noise level of all machines operating is more than 10 decibels less than the existing carwash nose levels, the machines do not change the carwash noise levels.

Vacuuming Station Relocation

As part of the car wash improvements and renovation, the hand vacuuming station will move from its current location near the mobile home park to along El Camino Real. The new vacuuming station will be an additional 80 feet away from the mobile park. The increased distance should result in 16 dB reduction in noise from the vacuuming. Moving the vacuuming away from the property line will decrease the overall noise up to 8 decibels from the carwash to the mobile park.

Noise Barrier Discussion

The measurements in the mobile home park demonstrate the acoustic effectiveness of the existing concrete wall. The mobile home park is 4 feet lower than the carwash. The concrete wall is 5 feet above the grade difference between the mobile park and carwash. Therefore, the effective barrier height is 9 feet, which offers up to 9 decibels of attenuation. This is evidenced by the difference between measured levels at Locations A/B and Location C. We measured a decrease in carwash noise of 9 decibels.

Conclusion

Based on our acoustical measurements, the addition of 4 carwash machines and vacuuming relocation will not cause the noise to increase. The existing noise levels from the carwash are well below the 60 dBA daytime standard. The vacuuming noise will be 16 decibels quieter. Since the carwash machine noise levels and vacuuming are more than 10 decibels quieter than the existing carwash noise, they will not increase the carwash noise levels. Therefore, adding 4 carwash machines will comply with the noise ordinance. No further attenuation measure are required.

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This concludes our comments on the subject project. Please contact us if you have any questions.

Sincerely,

CHARLES M. SALTER ASSOCIATES

Eric A. Yee
Vice President

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