Sunny Express Car Wash
Noise Impact Study
City of Lake Elsinore, CA

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TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF EXHIBITS

LIST OF TABLES

1.0 Introduction

1.1 Purpose of Analysis and Study Objectives

This purpose of this noise impact study is to evaluate the potential noise impacts for the project study area and compare results to City and CEQA thresholds. The assessment was conducted and compared to the noise standards set forth by the Federal, State and Local agencies. Consistent with the California Environmental Quality Act (CEQA) and CEQA Guidelines, a significant impact related to noise would occur if a proposed project is determined to result in:

- Exposure of persons to or generation of noise levels in excess of standards established in the local General Plan or noise ordinance, or applicable agencies.
- Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels.
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

The following is provided in this report:

- A description of the study area and the proposed project
- Information regarding the fundamentals of noise
- A description of the local noise guidelines and standards
- An evaluation of the existing ambient noise environment
- An analysis of stationary noise impacts from the project site to adjacent land uses
- Construction noise and vibration evaluation

1.2 Site Location and Study Area

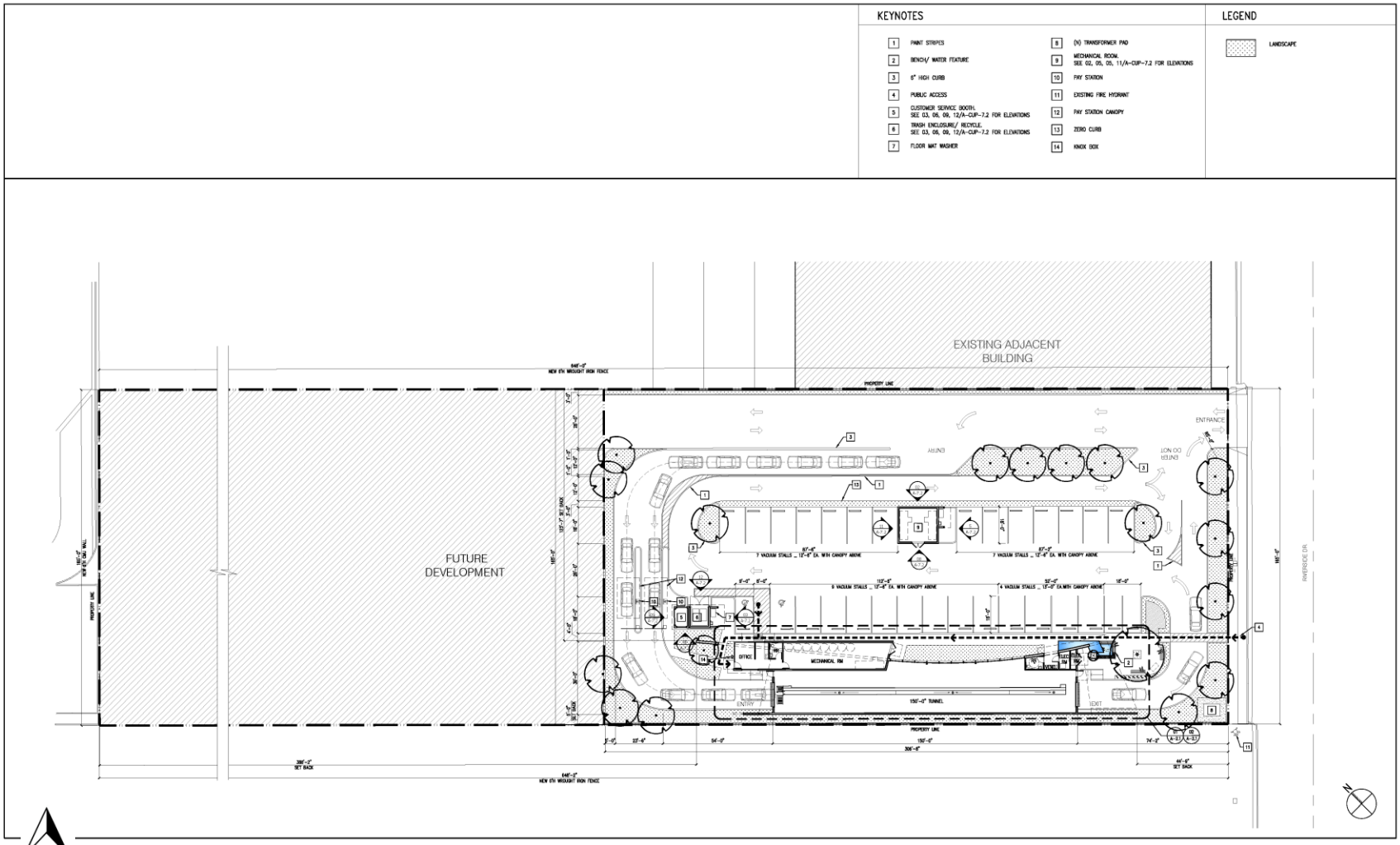
The project site is located at 31401 Riverside Drive in the City of Lake Elsinore, California, as shown in Exhibit A. Per the City of Lake Elsinore Lake View District Land Use Plan the site has a current land use classification of General Commercial. The proposed land use is commercial. Land uses surrounding the site include commercial uses and vacant land to the north, vacant land to the south, Riverside Drive to the east, and multi-family residential uses to the west (adjacent to the future development portion of the project site).

1.3 Proposed Project Description

The Project proposes to develop approximately 1.26-acres of an approximately 2.45-acre project site (remainder of site for future development) with a 5,436 square foot express car wash with 27 vacuum stations.

Exhibit A
Location Map

Exhibit B
Site Plan



Sunny Express Carwash | 31401 Riverside Dr., Lake Elsinore, CA 92530

Proposed Site Plan

Scale: 1" = 20'

A-CUP1.2

Issue for CUP
10/14/2020

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2.0 Fundamentals of Noise

This section of the report provides basic information about noise and presents some of the terms used in the report.

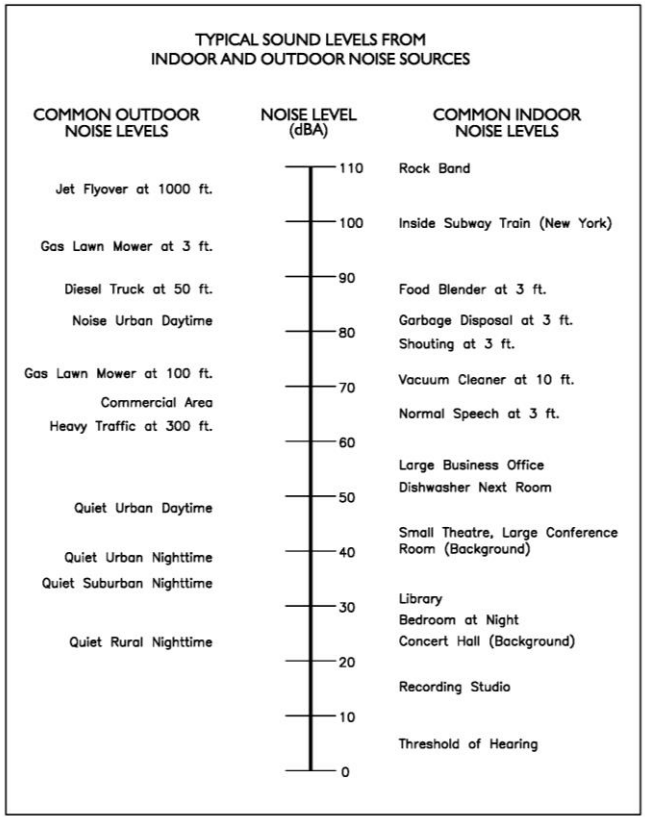
2.1 Sound, Noise and Acoustics

Sound is a disturbance created by a moving or vibrating source and is capable of being detected by the hearing organs. Sound may be thought of as mechanical energy of a moving object transmitted by pressure waves through a medium to a human ear. For traffic or stationary noise, the medium of concern is air. *Noise* is defined as sound that is loud, unpleasant, unexpected, or unwanted.

2.2 Frequency and Hertz

A continuous sound is described by its *frequency* (pitch) and its *amplitude* (loudness). Frequency relates to the number of pressure oscillations per second. Low-frequency sounds are low in pitch (bass sounding) and high-frequency sounds are high in pitch (squeak). These oscillations per second (cycles) are commonly referred to as Hertz (Hz). The human ear can hear from the bass pitch starting out at 20 Hz all the way to the high pitch of 20,000 Hz.

Exhibit C: Typical A-Weighted Noise Levels



2.3 Sound Pressure Levels and Decibels

The *amplitude* of a sound determines its loudness. The loudness of sound increases or decreases as the amplitude increases or decreases. Sound pressure amplitude is measured in units of micro-Newton per square inch meter ($\mu N/m^2$), also called micro-Pascal (µPa). One µPa is approximately one hundred billionths (0.00000000001) of normal atmospheric pressure. Sound pressure level (SPL or L_p) is used to describe in logarithmic units the ratio of actual sound pressures to a reference pressure squared. These units are called decibels, abbreviated dB. Exhibit C illustrates references sound levels for different noise sources.

2.4 Addition of Decibels

Because decibels are on a logarithmic scale, sound pressure levels cannot be added or subtracted by simple plus or minus addition. When two sounds or equal SPL are combined, they will produce an SPL 3 dB greater than the original single SPL. In other words, sound energy must be doubled to produce a 3 dB increase. If two sounds differ by approximately 10 dB, the higher sound level is the predominant sound.

2.5 Human Response to Changes in Noise Levels

In general, the healthy human ear is most sensitive to sounds between 1,000 Hz and 5,000 Hz, and it perceives a sound within that range as being more intense than a sound with a higher or lower frequency with the same magnitude. For purposes of this report as well as with most environmental documents, the A-scale weighting is typically reported in terms of A-weighted decibel (dBA), a scale designed to account for the frequency-dependent sensitivity of the ear. Typically, the human ear can barely perceive a change in noise level of 3 dB. A change in 5 dB is readily perceptible, and a change in 10 dB is perceived as being twice or half as loud. As previously discussed, a doubling of sound energy results in a 3 dB increase in sound, which means that a doubling of sound energy (e.g. doubling the volume of traffic on a highway) would result in a barely perceptible change in sound level.

2.6 Noise Descriptors

Noise in our daily environment fluctuates over time. Some noise levels occur in regular patterns, others are random. Some noise levels are constant while others are sporadic. Noise descriptors were created to describe the different time-varying noise levels.

A-Weighted Sound Level: The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighting filter de-emphasizes the very low and very high-frequency components of the sound in a manner similar to the response of the human ear. A numerical method of rating human judgment of loudness.

Ambient Noise Level: The composite of noise from all sources, near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

Community Noise Equivalent Level (CNEL): The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of five (5) decibels to sound levels in the evening from 7:00 to 10:00 PM and after addition of ten (10) decibels to sound levels in the night before 7:00 AM and after 10:00 PM.

Decibel (dB): A unit for measuring the amplitude of a sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micro-pascals.

dB(A): A-weighted sound level (see definition above).

Equivalent Sound Level (LEQ): The sound level corresponding to a steady noise level over a given sample period with the same amount of acoustic energy as the actual time-varying noise level. The energy average noise level during the sample period.

Habitable Room: Any room meeting the requirements of the Uniform Building Code, or other applicable regulations, which is intended to be used for sleeping, living, cooking or dining purposes, excluding such enclosed spaces as closets, pantries, bath or toilet rooms, service rooms, connecting corridors, laundries, unfinished attics, foyers, storage spaces, cellars, utility rooms and similar spaces.

L(n): The A-weighted sound level exceeded during a certain percentage of the sample time. For example, L10 in the sound level exceeded 10 percent of the sample time. Similarly L50, L90, and L99, etc.

Noise: *A*ny unwanted sound or sound which is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying. The State Noise Control Act defines noise as "...excessive undesirable sound...".

Outdoor Living Area: Outdoor spaces that are associated with residential land uses typically used for passive recreational activities or other noise-sensitive uses. Such spaces include patio areas, barbecue areas, jacuzzi areas, etc. associated with residential uses; outdoor patient recovery or resting areas associated with hospitals, convalescent hospitals, or rest homes; outdoor areas associated with places of worship which have a significant role in services or other noise-sensitive activities; and outdoor school facilities routinely used for educational purposes which may be adversely impacted by noise. Outdoor areas usually not included in this definition are: front yard areas, driveways, greenbelts, maintenance areas and storage areas associated with residential land uses; exterior areas at hospitals that are not used for patient activities; outdoor areas associated with places of worship and principally used for short-term social gatherings; and, outdoor areas associated with school facilities that are not typically associated with educational uses prone to adverse noise impacts (for example, school play yard areas).

Percent Noise Levels: See L(n).

Sound Level (Noise Level): The weighted sound pressure level obtained by use of a sound level meter having a standard frequency filter for attenuating part of the sound spectrum.

Sound Level Meter: An instrument, including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement and determination of noise and sound levels.

Single Event Noise Exposure Level (SENEL): The dB(A) level which, if it lasted for one second, would produce the same A-weighted sound energy as the actual event.

2.7 Traffic Noise Prediction

Noise levels associated with traffic depends on a variety of factors: (1) volume of traffic, (2) speed of traffic, (3) auto, medium truck (2–3 axle) and heavy truck percentage (4 axle and greater), and sound propagation. The greater the volume of traffic, higher speeds and truck percentages equate to a louder volume in noise. A doubling of the Average Daily Traffic (ADT) along a roadway will increase noise levels by approximately 3 dB; reasons for this are discussed in the sections above.

2.8 Sound Propagation

As sound propagates from a source it spreads geometrically. Sound from a small, localized source (i.e., a point source) radiates uniformly outward as it travels away from the source in a spherical pattern. The sound level attenuates at a rate of 6 dB per doubling of distance. The movement of vehicles down a roadway makes the source of the sound appear to propagate from a line (i.e., line source) rather than a point source. This line source results in the noise propagating from a roadway in a cylindrical spreading versus a spherical spreading that results from a point source. The sound level attenuates for a line source at a rate of 3 dB per doubling of distance.

As noise propagates from the source, it is affected by the ground and atmosphere. Noise models use hard site (reflective surfaces) and soft site (absorptive surfaces) to help calculate predicted noise levels. Hard site conditions assume no excessive ground absorption between the noise source and the

receiver. Soft site conditions such as grass, soft dirt or landscaping attenuate noise at a rate of 1.5 dB per doubling of distance. When added to the geometric spreading, the excess ground attenuation results in an overall noise attenuation of 4.5 dB per doubling of distance for a line source and 7.5 dB per doubling of distance for a point source.

Research has demonstrated that atmospheric conditions can have a significant effect on noise levels when noise receivers are located 200 feet from a noise source. Wind, temperature, air humidity, and turbulence can further impact have far sound can travel.

3.0 Ground-Borne Vibration Fundamentals

3.1 Vibration Descriptors

Ground-borne vibrations consist of rapidly fluctuating motions within the ground that have an average motion of zero. The effects of ground-borne vibrations typically only cause a nuisance to people, but at extreme vibration levels, damage to buildings may occur. Although ground-borne vibration can be felt outdoors, it is typically only an annoyance to people indoors where the associated effects of the shaking of a building can be notable. Ground-borne noise is an effect of ground-borne vibration and only exists indoors since it is produced from noise radiated from the motion of the walls and floors of a room and may also consist of the rattling of windows or dishes on shelves.

Several different methods are used to quantify vibration amplitude.

PPV – Known as the peak particle velocity (PPV) which is the maximum instantaneous peak in vibration velocity, typically given in inches per second.

RMS – Known as root mean squared (RMS) can be used to denote vibration amplitude

VdB – A commonly used abbreviation to describe the vibration level (VdB) for a vibration source.

3.2 Vibration Perception

Typically, developed areas are continuously affected by vibration velocities of 50 VdB or lower. These continuous vibrations are not noticeable to humans whose threshold of perception is around 65 VdB. Outdoor sources that may produce perceptible vibrations are usually caused by construction equipment, steel-wheeled trains, and traffic on rough roads, while smooth roads rarely produce perceptible ground-borne noise or vibration. To counter the effects of ground-borne vibration, the Federal Transit Administration (FTA) has published guidance relative to vibration impacts. According to the FTA, fragile buildings can be exposed to ground-borne vibration levels of 0.3 inches per second without experiencing structural damage.

3.3 Vibration Propagation

There are three main types of vibration propagation: surface, compression, and shear waves. Surface waves, or Rayleigh waves, travel along the ground's surface. These waves carry most of their energy along an expanding circular wavefront, similar to ripples produced by throwing a rock into a pool of water. P-waves, or compression waves, are body waves that carry their energy along an expanding spherical wavefront. The particle motion in these waves is longitudinal (i.e., in a "push-pull" fashion). P-waves are analogous to airborne sound waves. S-waves, or shear waves, are also body waves that carry energy along an expanding spherical wavefront. However, unlike P-waves, the particle motion is transverse, or side-to-side and perpendicular to the direction of propagation.

As vibration waves propagate from a source, the vibration energy decreases in a logarithmic nature and the vibration levels typically decrease by 6 VdB per doubling of the distance from the vibration source. As stated above, this drop-off rate can vary greatly depending on the soil but has been shown to be effective enough for screening purposes, in order to identify potential vibration impacts that may need to be studied through actual field tests.

4.0 Regulatory Setting

The proposed project is located in the City of Lake Elsinore, California and noise regulations are addressed through the efforts of various federal, state and local government agencies. The agencies responsible for regulating noise are discussed below.

4.1 Federal Regulations

The adverse impact of noise was officially recognized by the federal government in the Noise Control Act of 1972, which serves three purposes:

- Publicize noise emission standards for interstate commerce
- Assist state and local abatement efforts
- Promote noise education and research

The Federal Office of Noise Abatement and Control (ONAC) originally was tasked with implementing the Noise Control Act. However, it was eventually eliminated leaving other federal agencies and committees to develop noise policies and programs. Some examples of these agencies are as follows: The Department of Transportation (DOT) assumed a significant role in noise control through its various agencies. The Federal Aviation Agency (FAA) is responsible for regulating noise from aircraft and airports. The Federal Highway Administration (FHWA) is responsible for regulating noise from the interstate highway system. The Occupational Safety and Health Administration (OSHA) is responsible for the prohibition of excessive noise exposure to workers. The Housing and Urban Development (HUD) is responsible for establishing noise regulations as it relates to exterior/interior noise levels for new HUD-assisted housing developments near high noise areas.

The federal government advocates that local jurisdictions use their land use regulatory authority to arrange new development in such a way that “noise sensitive” uses are either prohibited from being constructed adjacent to a highway or, or alternatively that the developments are planned and constructed in such a manner that potential noise impacts are minimized.

Since the federal government has preempted the setting of standards for noise levels that can be emitted by the transportation source, the City is restricted to regulating the noise generated by the transportation system through nuisance abatement ordinances and land use planning.

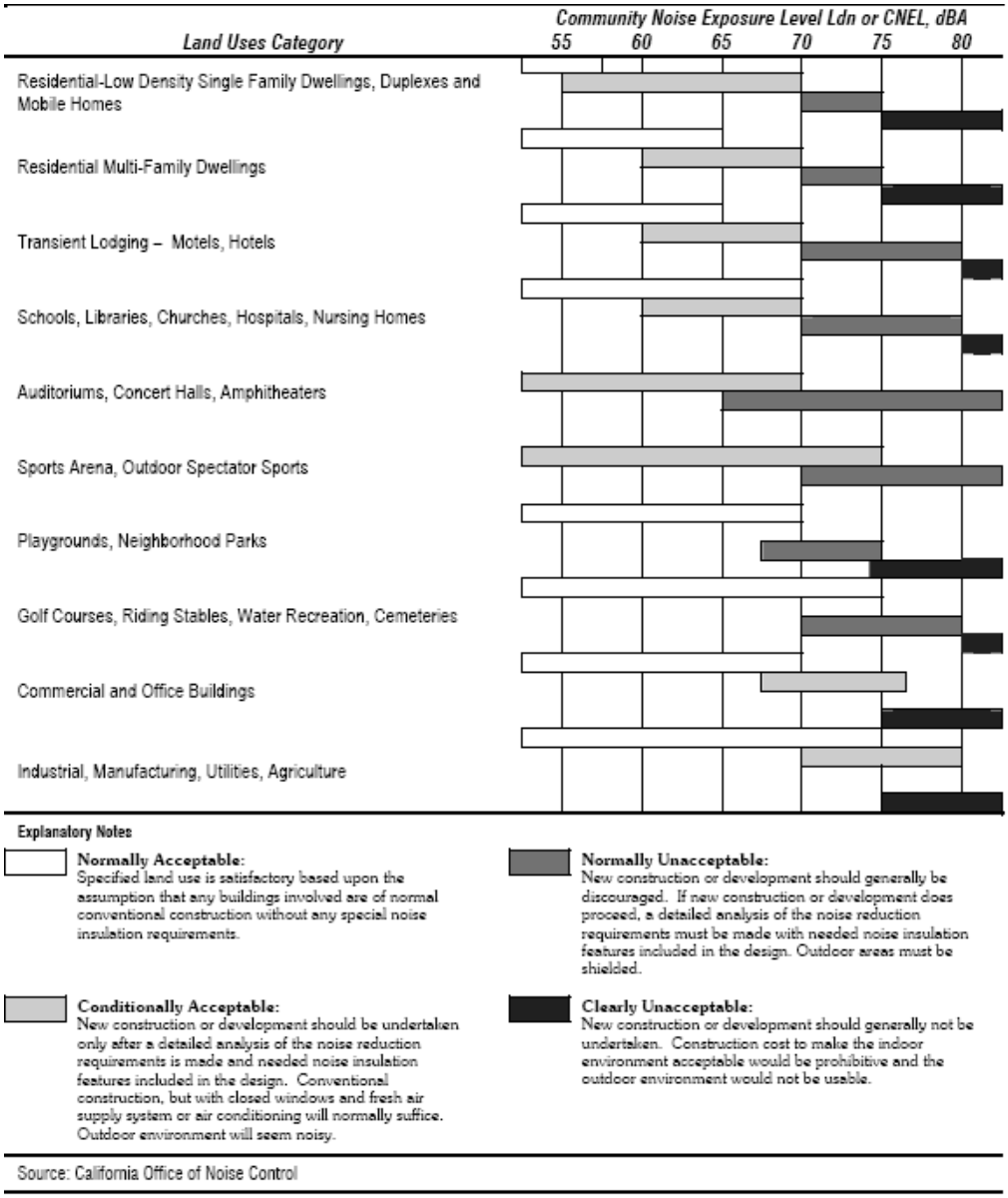
4.2 State Regulations

Established in 1973, the California Department of Health Services Office of Noise Control (ONC) was instrumental in developing regularity tools to control and abate noise for use by local agencies. One significant model is the “Land Use Compatibility for Community Noise Environments Matrix.” The matrix allows the local jurisdiction to clearly delineate compatibility of sensitive uses with various incremental levels of noise.

The State of California has established noise insulation standards as outlined in Title 24 and the Uniform Building Code (UBC) which in some cases requires acoustical analyses to outline exterior noise levels and to ensure interior noise levels do not exceed the interior threshold. The State mandates that the legislative body of each county and city adopt a noise element as part of its comprehensive general

plan. The local noise element must recognize the land use compatibility guidelines published by the State Department of Health Services. The guidelines rank noise land use compatibility in terms of normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable as illustrated in Exhibit D.

Exhibit D: Land Use Compatibility Guidelines



4.3 City of Lake Elsinore Noise Regulations

The City of Lake Elsinore outlines their noise regulations and standards within the Municipal Code and the Noise Element of the City of Lake Elsinore General Plan.

City of Lake Elsinore Municipal Code

CHAPTER 17.176 - NOISE CONTROL

Sec. 17.176.010. - Purpose

In order to control unnecessary, excessive and annoying noise and vibration in the City, it is hereby declared to be the policy of the City to prohibit such noise and vibration generated from or by all sources as specified in this chapter. It shall be the policy of the City to maintain quiet in those areas which exhibit low noise levels and to implement programs aimed at reducing noise in those areas within the City where noise levels are above acceptable values.

It is determined that certain noise levels and vibrations are detrimental to the public health, welfare and safety, and are contrary to public interest. Therefore, the City Council does ordain and declare that creating, maintaining, causing or allowing to be created, caused or maintained, any noise or vibration in a manner prohibited by or not in conformity with the provisions of this chapter, is a public nuisance and shall be punishable as such.

[Ord. 772 § 17.78.010, 1986. Code 1987 § 17.78.010].

City of Lake Elsinore – Noise Ordinance

Section 17.176.060 from the noise ordinance outlines the City's exterior noise limits as it relates to stationary noise sources.

Table 1: Allowable Exterior Noise Level[1]

Sound Level Standards (dBA Leq)*

General Plan Land Use Designation	Maximum Decibel Level	
	7 a.m. - 10 p.m.	10 p.m. - 7 a.m.
Single-Family Residential	50	40
Multiple Dwelling Residential	50	45
Commercial and Office	60	55
General Commercial	65	60
Light Industrial	70	70
Heavy Industrial	75	75

(Ord. 772 § 17.78.060, 1986. Code 1987 § 17.78.060)

Sec. 17.176.080. – Prohibited Acts.

No person shall unnecessarily make, continue, or cause to be made or continued, any noise disturbance. The following acts, and the causing or permitting thereof, are declared to be in violation of this chapter:

A. Operating, playing, or permitting the operation or playing of any radio, television set, phonograph, drum, musical instrument, or similar device which produces or reproduces sound:

   1. Between the hours of 10:00 p.m. and 7:00 a.m. in such a manner as to create a noise disturbance across a residential or commercial real property line or at any time to violate the provisions of LEMC 17.176.060(A), except for which a variance has been issued by the City.
   2. In such a manner as to exceed the levels set forth for public space in Table 1, measured at a distance of at least 50 feet (15 meters) from such device operating on a public right-of-way or public space.

B. Using or operating for any purpose any loudspeaker, loudspeaker system, or similar device between the hours of 10:00 p.m. and 7:00 a.m., such that the sound therefrom creates a noise disturbance across a residential real property line, or at any time violates the provisions of LEMC 17.176.060(A), except for any noncommercial public speaking, public assembly or other activity for which a variance has been issued by the City.

C. Offering for sale, selling anything, or advertising by shouting or outcry within any residential or commercial area or noise sensitive zone of the City except by variance issued by the City. The provisions of this section shall not be construed to prohibit the selling by outcry of merchandise, food, and beverages at licensed sporting events, parades, fairs, circuses, or other similar licensed public entertainment events.

D. Owning, possessing or harboring any animal or bird which frequently or for long duration, howls, barks, meows, squawks, or makes other sounds which create a noise disturbance across a residential or commercial real property line or within a noise sensitive zone. This provision shall not apply to public zoos.

E. Loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials, garbage cans, or similar objects between the hours of 10:00 p.m. and 7:00 a.m. in such a manner as to cause a noise disturbance across a residential real property line or at any time to violate the provisions of LEMC 17.176.060(A).

F. Construction/Demolition.
   1. Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work between weekday hours of 7:00 p.m. and 7:00 a.m., or at any time on weekends or holidays, such that the sound therefrom creates a noise disturbance across a residential or commercial real property line, except for emergency work of public service utilities or by variance issued by the City.
   2. Noise Restrictions at Affected Properties. Where technically and economically feasible, construction activities shall be conducted in such a manner that the maximum noise levels at affected properties will not exceed those listed in the following schedule:

Sec. 17.176.100. Special Provisions - Exemptions.

The following activities shall be exempted from the provisions of this chapter:

A. The emission of sound for the purpose of alerting persons to the existence of an emergency.
B. The emission of sound in the performance of emergency work.
C. Warning devices necessary for the protection of public safety, as for example, police, fire and ambulance.
D. Regularly scheduled school bands, school athletic and school entertainment events between the hours of 8:45 a.m. and 10:00 p.m., provided a special events permit is also required for band activities on City streets.
E. Regularly scheduled activities conducted on public parks, public playgrounds, and public or private school grounds. However, the use of public address or amplified music systems is not permitted to exceed the exterior noise standard of adjacent property at the property line.
F. All mechanical devices, apparatus or equipment which are utilized for the protection or salvage of agricultural crops during periods of potential or actual frost damage or other adverse weather conditions.
G. Mobile noise sources associated with agricultural pest control through pesticide application; provided, that the application is made in accordance with restricted material permits issued by or regulations enforced by the Agricultural Commissioner.
H. Mobile noise sources associated with agricultural operations, provided such operations take place on Monday through Friday, excepting legal holidays, between the hours of 7:00 a.m. and 6:00 p.m. All other operations shall comply with this chapter.
I. Noise sources associated with the maintenance of real property, provided such operations take place on Monday through Friday, excepting legal holidays, between the hours of 7:00 a.m. and 6:00 p.m., or on holidays and weekends between the hours of 9:00 a.m. and 6:00 p.m. All other operations shall comply with this chapter.
J. Any activity to the extent that regulation thereof has been preempted by State or Federal law.

(Ord. 772 § 17.78.100, 1986. Code 1987 § 17.78.100)

City of Lake Elsinore General Plan

Section 3.0, Public Safety and Welfare from the City's General Plan includes Section 3.7 noise. Section 3.7 describes sensitive land uses as locations where people reside or where the presence of noise could adversely affect the use of the land. The City has designed noise sensitive zones for land uses that require exceptional quiet. Table 3-1 and Table 3-2 provide regulations to ensure noise and land use compatibility and recommended noise standards.

Goals, Policies, and Implementation Measures

Policies, goals and implementation program measures from the Noise Element that would mitigate potential impacts on noise include the following.

Goal 7: Maintain an environment for all City residents and visitors free of unhealthy, obtrusive, or otherwise excessive noise.

7.1 Apply the noise standards set forth in the Lake Elsinore Noise and Land Use Compatibility Matrix (see Table 3-1) and Interior and Exterior Noise Standards (see Table 3-2) when considering all new development and redevelopment proposed within the City.

7.2 Require that mixed-use structures and areas be designed to prevent transfer of noise and vibration from commercial areas to residential areas.

7.3 Strive to reduce the effect of transportation noise on the I-15.

7.4 Consider estimated roadway noise contours based upon Figure 3.6, Noise Contours, when making land use design decisions along busy roadways throughout the City.

5.0 Study Method and Procedure

The following section describes the noise modeling procedures and assumptions used for this assessment.

5.1 Noise Measurement Procedure and Criteria

Noise measurements are taken to determine the existing noise levels. A noise receiver or receptor is any location in the noise analysis in which noise might produce an impact. The following criteria are used to select measurement locations and receptors:

- Locations expected to receive the highest noise impacts, such as the first row of houses
- Locations that are acoustically representative and equivalent of the area of concern
- Human land usage
- Sites clear of major obstruction and contamination

MD conducted the sound level measurements in accordance to the City's and Caltrans (TeNS) technical noise specifications. All measurement equipment meets American National Standards Institute (ANSI) specifications for sound level meters (S1.4-1983 identified in Chapter 19.68.020.AA). The following gives a brief description of the Caltrans Technical Noise Supplement procedures for sound level measurements:

- Microphones for sound level meters were placed 5-feet above the ground for all measurements
- Sound level meters were calibrated (Larson Davis CAL 200) before and after each measurement
- Following the calibration of equipment, a windscreen was placed over the microphone
- Frequency weighting was set on "A" and slow response
- Results of the long-term noise measurements were recorded on field data sheets
- During any short-term noise measurements, any noise contaminations such as barking dogs, local traffic, lawn mowers, or aircraft fly-overs were noted
- Temperature and sky conditions were observed and documented

5.2 Noise Measurement Locations

Noise monitoring locations were selected based on the nearest sensitive receptors relative to the proposed onsite noise sources. one (1) long-term 24-hour noise measurements was conducted at or near the project site and are illustrated in Exhibit E. Appendix A includes photos, field sheet, and measured noise data.

5.3 Stationary Noise Modeling

SoundPLAN (SP) acoustical modeling software was utilized to model future worst-case stationary noise impacts to the adjacent land uses. SP is capable of evaluating multiple stationary noise source impacts at various receiver locations. SP's software utilizes algorithms (based on the inverse square law and reference equipment noise level data) to calculate noise level projections. The software allows the user to input specific noise sources, spectral content, sound barriers, building placement, topography, and sensitive receptor locations.

The future worst-case noise level projections were modeled using referenced sound level data for the various stationary on-site sources (e.q. car wash equipment). The model assumes that the car was The

future worst-case noise level projections were modeled using reference sound level data for the various stationary on-site sources (e.g. car wash equipment) the model assumes that the car wash tunnel is approximately 150 feet long. The model assumes that the entrance and exit tunnel openings are approximately 10 feet wide by 9 feet tall with 27 vacuum bays.

The blowers (a 12 Tech 21 blower system or equivalent) were modeled at 10 to 12 feet high as a point source. It is anticipated that the blowers will be located approximately 5 to 10 feet inside the exit of the tunnel. The reference equipment sound level data is provided in Appendix B.

In addition, MD performed reference noise level measurements on Vacutech systems operations and utilized said information as part of the noise model. The referenced sound level data and assumptions are provided in Appendix C. The referenced data assumes the use of vacuums (claw tool and crevice tool), air nozzles to blow off car and typical patron usage at vacuum bay.

All other noise producing equipment (e.g., compressors, pumps) will be housed within mechanical equipment rooms. Vacuum motors will be housed within CMU enclosures.

The SP model assumes that all noise sources are operating simultaneously (worst-case scenario), when in actuality the noise will be intermittent and lower in noise level. SP modeling inputs and outputs ate provided in Appendix C.

5.5 FHWA Roadway Construction Noise Model

The construction noise analysis utilizes the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RNCM), together with several key construction parameters. Key inputs include distance to the sensitive receiver, equipment usage, % usage factor, and baseline parameters for the project site.

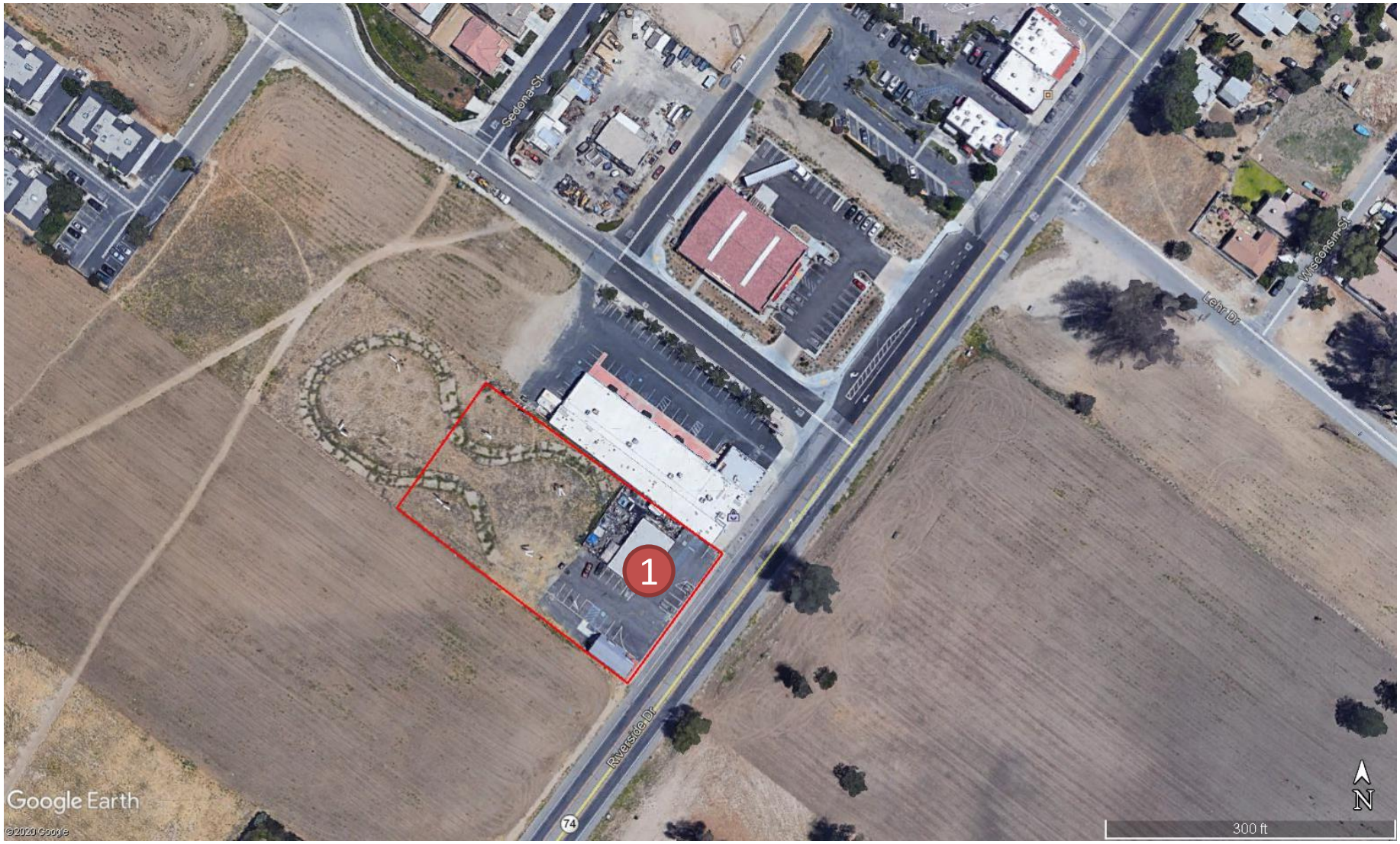
The project was analyzed based on the different construction phases. Construction noise is expected to be loudest during the grading, concrete and building phases of construction. The construction noise calculation output worksheet is located in Appendix E. The following assumptions relevant to short-term construction noise impacts were used:

- It is estimated that construction will occur over a 6 month to 1 year time period. Construction noise is expected to be the loudest during the grading, concrete, and building phases.

1 = Long-term Monitoring Location

Exhibit E

Measurement Locations



6.0 Existing Noise Environment

A twenty-four (24) hour ambient noise measurement was conducted at the property site. The noise measurement was taken to determine the existing ambient noise levels. Noise data indicates that traffic along SH-74/Central Avenue is the primary source of noise impacting the site and the adjacent uses. This assessment utilizes the ambient noise data as a basis and compares project operational levels to said data.

6.1 Long-Term Noise Measurement Results

The results of the Long-term noise data are presented in Table 2.

Table 2: Long-Term Noise Measurement Data[1]

Date	Time	dB(A)							
		L_{EQ}	L_{MAX}	L_{MIN}	L_2	L_8	L_{25}	L_{50}	L_{90}
1/20/2021	7AM-8AM	50.0	71.1	62.4	71.1	70.2	69.3	68.0	66.0
1/20/2021	8AM-9AM	48.1	69.2	60.5	69.2	68.3	67.4	66.1	64.1
1/20/2021	9AM-10AM	47.1	68.2	59.5	68.2	67.3	66.4	65.1	63.1
1/20/2021	10AM-1AM	47.0	68.1	59.4	68.1	67.2	66.3	65.0	63.0
1/20/2021	11AM-12PM	47.2	68.3	59.6	68.3	67.4	66.5	65.2	63.2
1/20/2021	12PM-1PM	47.3	68.4	59.7	68.4	67.5	66.6	65.3	63.3
1/20/2021	1PM-2PM	47.4	68.5	59.8	68.5	67.6	66.7	65.4	63.4
1/20/2021	2PM-3PM	47.7	68.8	60.1	68.8	67.9	67.0	65.7	63.7
1/20/2021	3PM-4PM	48.8	69.9	61.2	69.9	69.0	68.1	66.8	64.8
1/20/2021	4PM-5PM	50.4	71.5	62.8	71.5	70.6	69.7	68.4	66.4
1/20/2021	5PM-6PM	50.0	71.1	62.4	71.1	70.2	69.3	68.0	66.0
1/20/2021	6PM-7PM	48.3	69.4	60.7	69.4	68.5	67.6	66.3	64.3
1/20/2021	7PM-8PM	46.9	68.0	59.3	68.0	67.1	66.2	64.9	62.9
1/20/2021	8PM-9PM	45.8	66.9	58.2	66.9	66.0	65.1	63.8	61.8
1/21/2021	9PM-10PM	45.1	66.2	57.5	66.2	65.3	64.4	63.1	61.1
1/21/2021	10PM-11PM	44.1	65.2	56.5	65.2	64.3	63.4	62.1	60.1
1/21/2021	11PM-12AM	43.5	64.6	55.9	64.6	63.7	62.8	61.5	59.5
1/21/2021	12AM-1AM	42.0	63.1	54.4	63.1	62.2	61.3	60.0	58.0
1/21/2021	1AM-2AM	39.5	60.6	51.9	60.6	59.7	58.8	57.5	55.5
1/21/2021	2AM-3AM	38.3	59.4	50.7	59.4	58.5	57.6	56.3	54.3
1/21/2021	3AM-4AM	36.5	57.6	48.9	57.6	56.7	55.8	54.5	52.5
1/21/2021	4AM-5AM	37.5	58.6	49.9	58.6	57.7	56.8	55.5	53.5
1/21/2021	5AM-6AM	41.3	62.4	53.7	62.4	61.5	60.6	59.3	57.3
1/21/2021	6AM-7AM	47.7	68.8	60.1	68.8	67.9	67.0	65.7	63.7
CNEL		50.7							

Notes:
[1.] Long-term noise monitoring location (LT1) is illustrated in Exhibit E. The quietest hourly daytime noise interval is highlighted in orange when project operations could occur.

Noise data indicates the ambient noise level ranged between 36.5 dBA Leq(h) to 50.4 dBA Leq(h) at the project site. Maximum levels reach 50.4 dBA as a result of traffic along Redlands Drive. Additional field notes and photographs are provided in Appendix A.

For this evaluation, MD has utilized the quietest hourly level (during potential operational hours) and has compared the project's projected noise levels to the said ambient level. The quietest (lowest) daytime hourly level occurred between 9PM to 10PM (45.1 dBA, Leq(h)).

7.0 Future Noise Environment Impacts and Mitigation

This assessment analyzes future noise impacts as a result of the project. The analysis details the estimated exterior noise levels. Stationary noise impacts are analyzed from the on-site noise sources such as car wash equipment and vacuum stations.

7.1 Future Exterior Noise

The following outlines the exterior noise levels associated with the proposed project.

7.1.1 Noise Impacts to Off-Site Receptors Due to Stationary Sources

Sensitive receptors that may be affected by project operational noise include commercial to the north and medium/high density residential 335 feet to the west. The worst-case stationary noise was modeled using SoundPLAN acoustical modeling software. Worst-case assumes that all project activities are always operational when in reality the noise will be intermittent and cycle on/off depending on customer usage. Project operations are assumed to occur within the City's allowable daytime hours (7AM to 10PM).

A total of four (4) receptors were modeled to evaluate the proposed project's operational impact. A receptor is denoted by a yellow dot. All yellow dots represent either a property line or a sensitive receptor such as an outdoor sensitive area (courtyard, patio, backyard, etc). Receptor 1 represents commercial park (across Riverside Dr), Receptor 2-3 represent the nearest commercial receptors property line, and Receptor 4 represents the nearest multifamily residency.

This study compares the Project's operational noise levels to two (2) different noise assessment scenarios: 1) Project Only operational noise level projections, 2) Project plus ambient noise level projections.

Project Operational Noise Levels

Exhibit F shows the "project only" operational noise levels at the project site and illustrates how the noise will propagate at the property lines and/or sensitive receptor area. Operational noise levels at the adjacent uses are anticipated to range between 43 dBA to 60 dBA Leq (depending on the location).

Project Plus Ambient Operational Noise Levels

Table 3 demonstrates the project plus the ambient noise levels. Project plus ambient noise level projections are anticipated to range between 47 to 60 dBA Leq depending on location. Therefore, the project has been compared to the quietest hourly average ambient noise level for comparative purposes.

<Table 3 on Next Page>

Table 3: Worst-case Predicted Noise Level (dBA, Leq)

Receptor[1]	Floor	Existing Ambient Noise Level (dBA, Leq)[2]	Project Noise Level (dBA, Leq)[3]	Total Combined Noise Level (dBA, Leq)	Daytime (7AM – 10PM) Stationary Noise Limit (dBA, Leq)[4]	Change in Noise Level as Result of Project
1	1	45	60	60	**65**	14.7
2	1		45	48		3.0
3	1		44	48	**50**	2.5
4	1		43	47		2.1

Notes:
1. Receptors 1-2 represent commercial uses. Receptor 3-4 represents residential uses.
2. Existing ambient taken as one-hour measurement.
3. See Exhibit G for the operational noise level projections at said receptors.
4. Per the city of Lake Elsinore noise ordinance Section 17.176.060.

As shown in Table 3, the project will increase the worst-case noise level by approximately 2.1 to 14.7 dBA Leq depending on location. Project operations are anticipated to remain below the City's exterior noise level. Therefore, the impact is less than significant.

Table 4 provides the characteristics associated with changes in noise levels.

Table 4: Change in Noise Level Characteristics[1]

Changes in Intensity Level, dBA	Changes in Apparent Loudness
1	Not perceptible
3	Just perceptible
5	Clearly noticeable
10	Twice (or half) as loud

https://www.fhwa.dot.gov/environMent/noise/regulations_and_guidance/polguide/polguide02.cfm

The change in noise level at all receptors would fall within the "Not Perceptible" to "Twice (or half) as loud" acoustic characteristic depending on location.

7.1.2 Noise Impacts to On/Off-Site Receptors Due to Project Generated Traffic

Per the memo provided by TJW Engineering, 2/9/2021 (*Sunny Express Car Wash Vehicle Miles Traveled Memorandum*), As stated in the City Traffic Impact Analysis guidelines, it was determined the proposed project passes the WRCOG Screening process and is presumed to have a less than significant transportation impact. The proposed project is a local serving retail project with less than 50,000 square feet and is within a low VMT generating area, therefore the proposed project does not require a further VMT analysis. Per the TJW Engineering Scoping agreement the project will produce a total of 720 daily trips (ADT) and would be exempt from any analysis. See Appendix D.

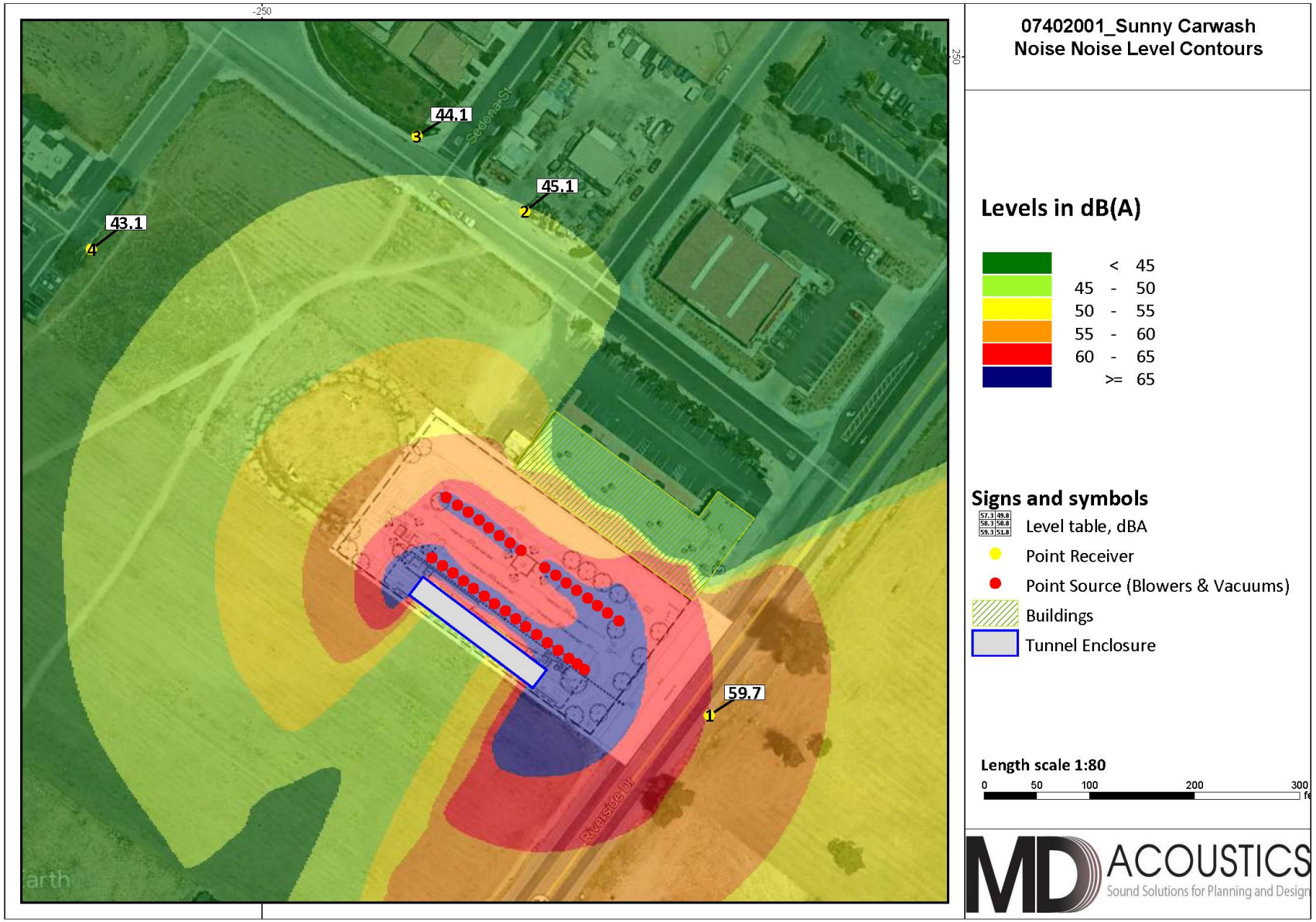
Traffic along the subject roadways would need to double in average daily traffic volumes to see a 3 dBA increase in noise level. Since the project generates a nominal amount of traffic relative to the existing ADTs, the project's traffic noise level increase would be nominal and therefore less than significant.

7.2 Mitigation Measures

The project will meet the City's daytime noise ordinance therefore, no further mitigation is required.

Exhibit F

Operational Noise Levels Leq(h)



8.0 Construction Noise Impact

The degree of construction noise may vary for different areas of the project site and also vary depending on the construction activities. Noise levels associated with the construction will vary with the different phases of construction.

8.1 Construction Noise

The Environmental Protection Agency (EPA) has compiled data regarding the noise generated characteristics of typical construction activities. The data is presented in Table 5.

Table 5: Typical Construction Equipment Noise Levels[1]

Type	Lmax (dBA) at 50 Feet
Backhoe	80
Truck	88
Concrete Mixer	85
Pneumatic Tool	85
Pump	76
Saw, Electric	76
Air Compressor	81
Generator	81
Paver	89
Roller	74

Notes:
[1] Referenced Noise Levels from FTA noise and vibration manual.

Construction noise is considered a short-term impact and would be considered significant if construction activities are taken outside the allowable times as described in the City's Noise Element Section 17.176.060 Table 1. Construction is anticipated to occur during the permissible hours according to the City's Municipal Code. Construction noise will have a temporary or periodic increase in the ambient noise level above the existing within the project vicinity. Furthermore, noise reduction measures are provided to further reduce construction noise. The impact is considered less than significant however construction noise level projections are provided.

Typical operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four minutes at lower power settings. Noise levels will be loudest during grading phase. A likely worst-case construction noise scenario during grading assumes the use of 1-grader, 1-dozer, 1-excavators, 1-scrapers and 1-backhoes operating at 80 feet from the nearest sensitive receptor.

Assuming a usage factor of 40 percent for each piece of equipment, unmitigated noise levels at 80 feet have the potential to reach 82 dBA L_{eq} at the nearest sensitive receptors during grading. Noise levels for the other construction phases would be lower, approximately 78 dBA.

8.2 Construction Vibration

Construction activities can produce vibration that may be felt by adjacent land uses. The construction of the proposed project would not require the use of equipment such as pile drivers, which are known to generate substantial construction vibration levels. The primary vibration source during construction may be from a bulldozer. A large bulldozer has a vibration impact of 0.089 inches per second peak particle velocity (PPV) at 25 feet which is perceptible but below any risk to architectural damage.

The fundamental equation used to calculate vibration propagation through average soil conditions and distance is as follows:

$$PPV_{equipment} = PPV_{ref} (100/D_{rec})^n$$

Where: PPV_{ref} = reference PPV at 100ft.
D_{rec} = distance from equipment to receiver in ft.
n = 1.1 (the value related to the attenuation rate through ground)

The thresholds from the Caltrans Transportation and Construction Induced Vibration Guidance Manual in Table 6 (below) provides general thresholds and guidelines as to the vibration damage potential from vibratory impacts.

Table 6: Guideline Vibration Damage Potential Threshold Criteria

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Source: Table 19, Transportation and Construction Vibration Guidance Manual, Caltrans, Sept. 2013.
Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Table 7 gives approximate vibration levels for particular construction activities. This data provides a reasonable estimate for a wide range of soil conditions.

Table 7: Vibration Source Levels for Construction Equipment[1]

Equipment	Peak Particle Velocity (inches/second) at 25 feet	Approximate Vibration Level LV (dVB) at 25 feet
Pile driver (impact)	1.518 (upper range)	112
	0.644 (typical)	104
Pile driver (sonic)	0.734 upper range	105
	0.170 typical	93
Clam shovel drop (slurry wall)	0.202	94
Hydromill	0.008 in soil	66
(slurry wall)	0.017 in rock	75
Vibratory Roller	0.21	94
Hoe Ram	0.089	87
Large bulldozer	0.089	87
Caisson drill	0.089	87
Loaded trucks	0.076	86
Jackhammer	0.035	79
Small bulldozer	0.003	58

[1] Source: Transit Noise and Vibration Impact Assessment, Federal Transit Administration, May 2006.

At a distance of 15 feet, a large bulldozer would yield a worst-case 0.156 PPV (in/sec) which may be perceptible for short periods of time during grading along the north property line of the project site but is below any threshold of damage. The impact is less than significant, and no mitigation is required.

8.3 Construction Noise Reduction Measures

Construction operations must follow the City's General Plan and the Noise Ordinance, which states that construction, repair or excavation work performed must occur within the permissible hours. To further ensure that construction activities do not disrupt the adjacent land uses, the following measures should be taken:

1. Construction should occur during the permissible hours as defined in Section 17.176.060.

2. During construction, the contractor shall ensure all construction equipment is equipped with appropriate noise attenuating devices.

3. The contractor should locate equipment staging areas that will create the greatest distance between construction-related noise/vibration sources and sensitive receptors nearest the project site during all project construction.

4. Idling equipment should be turned off when not in use.

5. Equipment shall be maintained so that vehicles and their loads are secured from rattling and banging.

9.0 References

State of California General Plan Guidelines: 1998. Governor's Office of Planning and Research

City of Lake Elsinore: General Plan Noise Element. Chapter 3.

City of Lake Elsinore: Municipal Code. Chapter 17.176 Noise Control

TJW Engineering, 2/9/2021 Sunny Express Car Wash Vehicle Miles Traveled Memorandum

Appendix A:

Photographs and Field Measurement Data

MD ACOUSTICS
Sound Solutions for Planning and Design
www.mdacoustics.com

AZ Office
4960 S. Gilbert Rd, Ste 1-461
Chandler, AZ 85249

CA Office
1197 E Los Angeles Ave, C-256
Simi Valley, CA 93065

24-Hour Continuous Noise Measurement Datasheet

Project:	Sunny Express Car Wash	**Site Observations:**	Clear Sky, little to no wind.
Site Address/Location:	31401 Riverside Dr		
Date:	1/20/2021 to 1/21/2021		
Field Tech/Engineer:	Jason Schuyler		

General Location:

Sound Meter:	NTi XL2	**SN:** 80206	
Settings:	A-weighted, slow, 1-min, 24-hour duration		
Meteorological Con.:	73 degrees F, 2 to 5 mph wind, west to east diretion		
Site ID:	LT-1		

Site Topo: Flat

Ground Type: Soft site, Open parking lot with a road

Noise Source(s) w/ Distance:
C/L of Riverside dr is 80 feet from meter

Figure 1: LT-1 Monitoring Location

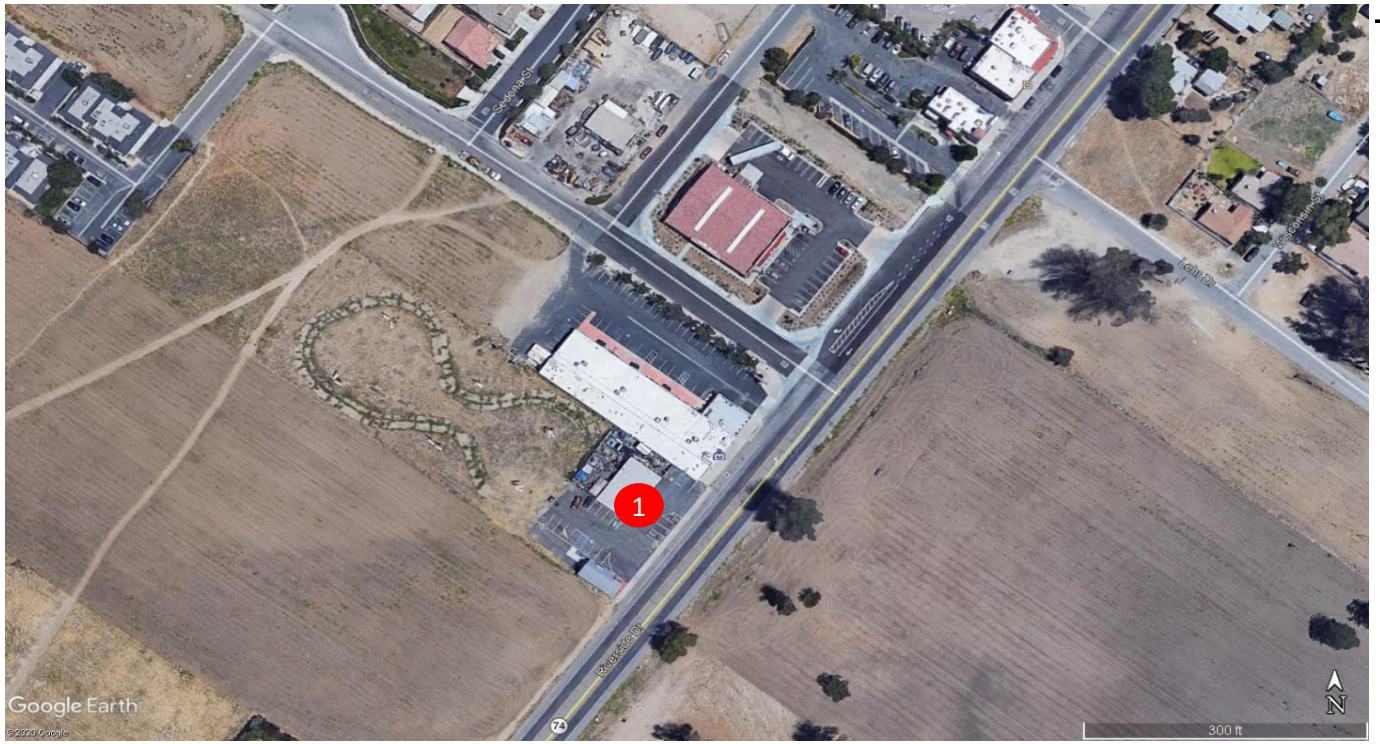


Figure 2: LT-1 Photo

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CA Office
1197 E Los Angeles Ave, C-256
Simi Valley, CA 93065

24-Hour Noise Measurement Datasheet - Cont.

Project: Sunny Express Car Wash **Day:** 1 of 1

Site Address/Location: 31401 Riverside Dr

Site ID: LT-1

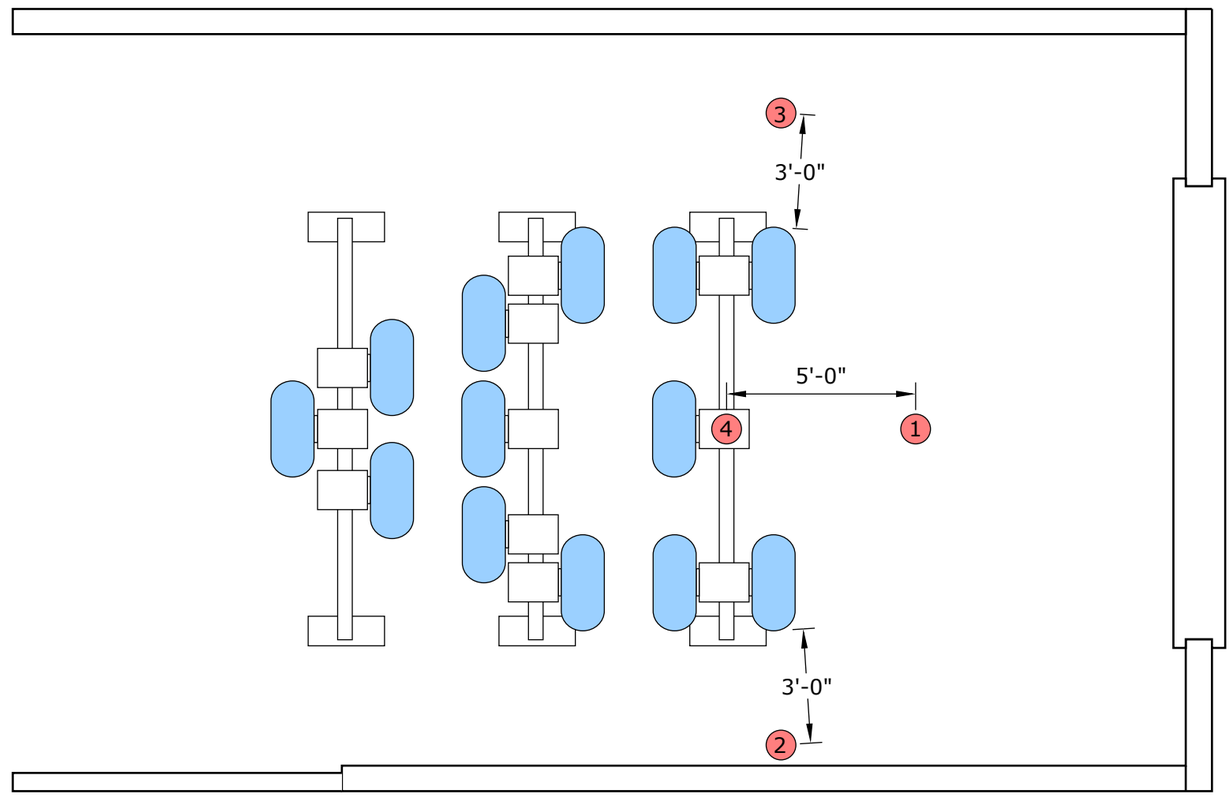
Date	Start	Stop	Leq	Lmax	Lmin	L2	L8	L25	L50	L90
1/20/2021	7:00 AM	8:00 AM	50.0	71.1	62.4	71.1	70.2	69.3	68.0	66.0
1/20/2021	8:00 AM	9:00 AM	48.1	69.2	60.5	69.2	68.3	67.4	66.1	64.1
1/20/2021	9:00 AM	10:00 AM	47.1	68.2	59.5	68.2	67.3	66.4	65.1	63.1
1/20/2021	10:00 AM	11:00 AM	47.0	68.1	59.4	68.1	67.2	66.3	65.0	63.0
1/20/2021	11:00 AM	12:00 PM	47.2	68.3	59.6	68.3	67.4	66.5	65.2	63.2
1/20/2021	12:00 PM	1:00 PM	47.3	68.4	59.7	68.4	67.5	66.6	65.3	63.3
1/20/2021	1:00 PM	2:00 PM	47.4	68.5	59.8	68.5	67.6	66.7	65.4	63.4
1/20/2021	2:00 PM	3:00 PM	47.7	68.8	60.1	68.8	67.9	67.0	65.7	63.7
1/20/2021	3:00 PM	4:00 PM	48.8	69.9	61.2	69.9	69.0	68.1	66.8	64.8
1/20/2021	4:00 PM	5:00 PM	50.4	71.5	62.8	71.5	70.6	69.7	68.4	66.4
1/20/2021	5:00 PM	6:00 PM	50.0	71.1	62.4	71.1	70.2	69.3	68.0	66.0
1/20/2021	6:00 PM	7:00 PM	48.3	69.4	60.7	69.4	68.5	67.6	66.3	64.3
1/20/2021	7:00 PM	8:00 PM	46.9	68.0	59.3	68.0	67.1	66.2	64.9	62.9
1/20/2021	8:00 PM	9:00 PM	45.8	66.9	58.2	66.9	66.0	65.1	63.8	61.8
1/20/2021	9:00 PM	10:00 PM	45.1	66.2	57.5	66.2	65.3	64.4	63.1	61.1
1/20/2021	10:00 PM	11:00 PM	44.1	65.2	56.5	65.2	64.3	63.4	62.1	60.1
1/20/2021	11:00 PM	12:00 AM	43.5	64.6	55.9	64.6	63.7	62.8	61.5	59.5
1/21/2021	12:00 AM	1:00 AM	42.0	63.1	54.4	63.1	62.2	61.3	60.0	58.0
1/21/2021	1:00 AM	2:00 AM	39.5	60.6	51.9	60.6	59.7	58.8	57.5	55.5
1/21/2021	2:00 AM	3:00 AM	38.3	59.4	50.7	59.4	58.5	57.6	56.3	54.3
1/21/2021	3:00 AM	4:00 AM	36.5	57.6	48.9	57.6	56.7	55.8	54.5	52.5
1/21/2021	4:00 AM	5:00 AM	37.5	58.6	49.9	58.6	57.7	56.8	55.5	53.5
1/21/2021	5:00 AM	6:00 AM	41.3	62.4	53.7	62.4	61.5	60.6	59.3	57.3
1/21/2021	6:00 AM	7:00 AM	47.7	68.8	60.1	68.8	67.9	67.0	65.7	63.7

CNEL: 50.7

Appendix B:

Manufacturers Cut Sheet

	Key
	Tech 21
	Measurement locations



Location	Scenario	Distance from Blower	Overall dBA	1/3 Octave Band																												
				40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	12500	16000	20000
1	All Tech 21 Blowers	5'	98.7	45.3	51.1	56.9	63.5	68.1	67.9	69.8	74.4	80.3	81.4	86.6	89.5	90	88.3	88.9	88.9	87.6	87.5	85.9	85.1	83.7	82.9	81	77.7	73	67.8	61.9	55.4
2	All Tech 21 Blowers	3' Left of Blowers	99.1	46.6	51.3	62.7	64.9	65	64.4	66.4	72.9	80.5	82.2	86.7	89.1	89.9	88.9	89.7	89.4	88.2	88.6	86.9	86	84.2	83.1	81.6	78.5	73.2	67.5	60.9	53.5
3	All Tech 21 Blowers	3' Right of Blowers	98.6	47.7	49.7	58.8	64.3	62.9	64.9	68.4	75.4	80.8	81	87.6	90	89.5	88.1	89.1	88.5	87.5	87.4	85.2	84	82.9	82.2	80.5	76.8	71.6	65.9	59.3	51.5
4	All Tech 21 Blowers	Directly Below Blowers	103.3	50.3	54.1	60.1	66.4	68.8	71.7	74.1	77.8	82.4	83.5	91.1	94.8	94.3	92.4	93.7	93.2	92.3	92.1	90.7	89.4	88.4	88.3	86.9	83.5	79.1	74.2	69.1	63.6

MD ACOUSTICS
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Tech 21 Blower

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Simi Valley, CA 93065
p. (805) 426-4477

Project: SuperStar Car Wash Chula Vista
Site Location: 1555 W Warner Rd, Gilbert, AZ 85233
Date: 4/5/2018
Field Tech/Engineer: Robert Pearson
Source/System: Vacutec System

Location: Vac Bay 1
Sound Meter: NTi XL2 **SN:** A2A-05967-E0
Settings: Z-weighted, slow, 1-sec, 10-sec duration
Meteorological Cond.: 80 degrees F, 2 mph wind

Site Observations:
Clear sky, measurements were performed within 1.5ft of source. Measurements were performed while the vacuum was positiioned at threee (3) different positions. Holstered, unholstered and inside a car. This data is utilized for acoustic modeling purposes and represents an average sound level at a vacuum station.

Table 1: Summary Measurement Data

Source	System	Overall dB(A)	3rd Octave Band Data (dBA)																														
			20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1K	1.25K	1.6K	2K	2.5K	3.15K	4K	5K	6.3K	8K	10K	12.5K	16K	20K
Vacutech (Holstered)	Vacuum	63.3	9	17	22	29	31	35	40	41	44	43	46	48	47	49	51	51	51	52	53	52	52	50	52	53	50	47	47	48	45	39	30
Vacutech (Un Holstered)	Vacuum	80.7	6	19	22	28	34	37	40	43	47	46	48	48	48	49	54	55	58	58	62	65	68	70	74	75	73	69	67	65	63	60	55
Vacutech (Inside Car)	Vacuum	69.6	16	28	31	38	42	45	49	51	52	55	60	61	57	55	59	53	55	56	54	57	57	57	57	57	55	54	51	48	46	42	36
Arth. Average Level*	Vacuum	71.2	11	21	25	32	36	39	43	45	47	48	52	53	51	51	55	53	55	55	56	58	59	59	61	62	59	56	55	53	51	47	40

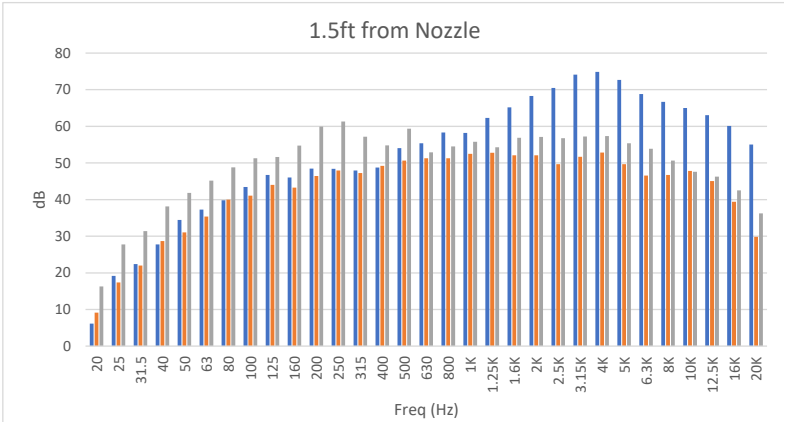
* Refers to the arthitmetic average of all measurements. This measurement represents an average of the multiple vacuum positions.

Figure 1: Example Measurement Position

Figure 1: Holstered

Figure 2: Un Holstered

Figure 3: Inside Car



Vacutech sound levels

Appendix C:

SoundPlan Input/Output

07402001_Sunny Carwash - Noise
Octave spectra of the sources in dB(A) - Situation 1: Outdoor SP

Name	Source type	l or A	Li	R'w	L'w	Lw	KI	KT	LwMax	DO-Wall	Time histogram	Emission spectrum	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	
		m,m²	dB(A)	dB	dB(A)	dB(A)	dB	dB	dB(A)	dB			dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	
Facade 01	Area	201.61	79.1	57.0	25.0	48.1	0.0	0.0		3	100%/24h	54_Facade 01_	44.1	38.0	40.0	41.8	36.5	33.0	23.0	14.3	
Facade 02	Area	21.07	84.7	57.0	30.3	43.5	0.0	0.0		3	100%/24h	55_Facade 02_	39.5	33.4	35.5	37.3	32.2	28.9	19.2	11.4	
Facade 03	Area	201.61	79.0	57.0	25.0	48.1	0.0	0.0		3	100%/24h	56_Facade 03_	44.1	38.0	40.0	41.8	36.5	32.9	23.0	14.3	
Facade 04	Area	21.07	76.6	57.0	22.9	36.2	0.0	0.0		3	100%/24h	57_Facade 04_	32.3	26.2	28.2	29.9	24.4	20.6	10.1	-0.5	
Roof 01	Area	293.05	75.2	57.0	20.9	45.5	0.0	0.0		0	100%/24h	52_Roof 01_	41.5	35.4	37.5	39.3	34.2	30.9	21.2	13.2	
Transmissive area 01	Area	8.36	85.5	0.0	85.5	94.7	0.0	0.0		3	100%/24h	64_Transmissive area 01_	66.2	74.1	78.2	86.0	90.0	90.7	84.1	74.2	
Transmissive area 02	Area	8.36	76.5	0.0	76.5	85.7	0.0	0.0		3	100%/24h	65_Transmissive area 02_	57.9	65.9	69.8	77.6	81.2	81.4	74.0	61.5	
Vac 1	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 2	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 3	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 4	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 5	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 6	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 7	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 8	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 9	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 10	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 11	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 12	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 13	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 14	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 15	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 16	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 17	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 18	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 19	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 20	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 21	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 22	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 23	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	

07402001_Sunny Carwash - Noise
Octave spectra of the sources in dB(A) - Situation 1: Outdoor SP

Name	Source type	l or A	Li	R'w	L'w	Lw	KI	KT	LwMax	DO-Wall	Time histogram	Emission spectrum	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	
		m,m²	dB(A)	dB	dB(A)	dB(A)	dB	dB	dB(A)	dB			dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	
Vac 24	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 25	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 26	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 27	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 28	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 29	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 30	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 31	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	
Vac 32	Point				72.6	72.6	0.0	0.0		0	100%/24h	Vacutech - 3'	57.6	53.6	52.3	57.7	61.7	67.7	69.0	61.6	

07402001_Sunny Carwash - Noise
Contribution level - Situation 1: Outdoor SP

Source	Source group	Source ty	Tr. lane	Ldn dB(A)	A dB	
Receiver -120,59 Fl GF dB(A) Ldn 59.8 dB(A) Sigma(Ldn) 0.0 dB(A)						
Vac 9	Default industrial noise	Point		33.6	0.0	
Vac 10	Default industrial noise	Point		34.2	0.0	
Vac 11	Default industrial noise	Point		34.8	0.0	
Vac 12	Default industrial noise	Point		35.3	0.0	
Vac 13	Default industrial noise	Point		36.0	0.0	
Vac 14	Default industrial noise	Point		36.7	0.0	
Vac 15	Default industrial noise	Point		37.4	0.0	
Vac 16	Default industrial noise	Point		37.1	0.0	
Vac 17	Default industrial noise	Point		32.2	0.0	
Vac 18	Default industrial noise	Point		32.6	0.0	
Vac 19	Default industrial noise	Point		32.9	0.0	
Vac 20	Default industrial noise	Point		33.3	0.0	
Vac 21	Default industrial noise	Point		33.7	0.0	
Vac 22	Default industrial noise	Point		34.2	0.0	
Vac 23	Default industrial noise	Point		34.1	0.0	
Vac 24	Default industrial noise	Point		34.6	0.0	
Vac 25	Default industrial noise	Point		33.5	0.0	
Vac 26	Default industrial noise	Point		34.0	0.0	
Vac 27	Default industrial noise	Point		33.4	0.0	
Vac 28	Default industrial noise	Point		34.1	0.0	
Vac 29	Default industrial noise	Point		34.8	0.0	
Vac 30	Default industrial noise	Point		35.6	0.0	
Vac 31	Default industrial noise	Point		36.3	0.0	
Vac 32	Default industrial noise	Point		36.9	0.0	
Vac 1	Default industrial noise	Point		30.3	0.0	
Vac 2	Default industrial noise	Point		30.6	0.0	
Vac 3	Default industrial noise	Point		31.0	0.0	
Vac 4	Default industrial noise	Point		31.3	0.0	
Vac 5	Default industrial noise	Point		31.1	0.0	
Vac 6	Default industrial noise	Point		31.5	0.0	
Vac 7	Default industrial noise	Point		32.0	0.0	
Vac 8	Default industrial noise	Point		32.5	0.0	
Roof 01	Default industrial noise	Area		-3.5	0.0	
Facade 01	Default industrial noise	Area		3.7	0.0	
Facade 02	Default industrial noise	Area		9.2	0.0	
Transmissive area 01	Default industrial noise	Area		59.4	0.0	
Facade 03	Default industrial noise	Area		11.3	0.0	
Facade 04	Default industrial noise	Area		-11.0	0.0	
Transmissive area 02	Default industrial noise	Area		25.8	0.0	
Receiver -174,205 Fl GF dB(A) Ldn 45.2 dB(A) Sigma(Ldn) 0.0 dB(A)						
Vac 9	Default industrial noise	Point		24.3	0.0	
Vac 10	Default industrial noise	Point		24.1	0.0	
Vac 11	Default industrial noise	Point		24.0	0.0	

Source	Source group	Source ty	Tr. lane	Ldn dB(A)	A dB	
Vac 12	Default industrial noise	Point		23.8	0.0	
Vac 13	Default industrial noise	Point		23.7	0.0	
Vac 14	Default industrial noise	Point		24.0	0.0	
Vac 15	Default industrial noise	Point		20.1	0.0	
Vac 16	Default industrial noise	Point		20.0	0.0	
Vac 17	Default industrial noise	Point		27.2	0.0	
Vac 18	Default industrial noise	Point		29.0	0.0	
Vac 19	Default industrial noise	Point		28.8	0.0	
Vac 20	Default industrial noise	Point		28.7	0.0	
Vac 21	Default industrial noise	Point		28.6	0.0	
Vac 22	Default industrial noise	Point		28.4	0.0	
Vac 23	Default industrial noise	Point		28.2	0.0	
Vac 24	Default industrial noise	Point		28.1	0.0	
Vac 25	Default industrial noise	Point		24.6	0.0	
Vac 26	Default industrial noise	Point		24.9	0.0	
Vac 27	Default industrial noise	Point		20.4	0.0	
Vac 28	Default industrial noise	Point		20.0	0.0	
Vac 29	Default industrial noise	Point		19.8	0.0	
Vac 30	Default industrial noise	Point		18.1	0.0	
Vac 31	Default industrial noise	Point		17.7	0.0	
Vac 32	Default industrial noise	Point		17.6	0.0	
Vac 1	Default industrial noise	Point		29.0	0.0	
Vac 2	Default industrial noise	Point		28.8	0.0	
Vac 3	Default industrial noise	Point		28.7	0.0	
Vac 4	Default industrial noise	Point		28.5	0.0	
Vac 5	Default industrial noise	Point		28.2	0.0	
Vac 6	Default industrial noise	Point		29.2	0.0	
Vac 7	Default industrial noise	Point		26.0	0.0	
Vac 8	Default industrial noise	Point		23.8	0.0	
Roof 01	Default industrial noise	Area		-10.0	0.0	
Facade 01	Default industrial noise	Area		-4.0	0.0	
Facade 02	Default industrial noise	Area		-12.0	0.0	
Transmissive area 01	Default industrial noise	Area		26.8	0.0	
Facade 03	Default industrial noise	Area		5.3	0.0	
Facade 04	Default industrial noise	Area		-5.2	0.0	
Transmissive area 02	Default industrial noise	Area		42.7	0.0	
Receiver -205,227 Fl GF dB(A) Ldn 44.1 dB(A) Sigma(Ldn) 0.0 dB(A)						
Vac 9	Default industrial noise	Point		23.3	0.0	
Vac 10	Default industrial noise	Point		21.9	0.0	
Vac 11	Default industrial noise	Point		21.5	0.0	
Vac 12	Default industrial noise	Point		21.2	0.0	
Vac 13	Default industrial noise	Point		20.9	0.0	
Vac 14	Default industrial noise	Point		20.7	0.0	
Vac 15	Default industrial noise	Point		21.8	0.0	
Vac 16	Default industrial noise	Point		21.6	0.0	

Source	Source group	Source ty	Tr. lane	Ldn dB(A)	A dB	
Vac 17	Default industrial noise	Point		25.6	0.0	
Vac 18	Default industrial noise	Point		25.4	0.0	
Vac 19	Default industrial noise	Point		27.3	0.0	
Vac 20	Default industrial noise	Point		27.1	0.0	
Vac 21	Default industrial noise	Point		26.9	0.0	
Vac 22	Default industrial noise	Point		26.7	0.0	
Vac 23	Default industrial noise	Point		26.5	0.0	
Vac 24	Default industrial noise	Point		26.3	0.0	
Vac 25	Default industrial noise	Point		26.1	0.0	
Vac 26	Default industrial noise	Point		25.9	0.0	
Vac 27	Default industrial noise	Point		25.8	0.0	
Vac 28	Default industrial noise	Point		25.6	0.0	
Vac 29	Default industrial noise	Point		25.4	0.0	
Vac 30	Default industrial noise	Point		23.2	0.0	
Vac 31	Default industrial noise	Point		22.3	0.0	
Vac 32	Default industrial noise	Point		15.7	0.0	
Vac 1	Default industrial noise	Point		27.1	0.0	
Vac 2	Default industrial noise	Point		26.8	0.0	
Vac 3	Default industrial noise	Point		26.6	0.0	
Vac 4	Default industrial noise	Point		26.4	0.0	
Vac 5	Default industrial noise	Point		26.2	0.0	
Vac 6	Default industrial noise	Point		26.0	0.0	
Vac 7	Default industrial noise	Point		25.7	0.0	
Vac 8	Default industrial noise	Point		26.9	0.0	
Roof 01	Default industrial noise	Area		-10.3	0.0	
Facade 01	Default industrial noise	Area		-4.4	0.0	
Facade 02	Default industrial noise	Area		-7.2	0.0	
Transmissive area 01	Default industrial noise	Area		31.1	0.0	
Facade 03	Default industrial noise	Area		4.9	0.0	
Facade 04	Default industrial noise	Area		-6.4	0.0	
Transmissive area 02	Default industrial noise	Area		41.5	0.0	
Receiver -300,194 Fl GF dB(A) Ldn 43.1 dB(A) Sigma(Ldn) 0.0 dB(A)						
Vac 9	Default industrial noise	Point		23.0	0.0	
Vac 10	Default industrial noise	Point		22.7	0.0	
Vac 11	Default industrial noise	Point		22.5	0.0	
Vac 12	Default industrial noise	Point		22.3	0.0	
Vac 13	Default industrial noise	Point		22.0	0.0	
Vac 14	Default industrial noise	Point		21.8	0.0	
Vac 15	Default industrial noise	Point		21.6	0.0	
Vac 16	Default industrial noise	Point		21.4	0.0	
Vac 17	Default industrial noise	Point		24.8	0.0	
Vac 18	Default industrial noise	Point		24.5	0.0	
Vac 19	Default industrial noise	Point		24.3	0.0	
Vac 20	Default industrial noise	Point		24.0	0.0	
Vac 21	Default industrial noise	Point		23.8	0.0	

Source	Source group	Source ty	Tr. lane	Ldn dB(A)	A dB	
Vac 22	Default industrial noise	Point		23.5	0.0	
Vac 23	Default industrial noise	Point		23.3	0.0	
Vac 24	Default industrial noise	Point		23.0	0.0	
Vac 25	Default industrial noise	Point		22.8	0.0	
Vac 26	Default industrial noise	Point		22.6	0.0	
Vac 27	Default industrial noise	Point		22.4	0.0	
Vac 28	Default industrial noise	Point		22.1	0.0	
Vac 29	Default industrial noise	Point		21.9	0.0	
Vac 30	Default industrial noise	Point		21.7	0.0	
Vac 31	Default industrial noise	Point		23.5	0.0	
Vac 32	Default industrial noise	Point		23.4	0.0	
Vac 1	Default industrial noise	Point		25.4	0.0	
Vac 2	Default industrial noise	Point		25.1	0.0	
Vac 3	Default industrial noise	Point		24.8	0.0	
Vac 4	Default industrial noise	Point		24.5	0.0	
Vac 5	Default industrial noise	Point		24.3	0.0	
Vac 6	Default industrial noise	Point		24.0	0.0	
Vac 7	Default industrial noise	Point		23.8	0.0	
Vac 8	Default industrial noise	Point		23.5	0.0	
Roof 01	Default industrial noise	Area		-8.3	0.0	
Facade 01	Default industrial noise	Area		-1.0	0.0	
Facade 02	Default industrial noise	Area		-8.8	0.0	
Transmissive area 01	Default industrial noise	Area		27.9	0.0	
Facade 03	Default industrial noise	Area		4.2	0.0	
Facade 04	Default industrial noise	Area		-6.7	0.0	
Transmissive area 02	Default industrial noise	Area		41.1	0.0	

07402001_Sunny Carwash - Noise
Contribution spectra - Situation 1: Outdoor SP

Source	Time slice	Sum	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz
		dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Receiver -120,59 Fl GF dB(A)	Ldn 59.8 dB(A)	Sigma(Ldn) 0.0 dB(A)																										
Facade 01	Ldn	3.7					2.9			-8.0			-10.8			-10.8			-16.7			-22.5			-36.0			-51.4
Facade 02	Ldn	9.2					7.2			-1.6			-3.1			0.4			-2.6			-5.7			-16.6			-28.7
Facade 03	Ldn	11.3					9.3			0.4			-1.9			2.4			-0.1			-3.6			-15.2			-29.5
Facade 04	Ldn	-11.0					-11.6			-23.1			-25.9			-25.3			-32.2			-38.4			-52.9			-72.7
Roof 01	Ldn	-3.5					-4.3			-15.2			-16.6			-16.9			-24.5			-28.1			-39.9			-53.7
Transmissive area 01	Ldn	59.4					33.9			39.4			38.7			47.8			54.9			56.1			48.3			34.2
Transmissive area 02	Ldn	25.8					12.7			14.7			11.5			17.9			21.4			20.5			9.7			-11.7
Vac 1	Ldn	30.3	-1.8	5.4	8.9	12.0	13.3	9.1	5.7	5.3	3.3	-4.5	-2.2	-1.9	1.7	7.5	8.8	13.8	13.2	18.5	21.0	21.5	23.0	23.4	20.3	17.9	12.6	2.5
Vac 2	Ldn	30.6	-1.6	5.6	9.1	12.2	13.5	9.4	6.1	5.6	3.6	-4.1	-1.8	-1.5	2.1	7.9	9.1	14.1	13.5	18.8	21.3	21.9	23.3	23.7	20.7	18.4	13.1	3.2
Vac 3	Ldn	31.0	-1.3	5.9	9.4	12.5	13.8	9.6	6.4	6.0	4.0	-3.7	-1.4	-1.1	2.5	8.2	9.5	14.4	13.7	19.1	21.5	22.2	23.6	24.1	21.0	18.8	13.7	3.9
Vac 4	Ldn	31.3	-1.0	6.2	9.7	12.8	14.1	10.0	6.8	6.4	4.4	-3.2	-0.9	-0.6	2.9	8.6	9.9	14.8	14.1	19.5	21.9	22.5	24.0	24.5	21.5	19.3	14.3	4.6
Vac 5	Ldn	31.1	-0.6	6.6	10.1	13.2	14.5	10.4	7.2	6.8	4.8	-2.7	-0.5	-0.1	3.4	9.0	10.3	15.1	13.6	19.0	21.5	22.1	23.6	24.2	21.3	19.2	14.4	5.0
Vac 6	Ldn	31.5	-0.2	7.0	10.5	13.6	14.9	10.8	7.6	7.2	5.2	-2.2	0.1	0.5	3.9	9.5	10.7	15.5	14.0	19.4	21.8	22.5	24.0	24.6	21.8	19.8	15.1	5.8
Vac 7	Ldn	32.0	0.2	7.4	10.9	14.0	15.3	11.2	8.0	7.6	5.6	-1.7	0.6	1.0	4.4	9.9	11.2	15.9	14.4	19.8	22.3	22.9	24.5	25.1	22.3	20.4	15.7	6.6
Vac 8	Ldn	32.5	0.7	7.9	11.4	14.5	15.8	11.7	8.5	8.1	6.1	-1.1	1.2	1.6	6.9	10.4	11.7	16.3	14.9	20.3	22.7	23.4	24.9	25.6	22.8	21.0	16.4	7.5
Vac 9	Ldn	33.6	1.7	8.9	12.4	15.5	16.8	12.7	9.6	9.2	7.2	0.4	2.7	3.0	8.1	11.6	12.9	17.4	15.9	21.3	23.7	24.4	26.0	26.7	24.0	22.3	18.0	9.4
Vac 10	Ldn	34.2	2.3	9.5	13.0	16.1	17.4	13.3	10.2	9.8	7.8	1.1	3.4	3.8	8.7	12.3	13.5	17.9	16.4	21.8	24.2	24.9	26.5	27.3	24.6	23.0	18.8	10.4
Vac 11	Ldn	34.8	2.8	10.0	13.5	16.6	17.9	13.8	10.8	10.4	8.4	1.8	4.1	4.5	9.3	12.9	14.1	18.4	16.9	22.4	24.7	25.5	27.1	27.8	25.3	23.7	19.6	11.3
Vac 12	Ldn	35.3	3.4	10.6	14.1	17.2	18.5	14.4	11.4	11.0	9.0	2.6	4.9	6.8	9.9	13.5	14.8	18.9	17.5	22.9	25.3	26.0	27.6	28.4	25.9	24.4	20.4	12.2
Vac 13	Ldn	36.0	4.1	11.3	14.8	17.9	19.2	15.1	12.1	11.7	9.7	3.5	5.8	7.6	10.7	14.3	15.5	19.5	18.1	23.5	25.9	26.6	28.3	29.1	26.6	25.2	21.2	13.2
Vac 14	Ldn	36.7	4.7	11.9	15.4	18.5	19.8	15.7	12.8	12.4	10.4	4.4	6.7	8.4	11.4	15.0	16.2	20.1	18.7	24.1	26.5	27.2	28.9	29.7	27.3	25.9	22.1	14.2
Vac 15	Ldn	37.4	5.4	12.6	16.1	19.2	20.5	16.4	13.5	13.1	11.1	5.4	7.7	9.3	12.2	15.7	17.0	20.8	19.3	24.8	27.1	27.9	29.6	30.4	28.0	26.7	23.0	15.2
Vac 16	Ldn	37.1	6.3	13.5	17.0	20.1	21.4	17.3	14.4	14.0	12.0	6.6	8.8	9.2	12.0	15.5	16.8	20.2	18.8	24.2	26.6	27.3	29.1	30.0	27.7	26.5	23.0	15.6
Vac 17	Ldn	32.2	-1.4	5.8	9.3	12.4	13.7	9.5	6.3	5.9	3.9	-3.8	-1.6	-1.2	2.4	8.8	11.5	16.5	15.0	20.4	22.8	23.4	24.9	25.4	22.3	20.1	15.0	5.1
Vac 18	Ldn	32.6	-1.1	6.1	9.6	12.7	14.0	9.9	6.7	6.3	4.2	-3.4	-1.1	-0.7	2.8	9.2	11.9	16.8	15.3	20.7	23.2	23.8	25.2	25.7	22.7	20.6	15.5	5.8
Vac 19	Ldn	32.9	-0.7	6.5	10.0	13.1	14.4	10.3	7.1	6.7	4.6	-2.9	-0.6	-0.2	3.2	9.5	12.2	17.1	15.7	21.1	23.5	24.1	25.6	26.1	23.2	21.1	16.1	6.6
Vac 20	Ldn	33.3	-0.3	6.9	10.4	13.5	14.8	10.7	7.5	7.1	5.1	-2.4	-0.1	0.3	3.7	9.9	12.6	17.5	16.0	21.4	23.8	24.5	26.0	26.5	23.6	21.6	16.7	7.3
Vac 21	Ldn	33.7	0.1	7.3	10.8	13.9	15.2	11.1	7.9	7.5	5.5	-1.9	0.4	0.8	4.2	10.3	13.1	17.8	16.4	21.8	24.2	24.8	26.3	26.9	24.1	22.1	17.3	8.1
Vac 22	Ldn	34.2	0.5	7.7	11.2	14.3	15.6	11.5	8.4	7.9	5.9	-1.3	1.0	1.4	4.7	12.2	13.5	18.2	16.7	22.1	24.6	25.2	26.7	27.4	24.5	22.6	18.0	8.9
Vac 23	Ldn	34.1	1.0	8.2	11.7	14.8	16.0	11.9	8.8	8.4	6.4	-0.7	1.6	2.0	5.3	12.2	13.4	18.0	16.6	22.0	24.4	25.1	26.6	27.3	24.5	22.7	18.2	9.3
Vac 24	Ldn	34.6	1.4	8.6	12.1	15.2	16.5	12.4	9.3	8.9	6.9	0.0	2.2	2.6	5.9	12.7	14.0	18.5	17.0	22.4	24.8	25.5	27.1	27.8	25.1	23.3	18.9	10.2
Vac 25	Ldn	33.5	1.9	9.1	12.6	15.7	17.0	12.9	9.9	9.4	7.4	0.6	2.9	3.3	7.9	11.5	12.7	17.2	15.7	21.1	23.5	24.2	25.8	26.5	23.8	22.1	17.8	9.2
Vac 26	Ldn	34.0	2.5	9.7	13.2	16.3	17.6	13.4	10.4	10.0	8.0	1.3	3.6	4.0	8.4	12.0	13.3	17.6	16.2	21.6	24.0	24.7	26.3	27.0	24.4	22.8	18.5	10.1
Vac 27	Ldn	33.4	3.0	10.2	13.7	16.8	18.1	14.0	11.0	10.6	8.6	2.1	4.4	4.8	7.9	11.5	12.7	16.8	15.4	20.8	23.2	23.9	25.6	26.4	23.8	22.4	18.4	10.3
Vac 28	Ldn	34.1	3.7	10.9	14.4	17.5	18.8	14.6	11.7	11.2	9.2	3.0	5.2	5.6	8.6	12.2	13.5	17.5	16.0	21.5	23.8	24.6	26.2	27.1	24.6	23.2	19.3	11.3

07402001_Sunny Carwash - Noise
Contribution spectra - Situation 1: Outdoor SP

Source	Time slice	Sum	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz
		dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Vac 29	Ldn	34.8	4.3	11.5	15.0	18.1	19.4	15.3	12.3	11.9	9.9	3.9	6.1	6.5	9.5	13.1	14.3	18.1	16.7	22.1	24.5	25.3	26.9	27.8	25.4	24.0	20.2	12.4
Vac 30	Ldn	35.6	5.0	12.2	15.7	18.8	20.1	16.0	13.1	12.7	10.7	4.8	7.1	7.5	10.4	14.0	15.2	18.9	17.5	22.9	25.2	26.0	27.7	28.6	26.2	24.9	21.3	13.6
Vac 31	Ldn	36.3	5.6	12.8	16.3	19.4	20.7	16.6	13.7	13.3	11.3	5.6	7.9	8.3	11.1	14.7	15.9	19.5	18.1	23.5	25.8	26.6	28.3	29.2	26.9	25.6	22.0	14.5
Vac 32	Ldn	36.9	6.2	13.4	16.9	20.0	21.3	17.1	14.3	13.9	11.8	6.3	8.6	9.0	11.8	15.3	16.6	20.1	18.6	24.1	26.4	27.2	28.9	29.8	27.5	26.3	22.8	15.3
Remaining contrib. of src "Facade 01"	Ldn																											
Remaining contrib. of src "Facade 02"	Ldn																											
Remaining contrib. of src "Facade 03"	Ldn																											
Remaining contrib. of src "Facade 04"	Ldn																											
Remaining contrib. of src "Roof 01"	Ldn																											
Remaining contrib. of src "Transmissive	Ldn																											
Remaining contrib. of src "Transmissive	Ldn																											
Remaining contrib. of src "Vac 1"	Ldn																											
Remaining contrib. of src "Vac 2"	Ldn																											
Remaining contrib. of src "Vac 3"	Ldn																											
Remaining contrib. of src "Vac 4"	Ldn																											
Remaining contrib. of src "Vac 5"	Ldn																											
Remaining contrib. of src "Vac 6"	Ldn																											
Remaining contrib. of src "Vac 7"	Ldn																											
Remaining contrib. of src "Vac 8"	Ldn																											
Remaining contrib. of src "Vac 9"	Ldn																											
Remaining contrib. of src "Vac 10"	Ldn																											

Source	Time slice	Sum dB(A)	25Hz dB(A)	31.5Hz dB(A)	40Hz dB(A)	50Hz dB(A)	63Hz dB(A)	80Hz dB(A)	100Hz dB(A)	125Hz dB(A)	160Hz dB(A)	200Hz dB(A)	250Hz dB(A)	315Hz dB(A)	400Hz dB(A)	500Hz dB(A)	630Hz dB(A)	800Hz dB(A)	1kHz dB(A)	1.25kHz dB(A)	1.6kHz dB(A)	2kHz dB(A)	2.5kHz dB(A)	3.15kHz dB(A)	4kHz dB(A)	5kHz dB(A)	6.3kHz dB(A)	8kHz dB(A)	
Remaining contrib. of src "Vac 11"	Ldn																												
Remaining contrib. of src "Vac 12"	Ldn																												
Remaining contrib. of src "Vac 13"	Ldn																												
Remaining contrib. of src "Vac 14"	Ldn																												
Remaining contrib. of src "Vac 15"	Ldn																												
Remaining contrib. of src "Vac 16"	Ldn																												
Remaining contrib. of src "Vac 17"	Ldn																												
Remaining contrib. of src "Vac 18"	Ldn																												
Remaining contrib. of src "Vac 19"	Ldn																												
Remaining contrib. of src "Vac 20"	Ldn																												
Remaining contrib. of src "Vac 21"	Ldn																												
Remaining contrib. of src "Vac 22"	Ldn																												
Remaining contrib. of src "Vac 23"	Ldn																												
Remaining contrib. of src "Vac 24"	Ldn																												
Remaining contrib. of src "Vac 25"	Ldn																												
Remaining contrib. of src "Vac 26"	Ldn																												
Remaining contrib. of src "Vac 27"	Ldn																												
Remaining contrib. of src "Vac 28"	Ldn																												
Remaining contrib. of src "Vac 29"	Ldn																												

07402001_Sunny Carwash - Noise
Contribution spectra - Situation 1: Outdoor SP

Source	Time slice	Sum	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	
		dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	
Remaining contrib. of src "Vac 30"	Ldn																												
Remaining contrib. of src "Vac 31"	Ldn																												
Remaining contrib. of src "Vac 32"	Ldn																												
Receiver -174,205 Fl GF dB(A) Ldn 45.2 dB(A) Sigma(Ldn) 0.0 dB(A)																													
Facade 01	Ldn	-4.0					-4.6			-16.2			-18.1			-19.7			-26.8			-32.4			-46.5			-66.4	
Facade 02	Ldn	-12.0					-12.7			-24.8			-25.7			-26.8			-33.7			-37.0			-51.0			-71.5	
Facade 03	Ldn	5.3					3.8			-5.7			-8.8			-4.5			-7.3			-10.9			-23.8			-42.4	
Facade 04	Ldn	-5.2					-6.8			-16.3			-19.2			-15.1			-17.8			-21.6			-34.7			-54.8	
Roof 01	Ldn	-10.0					-10.6			-22.7			-24.7			-25.8			-32.9			-35.0			-47.6			-65.8	
Transmissive area 01	Ldn	26.8					11.9			12.8			13.0			17.7			21.3			23.1			13.0			-8.7	
Transmissive area 02	Ldn	42.7					19.2			24.0			21.3			30.9			38.7			39.4			29.4			7.4	
Vac 1	Ldn	29.0	-0.8	6.4	9.9	13.0	14.3	10.2	7.0	6.5	4.5	-3.0	-0.7	-0.4	3.1	6.7	8.0	12.8	11.3	16.7	19.1	19.8	21.3	21.8	19.0	17.0	12.2	2.8	
Vac 2	Ldn	28.8	-0.9	6.3	9.8	12.8	14.1	10.0	6.8	6.4	4.4	-3.2	-0.9	-0.5	3.0	6.5	7.8	12.6	11.1	16.5	19.0	19.6	21.1	21.7	18.8	16.8	11.9	2.5	
Vac 3	Ldn	28.7	-1.1	6.1	9.6	12.7	14.0	9.9	6.7	6.3	4.2	-3.4	-1.1	-0.7	2.8	6.4	7.6	12.5	11.0	16.4	18.8	19.5	21.0	21.5	18.6	16.6	11.7	2.3	
Vac 4	Ldn	28.5	-1.2	6.0	9.5	12.6	13.8	9.7	6.5	6.1	4.1	-3.6	-1.3	-0.9	2.6	6.2	7.4	12.3	10.8	16.2	18.6	19.3	20.8	21.3	18.4	16.3	11.4	1.9	
Vac 5	Ldn	28.2	-1.4	5.8	9.3	12.4	13.7	9.6	6.3	5.9	3.9	-3.8	-1.5	-1.2	2.4	6.0	7.2	12.1	10.6	16.0	18.5	19.1	20.6	21.1	18.2	16.0	11.1	1.5	
Vac 6	Ldn	29.2	-1.6	5.6	9.1	12.2	13.5	9.4	6.1	5.7	3.7	-4.0	-1.8	-1.4	2.2	5.7	7.0	13.4	11.9	17.3	19.7	20.3	21.7	22.2	19.1	16.8	11.6	1.7	
Vac 7	Ldn	26.0	-3.9	3.2	6.6	9.6	10.8	6.5	3.0	2.4	0.2	-5.4	-3.4	-3.5	-1.2	2.1	3.1	10.6	9.1	14.4	16.7	17.2	18.5	18.8	15.5	12.8	7.1	-3.4	
Vac 8	Ldn	23.8	-4.2	2.8	6.1	9.0	10.0	5.6	1.8	1.0	-1.6	-6.9	-5.5	-6.1	-4.7	-2.0	-1.7	8.7	7.0	12.3	14.5	15.0	16.2	16.3	12.8	9.9	3.7	-7.6	
Vac 9	Ldn	24.3	-5.4	1.5	4.6	7.3	8.0	3.3	-1.0	-2.2	-5.3	-9.9	-8.7	-9.4	-8.8	-6.2	-6.0	7.8	6.3	11.6	15.7	16.1	17.3	17.4	13.8	10.6	4.1	-7.7	
Vac 10	Ldn	24.1	-5.9	1.0	4.0	6.6	7.3	2.5	-1.9	-3.2	-6.3	-10.6	-9.4	-10.1	-9.5	-6.9	-6.7	7.7	6.1	11.4	15.6	16.0	17.2	17.2	13.6	10.4	3.9	-8.0	
Vac 11	Ldn	24.0	-6.3	0.6	3.6	6.2	6.8	1.9	-2.5	-3.9	-7.0	-11.1	-9.9	-10.6	-10.0	-7.4	-7.2	7.5	6.0	11.3	15.4	15.9	17.0	17.1	13.4	10.2	3.6	-8.4	
Vac 12	Ldn	23.8	-6.6	0.2	3.2	5.7	6.4	1.4	-3.1	-4.4	-7.6	-11.5	-10.2	-10.9	-10.4	-7.8	-7.5	7.4	5.9	11.1	15.3	15.8	16.9	17.0	13.3	10.0	3.4	-8.7	
Vac 13	Ldn	23.7	-7.0	-0.1	2.9	5.4	6.0	1.1	-3.5	-4.9	-8.0	-11.8	-10.5	-11.1	-10.7	-8.0	-7.8	7.3	5.7	11.0	15.2	15.6	16.8	16.8	13.1	9.8	3.1	-9.0	
Vac 14	Ldn	24.0	-7.2	-0.4	2.6	5.2	5.8	0.9	-3.8	-5.1	-8.2	-11.9	-10.6	-11.3	-10.8	-8.2	-7.9	7.2	5.6	10.9	15.1	16.2	17.3	17.3	13.4	10.0	3.1	-9.2	
Vac 15	Ldn	20.1	-7.4	-0.6	2.4	5.0	5.6	0.7	-4.0	-5.4	-8.5	-12.1	-10.8	-11.4	-11.0	-8.4	-8.1	-2.7	-5.3	-1.1	10.8	12.7	13.7	13.4	9.3	5.4	-2.2	-15.7	
Vac 16	Ldn	20.0	-7.7	-0.8	2.2	4.7	5.4	0.4	-4.3	-5.6	-8.7	-12.2	-10.9	-11.5	-11.1	-8.5	-8.2	-7.2	-6.1	-1.8	10.7	12.6	13.6	13.3	9.2	5.2	-2.5	-16.0	
Vac 17	Ldn	27.2	-2.1	5.1	8.6	11.7	13.0	8.9	5.3	4.9	2.9	-5.0	-2.7	-2.4	1.3	4.8	6.1	11.2	9.7	15.1	17.5	18.1	19.5	19.9	16.9	14.6	9.3	-0.8	
Vac 18	Ldn	29.0	-2.2	5.0	8.5	11.6	12.9	8.8	5.2	4.8	2.8	-5.1	-0.7	-0.4	3.3	6.9	8.1	13.2	11.8	17.1	19.5	20.1	21.5	21.9	18.8	16.4	11.0	0.7	
Vac 19	Ldn	28.8	-2.3	4.9	8.4	11.5	12.8	8.7	5.1	4.7	2.7	-5.3	-0.9	-0.5	3.2	6.7	8.0	13.1	11.6	17.0	19.4	20.0	21.4	21.8	18.6	16.2	10.7	0.4	
Vac 20	Ldn	28.7	-2.4	4.8	8.3	11.4	12.7	8.6	5.0	4.6	2.5	-5.4	-1.0	-0.6	3.0	6.6	7.9	13.0	11.5	16.9	19.3	19.9	21.3	21.6	18.5	16.0	10.5	0.1	
Vac 21	Ldn	28.6	-2.5	4.7	8.2	11.3	12.6	8.5	4.8	4.4	2.4	-5.6	-1.2	-0.8	2.9	6.5	7.7	12.9	11.4	16.8	19.2	19.7	21.1	21.5	18.3	15.8	10.3	-0.2	
Vac 22	Ldn	28.4	-2.6	4.6	8.1	11.2	12.5	8.4	4.7	4.3	2.3	-5.7	-1.3	-0.9	2.8	6.3	7.6	12.8	11.3	16.6	19.1	19.6	21.0	21.3	18.1	15.6	10.0	-0.5	

07402001_Sunny Carwash - Noise
Contribution spectra - Situation 1: Outdoor SP

Source	Time slice	Sum	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz
		dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Vac 23	Ldn	28.2	-2.7	4.5	8.0	11.1	12.4	8.3	4.6	4.2	2.1	-5.9	-1.5	-1.1	2.6	6.2	7.4	12.6	11.1	16.5	18.9	19.5	20.8	21.2	17.9	15.4	9.7	-0.9
Vac 24	Ldn	28.1	-2.8	4.4	7.9	11.0	12.3	8.2	4.4	4.0	2.0	-6.1	-1.6	-1.3	2.5	6.0	7.3	12.5	11.0	16.4	18.8	19.3	20.7	21.0	17.7	15.1	9.5	-1.2
Vac 25	Ldn	24.6	-5.0	2.1	5.5	8.5	9.6	5.4	1.4	0.7	-1.6	-6.8	-2.4	-2.4	0.4	3.7	4.7	9.5	7.9	13.1	15.4	15.8	17.0	17.2	13.8	11.0	5.0	-6.1
Vac 26	Ldn	24.9	-5.3	1.8	5.1	8.0	9.1	4.7	0.5	-0.3	-2.9	-7.9	-3.2	-3.2	-0.4	2.9	3.9	8.8	7.2	12.5	16.1	16.5	17.7	17.8	14.3	11.3	5.1	-6.3
Vac 27	Ldn	20.4	-5.7	1.3	4.6	7.4	8.4	3.9	-0.4	-1.4	-4.2	-8.9	-4.7	-5.1	-4.5	-1.9	-1.7	-0.2	-2.8	1.5	2.8	12.9	13.9	13.6	9.4	5.5	-2.2	-15.8
Vac 28	Ldn	20.0	-6.1	0.9	4.1	6.9	7.8	3.2	-1.3	-2.3	-5.2	-9.7	-8.4	-6.1	-5.6	-3.1	-2.9	-1.6	-4.1	0.2	1.6	12.8	13.7	13.4	9.3	5.3	-2.5	-16.2
Vac 29	Ldn	19.8	-6.5	0.5	3.7	6.4	7.3	2.6	-2.0	-3.1	-6.0	-10.3	-8.9	-6.8	-6.4	-3.8	-3.6	-2.4	-4.8	-0.4	0.9	12.7	13.6	13.3	9.1	5.1	-2.7	-16.5
Vac 30	Ldn	18.1	-6.8	0.1	3.2	6.0	6.8	2.1	-2.6	-3.7	-6.7	-10.7	-9.4	-7.2	-6.8	-4.2	-4.0	-2.9	-5.3	-0.9	0.5	10.4	11.4	11.1	6.9	3.0	-4.8	-18.5
Vac 31	Ldn	17.7	-7.1	-0.1	3.0	5.7	6.5	1.8	-2.9	-4.1	-7.1	-11.0	-9.7	-10.2	-9.7	-7.1	-6.8	-5.4	-7.8	-3.4	-2.0	10.2	11.1	10.9	6.7	2.7	-5.1	-18.8
Vac 32	Ldn	17.6	-7.3	-0.4	2.7	5.4	6.2	1.5	-3.3	-4.5	-7.4	-11.2	-9.9	-10.4	-9.9	-7.3	-7.0	-5.7	-8.1	-3.7	-2.3	10.1	11.1	10.8	6.6	2.6	-5.2	-19.1
Remaining contrib. of src "Facade 01"	Ldn																											
Remaining contrib. of src "Facade 02"	Ldn																											
Remaining contrib. of src "Facade 03"	Ldn																											
Remaining contrib. of src "Facade 04"	Ldn																											
Remaining contrib. of src "Roof 01"	Ldn																											
Remaining contrib. of src "Transmissive	Ldn																											
Remaining contrib. of src "Transmissive	Ldn																											
Remaining contrib. of src "Vac 1"	Ldn																											
Remaining contrib. of src "Vac 2"	Ldn																											
Remaining contrib. of src "Vac 3"	Ldn																											
Remaining contrib. of src "Vac 4"	Ldn																											
Remaining contrib. of src "Vac 5"	Ldn																											
Remaining contrib. of src "Vac 6"	Ldn																											
Remaining contrib. of src "Vac 7"	Ldn																											

Source	Time slice	Sum dB(A)	25Hz dB(A)	31.5Hz dB(A)	40Hz dB(A)	50Hz dB(A)	63Hz dB(A)	80Hz dB(A)	100Hz dB(A)	125Hz dB(A)	160Hz dB(A)	200Hz dB(A)	250Hz dB(A)	315Hz dB(A)	400Hz dB(A)	500Hz dB(A)	630Hz dB(A)	800Hz dB(A)	1kHz dB(A)	1.25kHz dB(A)	1.6kHz dB(A)	2kHz dB(A)	2.5kHz dB(A)	3.15kHz dB(A)	4kHz dB(A)	5kHz dB(A)	6.3kHz dB(A)	8kHz dB(A)	
Remaining contrib. of src "Vac 8"	Ldn																												
Remaining contrib. of src "Vac 9"	Ldn																												
Remaining contrib. of src "Vac 10"	Ldn																												
Remaining contrib. of src "Vac 11"	Ldn																												
Remaining contrib. of src "Vac 12"	Ldn																												
Remaining contrib. of src "Vac 13"	Ldn																												
Remaining contrib. of src "Vac 14"	Ldn																												
Remaining contrib. of src "Vac 15"	Ldn																												
Remaining contrib. of src "Vac 16"	Ldn																												
Remaining contrib. of src "Vac 17"	Ldn																												
Remaining contrib. of src "Vac 18"	Ldn																												
Remaining contrib. of src "Vac 19"	Ldn																												
Remaining contrib. of src "Vac 20"	Ldn																												
Remaining contrib. of src "Vac 21"	Ldn																												
Remaining contrib. of src "Vac 22"	Ldn																												
Remaining contrib. of src "Vac 23"	Ldn																												
Remaining contrib. of src "Vac 24"	Ldn																												
Remaining contrib. of src "Vac 25"	Ldn																												
Remaining contrib. of src "Vac 26"	Ldn																												

07402001_Sunny Carwash - Noise
Contribution spectra - Situation 1: Outdoor SP

Source	Time slice	Sum	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz
		dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Remaining contrib. of src "Vac 27"	Ldn																											
Remaining contrib. of src "Vac 28"	Ldn																											
Remaining contrib. of src "Vac 29"	Ldn																											
Remaining contrib. of src "Vac 30"	Ldn																											
Remaining contrib. of src "Vac 31"	Ldn																											
Remaining contrib. of src "Vac 32"	Ldn																											
Receiver -205,227 Fl GF dB(A) Ldn 44.1 dB(A) Sigma(Ldn) 0.0 dB(A)																												
Facade 01	Ldn	-4.4					-5.0			-16.8			-19.1			-20.6			-27.6			-33.4			-48.2			-69.8
Facade 02	Ldn	-7.2					-7.9			-19.3			-21.9			-21.9			-27.6			-33.7			-49.2			-72.0
Facade 03	Ldn	4.9					3.3			-6.3			-10.0			-4.8			-7.3			-11.4			-24.6			-45.1
Facade 04	Ldn	-6.4					-7.9			-17.6			-20.6			-16.4			-19.0			-22.9			-36.5			-58.0
Roof 01	Ldn	-10.3					-10.8			-23.0			-24.8			-25.9			-33.1			-36.0			-49.0			-69.1
Transmissive area 01	Ldn	31.1					18.4			20.2			17.3			22.5			26.9			25.6			13.4			-11.3
Transmissive area 02	Ldn	41.5					18.3			22.7			19.9			29.6			37.5			38.2			27.7			4.2
Vac 1	Ldn	27.1	-2.2	5.0	8.5	11.6	12.9	8.8	5.2	4.8	2.8	-5.1	-2.8	-2.5	1.2	4.7	6.0	11.1	9.6	15.0	17.4	18.0	19.4	19.8	16.7	14.4	9.1	-1.0
Vac 2	Ldn	26.8	-2.3	4.9	8.4	11.5	12.8	8.6	5.0	4.6	2.6	-5.3	-3.1	-2.7	0.9	4.5	5.8	10.9	9.4	14.8	17.2	17.8	19.2	19.6	16.5	14.1	8.7	-1.5
Vac 3	Ldn	26.6	-2.5	4.7	8.2	11.3	12.6	8.5	4.9	4.5	2.4	-5.6	-3.3	-2.9	0.7	4.3	5.6	10.7	9.2	14.6	17.0	17.6	19.0	19.4	16.2	13.8	8.4	-1.9
Vac 4	Ldn	26.4	-2.6	4.6	8.1	11.2	12.5	8.4	4.7	4.2	2.2	-5.8	-3.5	-3.2	0.5	4.1	5.3	10.5	9.0	14.4	16.8	17.4	18.7	19.1	16.0	13.5	8.0	-2.4
Vac 5	Ldn	26.2	-2.8	4.4	7.9	11.0	12.3	8.2	4.5	4.1	2.0	-6.0	-3.8	-3.4	0.3	3.9	5.1	10.3	8.8	14.2	16.6	17.2	18.5	18.9	15.7	13.2	7.6	-2.9
Vac 6	Ldn	26.0	-2.9	4.3	7.8	10.9	12.2	8.1	4.3	3.8	1.8	-6.3	-4.0	-3.6	0.1	3.6	4.9	10.1	8.6	14.0	16.4	16.9	18.3	18.6	15.4	12.8	7.2	-3.4
Vac 7	Ldn	25.7	-3.1	4.1	7.6	10.7	12.0	7.9	4.1	3.7	1.6	-6.5	-4.2	-3.8	-0.1	3.4	4.7	9.9	8.4	13.8	16.2	16.7	18.1	18.4	15.1	12.5	6.8	-3.9
Vac 8	Ldn	26.9	-3.2	4.0	7.5	10.6	11.9	7.8	3.9	3.5	1.4	-6.7	-4.4	-4.1	-0.3	3.2	4.5	9.7	10.0	15.3	17.7	18.2	19.5	19.7	16.3	13.5	7.5	-3.6
Vac 9	Ldn	23.3	-5.6	1.5	4.9	7.9	9.1	4.8	0.7	0.1	-2.1	-7.5	-5.6	-5.7	-3.6	-0.4	0.5	4.6	7.0	12.2	14.5	14.8	15.9	15.9	12.1	8.8	2.1	-10.0
Vac 10	Ldn	21.9	-5.9	1.2	4.6	7.5	8.6	4.3	0.0	-0.7	-3.2	-8.5	-6.9	-7.3	-5.9	-3.2	-2.8	0.6	5.6	10.8	13.1	13.4	14.4	14.4	10.6	7.2	0.3	-12.2
Vac 11	Ldn	21.5	-6.2	0.8	4.1	7.0	8.0	3.6	-0.9	-1.8	-4.4	-9.5	-8.1	-8.8	-7.7	-5.1	-4.9	-2.0	5.1	10.3	12.6	13.0	14.1	14.0	10.2	6.8	-0.2	-12.8
Vac 12	Ldn	21.2	-6.6	0.5	3.7	6.5	7.5	2.9	-1.7	-2.7	-5.5	-10.4	-9.1	-9.8	-8.9	-6.3	-6.0	-3.6	4.9	10.1	12.4	12.8	13.8	13.8	9.9	6.5	-0.6	-13.3
Vac 13	Ldn	20.9	-6.9	0.0	3.2	6.0	6.9	2.3	-2.5	-3.6	-6.5	-11.1	-9.8	-10.5	-9.7	-7.1	-6.9	-4.8	4.6	9.9	12.2	12.6	13.6	13.6	9.7	6.2	-1.0	-13.8
Vac 14	Ldn	20.7	-7.3	-0.3	2.9	5.6	6.5	1.8	-3.0	-4.2	-7.1	-11.6	-10.3	-10.9	-10.2	-7.6	-7.3	-5.4	4.5	9.7	12.0	12.4	13.5	13.4	9.5	5.9	-1.3	-14.2
Vac 15	Ldn	21.8	-7.6	-0.6	2.5	5.2	6.1	1.4	-3.5	-4.7	-7.7	-12.0	-10.6	-11.2	-10.6	-8.0	-7.7	-6.0	4.3	9.6	11.9	14.2	15.2	15.0	11.0	7.3	-0.2	-13.5
Vac 16	Ldn	21.6	-7.9	-1.0	2.2	4.8	5.6	0.9	-4.1	-5.3	-8.2	-12.3	-11.0	-11.6	-11.0	-8.3	-8.0	-6.4	4.2	9.4	11.7	14.0	15.0	14.9	10.8	7.0	-0.5	-14.0
Vac 17	Ldn	25.6	-3.1	4.1	7.6	10.7	11.9	7.8	4.0	3.6	1.5	-6.6	-4.3	-4.0	-0.2	3.3	4.6	9.8	8.3	13.7	16.1	16.6	18.0	18.3	15.0	12.4	6.6	-4.2

07402001_Sunny Carwash - Noise
Contribution spectra - Situation 1: Outdoor SP

Source	Time slice	Sum	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz
		dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Vac 18	Ldn	25.4	-3.3	3.9	7.4	10.5	11.8	7.7	3.8	3.4	1.4	-6.8	-4.5	-4.1	-0.4	3.1	4.4	9.7	8.2	13.5	15.9	16.5	17.8	18.1	14.8	12.1	6.3	-4.6
Vac 19	Ldn	27.3	-3.4	3.8	7.3	10.4	11.7	7.6	3.7	3.2	1.2	-7.0	-2.4	-2.1	1.7	5.2	6.5	11.8	10.3	15.6	18.0	18.6	19.9	20.1	16.7	14.0	8.0	-3.1
Vac 20	Ldn	27.1	-3.5	3.7	7.2	10.3	11.6	7.5	3.5	3.1	1.0	-7.1	-2.6	-2.3	1.5	5.1	6.3	11.6	10.1	15.5	17.9	18.4	19.7	19.9	16.5	13.7	7.6	-3.6
Vac 21	Ldn	26.9	-3.6	3.6	7.0	10.1	11.4	7.3	3.3	2.9	0.9	-7.3	-5.1	-2.4	1.3	4.9	6.1	11.5	10.0	15.3	17.7	18.2	19.5	19.7	16.3	13.4	7.3	-4.0
Vac 22	Ldn	26.7	-3.8	3.4	6.9	10.0	11.3	7.2	3.2	2.7	0.7	-7.5	-5.3	-2.6	1.2	4.7	6.0	11.3	9.8	15.1	17.6	18.0	19.3	19.5	16.0	13.1	6.9	-4.5
Vac 23	Ldn	26.5	-3.9	3.3	6.8	9.9	11.2	7.1	3.0	2.6	0.5	-7.7	-5.4	-2.8	1.0	4.6	5.8	11.2	9.7	15.0	17.4	17.9	19.1	19.3	15.8	12.9	6.6	-4.9
Vac 24	Ldn	26.3	-4.0	3.2	6.7	9.8	11.1	6.9	2.8	2.4	0.4	-7.9	-5.6	-3.0	0.8	4.4	5.6	11.0	9.5	14.8	17.2	17.7	18.9	19.1	15.6	12.6	6.2	-5.4
Vac 25	Ldn	26.1	-4.2	3.0	6.5	9.6	10.9	6.8	2.6	2.2	0.2	-8.1	-5.8	-3.1	0.7	4.2	5.5	10.8	9.3	14.7	17.1	17.5	18.7	18.9	15.3	12.3	5.9	-5.9
Vac 26	Ldn	25.9	-4.3	2.9	6.4	9.5	10.8	6.7	2.5	2.1	0.0	-8.3	-6.0	-3.3	0.5	4.0	5.3	10.7	9.2	14.5	16.9	17.3	18.6	18.7	15.1	12.0	5.5	-6.3
Vac 27	Ldn	25.8	-4.4	2.8	6.3	9.4	10.7	6.5	2.3	1.9	-0.1	-8.4	-6.2	-3.5	0.3	3.9	5.1	10.5	9.0	14.3	16.7	17.2	18.4	18.5	14.9	11.7	5.1	-6.8
Vac 28	Ldn	25.6	-4.6	2.6	6.1	9.2	10.5	6.4	2.1	1.7	-0.3	-8.6	-6.4	-3.7	0.1	3.7	4.9	10.4	8.8	14.2	16.5	17.0	18.2	18.3	14.6	11.4	4.8	-7.3
Vac 29	Ldn	25.4	-4.7	2.5	6.0	9.1	10.4	6.3	2.0	1.5	-0.5	-8.8	-6.5	-3.9	0.0	3.5	4.8	10.2	8.7	14.0	16.4	16.8	18.0	18.0	14.4	11.1	4.4	-7.8
Vac 30	Ldn	23.2	-6.7	0.4	3.9	6.9	8.1	4.0	-0.5	-1.0	-3.2	-9.0	-6.7	-6.4	-1.0	2.4	3.5	8.3	6.7	11.9	14.3	14.6	15.7	15.7	11.9	8.5	1.6	-10.8
Vac 31	Ldn	22.3	-6.9	0.3	3.7	6.8	8.0	3.8	-0.7	-1.3	-3.5	-9.1	-6.9	-6.5	-1.4	1.9	2.9	7.7	6.0	11.2	13.4	13.7	14.8	14.6	10.7	7.2	0.2	-12.5
Vac 32	Ldn	15.7	-7.0	0.1	3.6	6.6	7.8	3.5	-1.0	-1.6	-3.9	-9.2	-7.0	-7.2	-5.8	-2.9	-2.5	0.8	-1.4	3.2	4.8	4.5	4.9	4.1	-0.5	-4.7	-12.4	-25.8
Remaining contrib. of src "Facade 01"	Ldn																											
Remaining contrib. of src "Facade 02"	Ldn																											
Remaining contrib. of src "Facade 03"	Ldn																											
Remaining contrib. of src "Facade 04"	Ldn																											
Remaining contrib. of src "Roof 01"	Ldn																											
Remaining contrib. of src "Transmissive	Ldn																											
Remaining contrib. of src "Transmissive	Ldn																											
Remaining contrib. of src "Vac 1"	Ldn																											
Remaining contrib. of src "Vac 2"	Ldn																											
Remaining contrib. of src "Vac 3"	Ldn																											
Remaining contrib. of src "Vac 4"	Ldn																											

Source	Time slice	Sum dB(A)	25Hz dB(A)	31.5Hz dB(A)	40Hz dB(A)	50Hz dB(A)	63Hz dB(A)	80Hz dB(A)	100Hz dB(A)	125Hz dB(A)	160Hz dB(A)	200Hz dB(A)	250Hz dB(A)	315Hz dB(A)	400Hz dB(A)	500Hz dB(A)	630Hz dB(A)	800Hz dB(A)	1kHz dB(A)	1.25kHz dB(A)	1.6kHz dB(A)	2kHz dB(A)	2.5kHz dB(A)	3.15kHz dB(A)	4kHz dB(A)	5kHz dB(A)	6.3kHz dB(A)	8kHz dB(A)	
Remaining contrib. of src "Vac 5"	Ldn																												
Remaining contrib. of src "Vac 6"	Ldn																												
Remaining contrib. of src "Vac 7"	Ldn																												
Remaining contrib. of src "Vac 8"	Ldn																												
Remaining contrib. of src "Vac 9"	Ldn																												
Remaining contrib. of src "Vac 10"	Ldn																												
Remaining contrib. of src "Vac 11"	Ldn																												
Remaining contrib. of src "Vac 12"	Ldn																												
Remaining contrib. of src "Vac 13"	Ldn																												
Remaining contrib. of src "Vac 14"	Ldn																												
Remaining contrib. of src "Vac 15"	Ldn																												
Remaining contrib. of src "Vac 16"	Ldn																												
Remaining contrib. of src "Vac 17"	Ldn																												
Remaining contrib. of src "Vac 18"	Ldn																												
Remaining contrib. of src "Vac 19"	Ldn																												
Remaining contrib. of src "Vac 20"	Ldn																												
Remaining contrib. of src "Vac 21"	Ldn																												
Remaining contrib. of src "Vac 22"	Ldn																												
Remaining contrib. of src "Vac 23"	Ldn																												

07402001_Sunny Carwash - Noise
Contribution spectra - Situation 1: Outdoor SP

Source	Time slice	Sum	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz
		dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Remaining contrib. of src "Vac 24"	Ldn																											
Remaining contrib. of src "Vac 25"	Ldn																											
Remaining contrib. of src "Vac 26"	Ldn																											
Remaining contrib. of src "Vac 27"	Ldn																											
Remaining contrib. of src "Vac 28"	Ldn																											
Remaining contrib. of src "Vac 29"	Ldn																											
Remaining contrib. of src "Vac 30"	Ldn																											
Remaining contrib. of src "Vac 31"	Ldn																											
Remaining contrib. of src "Vac 32"	Ldn																											
Receiver -300,194 Fl GF dB(A) Ldn 43.1 dB(A) Sigma(Ldn) 0.0 dB(A)																												
Facade 01	Ldn	-1.0					-1.7			-12.8			-16.4			-15.1			-19.6			-25.5			-41.2			-64.5
Facade 02	Ldn	-8.8					-9.3			-21.8			-24.8			-25.0			-30.8			-37.0			-52.9			-77.4
Facade 03	Ldn	4.2					2.7			-7.1			-10.9			-5.6			-8.1			-12.2			-25.8			-47.3
Facade 04	Ldn	-6.7					-8.2			-17.9			-21.0			-16.8			-19.4			-23.3			-37.0			-58.9
Roof 01	Ldn	-8.3					-9.0			-20.6			-21.6			-22.1			-29.9			-34.5			-49.5			-70.9
Transmissive area 01	Ldn	27.9					16.2			16.8			13.4			18.9			23.6			22.7			10.5			-15.3
Transmissive area 02	Ldn	41.1					18.0			22.4			19.5			29.2			37.2			37.8			27.2			3.3
Vac 1	Ldn	25.4	-3.3	3.9	7.4	10.5	11.8	7.7	3.8	3.3	1.3	-6.8	-4.6	-4.2	-0.5	3.1	4.4	9.6	8.1	13.5	15.9	16.4	17.7	18.0	14.7	12.0	6.2	-4.7
Vac 2	Ldn	25.1	-3.5	3.7	7.2	10.3	11.6	7.5	3.5	3.1	1.1	-7.1	-4.9	-4.5	-0.7	2.8	4.1	9.4	7.8	13.2	15.6	16.1	17.4	17.7	14.3	11.6	5.6	-5.5
Vac 3	Ldn	24.8	-3.7	3.5	7.0	10.1	11.4	7.3	3.3	2.8	0.8	-7.4	-5.1	-4.8	-1.0	2.6	3.8	9.1	7.6	12.9	15.4	15.9	17.2	17.4	14.0	11.2	5.1	-6.1
Vac 4	Ldn	24.5	-3.9	3.3	6.8	9.9	11.2	7.1	3.0	2.6	0.6	-7.7	-5.4	-5.0	-1.3	2.3	3.5	8.9	7.4	12.7	15.1	15.6	16.9	17.1	13.6	10.7	4.6	-6.8
Vac 5	Ldn	24.3	-4.1	3.1	6.6	9.7	11.0	6.9	2.8	2.4	0.3	-7.9	-5.7	-5.3	-1.5	2.1	3.3	8.7	7.1	12.5	14.9	15.4	16.6	16.8	13.3	10.4	4.1	-7.4
Vac 6	Ldn	24.0	-4.2	3.0	6.5	9.5	10.8	6.7	2.5	2.1	0.1	-8.2	-5.9	-5.5	-1.7	1.8	3.1	8.4	6.9	12.2	14.6	15.1	16.3	16.5	13.0	10.0	3.6	-8.1
Vac 7	Ldn	23.8	-4.4	2.8	6.3	9.4	10.7	6.6	2.3	1.9	-0.1	-8.4	-6.2	-5.8	-2.0	1.6	2.8	8.2	6.7	12.0	14.4	14.9	16.1	16.2	12.6	9.6	3.1	-8.7
Vac 8	Ldn	23.5	-4.6	2.6	6.1	9.2	10.5	6.4	2.1	1.7	-0.3	-8.7	-6.4	-6.0	-2.2	1.3	2.6	8.0	6.5	11.8	14.2	14.6	15.8	15.9	12.3	9.2	2.6	-9.4
Vac 9	Ldn	23.0	-5.0	2.2	5.7	8.8	10.1	6.0	1.6	1.2	-0.8	-9.2	-6.9	-6.5	-2.7	0.9	2.1	7.5	6.0	11.3	13.7	14.1	15.3	15.3	11.6	8.3	1.5	-10.8
Vac 10	Ldn	22.7	-5.1	2.1	5.6	8.7	9.9	5.8	1.4	1.0	-1.0	-9.4	-7.1	-6.8	-2.9	0.6	1.9	7.3	5.8	11.1	13.5	13.9	15.0	15.0	11.3	7.9	1.0	-11.4
Vac 11	Ldn	22.5	-5.3	1.9	5.4	8.5	9.8	5.7	1.2	0.8	-1.2	-9.6	-7.3	-7.0	-3.1	0.4	1.7	7.1	5.6	10.9	13.3	13.7	14.8	14.8	11.0	7.6	0.6	-12.1

07402001_Sunny Carwash - Noise
Contribution spectra - Situation 1: Outdoor SP

Source	Time slice	Sum	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz
		dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Vac 12	Ldn	22.3	-5.4	1.8	5.2	8.3	9.6	5.5	1.0	0.6	-1.4	-9.8	-7.5	-7.2	-3.3	0.2	1.5	6.9	5.4	10.7	13.1	13.5	14.6	14.5	10.7	7.2	0.1	-12.7
Vac 13	Ldn	22.0	-5.6	1.6	5.1	8.2	9.5	5.4	0.8	0.4	-1.6	-10.0	-7.7	-7.4	-3.5	0.0	1.3	6.8	5.2	10.5	12.9	13.2	14.3	14.3	10.4	6.8	-0.4	-13.3
Vac 14	Ldn	21.8	-5.7	1.4	4.9	8.0	9.3	5.2	0.6	0.2	-1.8	-10.2	-7.9	-7.6	-3.7	-0.1	1.1	6.6	5.0	10.3	12.7	13.0	14.1	14.0	10.1	6.5	-0.8	-13.9
Vac 15	Ldn	21.6	-5.9	1.3	4.8	7.9	9.2	5.1	0.4	0.0	-2.0	-10.3	-8.1	-7.7	-3.9	-0.3	0.9	6.4	4.9	10.1	12.5	12.9	13.9	13.8	9.8	6.1	-1.2	-14.5
Vac 16	Ldn	21.4	-6.0	1.1	4.6	7.7	9.0	4.9	0.2	-0.2	-2.2	-10.5	-8.3	-7.9	-4.1	-0.5	0.7	6.2	4.7	9.9	12.3	12.6	13.7	13.5	9.5	5.8	-1.7	-15.1
Vac 17	Ldn	24.8	-3.7	3.5	7.0	10.1	11.4	7.3	3.2	2.8	0.8	-7.4	-5.1	-4.8	-1.0	2.6	3.8	9.1	7.6	12.9	15.4	15.9	17.2	17.4	14.0	11.2	5.1	-6.1
Vac 18	Ldn	24.5	-3.9	3.3	6.8	9.9	11.2	7.1	3.0	2.6	0.6	-7.7	-5.4	-5.0	-1.3	2.3	3.5	8.9	7.4	12.7	15.1	15.6	16.9	17.1	13.6	10.7	4.6	-6.8
Vac 19	Ldn	24.3	-4.1	3.1	6.6	9.7	11.0	6.9	2.8	2.4	0.3	-7.9	-5.7	-5.3	-1.5	2.1	3.3	8.7	7.1	12.5	14.9	15.4	16.6	16.8	13.3	10.4	4.1	-7.4
Vac 20	Ldn	24.0	-4.2	3.0	6.5	9.5	10.8	6.7	2.5	2.1	0.1	-8.2	-5.9	-5.5	-1.7	1.8	3.1	8.4	6.9	12.2	14.6	15.1	16.4	16.5	13.0	10.0	3.6	-8.1
Vac 21	Ldn	23.8	-4.4	2.8	6.3	9.4	10.7	6.6	2.3	1.9	-0.1	-8.4	-6.1	-5.8	-2.0	1.6	2.8	8.2	6.7	12.0	14.4	14.9	16.1	16.2	12.7	9.6	3.1	-8.7
Vac 22	Ldn	23.5	-4.6	2.6	6.1	9.2	10.5	6.4	2.1	1.7	-0.3	-8.6	-6.4	-6.0	-2.2	1.4	2.6	8.0	6.5	11.8	14.2	14.6	15.8	15.9	12.3	9.2	2.6	-9.3
Vac 23	Ldn	23.3	-4.7	2.4	5.9	9.0	10.3	6.2	1.9	1.5	-0.5	-8.9	-6.6	-6.2	-2.4	1.1	2.4	7.8	6.3	11.6	14.0	14.4	15.6	15.7	12.0	8.8	2.2	-10.0
Vac 24	Ldn	23.0	-4.9	2.3	5.8	8.9	10.2	6.1	1.7	1.3	-0.8	-9.1	-6.8	-6.5	-2.6	0.9	2.2	7.6	6.1	11.4	13.8	14.2	15.4	15.4	11.7	8.4	1.7	-10.6
Vac 25	Ldn	22.8	-5.1	2.1	5.6	8.7	10.0	5.9	1.5	1.1	-1.0	-9.3	-7.0	-6.7	-2.8	0.7	2.0	7.4	5.9	11.2	13.5	14.0	15.1	15.1	11.4	8.1	1.2	-11.2
Vac 26	Ldn	22.6	-5.2	2.0	5.5	8.6	9.8	5.7	1.3	0.9	-1.2	-9.5	-7.2	-6.9	-3.0	0.5	1.7	7.2	5.7	11.0	13.3	13.8	14.9	14.9	11.1	7.7	0.7	-11.8
Vac 27	Ldn	22.4	-5.4	1.8	5.3	8.4	9.7	5.6	1.1	0.6	-1.4	-9.7	-7.5	-7.1	-3.2	0.3	1.5	7.0	5.5	10.8	13.1	13.5	14.6	14.6	10.8	7.3	0.3	-12.5
Vac 28	Ldn	22.1	-5.6	1.6	5.1	8.2	9.5	5.4	0.9	0.4	-1.6	-9.9	-7.7	-7.3	-3.4	0.1	1.3	6.8	5.3	10.6	12.9	13.3	14.4	14.3	10.5	6.9	-0.2	-13.1
Vac 29	Ldn	21.9	-5.7	1.5	5.0	8.1	9.4	5.3	0.7	0.3	-1.8	-10.1	-7.9	-7.5	-3.6	-0.1	1.1	6.6	5.1	10.4	12.7	13.1	14.2	14.1	10.2	6.6	-0.7	-13.7
Vac 30	Ldn	21.7	-5.9	1.3	4.8	7.9	9.2	5.1	0.5	0.1	-2.0	-10.3	-8.1	-7.7	-3.8	-0.3	0.9	6.4	4.9	10.2	12.5	12.9	14.0	13.8	9.9	6.2	-1.2	-14.4
Vac 31	Ldn	23.5	-6.0	1.2	4.7	7.8	9.1	5.0	0.3	-0.1	-2.1	-10.4	-8.2	-7.8	-4.0	-0.4	0.8	6.3	4.8	12.6	14.9	15.2	16.3	16.2	12.2	8.4	1.0	-12.4
Vac 32	Ldn	23.4	-6.1	1.1	4.6	7.7	9.0	4.9	0.2	-0.2	-2.3	-10.6	-8.3	-8.0	-4.1	-0.5	0.7	6.2	4.6	12.4	14.8	15.1	16.1	16.0	12.0	8.2	0.6	-12.8
Remaining contrib. of src "Facade 01"	Ldn																											
Remaining contrib. of src "Facade 02"	Ldn																											
Remaining contrib. of src "Facade 03"	Ldn																											
Remaining contrib. of src "Facade 04"	Ldn																											
Remaining contrib. of src "Roof 01"	Ldn																											
Remaining contrib. of src "Transmissive	Ldn																											
Remaining contrib. of src "Transmissive	Ldn																											
Remaining contrib. of src "Vac 1"	Ldn																											

Source	Time slice	Sum dB(A)	25Hz dB(A)	31.5Hz dB(A)	40Hz dB(A)	50Hz dB(A)	63Hz dB(A)	80Hz dB(A)	100Hz dB(A)	125Hz dB(A)	160Hz dB(A)	200Hz dB(A)	250Hz dB(A)	315Hz dB(A)	400Hz dB(A)	500Hz dB(A)	630Hz dB(A)	800Hz dB(A)	1kHz dB(A)	1.25kHz dB(A)	1.6kHz dB(A)	2kHz dB(A)	2.5kHz dB(A)	3.15kHz dB(A)	4kHz dB(A)	5kHz dB(A)	6.3kHz dB(A)	8kHz dB(A)	
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Remaining contrib. of src "Vac 7"	Ldn																												
Remaining contrib. of src "Vac 8"	Ldn																												
Remaining contrib. of src "Vac 9"	Ldn																												
Remaining contrib. of src "Vac 10"	Ldn																												
Remaining contrib. of src "Vac 11"	Ldn																												
Remaining contrib. of src "Vac 12"	Ldn																												
Remaining contrib. of src "Vac 13"	Ldn																												
Remaining contrib. of src "Vac 14"	Ldn																												
Remaining contrib. of src "Vac 15"	Ldn																												
Remaining contrib. of src "Vac 16"	Ldn																												
Remaining contrib. of src "Vac 17"	Ldn																												
Remaining contrib. of src "Vac 18"	Ldn																												
Remaining contrib. of src "Vac 19"	Ldn																												
Remaining contrib. of src "Vac 20"	Ldn																												

Source	Time slice	Sum dB(A)	25Hz dB(A)	31.5Hz dB(A)	40Hz dB(A)	50Hz dB(A)	63Hz dB(A)	80Hz dB(A)	100Hz dB(A)	125Hz dB(A)	160Hz dB(A)	200Hz dB(A)	250Hz dB(A)	315Hz dB(A)	400Hz dB(A)	500Hz dB(A)	630Hz dB(A)	800Hz dB(A)	1kHz dB(A)	1.25kHz dB(A)	1.6kHz dB(A)	2kHz dB(A)	2.5kHz dB(A)	3.15kHz dB(A)	4kHz dB(A)	5kHz dB(A)	6.3kHz dB(A)	8kHz dB(A)	
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Remaining contrib. of src "Vac 32"	Ldn																												

Appendix D:

TJW Engineering Traffic Report

February 9, 2021

TJW ENGINEERING, INC.
TRAFFIC ENGINEERING &
TRANSPORTATION PLANNING
CONSULTANTS

Mr. Nicholas Lowe
Consultant Traffic Engineer
City of Lake Elsinore
130 South Main Street
Lake Elsinore, CA 92530

SUBJECT: Sunny Express Car Wash Vehicle Miles Traveled Memorandum, City of Lake Elsinore

Dear Mr. Lowe,

*TJW Engineering, Inc. (*TJW*)* is pleased to submit this Vehicle Miles Traveled (VMT) memorandum for the proposed Sunny Express Car Wash project in the City of Lake Elsinore. The proposed project includes 5,436 square foot express car wash. A site plan is attached for reference. The purpose of this memorandum is to summarize VMT analysis results.

Proposed Project

The project site is located at 31401 Riverside Drive south west of the intersection Riverside Drive and Walnut Drive in the City of Lake Elsinore. The project will construct a 5,436 square foot express car wash. Site access will be provided at Riverside Drive.

Vehicle Miles Traveled (VMT) Review

Senate Bill (SB) 743 was adopted in 2013 requiring the Governor's Office of Planning and Research (OPR) to identify new metrics for identifying and mitigating transportation impacts within the California Environmental Quality Act (CEQA). For land use projects, OPR has identified Vehicle Miles Traveled (VMT) as the new metric for transportation analysis under CEQA. The regulatory changes to the CEQA guidelines that implement SB 743 were approved on December 28th, 2018 with an implementation date of July 1st, 2020 as the new metric.

The following VMT guidelines are based on the WRCOG Implementation Pathway Study, March 2019, which provides options for both methodologies and VMT screening. As stated in City Traffic Impact Analysis guidelines, it is anticipated that the proposed project will be screened out per the following screening steps:

Step 2: Low VMT Area Screening

Residential and office projects located within a low VMT-generating area may be presumed to have a less than significant impact absent substantial evidence to the contrary. In addition, other employment-related and mixed-use land use projects may qualify for the use of screening if the project can reasonably be expected to generate VMT per resident, per worker, or per service population that is similar to the existing land uses in the low VMT area.

For this screening in the WRCOG area, the RIVTAM travel forecasting model was used to measure VMT performance for individual jurisdictions and for individual traffic analysis zones (TAZs). TAZs are geographic polygons similar to Census block groups used to represent areas of homogenous travel behavior. Total daily VMT per service population (population plus employment) was estimated for each TAZ. As shown in **Exhibit 1**, the RIVTAM model indicates the proposed project will be located within a low VMT generating area and is presumed to have a less than significant impact.

Step 3: Project Type Screening

Local serving retail projects less than 50,000 square feet may be presumed to have a less than significant impact absent substantial evidence to the contrary. Local serving retail generally improves the convenience of shopping close to home and has the effect of reducing vehicle travel. The proposed project will be local serving under 50,000 square feet and is presumed to have a less than significant impact.

Summary

This memorandum provides an overview of the VMT analysis for the proposed project for consistency with the new CEQA Guidelines. As stated in the City Traffic Impact Analysis guidelines, it was determined the proposed project passes the WRCOG Screening process and is presumed to have a less than significant transportation impact. The proposed project is a local serving retail project with less than 50,000 square feet and is within a low VMT generating area, therefore the proposed project does not require a further VMT analysis.

Please contact us at (949) 878-3509 if you have any questions regarding this memorandum.

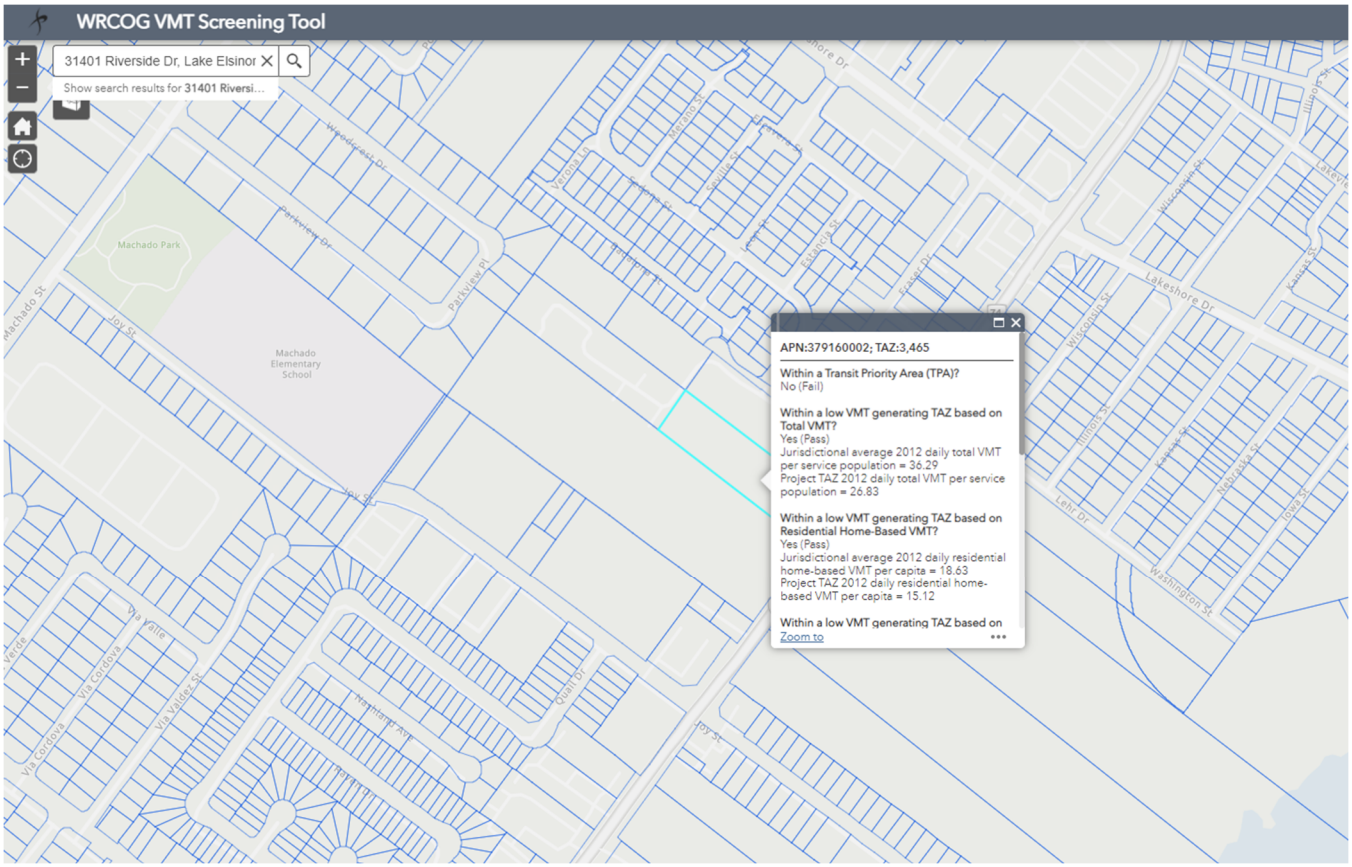
Sincerely,

Thomas Wheat, PE, TE
President

Daniel Flores, EIT
Project Engineer

Registered Civil Engineer *#69467*
Registered Traffic Engineer *#2565*

Exhibit 1: WRCOG VMT Screening Tool Results

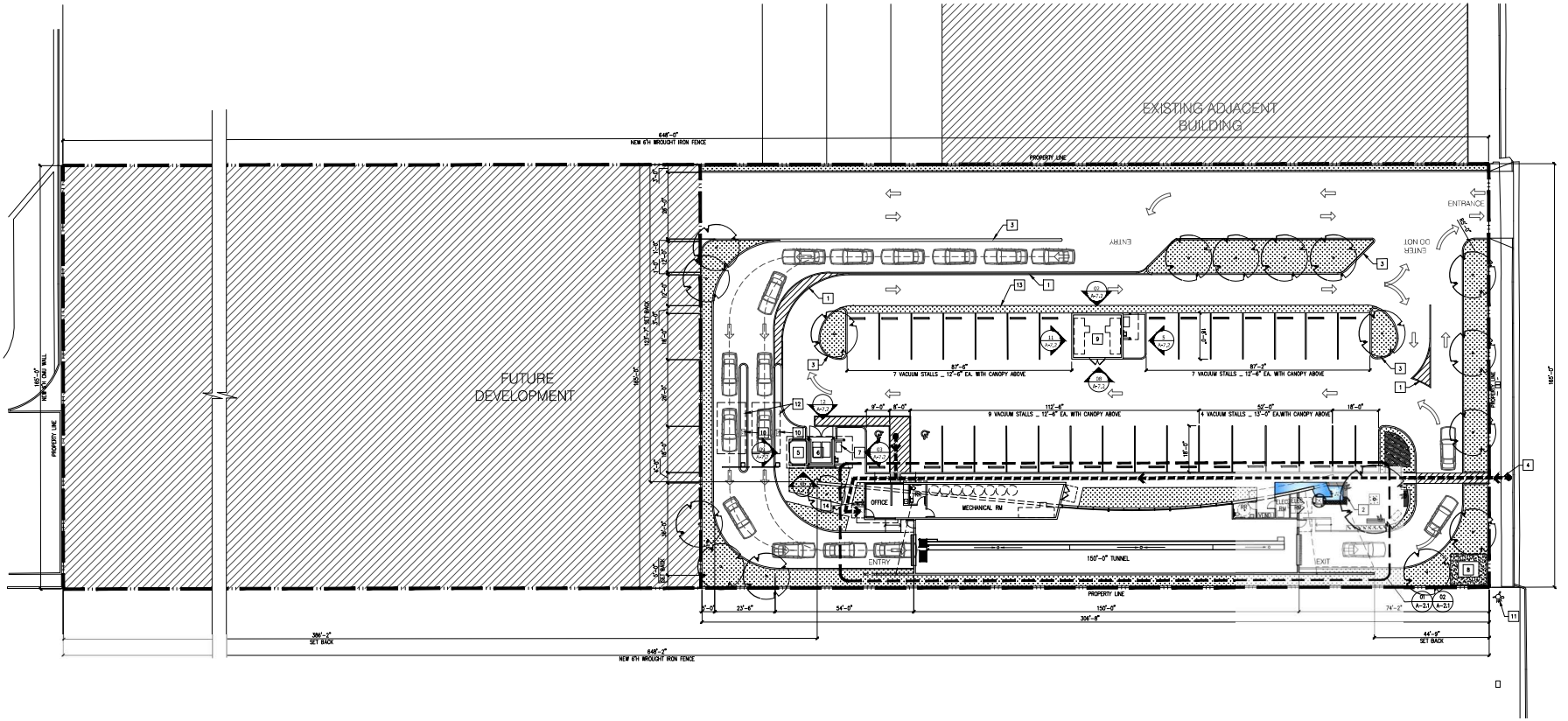


KEYNOTES

1	PAINT STRIPES	8	(N) TRANSFORMER PAD
2	BENCH/ WATER FEATURE	9	MECHANICAL ROOM. SEE 02, 05, 05, 11/A-CUP-7.2 FOR ELEVATIONS
3	6" HIGH CURB	10	PAY STATION
4	PUBLIC ACCESS	11	EXISTING FIRE HYDRANT
5	CUSTOMER SERVICE BOOTH. SEE 03, 06, 09, 12/A-CUP-7.2 FOR ELEVATIONS	12	PAY STATION CANOPY
6	TRASH ENCLOSURE/ RECYCLE. SEE 03, 06, 09, 12/A-CUP-7.2 FOR ELEVATIONS	13	ZERO CURB
7	FLOOR MAT WASHER	14	KNOX BOX

LEGEND

LANDSCAPE



SYNARC STUDIO
ARCHITECTURE . LANDSCAPE . INTERIOR DESIGN

17200 Red Hill Ave, Irvine, CA 92614
w: 949-596-4298 | m: 949-233-1126
jchoi@SynArcStudio.com | PN: 20_104

Sunny Express Carwash | 31401 Riverside Dr., Lake Elsinore, CA 92530

Proposed Site Plan

Scale: 1" = 20'

Issue for CUP
10/14/2020

A-CUP1.2

Exhibit B

SCOPING AGREEMENT FOR TRAFFIC IMPACT STUDY

This letter acknowledges the City of Lake Elsinore requirements for traffic impact analysis of the following project. The analysis must follow the City of Lake Elsinore Traffic Study Guidelines dated May 2020.

Case No. (i.e. TR, PM, CUP, PP) TBD (APN 379-160-002)
Related Cases -
SP No. *Provide SP No. and list of other approved or active projects within the SP.*
EIR No.
GPA No.
CZ No.
Project Name: Sunny Express Car Wash Lake Elsinore
Project Address: 31401 Riverside Drive
Project Description: 5,436 s.f. express car wash

	Consultant	Developer
Name:	TJW Engineering	Bradon Choi
Address:	6 Venture, Suite 225	29140 Medea Lane #1104
	Irvine, CA 92618	Agoura Hills, CA 91301
Telephone:	949-878-3509	213-249-4070

A. Trip Generation Source: (ITE 10th Edition + Supplement or other) SANDAG Traffic Generation Rates (See Attached)

Current GP Land Use: General Commercial — Proposed Land Use: General Commercial
Current Zoning: C2 (General Commercial) — Proposed Zoning: C2 (General Commercial)

	Current Trip Generation			Proposed Trip Generation (PCE)		
	In	Out	Total	In	Out	Total
AM Trips	0	0	0	14	14	28
PM Trips	0	0	0	33	33	66
					Daily Trips	720

Internal Trip Allowance ☐ Yes ☒ No ( ) % Trip Discount)
Pass-By Trip Allowance ☒ Yes ☐ No (20 % Trip Discount)
See attached trip generation

Internal and Pass-By trip allowance percentages shall be per NCHRP 684 and the ITE Trip Generation Manual. The pass-by trips at adjacent study area intersections and project driveways shall be indicated on a report figure. Internal trips that use external streets shall be indicated on a report figure.

B. Trip Geographic Distribution: N % S % E % W %
(Attach exhibit for detailed assignment)

C. Background Traffic

Project Build-out Year: 2023 — Annual Ambient Growth Rate: %
Phase Year(s), if needed: Single phase
Other area projects to be analyzed: (to be provided by the City planning department)

Model/Forecast methodology

Exhibit B – Scoping Agreement – Page 2

D. Study intersections: *(NOTE: Subject to revision after other projects, trip generation and distribution are determined, or comments from other agencies.)*

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

E. Study Roadway Segments: *(NOTE: Subject to revision after other projects, trip generation and distribution are determined, or comments from other agencies.)*

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

E. Other Jurisdictional Impacts

Is this project within one-mile radius of another jurisdiction or a State Highway? [X] Yes [ ] No

If so, name of Agency: Caltrans

F. Site Plan (please attach figure)

G. Specific issues to be addressed in the Study (in addition to the standard analysis described in the Guideline) (To be filled out by City)

_____
_____
_____

H. Existing Conditions

Traffic count data must be new or recent within 1 calendar year. Provide traffic count dates if using other than new counts. Date of counts:_____

I. Traffic Study Requirements

Traffic Study Required: ___ _____
Focused Study Required: ___ _____
Except from Analysis: X Less than 100 vehicle trips in the AM or PM Peak Hours
VMT screening memo required - NL

Recommended by:

Jeffrey Chinchilla - TJW Engineering — 01/26/21
Consultant's Representative — Date

Approved Scoping Agreement:

Nicholas Lowe — 2/4/2021
City of Lake Elsinore Engineering Department — Date

Scoping Agreement Submitted on 01/26/21

Revised on _____

Table 1: Proposed Project Trip Generation

Proposed Land Use[1]	Qty	Unit	Daily Trips (ADTs)		AM Peak Hour					PM Peak Hour					Pass By %'s [2]		
			Rate	Volume	Rate	In:Out Split	Volume			Rate	In:Out Split	Volume					
							In	Out	Total			In	Out	Total	AM	PM	Daily
Single-Tunnel Automated Car Wash	1.00	Tunnel	900	900	36.00	50:50	18	18	36	190.00	50:50	41	41	82	20%	20%	20%
Pass-By Trips				-180			-4	-4	-8			-8	-8	-16			
Net Total				**720**			**14**	**14**	**28**			**33**	**33**	**66**			

1: SANDAG, April 2002

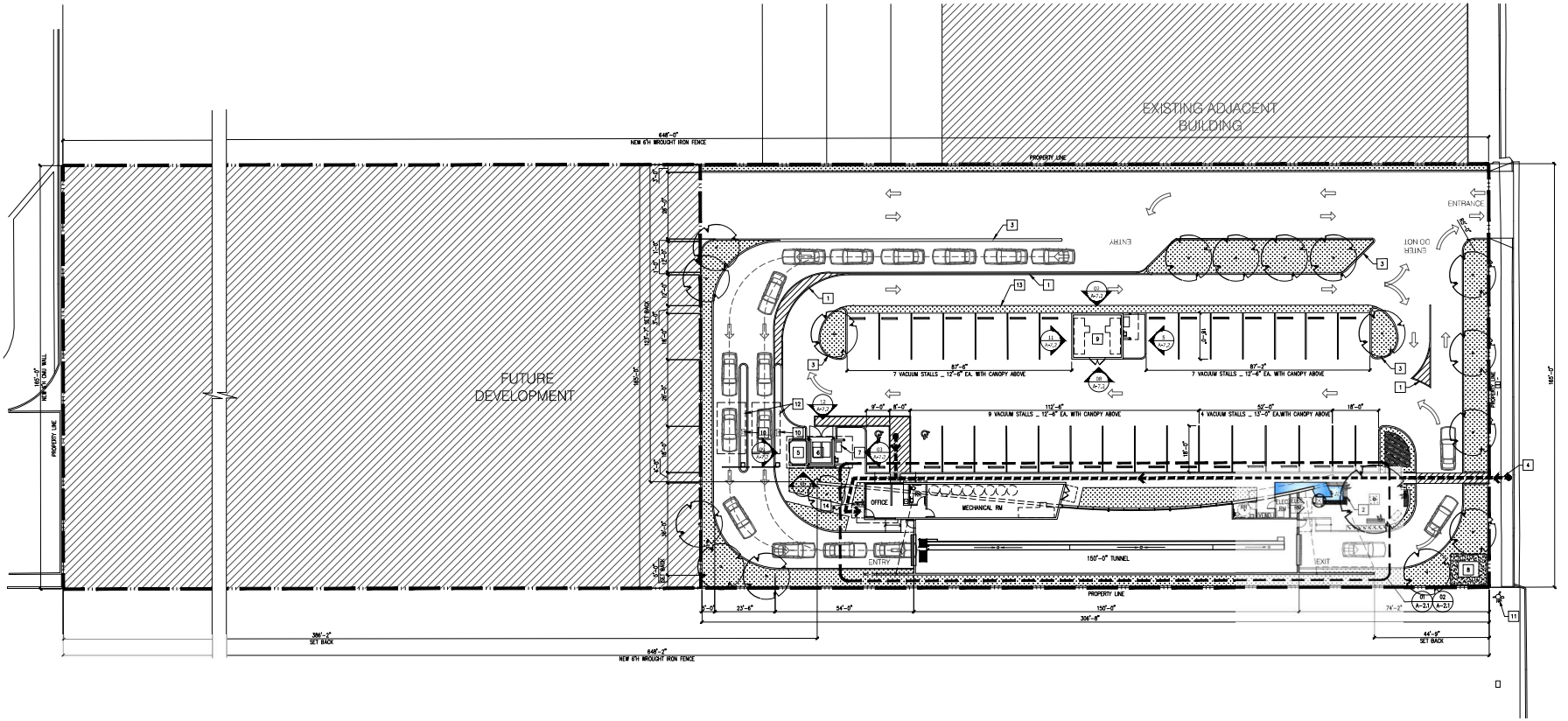
2: LADOT Traffic Study Policies and Procedures (2017)

KEYNOTES

1	PAINT STRIPES	8	(N) TRANSFORMER PAD
2	BENCH/ WATER FEATURE	9	MECHANICAL ROOM. SEE 02, 05, 05, 11/A-CUP-7.2 FOR ELEVATIONS
3	6" HIGH CURB	10	PAY STATION
4	PUBLIC ACCESS	11	EXISTING FIRE HYDRANT
5	CUSTOMER SERVICE BOOTH. SEE 03, 06, 09, 12/A-CUP-7.2 FOR ELEVATIONS	12	PAY STATION CANOPY
6	TRASH ENCLOSURE/ RECYCLE. SEE 03, 06, 09, 12/A-CUP-7.2 FOR ELEVATIONS	13	ZERO CURB
7	FLOOR MAT WASHER	14	KNOX BOX

LEGEND

LANDSCAPE



SYNARC STUDIO
ARCHITECTURE . LANDSCAPE . INTERIOR DESIGN

17200 Red Hill Ave, Irvine, CA 92614
w: 949-596-4298 | m: 949-233-1126
jchoi@SynArcStudio.com | PN: 20_104

Sunny Express Carwash | 31401 Riverside Dr., Lake Elsinore, CA 92530

Proposed Site Plan

Scale: 1" = 20'

Issue for CUP
10/14/2020

A-CUP1.2

(NOT SO)

BRIEF GUIDE OF VEHICULAR TRAFFIC GENERATION RATES FOR THE SAN DIEGO REGION

APRIL 2002

SANDAG
401 B Street, Suite 800
San Diego, California 92101
(619) 699-1900 • Fax (619) 699-1950

NOTE: This listing only represents a ***guide*** of average, or estimated, traffic generation "driveway" rates and some very general trip data for land uses (emphasis on acreage and building square footage) in the San Diego region. These rates (both local and national) are subject to change as future documentation becomes available, or as regional sources are updated. For more specific information regarding traffic data and trip rates, please refer to the San Diego Traffic Generators manual. ***Always check with local jurisdictions for their preferred or applicable rates.***

LAND USE	TRIP CATEGORIES [PRIMARY:DIVERTED:PASS-BY][P]	ESTIMATED WEEKDAY VEHICLE TRIP GENERATION RATE (DRIVEWAY)	HIGHEST PEAK HOUR % (plus IN:OUT ratio) Between 6:00-9:30 A.M.		Between 3:00-6:30 P.M.		TRIP LENGTH (Miles)[L]
AGRICULTURE (Open Space)	[80:18:2]	2/acre**					10.8
AIRPORT	[78:20:2]						12.5
Commercial		60/acre, 100/flight, 70/1000 sq. ft.* **	5%	(6:4)	6%	(5:5)	
General Aviation		6/acre, 2/flight, 6/based aircraft* **	9%	(7:3)	15%	(5:5)	
Heliports		100/acre**					
AUTOMOBILE[S]							
Car Wash							
Automatic		900/site, 600/acre**	4%	(5:5)	9%	(5:5)	
Self-serve		100/wash stall**	4%	(5:5)	8%	(5:5)	
Gasoline	[21:51:28]						2.8
with/Food Mart		160/vehicle fueling space**	7%	(5:5)	8%	(5:5)	
with/Food Mart & Car Wash		155/vehicle fueling space**	8%	(5:5)	9%	(5:5)	
Older Service Station Design		150/vehicle fueling space, 900/station**	7%	(5:5)	9%	(5:5)	
Sales (Dealer & Repair)		50/1000 sq. ft., 300/acre, 60/service stall* **	5%	(7:3)	8%	(4:6)	
Auto Repair Center		20/1000 sq. ft., 400/acre, 20/service stall*	8%	(7:3)	11%	(4:6)	
Auto Parts Sales		60/1000 sq. ft. **	4%		10%		
Quick Lube		40/service stall**	7%	(6:4)	10%	(5:5)	
Tire Store		25/1000 sq. ft., 30/service stall**	7%	(6:4)	11%	(5:5)	
CEMETERY		5/acre*					
CHURCH (or Synagogue)	[64:25:11]	9/1000 sq. ft., 30/acre** (quadruple rates for Sunday, or days of assembly)	5%	(6:4)	8%	(5:5)	5.1
COMMERCIAL/RETAIL[S]							
Super Regional Shopping Center (More than 80 acres, more than 800,000 sq. ft., w/usually 3 + major stores)		35/1000 sq. ft.,[C] 400/acre*	4%	(7:3)	10%	(5:5)	
Regional Shopping Center (40-80acres, 400,000-800,000 sq. ft., w/usually 2 + major stores)	[54:35:11]	50/1000 sq. ft.,[C] 500/acre*	4%	(7:3)	9%	(5:5)	5.2
Community Shopping Center (15-40 acres, 125,000-400,000 sq. ft., w/usually 1 major store, detached restaurant(s), grocery and drugstore)	[47:31:22]	80/1000 sq. ft., 700/acre* **	4%	(6:4)	10%	(5:5)	3.6
Neighborhood Shopping Center (Less than 15 acres, less than 125,000 sq. ft., w/usually grocery & drugstore, cleaners, beauty & barber shop, & fast food services)		120/1000 sq. ft., 1200/acre* **	4%	(6:4)	10%	(5:5)	
Commercial Shops	[45:40:15]						
Specialty Retail/Strip Commercial		40/1000 sq. ft., 400/acre*	3%	(6:4)	9%	(5:5)	4.3
Electronics Superstore		50/1000 sq. ft**			10%	(5:5)	
Factory Outlet		40/1000 sq. ft.**	3%	(7:3)	9%	(5:5)	
Supermarket		150/1000 sq. ft., 2000/acre* **	4%	(7:3)	10%	(5:5)	
Drugstore		90/1000 sq. ft.**	4%	(6:4)	10%	(5:5)	
Convenience Market (15-16 hours)		500/1000 sq. ft.**	8%	(5:5)	8%	(5:5)	
Convenience Market (24 hours)		700/1000 sq. ft.**	9%	(5:5)	7%	(5:5)	
Convenience Market (w/gasoline pumps)		850/1000 sq. ft., 550/vehicle fueling space**	6%	(5:5)	7%	(5:5)	
Discount Club		60/1000 sq. ft., 600/acre* **	1%	(7:3)	9%	(5.5)	
Discount Store		60/1000 sq. ft., 600/acre**	3%	(6:4)	8%	(5:5)	
Furniture Store		6/1000 sq. ft., 100/acre**	4%	(7:3)	9%	(5:5)	
Lumber Store		30/1000 sq. ft., 150/acre**	7%	(6:4)	9%	(5:5)	
Home Improvement Superstore		40/1000 sq. ft.**	5%	(6:4)	8%	(5:5)	
Hardware/Paint Store		60/1000 sq. ft., 600/acre**	2%	(6:4)	9%	(5:5)	
Garden Nursery		40/1000 sq. ft., 90/acre**	3%	(6:4)	10%	(5:5)	
Mixed Use: Commercial (w/supermarket)/Residential		110/1000 sq. ft., 2000/acre* (commercial only) 5/dwelling unit, 200/acre* (residential only)	3% 9%	(6:4) (3:7)	9% 13%	(5:5) (6:4)	
EDUCATION							
University (4 years)	[91:9:0]	2.4/student, 100 acre*	10%	(8:2)	9%	(3:7)	8.9
Junior College (2 years)	[92:7:1]	1.2/student, 24/1000 sq. ft., 120/acre* **	12%	(8:2)	9%	(6:4)	9.0
High School	[75:19:6]	1.3/student, 15/1000 sq. ft., 60/acre* **	20%	(7:3)	10%	(4:6)	4.8
Middle/Junior High	[63:25:12]	1.4/student, 12/1000 sq. ft. 50/acre**	30%	(6:4)	9%	(4:6)	5.0
Elementary	[57:25:10]	1.6/student, 14/1000 sq. ft., 90/acre* **	32%	(6:4)	9%	(4:6)	3.4
Day Care	[28:58:14]	5/child, 80/1000 sq. ft.**	17%	(5:5)	18%	(5:5)	3.7
FINANCIAL[S]	[35:42:23]						3.4
Bank (Walk-In only)		150/1000 sq. ft., 1000/acre* **	4%	(7:3)	8%	(4:6)	
with Drive-Through		200/1000 sq. ft., 1500/acre*	5%	(6:4)	10%	(5:5)	
Drive-Through only		250 (125 one-way)/lane*	3%	(5:5)	13%	(5:5)	
Savings & Loan		60/1000 sq. ft., 600/acre**	2%		9%		
Drive-Through only		100 (50 one-way)/lane**	4%		15%		
HOSPITAL	[73:25:2]						8.3
General		20/bed, 25/1000 sq. ft., 250/acre*	8%	(7:3)	10%	(4:6)	
Convalescent/Nursing		3/bed**	7%	(6:4)	7%	(4:6)	
INDUSTRIAL							
Industrial/Business Park (commercial included)	[79:19:2]	16/1000 sq. ft., 200/acre* **	12%	(8:2)	12%	(2:8)	9.0
Industrial Park (no commercial)		8/1000 sq. ft., 90/acre**	11%	(9:1)	12%	(2:8)	
Industrial Plant (multiple shifts)	[92:5:3]	10/1000 sq. ft., 120/acre*	14%	(8:2)	15%	(3:7)	11.7
Manufacturing/Assembly		4/1000 sq. ft., 50/acre**	19%	(9:1)	20%	(2:8)	
Warehousing		5/1000 sq. ft., 60/acre**	13%	(7:3)	15%	(4:6)	
Storage		2/1000 sq. ft., 0.2/vault, 30/acre*	6%	(5:5)	9%	(5:5)	
Science Research & Development		8/1000 sq. ft., 80/acre*	16%	(9:1)	14%	(1:9)	
Landfill & Recycling Center		6/acre	11%	(5:5)	10%	(4:6)	

(OVER)

Appendix E:

Construction Noise Modeling Output

Activity	L_{eq} at 80 feet dBA	L_{Max} at 80 feet dBA
Grading	82	83
Building Construction	78	79
Paving	79	82

Equipment Summary	Reference (dBA) 50 ft Lmax
Rock Drills	96
Jack Hammers	82
Pneumatic Tools	85
Pavers	80
Dozers	85
Scrappers	87
Haul Trucks	88
Cranes	82
Portable Generators	80
Rollers	80
Tractors	80
Front-End Loaders	86
Hydraulic Excavators	86
Graders	86
Air Compressors	86
Trucks	86

Grading

		Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements								
No.	Equipment Description	Reference (dBA) 50 ft Lmax	Quantity	Usage Factor[1]	Distance to Receptor (ft)	Ground Effect	Shielding (dBA)	Calculated (dBA) Lmax	Leq	Energy
1	Grader	86	1	40	80	0.5	0	80.9	76.9	49176773.9
2	Dozer	85	1	40	80	0.5	0	79.9	75.9	39062500
3	Excavator	86	1	40	80	0.5	0	80.9	76.9	49176773.9
4	Tractor/Backhoe	80	1	40	80	0.5	0	74.9	70.9	12352647.1
							Lmax*	**83**	**Leq**	**82**
							Lw	**115**	**Lw**	**113**

Source: MD Acoustics, July 2018.

1- Percentage of time that a piece of equipment is operating at full power.

dBA – A-weighted Decibels

Lmax- Maximum Level

Leq- Equivalent Level

Feet	Meters	Ground Effect	No Shielding Leq dBA	1 dBA Shielding Leq dBA	2 dBA Shielding Leq dBA	3 dBA Shielding Leq dBA	4 dBA Shielding Leq dBA	5 dBA Shielding Leq dBA	6 dBA Shielding Leq dBA	7 dBA Shielding Leq dBA	8 dBA Shielding Leq dBA	9 dBA Shielding Leq dBA	10 dBA Shielding Leq dBA	11 dBA Shielding LeqdBA	12 dBA Shielding Leq dBA	13 dBA Shielding Leq dBA	14 dBA Shielding Leq dBA	15 dBA Shielding Leq dBA
50	**15.2**	**0.5**	**82**	**81**	**80**	**79**	**78**	**77**	**76**	**75**	**74**	**73**	**72**	**71**	**70**	**69**	**68**	**67**
60	18.3	0.5	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65
70	21.3	0.5	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63
80	24.4	0.5	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62
90	27.4	0.5	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60
100	30.5	0.5	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59
110	33.5	0.5	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58
120	36.6	0.5	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57
130	39.6	0.5	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56
140	42.7	0.5	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56
150	45.7	0.5	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55
160	48.8	0.5	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54
170	51.8	0.5	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53
180	54.9	0.5	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53
190	57.9	0.5	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52
200	61.0	0.5	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52
210	64.0	0.5	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51
220	67.1	0.5	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51
230	70.1	0.5	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50
240	73.1	0.5	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50
250	76.2	0.5	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
260	79.2	0.5	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
270	82.3	0.5	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48
280	85.3	0.5	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48
290	88.4	0.5	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48
300	91.4	0.5	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47
310	94.5	0.5	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47
320	97.5	0.5	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47
330	100.6	0.5	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46
340	103.6	0.5	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46
350	106.7	0.5	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46
360	109.7	0.5	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45
370	112.8	0.5	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45

Building Construction

		Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements								
No.	Equipment Description	Reference (dBA) 50 ft Lmax	Quantity	Usage Factor[1]	Distance to Receptor (ft)	Ground Effect	Shielding (dBA)	Calculated (dBA) Lmax	Calculated (dBA) Leq	Energy
1	Cranes	82	1	40	80	0.5	0	76.9	72.9	19577626.3
2	Forklift/Tractor	80	1	40	80	0.5	0	74.9	70.9	12352647.1
3	Generator	80	1	40	80	0.5	0	74.9	70.9	12352647.1
4	Tractor/Backhoe	80	1	40	80	0.5	0	74.9	70.9	12352647.1
							Lmax*	**79**	**Leq**	**78**
							Lw	**111**	**Lw**	**109**

Source: MD Acoustics, July 2018.

1- Percentage of time that a piece of equipment is operating at full power.

dBA – A-weighted Decibels

Lmax- Maximum Level

Leq- Equivalent Level

Feet	Meters	Ground Effect	No Shielding Leq dBA	1 dBA Shielding Leq dBA	2 dBA Shielding Leq dBA	3 dBA Shielding Leq dBA	4 dBA Shielding Leq dBA	5 dBA Shielding Leq dBA	6 dBA Shielding Leq dBA	7 dBA Shielding Leq dBA	8 dBA Shielding Leq dBA	9 dBA Shielding Leq dBA	10 dBA Shielding Leq dBA	11 dBA Shielding LeqdBA	12 dBA Shielding Leq dBA	13 dBA Shielding Leq dBA	14 dBA Shielding Leq dBA	15 dBA Shielding Leq dBA
50	**15.2**	**0.5**	**78**	**77**	**76**	**75**	**74**	**73**	**72**	**71**	**70**	**69**	**68**	**67**	**66**	**65**	**64**	**63**
60	18.3	0.5	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61
70	21.3	0.5	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59
80	24.4	0.5	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57
90	27.4	0.5	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56
100	30.5	0.5	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55
110	33.5	0.5	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54
120	36.6	0.5	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53
130	39.6	0.5	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52
140	42.7	0.5	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51
150	45.7	0.5	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51
160	48.8	0.5	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50
170	51.8	0.5	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
180	54.9	0.5	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
190	57.9	0.5	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48
200	61.0	0.5	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47
210	64.0	0.5	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47
220	67.1	0.5	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46
230	70.1	0.5	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46
240	73.1	0.5	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45
250	76.2	0.5	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45
260	79.2	0.5	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45
270	82.3	0.5	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44
280	85.3	0.5	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44
290	88.4	0.5	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43
300	91.4	0.5	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43
310	94.5	0.5	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43
320	97.5	0.5	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42
330	100.6	0.5	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42
340	103.6	0.5	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42
350	106.7	0.5	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41
360	109.7	0.5	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41
370	112.8	0.5	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41

Paving

		Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements								
No.	Equipment Description	Reference (dBA) 50 ft Lmax	Quantity	Usage Factor[1]	Distance to Receptor (ft)	Ground Effect	Shielding (dBA)	Calculated (dBA) Lmax	Calculated (dBA) Leq	Energy
1	Pavers	86	1	40	80	0.5	0	80.9	76.9	49176773.9
2	Rollers	80	1	40	80	0.5	0	74.9	70.9	12352647.1
3	Paving Equipment	80	1	40	80	0.5	0	74.9	70.9	12352647.1
							Lmax*	**82**	**Leq**	**79**
							Lw	**114**	**Lw**	**110**

Source: MD Acoustics, July 2018.

1- Percentage of time that a piece of equipment is operating at full power.

dBA – A-weighted Decibels

Lmax- Maximum Level

Leq- Equivalent Level

Feet	Meters	Ground Effect	No Shielding Leq dBA	1 dBA Shielding Leq dBA	2 dBA Shielding Leq dBA	3 dBA Shielding Leq dBA	4 dBA Shielding Leq dBA	5 dBA Shielding Leq dBA	6 dBA Shielding Leq dBA	7 dBA Shielding Leq dBA	8 dBA Shielding Leq dBA	9 dBA Shielding Leq dBA	10 dBA Shielding Leq dBA	11 dBA Shielding LeqdBA	12 dBA Shielding Leq dBA	13 dBA Shielding Leq dBA	14 dBA Shielding Leq dBA	15 dBA Shielding Leq dBA
50	**15.2**	**0.5**	**79**	**78**	**77**	**76**	**75**	**74**	**73**	**72**	**71**	**70**	**69**	**68**	**67**	**66**	**65**	**64**
60	18.3	0.5	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62
70	21.3	0.5	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60
80	24.4	0.5	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59
90	27.4	0.5	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57
100	30.5	0.5	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56
110	33.5	0.5	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55
120	36.6	0.5	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54
130	39.6	0.5	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53
140	42.7	0.5	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53
150	45.7	0.5	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52
160	48.8	0.5	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51
170	51.8	0.5	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50
180	54.9	0.5	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50
190	57.9	0.5	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
200	61.0	0.5	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
210	64.0	0.5	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48
220	67.1	0.5	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48
230	70.1	0.5	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47
240	73.1	0.5	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47
250	76.2	0.5	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46
260	79.2	0.5	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46
270	82.3	0.5	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45
280	85.3	0.5	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45
290	88.4	0.5	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45
300	91.4	0.5	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44
310	94.5	0.5	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44
320	97.5	0.5	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44
330	100.6	0.5	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43
340	103.6	0.5	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43
350	106.7	0.5	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43
360	109.7	0.5	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42
370	112.8	0.5	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42

VIBRATION LEVEL IMPACT

Project:	Sunny Car Wash	Date: 2/10/21
Source:	Large Bulldozer	
Scenario:	Unmitigated	
Location:	Project Site	
Address:		

PPV = PPVref(25/D)^n (in/sec)

DATA INPUT

Equipment = Type	2	Large Bulldozer	INPUT SECTION IN BLUE
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	15.00	Distance from Equipment to Receiver (ft)	
n =	1.10	Vibration attenuation rate through the ground	

Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.

DATA OUT RESULTS

PPV =	**0.156**	IN/SEC	OUTPUT IN RED