

# **AMBIENT AND PROJECTED OPERATIONS NOISE STUDY FOR A PROPOSED EXPRESS CAR WASH IN THE CITY OF LOS ANGELES**

**July 6, 2022**

PREPARED FOR:

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## 1. Introduction

At the request of Mr. Moti Balyan and his architect, Mr. Jian Keredian, and in compliance with requirements of the Woodland Hills district of the City of Los Angeles (City), a noise study has been conducted by Advanced Engineering Acoustics (AEA) at the site of the existing Fallbrook Self Service Car Wash proposed to be converted into an express car wash. This site is near the SE corner of Fallbrook Avenue and Victory Boulevard in Woodland Hills, CA (see Figure 1). Hours of operation are planned to be daily 7 a.m. to 8 p.m. In order to document the current level of ambient noise at the current self-service car wash and proposed new Fallbrook Express Car Wash location, AEA was retained to monitor the ambient noise at the site property lines nearest sensitive receptor locations. A solid block property line wall now exists on the site near the commercial receptors west of the planned car wash conversion. This report provides the measured existing ambient noise and future projected Express Car Wash noise on site and for the nearby adjacent residential and commercial properties.

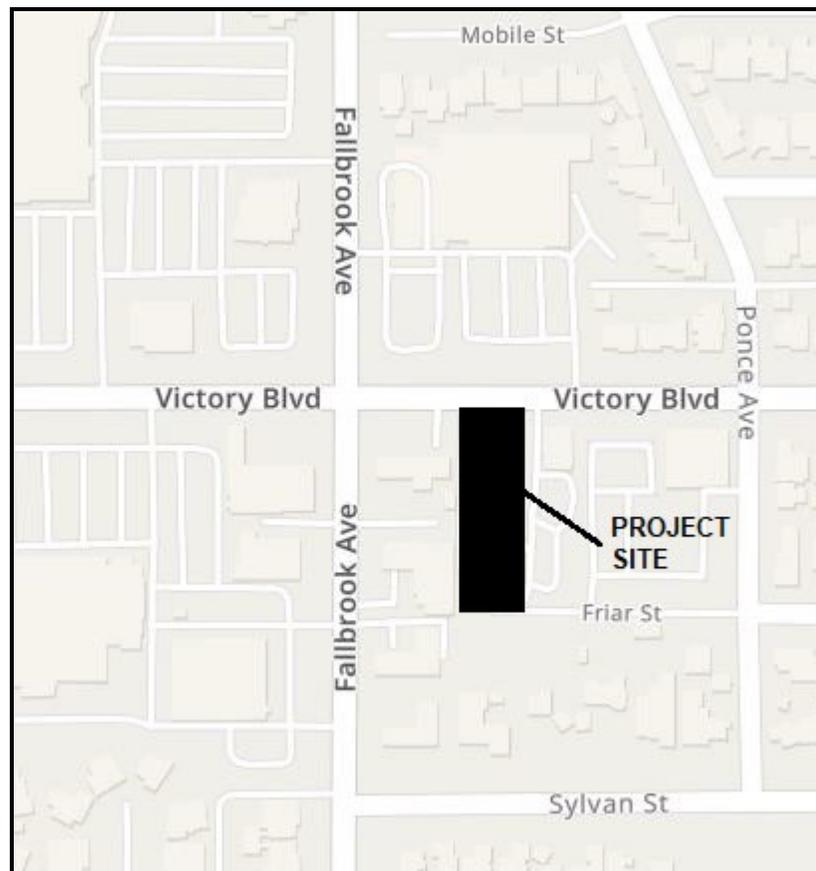


Figure 1. Project Vicinity Map

## 2. Sound Fundamentals

Physically, sound pressure magnitude is measured and quantified in terms of the decibel (dB), which is associated with a logarithmic scale based on the ratio of a measured sound pressure to the reference sound pressure of 20 micropascal ( $20 \mu\text{Pa} = 20 \times 10^{-6} \text{ N/m}^2$ ). However, the decibel system can be very confusing. For example, doubling or halving the number of sources of equal noise output (a 2-fold change in acoustic *energy*) changes the noise level at the receptor by only 3 dB, which is a barely

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perceptible sound change for humans. While doubling or halving the sound *loudness* at the receptor results in a 10 dB change and also represents a 10-fold change in the acoustic *energy*.

The human hearing system is not equally sensitive to sound at all frequencies. Because of this variability, a frequency-dependent adjustment called “A-weighting” has been devised so that sound may be measured in a manner similar to the way the human hearing system responds. The A-weighted sound level is abbreviated "dBA". Figure 2 gives typical A-weighted sound levels for various noise sources and the typical responses of people to these levels.

### 3. City Noise Standards

The City has established special exterior noise criteria for drive-through car wash operations. Los Angeles Municipal Code (“LAMC”) Section 12.22 A.28 states that a car wash must maintain noise levels below the levels provided in Table II in LAMC Section 111.03. Table II of the code was originally developed for locations in the City where ambient noise is always very low and where a 5 dB limit above those low ambient noises could still be a problem. Table II specifies such locations presumed ambient A-weighted noise levels (dBA) for day and night based on the property’s zoning. However, it also has been specified as the car wash noise limit for the Project Site’s C2 and P Zones is 60 dBA during day (7am-10pm) hours and 55 dBA at night (10pm-7am), unless the measured ambient noise is greater. For the south residential property line, the car wash day noise limit is still 60 dBA and the night noise limit is 40 dBA. But the noise code also states that, “*If the ambient sound levels at the site exceed the allowable ambient levels in Table II, the existing site's ambient level becomes the new allowable baseline and no increase in that level shall be allowed.*”

Demolition and construction noise is prohibited by LAMC Section 41.40 between the hours of 9:00 P.M. and 7:00 A.M. of the following day, which makes loud noises to the disturbance of persons occupying sleeping quarters in any dwelling hotel or apartment or other place of residence. These sections are included in Appendix A.

### 4. Sound Monitoring Equipment and Locations

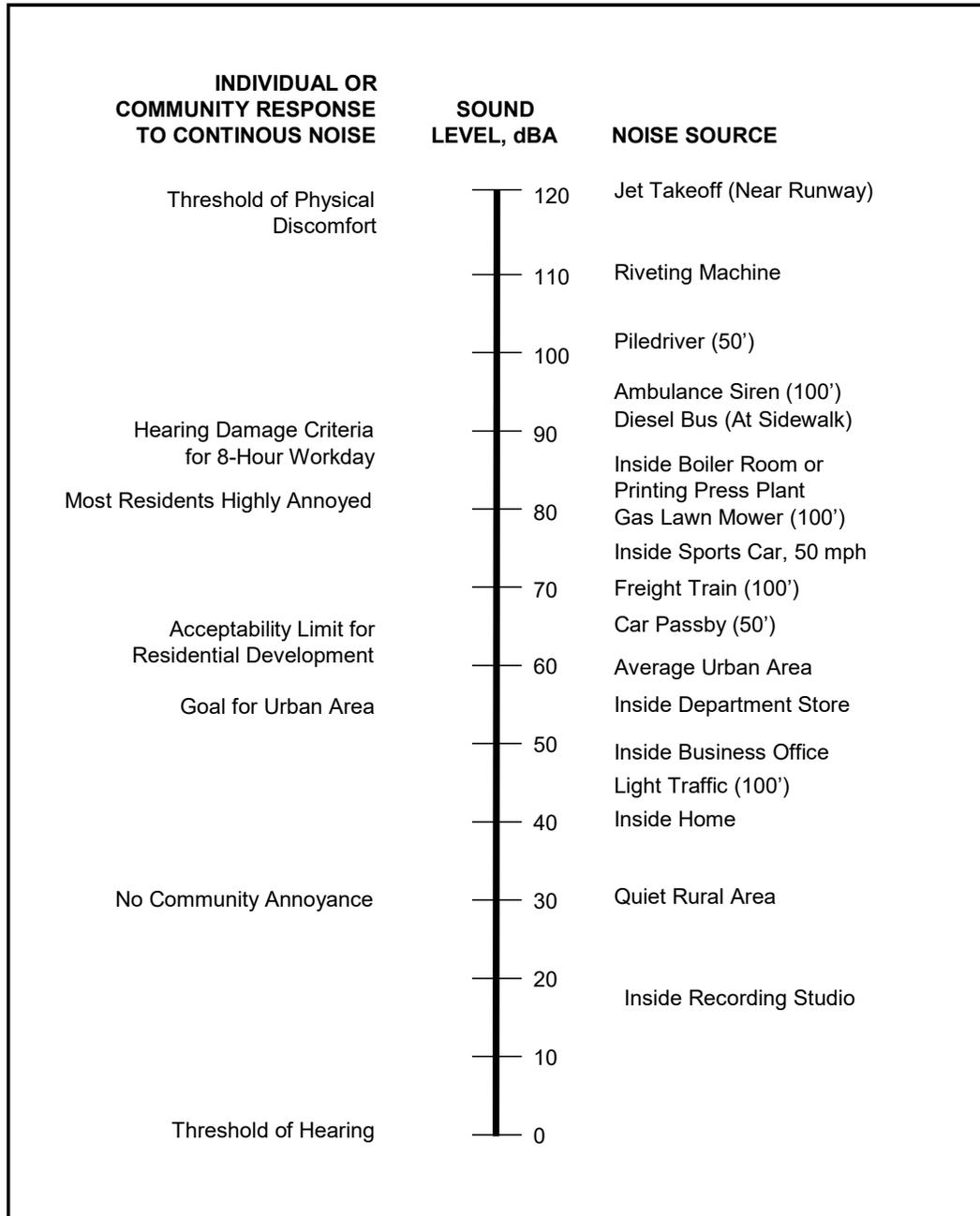
AEA used six NTi XL2 Type 1 Real-Time Analyzer and Integrating Sound Meters to monitor the ambient noise along the existing boundary line of the project site near the commercial and residential locations nearby. Each sound meter system was in current laboratory calibration and was field calibrated according to the manufacturers’ instructions just prior to and after making the current operations and ambient noise measurements.

The six noise monitoring positions (see Figure 3) were five feet above local grade. Sound level meters (SLM) A and B were 55 feet south of the centerline of Victory Blvd. and 2 feet from the west and East property lines, respectively. SLMs C and D were 170 feet south of the centerline of Victory Blvd. SLM E was 20 feet north of the south property line and 2 feet east of the west property line. SLM F was 2 feet north of the south property line and 2 feet west of the east property line.

The proposed car wash tunnel exit will be approximately 100 feet south of the centerline of Victory Blvd. and 235 feet southwest of the closest single-family residential façade that is across Victory Blvd. east-northeast of the project site. The car wash tunnel entrance will be approximately 155 feet north of the south property line and the nearest residential lot south of the project, which has a 7.5 foot high

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cement block rear yard wall. An 8-foot high masonry block wall extends 70 feet north of the project's south property line along the project's west property line. An 8-foot high cement block wall continues north for 100 feet. Then a 5-foot high masonry wall continues north another 60 feet along the west property line, dropping down to a 2.75-foot high masonry wall that continues 14 more feet and then a 2.5-foot high masonry wall continues north to the project's north property line just south of Victory Blvd.



**Figure 2 - Typical Sound Levels and their Effect on People**

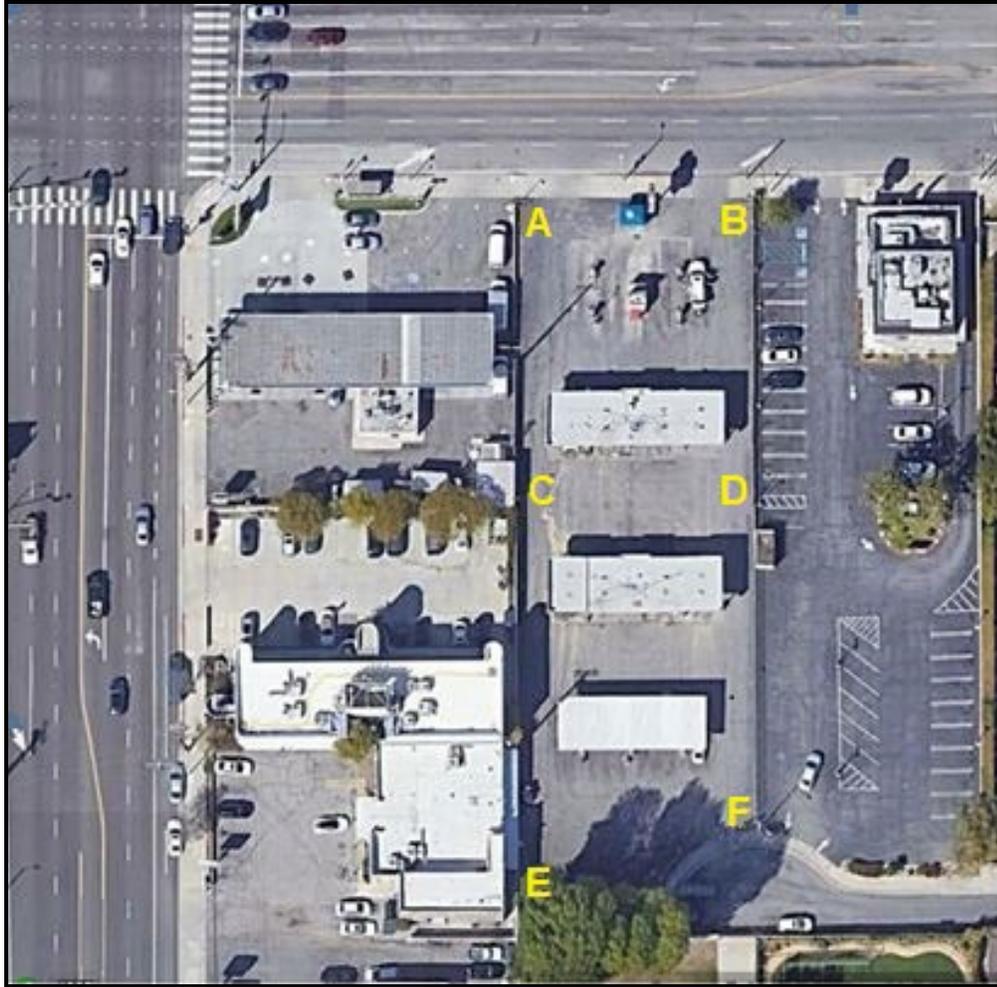


Figure 3. Aerial View of Proposed Project Site with Sound Level Meters

### 5. Ambient and Existing Self-Service Car Wash Noise Measurements and Results

The proposed Express Car Wash site noise monitoring was over the 3-hour test period from 4:00 p.m. to 7:00 p.m. on March 29, 2022. The proposed car wash site energy average ( $L_{eq}$ ) and maximum A-weighted daytime ambient noise measurement results between 4:00 p.m. to 7 p.m. are given on Table 1.

### 6. Project Noise Modeling Results

The project noise model is based on the proposed car wash design for the selected location. The planned hours of operation of the proposed car wash are 7 a.m. to 8 p.m., seven (7) days a week. Figure 4 shows the proposed car wash design layout. The project layout shows that the maximum number of patron vehicles queued up to pay for a car wash at a time could be eighteen (18), with five (5) slow moving vehicles on site. In addition, there are twenty (25) vacuum nozzles for thirteen (13) vehicles along the east property line with a fabric canopy shade. Lastly, is an enclosed shed containing the central vacuum equipment and the main equipment room with an air compressor and tanks. The car wash tunnel is concrete block walls, an open joist ceiling and will have Aerodry dual 15 hp motor driven vane-axial fan

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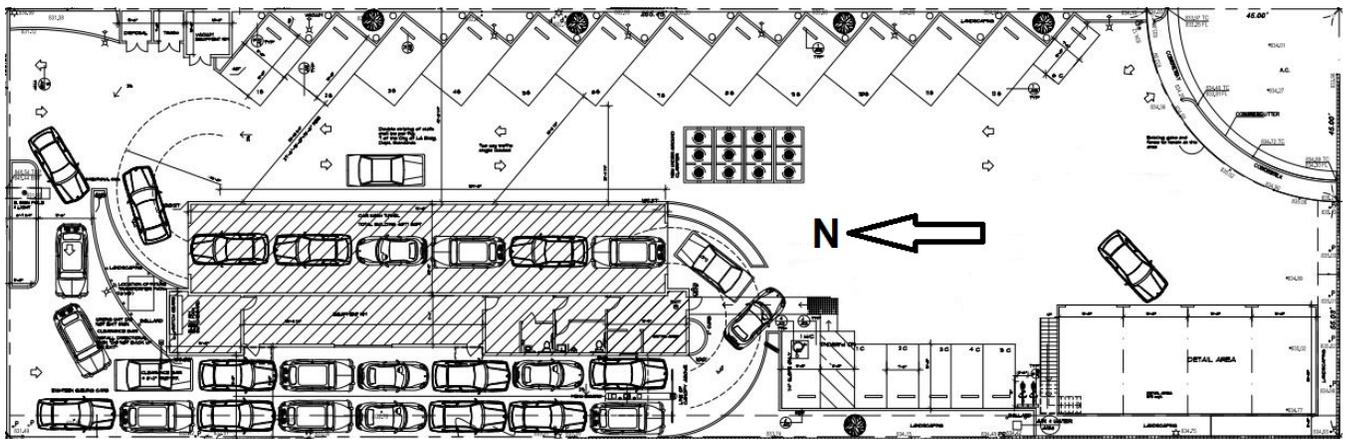
blower/dryers inside each of 4 (columns) near the tunnel exit for a total of eight (8) 15 hp blower motors totaling 120 hp overall.

**Table 1. Project Site 15-minute  $Leq^*$  & Max Exterior Ambient Noise Monitoring Results**

| Sound Meter Site > | A               |             | B               |             | C               |             | D               |             | E               |             | F               |             |
|--------------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|
| 16:00 – 16:15      | 68.4            | <b>84.9</b> | 69.7            | <b>79.2</b> | 64.9            | <b>77.1</b> | 68.1            | <b>77.2</b> | <del>56.7</del> | <b>66.7</b> | <del>60.5</del> | <b>72.1</b> |
| 16:15 – 16:30      | 69.3            | <b>84.8</b> | 71.2            | <b>85.5</b> | 65.2            | <b>77.1</b> | 67.9            | <b>75.7</b> | 58.1            | <b>68.4</b> | 65.3            | <b>81.6</b> |
| 16:30 – 16:45      | 67.7            | <b>84.9</b> | 68.6            | <b>77.9</b> | <del>62.4</del> | <b>74.5</b> | <del>60.7</del> | <b>71.1</b> | 62.5            | <b>72.2</b> | 69.7            | <b>88.3</b> |
| 16:45 – 17:00      | <del>66.6</del> | <b>76.0</b> | 67.9            | <b>78.4</b> | 63.6            | <b>73.7</b> | 65.9            | <b>79.3</b> | 59.8            | <b>65.8</b> | 65.5            | <b>82.5</b> |
| 17:00 – 17:15      | 67.5            | <b>82.4</b> | 69.5            | <b>82.5</b> | 64.5            | <b>80.3</b> | 64.6            | <b>84.1</b> | 57.9            | <b>68.8</b> | 63.7            | <b>76.2</b> |
| 17:15 – 17:30      | 71.8            | <b>91.9</b> | 73.6            | <b>94.8</b> | 66.6            | <b>88.5</b> | 69.3            | <b>85.6</b> | 60.2            | <b>76.4</b> | 67.3            | <b>84.9</b> |
| 17:30 – 17:45      | 72.5            | <b>97.7</b> | 73.5            | <b>94.9</b> | 66.2            | <b>77.6</b> | 69.0            | <b>79.8</b> | 61.7            | <b>80.6</b> | 67.5            | <b>82.3</b> |
| 17:45 – 18:00      | 68.1            | <b>81.7</b> | 70.1            | <b>82.5</b> | 71.4            | <b>80.2</b> | 67.4            | <b>78.4</b> | 60.7            | <b>70.6</b> | 66.6            | <b>76.8</b> |
| 18:00 – 18:15      | 70.8            | <b>88.5</b> | 70.5            | <b>87.4</b> | 69.0            | <b>76.4</b> | 64.4            | <b>87.8</b> | 64.2            | <b>72.1</b> | 68.3            | <b>79.8</b> |
| 18:15 – 18:30      | 67.9            | <b>78.4</b> | 68.0            | <b>77.7</b> | 67.8            | <b>76.4</b> | 61.8            | <b>72.2</b> | 61.1            | <b>68.3</b> | 64.4            | <b>75.7</b> |
| 18:30 – 18:45      | 68.0            | <b>84.8</b> | <del>67.6</del> | <b>83.9</b> | 69.2            | <b>83.0</b> | 65.7            | <b>80.7</b> | 59.0            | <b>72.6</b> | 61.4            | <b>77.0</b> |
| 18:45 – 19:00      | 72.1            | <b>95.4</b> | 70.0            | <b>91.1</b> | 64.9            | <b>77.1</b> | 68.1            | <b>77.2</b> | 63.9            | <b>73.7</b> | 66.1            | <b>79.8</b> |

\* The cells with gray backgrounds are the ambient-based project operations noise limits (except Site E, which is 60.0 dBA per Table II).

Since the measured property line ambient noise exceeds the noise code limits (except at Site E), the measured ambient becomes the applicable noise limits for the northerly, easterly, southerly and westerly residential and business properties, due to the operating noise of the planned car wash operations.



**Figure 4. Project Design Layout**

Computer modeling of the car wash equipment noise, transmitted through the car wash tunnel exit opening, entrance opening, the tunnel walls and tunnel roof, was conducted using the SoundPLAN™, Version 8.2, community noise modeling software. The noise model assumed a worst-case scenario of 18 queued idling vehicles and 5 low speed vehicle movements on-site entering and exiting the tunnel

and project site and also assumed 13 vehicles being vacuumed at once, with a replacement fabric canopy abating reflected vacuuming noise. The abated noise model results for receptor locations around the project site are given in Table 2. Figure 5 shows the predicted abated car wash project noise contours.

**Table 2. Abated Worst-Case Project Site Operational Noise Levels**

| RNo | Receiver           | Usage | FI | Lim d<br>dB(A) | Ld<br>dB(A) | Ld,diff<br>dB |
|-----|--------------------|-------|----|----------------|-------------|---------------|
| 1   | 22715 Victory Blvd | SCR   | G  |                | 38.3        | ---           |
| 2   | 22727 Sylvan St.   | GR    | G  |                | 47.4        | ---           |
| 2   | 22727 Sylvan St.   | GR    | F2 |                | 47.8        | ---           |
| 3   | 22745 Sylvan St.   | MIX   | G  |                | 40.5        | ---           |
| 4   | SLM A              | COM   | G  | 66.6           | 46.7        | ---           |
| 5   | SLM B              | COM   | G  | 67.6           | 51.2        | ---           |
| 6   | SLM C              | COM   | G  | 62.4           | 39.1        | ---           |
| 7   | SLM D              | COM   | G  | 60.7           | 60.5        | ---           |
| 8   | SLM E              | COM   | G  | 60.0           | 50.4        | ---           |
| 9   | SLM F              | COM   | G  | 60.5           | 57.7        | ---           |

**7. Conclusions**

Except for Site E, the current project site ambient noise already exceeds the city code car wash noise limits on the project/residential or business property lines (see Table 1), mainly due to roadway traffic and the nearby fire station. The existing west property line variable height masonry walls provide a noise barrier that will also abate the proposed project operational noise propagating to the west. Therefore, after replacing the vacuum canopy with a fabric shade screen, the planned new express car wash will comply with the city car wash noise code in all directions.

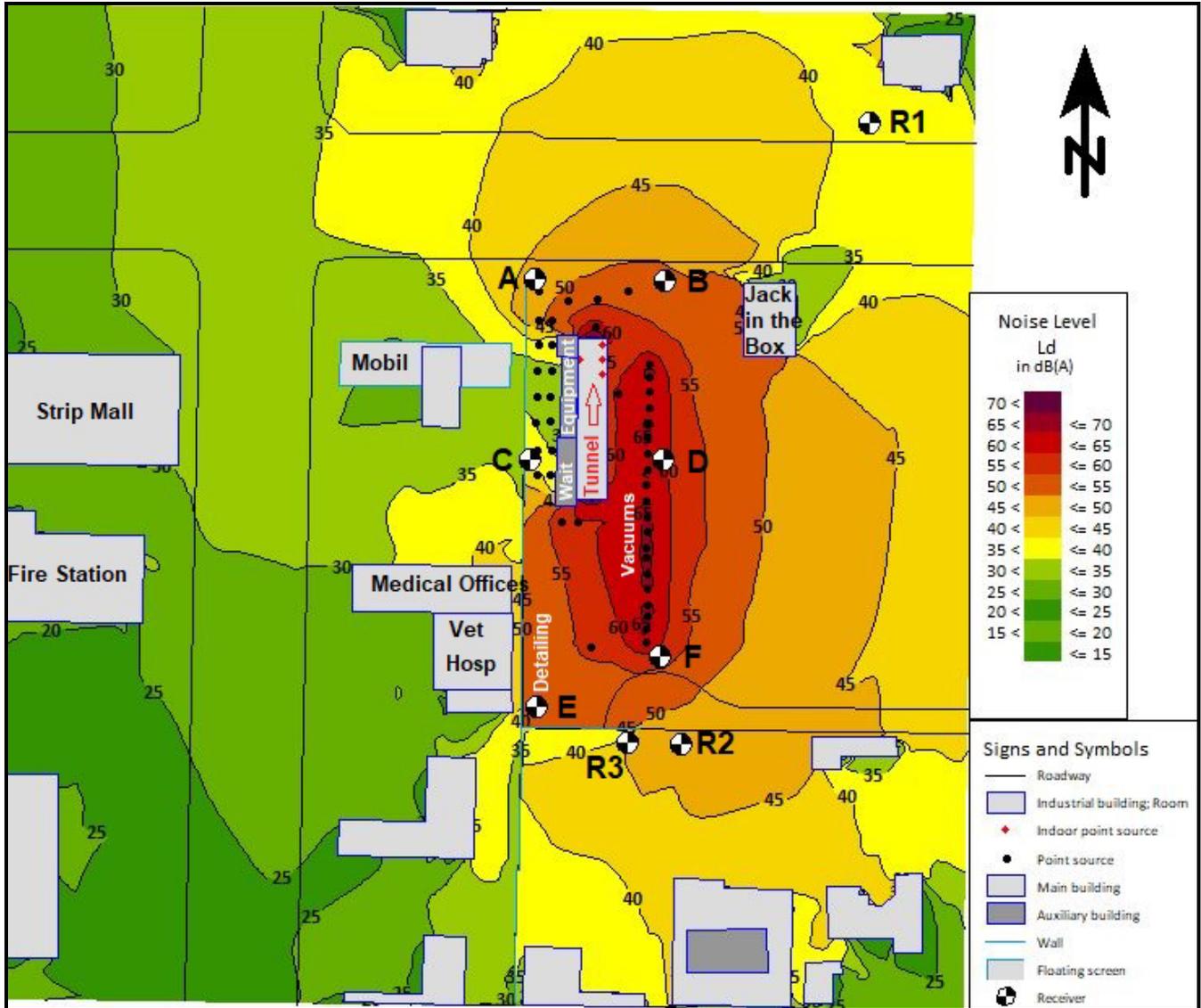


Figure 5. Project Vicinity Abated Noise Level Contours

## APPENDIX A

### ***SEC 13.18.F2(I)(1) Noise (applies to project types: NEW, MAJOR IMPROVEMENT, ADDITION, CHANGE OF USE).***

(1) A noise generating use or activity shall not exceed the presumed ambient noise level specified by zone in Table II of Section 111.03 of the LAMC.

(i) An applicant shall submit to the Department of City Planning an acoustic evaluation report issued by a licensed noise consulting professional which identifies compliance options for noise mitigation. An applicant shall comply with the stated performance-based mitigation measures.

(ii) Baseline and other ambient noise levels shall be measured at the property line. If the ambient sound levels at the site exceed the allowable ambient levels in Table II, the existing site's ambient level becomes the new allowable baseline and no increase in that level shall be allowed.

(2) An applicant whose project include a noise generating use or activity shall submit an acoustic evaluation report prepared by a licensed consulting professional which includes current and projected noise levels at the site. The report shall include compliance options for noise mitigation measures. An applicant shall comply with all mitigated measures. Noise levels shall be measured per Section 13.18 F.2.(I)(1)(ii) of this Code.

### ***SEC. 41.40 NOISE DUE TO CONSTRUCTION, EXCAVATION WORK-WHEN PROHIBITED***

(a) No person shall, between the hours of 9:00 P.M. and 7:00 A.M. of the following day, perform any construction or repair work of any kind upon, or any excavating for, any building or structure, where any of the foregoing entails the use of any power driven drill, riveting machine excavator or any other machine, tool, device or equipment which makes loud noises to the disturbance of persons occupying sleeping quarters in any dwelling hotel or apartment or other place of residence. In addition, the operation, repair or servicing of construction equipment and the job-site delivering of construction materials in such areas shall be prohibited during the hours herein specified. Any person who knowingly and willfully violates the foregoing provision shall be deemed guilty of a misdemeanor punishable as elsewhere provided in this Code.

...

(c) No person, other than an individual homeowner engaged in the repair or construction of his single-family dwelling shall perform any construction or repair work of any kind upon, or any earth grading for, any building or structure located on land developed with residential buildings under the provisions of Chapter I of this Code, or perform such work within 500 feet of land so occupied, before 8:00 a.m. or after 6:00 p.m. on any Saturday or national holiday nor at any time on any Sunday. In addition, the operation, repair or servicing of construction equipment and the job-site delivering of construction materials in such areas shall be prohibited on Saturdays and on Sundays during the hours herein specified. The provisions of this subsection shall not apply to persons engaged in the emergency repair of:

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1. Any building or structure.
2. Earth supporting or endangering any building or structure.
3. Any public utility.
4. Any public way or adjacent earth.

### **SEC.112.04. POWER EQUIPMENT INTENDED FOR REPETITIVE USE IN RESIDENTIAL AREAS AND OTHER MACHINERY, EQUIPMENT, AND DEVICES.**

(a) *Between the hours of 10:00 p.m. and 7:00 a.m. of the following day, no person shall operate any lawn mower, backpack blower, lawn edger, riding tractor, or any other machinery, equipment, or other mechanical or electrical device, or any hand tool which creates a loud, raucous or impulsive sound, within any residential zone or within 500 feet of a residence.*

(b) *Except as to the equipment and operations specifically mentioned and related elsewhere in this Chapter or for emergency work as that term is defined in Section 111.01(d), and except as to aircraft, tow tractors, aircraft auxiliary power units, trains and motor vehicles in their respective operations governed by State or federal regulations, no person shall operate or cause to be operated any machinery, equipment, tools, or other mechanical or electrical device, or engage in any other activity in such manner as to create any noise which would cause the noise level on the premises of any other occupied property, or, if a condominium, apartment house, duplex, or attached business, within any adjoining unit, to exceed the ambient noise level by more than five (5) decibels.*

### **SEC. 111.03. MINIMUM AMBIENT NOISE LEVEL**

*Where the ambient noise level is less than the presumed ambient noise level designated in this section, the presumed ambient noise level in this section shall be deemed to be the minimum ambient noise level for purposes of this chapter.*

**TABLE II**  
**SOUND LEVEL "A" DECIBELS**

*(In this chart, daytime levels are to be used from 7:00 a.m. to 10:00 p.m. and nighttime levels from 10:00 p.m. to 7:00 a.m.)*

| <b>ZONE</b>  | <b>PRESUMED AMBIENT NOISE LEVEL (dB(A))</b> |              |
|--|---|--------------|
|  | <b>DAY</b>                                  | <b>NIGHT</b> |
| A1, A2, RA, RE, RS, RD, RW1, RW2, R1, R2, R3, R4, and RS | 60  | 40           |

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|  |    |    |
|--|----|----|
| <i>P, PB, CR, CI, CI.5, C2, C4, CS, and CM</i> | 60 | 55 |
| <i>M1, MR1, and MR2</i>                        | 60 | 55 |
| <i>M2 and M3</i>                               | 65 | 65 |

*At the boundary line between two zones, the presumed ambient noise level of the quieter zone shall be used.*

### **SEC. 112.05. MAXIMUM NOISE LEVEL OF POWERED EQUIPMENT OR POWERED HAND TOOLS.**

*Between the hours of 7:00 a.m. and 10:00 p.m., in any residential zone of the City or within 500 feet thereof, no person shall operate or cause to be operated any powered equipment or powered hand tool that produces a maximum noise level exceeding the following noise limits at a distance of 50 feet therefrom:*

*(a) 75 dB(A) for construction, industrial, and agricultural machinery including crawler-tractors, dozers, rotary drills and augers, loaders, power shovels, cranes, derricks, motor graders, paving machines, off-highway trucks, ditchers, trenchers, compactors, scrapers, wagons, pavement breakers, compressors and pneumatic or other powered equipment;*

*(b) 75 dB(A) for powered equipment of 20 HP or less intended for infrequent use in residential areas, including chain saws, log chippers and powered hand tools;*

*(c) 65 dB(A) for powered equipment intended for repetitive use in residential areas, including lawn mowers, backpack blowers, small lawn and garden tools and riding tractors;*

*The noise limits for particular equipment listed above in (a), (b) and (c) shall be deemed to be superseded and replaced by noise limits for such equipment from and after their establishment by final regulations adopted by the Federal Environmental Protection Agency and published in the Federal Register.*

*Said noise limitations shall not apply where compliance therewith is technically infeasible. The burden of proving that compliance is technically infeasible shall be upon the person or persons charged with a violation of this section. Technical infeasibility shall mean that said noise limitations cannot be complied with despite the use of mufflers, shields, sound barriers and/or other noise reduction device or techniques during the operation of the equipment.*