Appendix J

Noise Study

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MEMORANDUM

To:	H. P. Kang, MBA City of Hemet 445 E Florida Ave Hemet, CA 92543
From:	Mark Storm, INCE Bd. Cert.
Subject:	Noise Analysis for the Stetson Corner Project
Date:	October 19, 2020
Attachment(s):	A: MD Acoustics 2017 Noise Report B: Acoustic Terminology and Definitions C: Traffic Noise Model (v. 2.5) Input and Output D: Operation Noise Model Input and Output Data

Dudek is pleased to submit this noise impact assessment to assist the City of Hemet (City) with initial environmental planning requirements for the proposed Stetson Corner Project (Proposed Project).

This memorandum estimates potential noise and vibration impacts from operation of the Proposed Project in accordance with the California Environmental Quality Act (CEQA) Guidelines and reflecting an update to the Project layout of proposed facilities subsequent to the original project EIR.

The original 2017 MD Acoustics Noise Report (Attachment A) prepared for the earlier EIR for the Proposed Project concluded that there were no significant impacts related to exposing people residing or working in the Proposed Project vicinity to excessive noise levels as a result of short-term construction noise, groundborne vibration or groundborne noise levels. Additionally, the Proposed Project is not located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport or within the vicinity of a private airstrip. Therefore, and because changes to the Proposed Project would not alter these findings and their supporting analyses, these issues are not included as part of this noise assessment. As such, analysis provided in this noise assessment focuses on regulatory requirements and potential impacts related to implementation of the Proposed Amendment to the site plan as it relates to a substantial permanent increase in ambient noise levels in the Proposed Project vicinity above levels existing without the Proposed Project.

The contents and organization of this memorandum are as follows: project description, environmental setting, regulatory setting, noise and vibration impacts assessment, conclusions, and references cited. Attachment B provides a glossary of common acoustical terms that should help acquaint the reader with metrics and descriptors used herein to present and discuss results of the noise impact assessment for the Proposed Project.

1 Project Description

The 8.7-acre project site is located in the City of Hemet (City), California. Specifically, the Proposed Project is located at the southeast corner of Sanderson and Stetson Avenues (Figure 1, Project Location). The Proposed Project intends to develop commercial uses including a 12-bay gas station with an approximately 4,088-square-foot convenience store (7-Eleven), an approximately 2,660-square-foot drive-thru fast food restaurant, and an approximately 3,590 square-foot car wash with 21 self-serve vacuum stations under a 3,096-square-foot canopy (Figure 2, Site Plan). For purposes of this noise analysis, it is assumed the car wash and associated customer vacuum units would only be allowed to operate within daytime hours (7:00 a.m. to 10:00 p.m.). At night, the gas station, convenience store, and fast-food restaurant may be open for some nighttime hours and with reduced onsite patronage (compared to daytime levels).

2 Environmental Setting

2.1 Noise Characteristics and Terminology

2.1.1 Fundamentals of Sound

Pressure fluctuations, traveling as waves through air from a source, exert a force perceived by the human ear as sound. Sound pressure level (often referred to generally as "sound level" or "noise level") is expressed by way of a logarithmic scale in decibels (dB) that represent magnitude of these air pressure waves with respect to the threshold of average human hearing. The human ear is more sensitive to middle and higher frequencies (those usually associated with speech) of the audible spectrum, especially when the noise levels are quieter; thus, to accommodate for this phenomenon, a decibel weighting system was developed to mimic this human hearing frequency response. The frequency weighting called the "A" scale is typically used for quantifying typical environmental sound levels that de-emphasizes the low frequency components of the sound in a manner similar to the response of an average healthy human ear. An A-weighted sound level is thus described in units of "dBA" and distinguishes the value from a "flat" or unweighted dB value. In a manner similar to the scaling of temperature on a thermometer, Table 1 provides examples of common indoor and outdoor sound sources having A-weighted levels that "line-up" with the listed dB values.

Table 1: Typical Sound Levels in the Environment and Industry

Common Outdoor Activities	Noise Level (dB)	Common Indoor Activities
—	110	Rock band
Jet flyover at 300 meters (1,000 feet)	100	—
Gas lawn mower at 1 meter (3 feet)	90	—
Diesel truck at 15 meters (50 feet), at 80 kph (50 mph)	80	Food blender at 1 meter (3 feet)
		Garbage disposal at 1 meter (3 feet)
Noisy urban area, daytime	70	Vacuum cleaner at 3 meters (10 feet)
gas lawn mower at 30 meters (100 feet)		

Table 1: Typical Sound Levels in the Environment and Industry

Common Outdoor Activities	Noise Level (dB)	Common Indoor Activities
Commercial area	60	Normal speech at 1 meter (3 feet)
Heavy traffic at 90 meters (300 feet)		
Quiet urban daytime	50	Large business office
		Dishwasher, next room
Quiet urban nighttime	40	Theater, large conference room (background)
Quiet suburban nighttime	30	Library
Quiet rural night time	20	Bedroom at night, concert hall (background)
—	10	Broadcast/recording studio
Lowest threshold of human hearing	0	Lowest threshold of human hearing

Source: Caltrans 2013a.
Notes: kph = kilometers per hour; mph = miles per hour

The equivalent noise level L_{eq}, also referred to as the energy-average sound level, is a single number representing the fluctuating sound level in decibels (dB) over a specified period of time. It is a sound-energy average of the fluctuating level and is equal to a constant unchanging sound of that dB level. Community noise sources vary continuously, being the product of many noise sources at various distances, all of which in aggregate tend to constitute a relatively stable background sound environment. This background, added to perceptibly dominant acoustical contributors (i.e., those that are the loudest and/or closest to the listener position) makes the overall "ambient" sound that a sound level meter can detect with its microphone and quantify as a dB level.

Noise levels are generally higher during the daytime and early evening when traffic (including airplanes), commercial, and industrial activity is the greatest. However, noise sources experienced during nighttime hours when background levels are generally lower can be potentially more conspicuous and irritating to the receiver. In order to evaluate noise in a way that considers periodic fluctuations experienced throughout the day and night, a concept termed "community noise equivalent level" (CNEL) was developed. The CNEL scale represents a time-weighted 24-hour average noise level based on the A-weighted equivalent (L_{eq}) sound level. But more than merely a 24-hour L_{eq}, CNEL accounts for the increased noise sensitivity during the evening hours (7 p.m. to 10 p.m.) and nighttime hours (10 p.m. to 7 a.m.) by adding 5 dB to the hourly average sound levels occurring during the evening hours and 10 dB to the hourly average sound levels occurring during nighttime hours.

2.1.2 Exterior Noise Distance Attenuation

Noise sources are largely classified in two forms: 1) point sources, such as stationary equipment or a group of construction vehicles and equipment working within a spatially limited area at a given time; and 2) line sources, such as a roadway with a large number of pass-by sources (motor vehicles). Sound generated by a point source typically diminishes (attenuates) at a rate of 6.0 dBA for each doubling of distance from the source to the receptor at acoustically "hard" sites and at a rate of 7.5 dBA for each doubling of distance from source to receptor at acoustically "soft" sites. These attenuation rates would also be expected for sound propagation away from a

horizontal area source, which can be approximated as a single point such as the geographic center of the area. By comparison, sound generated by a line source (such as a roadway) typically attenuates at a rate of 3.0 dBA for each doubling of distance from the source to the receptor at acoustically "hard" sites and at a rate of 4.5 dBA for each doubling of distance from source to receptor at acoustically "soft" sites.

Sound levels can also be attenuated by man-made or natural barriers. For the purpose of a sound attenuation discussion, hard, smooth, or otherwise acoustically reflective surfaces do not provide any excess ground-effect attenuation and are characteristic of sealed asphalt roads, bodies of water, and hard-packed soils. An acoustically soft or absorptive surface, on the other hand, is exemplified by fresh-fallen snow, tilled soils, or thickly-vegetated ground cover.

2.1.3 Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration can be a serious concern, causing buildings to shake and rumbling sounds to be heard. In contrast to noise, vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of vibration are trains, buses on rough roads, and construction activities, such as blasting, pile driving, and heavy earthmoving equipment.

Several different descriptors are used to quantify vibration. Peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. PPV is most frequently used to describe vibration impacts to buildings and is usually measured in inches per second (ips). The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body and is defined as the average of the squared amplitude of the signal. Decibel notation (VdB) is commonly used to describe RMS amplitude with respect to a reference quantity. The decibel notation acts to compress, and thus make more convenient for presentation and discussion purposes, the range of numbers required to describe vibration.

High levels of vibration may cause risk of or actual damage to buildings. However, most people consider vibration to be an annoyance that can affect concentration or disturb sleep. In addition, high levels of vibration can interfere with processes or equipment that are highly sensitive to vibration (e.g., electron microscopes). Most perceptible indoor vibration is caused by sources within buildings, such as operation of mechanical equipment, movement of people, or slamming of doors. Typical outdoor sources of perceptible vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If the roadway is smooth, which means there are little or no bumps that could cause a slight wheel drop or other force impulse, the vibration from traffic is rarely perceptible.

2.1.4 Sensitive Receptors

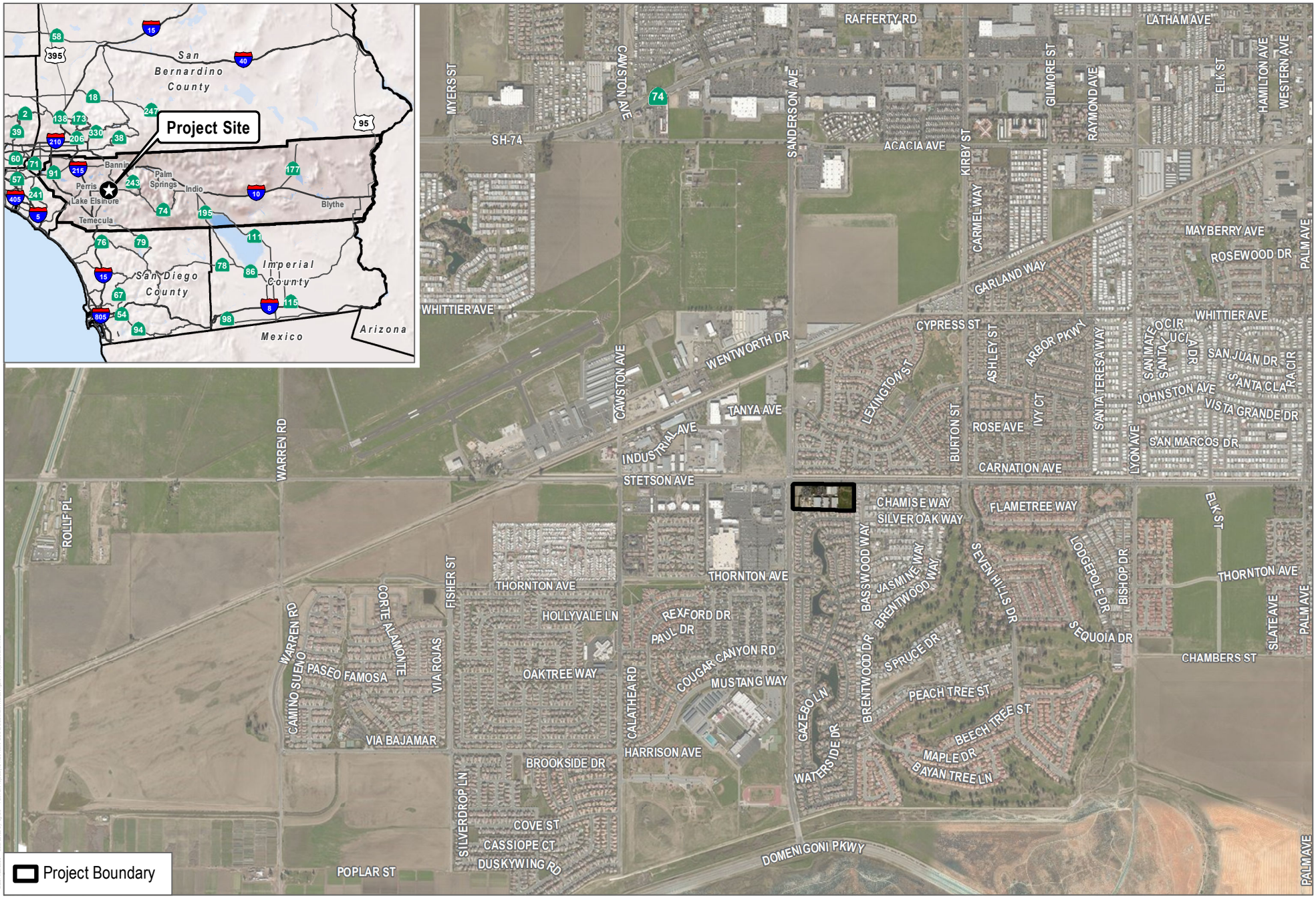
Noise- and vibration-sensitive land uses are locations where people reside or where the presence of unwanted sound and/or vibration could adversely affect the use of the land. Residences, schools, hospitals, guest lodging, libraries, and some passive recreation areas would be considered noise and vibration sensitive and may warrant unique measures for protection from intruding noise.

Sensitive receptors near the project site include adjoining existing single-family residential uses to the south, and north of Stetson Avenue. The closest of the former are located approximately 15 feet from the Proposed Project

site boundary. These sensitive receptors represent the nearest residential land uses with the potential to be impacted by normal operation of the Proposed Project features. Additional sensitive receptors are located farther from the project site in the surrounding community and would be less impacted by noise and vibration levels than the above-listed sensitive receptors.

2.2 Existing Outdoor Ambient Sound Levels

The measurements of existing outdoor sound level in the vicinity of the Proposed Project as disclosed in Attachment A are still considered representative of the sound environment. Dominant acoustical contributors include regular volumes of roadway traffic associated with the intersection of Stetson Avenue and Sanderson Avenue.



SOURCE: Riverside County 2020; Bing Maps

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0 1,000 2,000 Feet

FIGURE 1

Project Location

Stetson Corner

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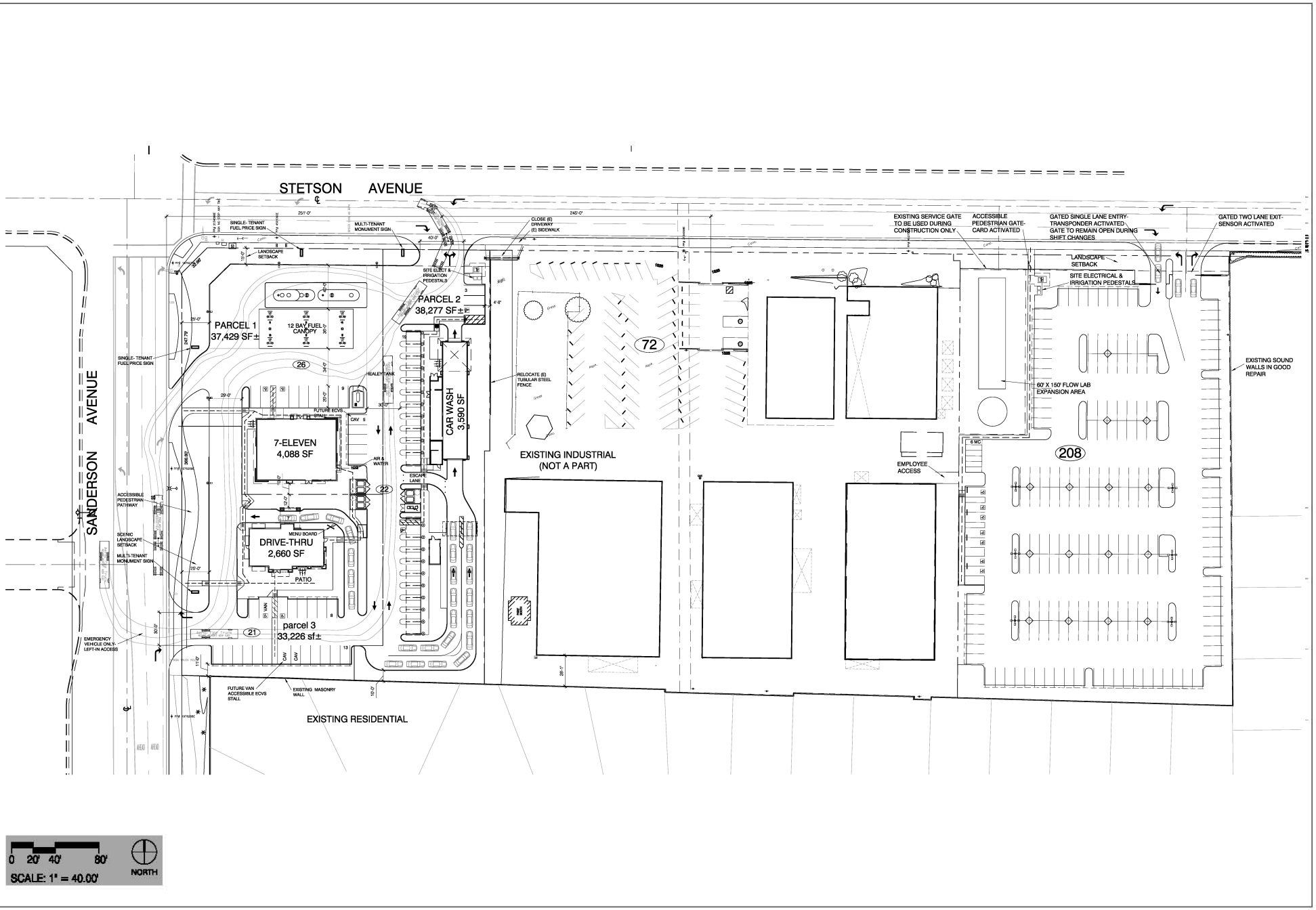

SOURCE: GK Pierce Architects 2019

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FIGURE 2
Site Plan
Stetson Corner

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3 Regulatory Setting

Applicable policies and standards governing environmental noise in the City are set forth in the General Plan Public Safety Chapter. Table 6.5 from the City's General Plan 2030 outlines the acceptable daytime/nighttime noise performance standards for non-transportation noise sources and is detailed in Table 2 (below):

Table 2: Noise Level Performance Standards for Non-transportation Noise Sources

Noise Level Descriptor	Daytime 7:00 am to 10:00 pm	Nighttime 10:00 pm to 7:00 am
Hourly Average Level (L_{eq})	60 dBA	45 dBA
Maximum Equivalent Levels (L_{max})	75 dBA	65 dBA

Source: City of Hemet 2030 General Plan, Public Safety Element, Table 6.5
Notes: Each of the noise levels specified shall be lowered by 5 decibels for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings). The noise standard is to be applied at the property lines of the affected land use.

The Proposed Project operations will occur during daytime hours; therefore, it must demonstrate compliance to the City's 60 dBA noise limit at the property line of nearby residential receptors. In addition to the noise standards, the City has outlined goals, policies and implementation measures to reduce potential noise impacts and are presented below:

Goals, Policies, and Implementation Measures

Policies and goals from the Safety and Noise Chapter that would mitigate potential impacts on noise include the following.

Goal PS-11 Manage noise levels through land use planning and development review.

PS-11.1 **Noise Standards**. Enforce noise standards to maintain acceptable noise limits and protect existing areas with acceptable noise environments.

PS-11.2 **Design to Minimize Noise**. Encourage the use of siting and building design techniques as a means to minimize noise.

PS-11.3 **Evaluate Noise**. Evaluate potential noise conflicts for individual sites and projects, and require mitigation of all significant noise impacts (including construction and short- term noise impacts) as a condition of project approval.

PS-11.4 **Protect Noise-Sensitive Uses**. Protect noise-sensitive uses from new noise sources.

Goal PS-12 Minimize noise conflicts from transportation sources and airports.

PS-12.1 **Traffic Noise**. Minimize noise conflicts between current and proposed land uses and the circulation network by encouraging compatible land uses around critical roadway segments with higher noise potential.

Goal PS-13 Minimize noise conflicts with stationary noise generators.

PS-13.2 **New Sensitive Uses**. Restrict the location of sensitive land uses near major noise sources to achieve the standards present in Table 6.4.

PS-13.3 **Prevent Encroachment**. Prevent the encroachment of noise sensitive land uses into areas designated for use by existing or future noise generators.

4 Thresholds of Significance

The following significance criteria are based on Appendix G of the California Environmental Quality Act Guidelines (14 CCR 15000 et seq.) and will be used to determine the significance of potential noise impacts. Impacts related to noise would be significant if the proposed project would result in the following:

a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
b. Generation of excessive groundborne vibration or groundborne noise levels; and,
c. Expose people residing or working in the project area to excessive noise levels (for a project located within the vicinity of a private airstrip or an airport land use plan, or where such a plan has not been adopted, within 2 miles of a public airport or public use airport).

The following Section 5 considers only the first (a) of these three significance criteria, evaluating potential impacts with respect to relevant regulations, standards, and guidance that have been introduced in Section 3. Significance criteria (b) and (c) have already been adequately discussed for the assessment of construction noise and vibration impacts and aviation-related noise exposure, respectively.

5 Impact Discussion

a) ***Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?***

Long-Term Operational

Increase of Off-Site Roadway Traffic Noise

The Proposed Project would result in the contribution of additional vehicle trips on local arterial roadways (i.e., Stetson Avenue and Sanderson Avenue), which could result in increased traffic noise levels at adjacent noise-sensitive land uses. Attachment C, Traffic Noise Model (v. 2.5) Input and Output Data, contains a spreadsheet with traffic volume data (average daily trips, ADT) for Stetson Avenue and Sanderson Avenue based on the Traffic Impact Assessment prepared for the proposed project (Dudek 2020). In particular, the Proposed Project would generate 3,038 ADT along Stetson Avenue and Sanderson Avenue. Potential noise effects from vehicular traffic were assessed by comparing traffic volumes from the 2017 MD Acoustics Noise Report (Attachment A) with updated volumes in the 2020 traffic impact analysis. In addition to comparing traffic volumes, potential noise effects from

vehicular traffic were assessed using the Federal Highway Administration's Traffic Noise Model (TNM) version 2.5 (FHWA 2004) to quantify estimated traffic noise levels, and eliminate discrepancies in ADT volumes found in the 2017 MD Acoustics Noise Report. Information used in the TNM model included the roadway geometry, posted traffic speeds, and traffic volumes for the following scenarios: existing (year 2020), existing plus project, cumulative (existing plus ambient without project), cumulative plus project, buildout (2023), and buildout plus project.

The predicted CNEL values for existing conditions shown in Table 3 are each within +/-.05 dB of the MD Acoustics 2017 Noise Report CNEL (approximated by the measured L_{eq} values) shown in Attachment A, which suggests good agreement since a 2-3 dB difference is barely perceptible. Validated by this value agreement, the same TNM-based model is used to predict the above scenario's traffic noise levels.

Table 3. Off-site Roadway Traffic Noise Modeling Results

Modeled Receiver Tag (Location Description)	Existing (2019) Noise Level (dBA CNEL)	Existing (2019) Plus Project Noise Level (dBA CNEL)	Opening Year (2023) Noise level (dBA CNEL)	Opening Year Plus Project Noise level (dBA CNEL)	Cumulative (Existing + Ambient) Noise level (dBA CNEL)	Cumulative Plus Project Noise Level (dBA CNEL)	Maximum Project-Related Noise Level Increase (dB)
M1 (Southwestern project boundary)	68.7	69	68.9	69.1	69.4	69.6	0.3
M2 (Northeastern project boundary)	68.9	69.5	69.1	69.7	69.9	70.4	0.6
M3 (Residence North of Stetson)	57.6	58.1	57.7	58.3	58.5	59	0.5
M4 (Residence North of Stetson)	57.9	58.5	58	58.6	58.9	59.4	0.6
M5 (Residence South of Stetson)	57.3	57.9	57.5	58.1	58.3	58.8	0.6
M6 (Residence South of Stetson)	61	61.3	61.2	61.4	61.7	61.9	0.3
M7 (Residence South of Stetson)	52.2	52.5	52.4	52.7	53	53.2	0.3
M8 (Residence South of Stetson)	48.5	48.9	48.6	49.1	49.3	49.7	0.5

The City's Noise Element establishes a policy for exterior use areas of sensitive land uses to be protected from high noise levels. The Noise Element sets 65 dBA CNEL for the outdoor (i.e., exterior use) areas and 45 dBA CNEL for interior areas (e.g., residential indoor space) as the upper limit for normally acceptable levels. In addition, for the purposes of this noise analysis, traffic-related noise impacts are considered significant when they cause an increase

of 3 dB or more from existing noise levels. An increase or decrease in noise level of at least 3 dB is required before any noticeable change in community response would be expected (Caltrans 2013a).

Table 3 shows that at all listed receptor locations, the addition of proposed project traffic to the roadway network would result in a CNEL increase of less than 3 dB, which is below the discernible level of change for the average healthy human ear. Thus, a **less-than-significant impact** is expected for proposed project-related off-site traffic noise increases affecting existing residences in the vicinity.

Stationary Operations Noise

The Proposed Project is expected to feature "stationary" producers of noise associated with onsite operations that are distinct from the transportation noise studied in the preceding section. The assumed major onsite operating noise sources during daytime hours (7:00 a.m. to 10:00 p.m.) are as follows:

- The 4,088 square foot convenience store (e.g., 7-Eleven) and a 2,660 square foot drive-thru fast food restaurant would both likely feature a packaged air-conditioner on its roof, which we could assume would be something like a 5-ton (refrigeration) air-cooled condensing unit resembling a Carrier CA16NA 060 and thus having a reference sound power level of 78 dBA (or 76 dBA if equipped with a "sound shield" [Carrier 2012]). These two rooftop HVAC units would also operate during some or all nighttime hours.
- An approximately 3,590 square-foot car wash with 21 operating self-serve vacuum stations under a 3,096-square-foot canopy. Sound sources include:
  - Each vacuum unit exhibiting 77 dBA sound power level; and,
  - Each of three car wash tunnel exit air dryers (blowers) exhibiting 104 dBA sound power level.
- Eleven (11) idling vehicles queued up for the car-wash and seven (7) idling vehicles in line for the fast food restaurant drive thru window for no more than five minutes in any hour (8.25% of the time), consistent with state law for trucks. Conservatively, a pick-up truck is considered idling with L_{max} = 71 dBA at 50 feet. Three (3) additional vehicles are idling in parking stalls near the proposed restaurant, and three are idling at parking stalls associated with the convenience store.
- An Idling recreational vehicle (RV) idling just before and after using the fuel pumps, up to one at a time during daytime and nighttime hours and idling for no more than five minutes in any hour (8.25% of the time), consistent with state law for trucks. Conservatively, a large RV is considered an idling bus with L_{max} = 72 dBA at 50 feet.
- Up to six (6) fuel pumps operate during the day for no more than 20 minutes in any hour (33% of the time), and each generates no more than 80 dBA sound power level.

The aggregate sound emission of these Proposed Project on-site noise-producing sources was predicted with CadnaA, a commercially available sound propagation modeling software program based on International Organization of Standardization (ISO) 9613-2 standards. Key modeling parameters and assumptions utilized by the software include the following:

- Ground effect acoustical absorption coefficient equal to 0.2, which intends to represent what will largely be a paved or concrete surface on the Proposed Project site;

- Reflection order of 1, which allows for a single reflection of sound paths on encountered structural surfaces such as the modeled facades of the Proposed Project fast-food restaurant, convenience store, and car wash operations building portion westerly adjacent to the car wash tunnel;
- Offsite residential structures and the commercial buildings of the easterly-adjoining site have not been rendered in the model
- Building facades are a combination of stucco/plaster, glazing, and diffractive surface features that yield an approximate net acoustical absorption coefficient of 0.2; and,
- Calm meteorological conditions (i.e., no wind) with 68 degrees Fahrenheit and 70% relative humidity.

Table 4 compares the predicted aggregate Proposed Project operation noise emission levels (i.e., at the modeled receptor locations appearing in Figure 3) and the applicable City of Hemet daytime noise thresholds. Figure 3 displays predicted levels from project stationary sources out to a modeled calculation boundary. Attachment D, Operational Noise Model Input and Output Data, provides details of the calculated values appearing in Table 4. Even under these conservative sound modeling conditions, such as all 21 vacuum stations in use by prospective customers of the car wash, no exceedances with respect to the municipal standards are expected; thus, operational noise impact from stationary sources during daytime hours should be **less than significant**.

Table 4. Predicted Project Daytime Stationary Operations Noise at Nearest Sensitive Receptors

Receptor	M1 (Southwestern project boundary)	M2 (Northeastern project boundary)	M3 (Residence North of Stetson)	M4 (Residence North of Stetson)	M5 (Residence South of Stetson)	M6 (Residence South of Stetson)	M7 (Residence South of Stetson)	M8 (Residence South of Stetson)	M9* (Industrial property to the east of project site)
Predicted Stationary Ops Noise Level (hourly L_{eq})	53	54	53	50	53	57	58	55	76
Hourly L_{eq} Limit (residential/industrial zone)	60	60	60	60	60	60	60	60	n/a
Exceedance?	no	no	no	no	no	no	no	no	n/a

* not a noise-sensitive receptor according to City of Hemet General Plan

Table 5 is similar to Table 4, but presents the predicted aggregate Proposed Project nighttime operation noise emission levels (i.e., at the modeled receptor locations appearing in Figure 4) and the applicable City of Hemet nighttime noise thresholds. Like Figure 3, Figure 4 displays predicted levels from project stationary sources out to a modeled calculation boundary. Attachment D, Operational Noise Model Input and Output Data, provides details of the calculated values appearing in Table 5. The differences between the daytime operation model and the nighttime operation model are as follows:

- The car wash, its idling vehicles, and customer vacuum stations are inoperative;

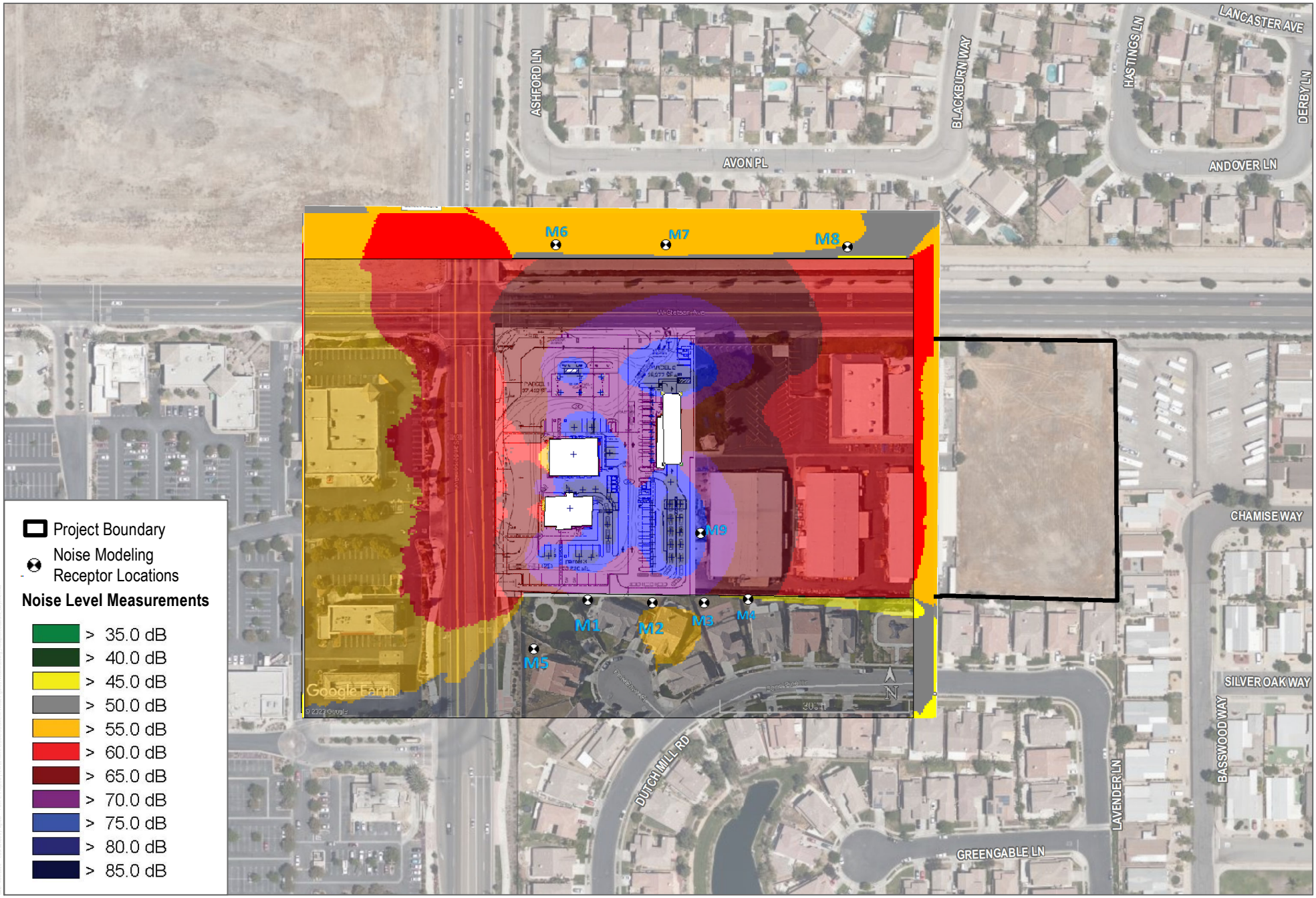
- Only three fuel pumps are operating;
- Only two idling vehicles at the convenience store and two at the fast-food restaurant parking lots; and,
- Only three vehicles idling at the fast-food restaurant drive-thru queue.

All other model inputs are the same as that of the daytime prediction model. No exceedances with respect to the municipal nighttime standards are expected; thus, operational noise impact from stationary sources during nighttime hours should be **less than significant**.

Table 5. Predicted Project Nighttime Stationary Operations Noise at Nearest Sensitive Receptors

Receptor	M1 (Southwestern project boundary)	M2 (Northeastern project boundary)	M3 (Residence North of Stetson)	M4 (Residence North of Stetson)	M5 (Residence South of Stetson)	M6 (Residence South of Stetson)	M7 (Residence South of Stetson)	M8 (Residence South of Stetson)	M9* (Industrial property to the east of project site)
Predicted Stationary Ops Noise Level (hourly L_{eq})	41	42	40	38	37	45	45	41	59
Hourly L_{eq} Limit (residential/industrial zone)	45	45	45	45	45	45	45	45	n/a
Exceedance?	no	no	no	no	no	no	no	no	n/a

* not a noise-sensitive receptor according to City of Hemet General Plan



SOURCE: Riverside County 2020; Bing Maps

FIGURE 3

Noise Modeling Receptor Locations - Daytime Measurements

Stetson Corner

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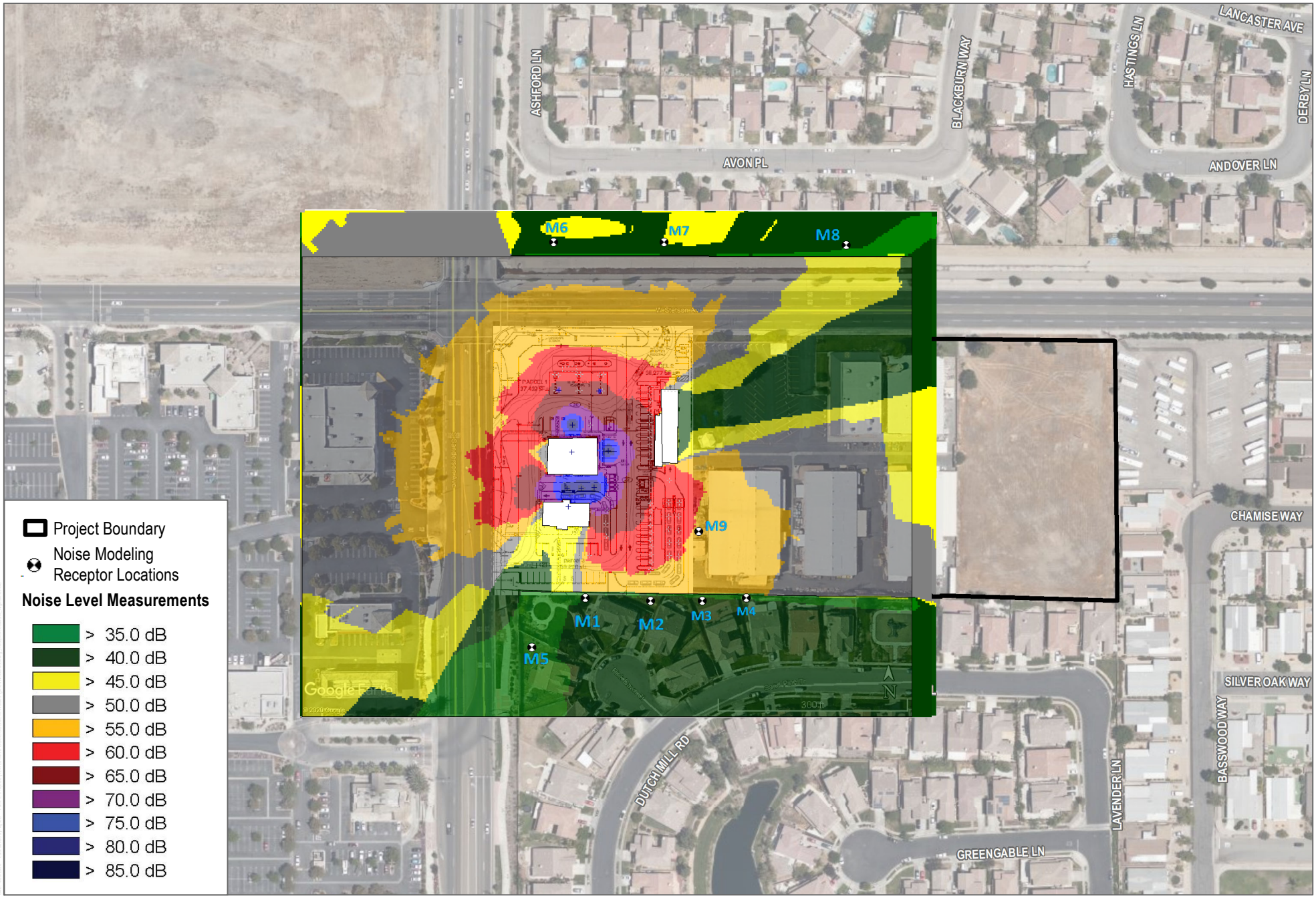

SOURCE: Riverside County 2020; Bing Maps

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0 150 300 Feet

FIGURE 4

Noise Modeling Receptor Locations - Nighttime Measurements

Stetson Corner

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5 Conclusions

Based upon the modeled traffic and stationary-source operational noise, predicted sound levels attributed to the Proposed Project are not in excess of City standards at the Project boundary with its neighbors.

We trust that this technical memorandum meets your Project needs with the City. Should you have any questions or require additional information, please do not hesitate to contact Mark Storm at (760) 479-4297, mstorm@dudek.com; or, Connor Burke at (760) 479-4272, cburke@dudek.com.

Sincerely,

Mark Storm, INCE Bd. Cert.
Acoustic Services Manager

Connor Burke
Environmental Analyst

Att. A: MD Acoustics 2017 Noise Report
B: Acoustic Terminology and Definitions
C: Traffic Noise Model (v. 2.5) Input and Output Data
D: Operational Noise Model Input and Output Data

6 References

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Attachment A

MD Acoustics 2017 Noise Report

Attachment A

MD Acoustics 2017 Noise Report

McHolland Retail

Noise Impact Study

City of Hemet, CA

Prepared for:

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MD ACOUSTICS
Sound Solutions for Planning and Design

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1.0 Introduction

1.1 Purpose of Analysis and Study Objectives

This noise assessment was prepared to evaluate the potential noise impacts for the project study area and to recommend noise mitigation measures, if necessary, to minimize the potential noise impacts. The assessment was conducted and compared to the noise standards set-forth by the Federal, State and Local agencies. Consistent with the City's Noise Guidelines, the project must demonstrate compliance to the applicable noise criterion as outlined within the City's Noise Element and Municipal Code.

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 analysis of traffic noise impacts to and from the project site
- An analysis of stationary noise impacts to and from the project site
- An analysis of construction noise impacts

1.2 Site Location and Study Area

The project site is located southeast corner Sanderson Avenue and Stetson Avenue, in the City of Hemet, California, as shown in Exhibit A. The site is currently zoned as Business Park. Land uses surrounding the site include residential to the north and south, industrial to the east and retail to the west.

1.3 Proposed Project Description

The project proposes to develop a convenience market with 12 vehicle fueling positions and an automatic car wash facility with approximately 21 vacuum bays.

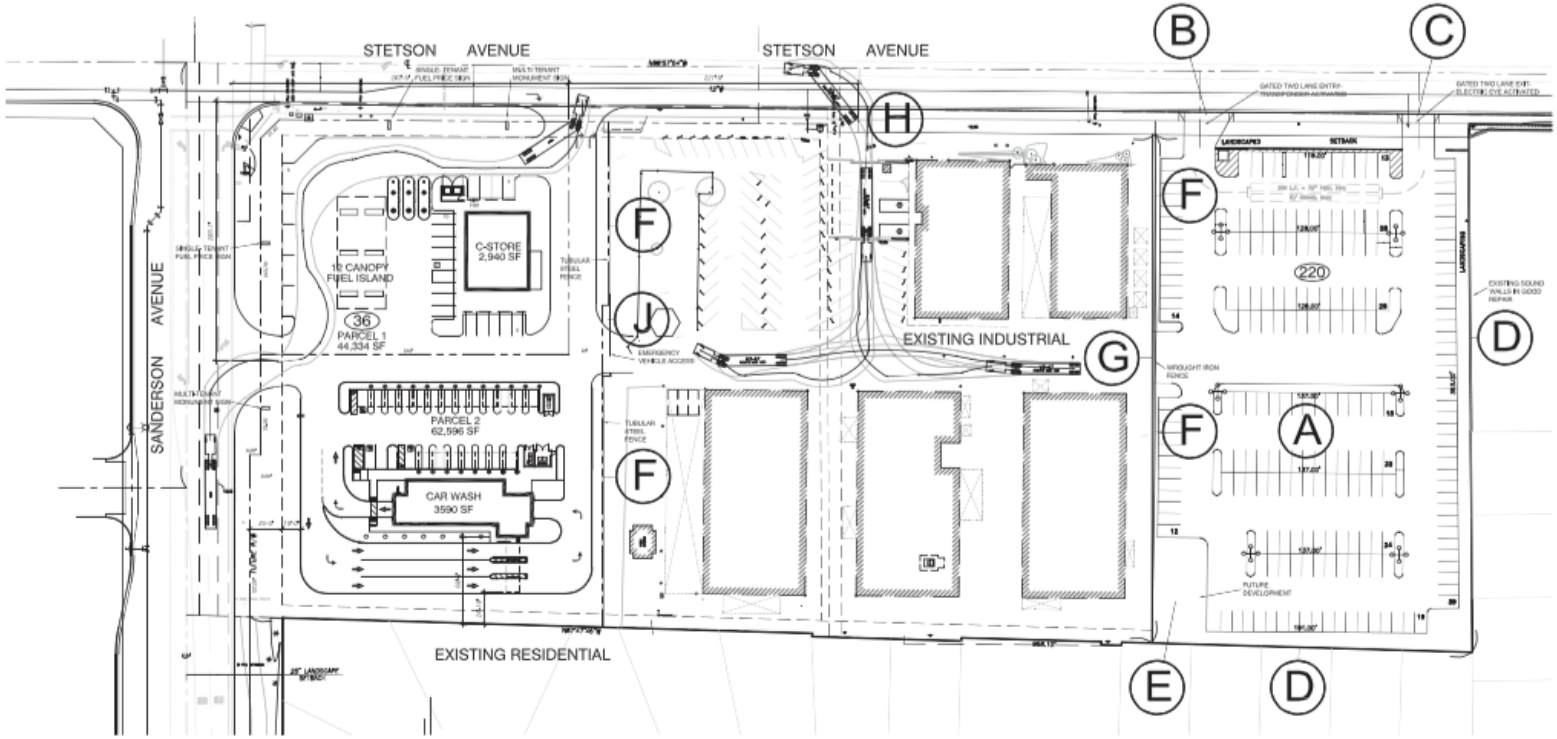
This study assesses both the traffic and stationary noise to and from the project site and compares the results to the applicable City noise limits. The primary source of traffic noise propagates from Sanderson Avenue and Stetson Avenue. The primary source of stationary noise propagates from the on-site car wash blow dryer system, vacuums and convenience store operations. The site plan used for this is illustrated in Exhibit B.

Construction activities within the Project area will consist of on-site grading, building, paving, and architectural coating.

Exhibit A
Location Map

Exhibit B

Site Plan



KEY NOTES

- (A) 220 STALL, PAVED & STRIPED PARKING LOT
- (B) GATED, 2 LANE ENTRY- TRANSPONDER ACTIVATED
- (C) GATED, 2 LANE EXIT- ELECTRIC EYE ACTIVATED
- (D) EXISTING SOUND WALL IN GOOD REPAIR
- (E) FUTURE DEVELOPMENT AREA
- (F) SOLID BAR, STEEL FENCING
- (G) PEDESTRIAN GATE
- (H) EXISTING McCROMETER TRUCK INGRESS/ EGRESS TO REMAIN
- (J) TUBULAR STEEL GATE- EMERGENCY VEHICLE ACCESS ONLY

CONCEPTUAL SITE PLAN
SCHEME Mv3

0 20' 40' 80'
SCALE: 1" = 40.00'
NORTH

McHOLLAND RETAIL
HEMET, CALIFORNIA

PAGE PLAZA PARTNERS, LLC
38011 STONE MEADOW DRIVE
MURRIETA, CA 92562
951.643.4711

GKP PIERCE ARCHITECTS

2.0 Fundamentals of Noise

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

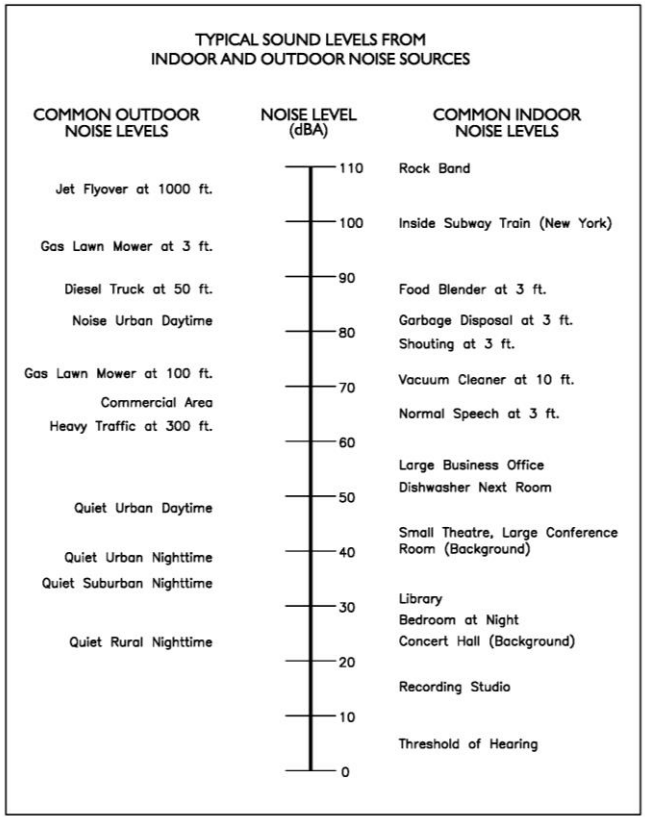
2.1 Sound, Noise and Acoustics

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 it loudness. The loudness of sound increases or decreases as the amplitude increases or decreases. Sound pressure amplitude is measure in units of micro-Newton per square inch meter (N/m2), 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, (A-weighted scale) 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). Typically, the human ear can barely perceive the 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.

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

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 Perception

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 wave front, 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 wave front. 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 wave front. 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 Hemet 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 to regulate noise from aircraft and airports. The Federal Highway Administration (FHWA) is responsible to regulate 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 federal government advocates that local jurisdiction 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.

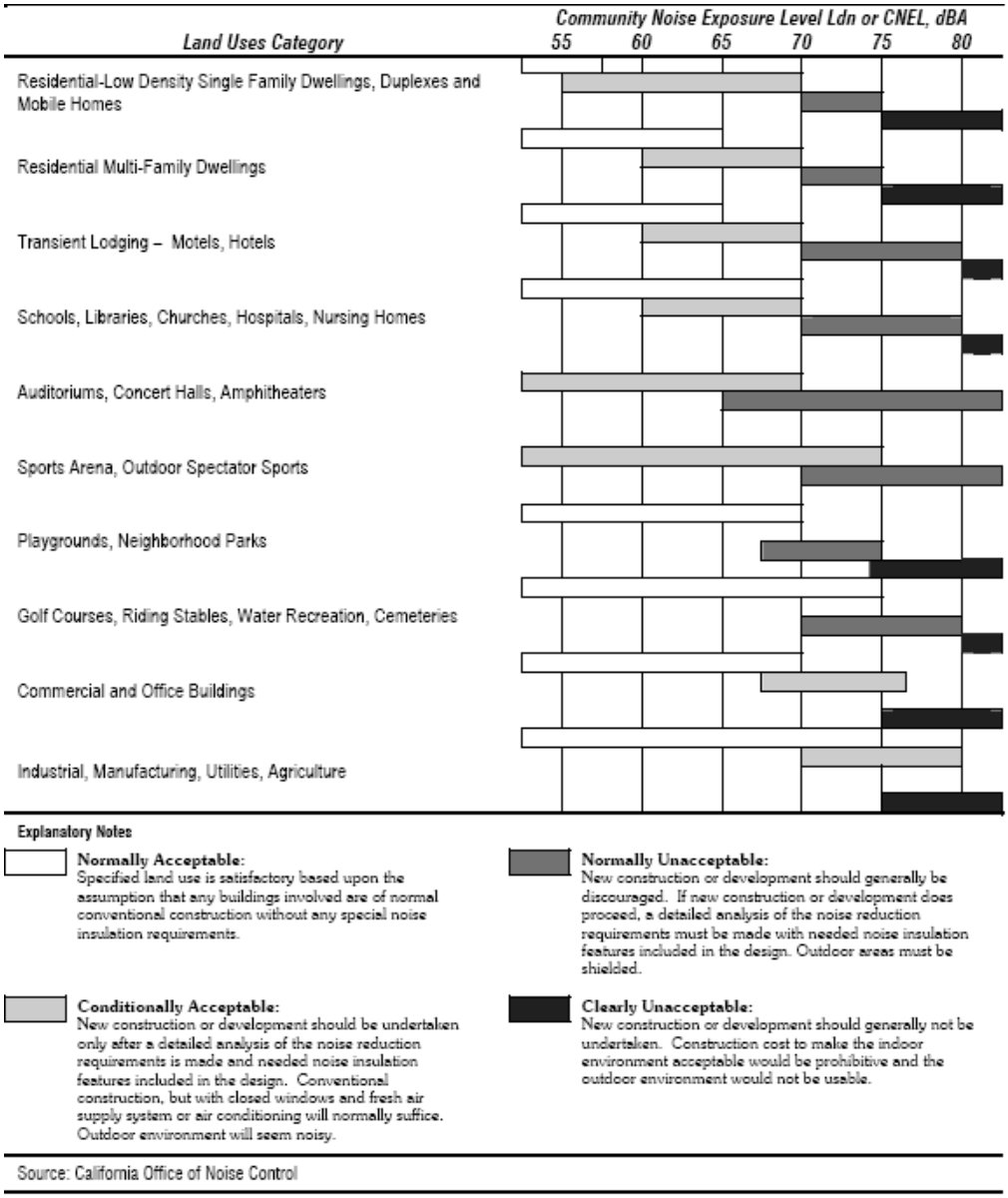
4.2 State Regulations

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 Hemet Noise Regulations

The City of Hemet outlines their noise regulations and standards within the Noise Element from the General Plan and the Noise Ordinance from the Municipal Code.

Applicable policies and standards governing environmental noise in the City are set forth in the General Plan Public Safety Chapter. Table 6.5 from the City's General Plan 2030 outlines the acceptable daytime/nighttime noise performance standards for nontransportation noise sources and is detailed in Table 1 (below):

Table 1: Noise Level Performance Standards for Nontransportation Noise Sources[1]

Noise Level Descriptor	Daytime	Nighttime
	7:00 am to 10:00 pm	10:00 pm to 7:00 am
Hourly Average Level (Leq)	60 dBA	45 dBA
Maximum Equivalent Levels (Lmax)	75 dBA	65 dBA

Source: City of Hemet 2030 General Plan, Public Safety Element, Table 6.5

Notes:
Each of the noise levels specified shall be lowered by 5 decibels for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings). The noise standard is to be applied at the property lines of the affected land use.

Project operations will occur during daytime hours. Therefore, the project must demonstrate compliance to the City's 60 dBA noise limit.

In addition to the noise standards, the City has outlined goals, policies and implementation measures to reduce potential noise impacts and are presented below:

Goals, Policies, and Implementation Measures

Policies and goals from the Safety and Noise Chapter that would mitigate potential impacts on noise include the following.

Goal PS-11 Manage noise levels through land use planning and development review.

PS-11.1 **Noise Standards.** Enforce noise standards to maintain acceptable noise limits and protect existing areas with acceptable noise environments.

PS-11.2 **Design to Minimize Noise.** Encourage the use of siting and building design techniques as a means to minimize noise.

PS-11.3 **Evaluate Noise.** Evaluate potential noise conflicts for individual sites and projects, and require mitigation of all significant noise impacts (including construction and short-term noise impacts) as a condition of project approval.

PS-11.4 **Protect Noise-Sensitive Uses.** Protect noise-sensitive uses from new noise sources.

Goal PS-12 Minimize noise conflicts from transportation sources and airports.

PS-12.1 **Traffic Noise.** Minimize noise conflicts between current and proposed land uses and the circulation network by encouraging compatible land uses around critical roadway segments with higher noise potential.

Goal PS-13 Minimize noise conflicts with stationary noise generators.

PS-13.2 **New Sensitive Uses.** Restrict the location of sensitive land uses near major noise sources to achieve the standards present in Table 6.4.

PS-13.3 **Prevent Encroachment.** Prevent the encroachment of noise sensitive land uses into areas designated for use by existing or future noise generators.

Construction Noise Regulations

Section 30-32 [33] of the Municipal Code exempts construction noise that occurs between the hours of 6:00 a.m. and 6:00 p.m. during the months of June through September and between the hours of 7:00 a.m. and 6:00 p.m. during the months of October through May. The Code permits Saturday construction between the hours of 7:00 a.m. and 6:00 p.m. and prohibits Sunday construction.

Section 90-1048 (1) of the Municipal Code declares that no use, except a temporary construction operation, shall be permitted which creates noise of a maximum sound pressure level greater than the value established in the public safety element of the general plan, and adopted building codes, or as may be further determined by project specific mitigation measures. The general plan specifies land use compatibility standards to ensure that stationary noise sources (e.g., industrial uses) do not adversely affect noise-sensitive land uses and that community noise environments do not negatively affect land uses.

Vibration

Section 90-1048 (7) of the Municipal Code declares that no use, except a temporary construction operation, shall be permitted which creates vibration sufficient to cause a displacement of 0.003 inch beyond the boundaries of the site.

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 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 CalTrans technical noise specifications. All measurements 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 wind screen 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 Long-Term Noise Measurement Location

The noise monitoring location was selected based on the distance of the project’s stationary noise sources to the nearest sensitive on-site receptors. The long-term noise measurement was conducted on the southern property line of the project site and represents ambient levels at the site. Appendix A includes photos, field sheet, and measured noise data. Exhibit E (next page) illustrates the location of the measurement.

5.3 FHWA Traffic Noise Prediction Model

Traffic noise from vehicular traffic was projected using a computer program that replicates the FHWA Traffic Noise Prediction Model (FHWA-RD-77-108). The FHWA model arrives at the predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). Roadway volumes were provided by Trames Solutions, Inc. The referenced traffic data was applied to the model and is in Appendix B. The following outlines the key adjustments made to the REMEL for the roadway inputs:

Exhibit E

Measurement Locations

1 = 24-hour noise reading

2 = 10-min noise reading

- Roadway classification – (e.g. freeway, major arterial, arterial, secondary, collector, etc),
- Roadway Active Width – (distance between the center of the outer most travel lanes on each side of the roadway)
- Average Daily Traffic Volumes (ADT), Travel Speeds, Percentages of automobiles, medium trucks and heavy trucks
- Roadway grade and angle of view
- Site Conditions (e.g. soft vs. hard)
- Percentage of total ADT which flows each hour through-out a 24-hour period

Table 2 indicates the roadway parameters and vehicle distribution utilized for this study.

Table 2: Roadway Parameters and Vehicle Distribution

Roadway	Segment	Existing ADT	Existing Plus Project ADT	Speed (MPH)	Site Conditions
Sanderson Avenue	South of Stetson Avenue	24,600	28,900	40	Soft
Sanderson Avenue	North of Stetson Avenue	17,700	20,600	40	Soft
Stetson Avenue	East of Sanderson Avenue	11,900	13,600	40	Soft
Stetson Avenue	West of Sanderson Avenue	25,600	28,600	40	Soft
Major Arterial Vehicle Distribution (Truck Mix)[2]					
Motor-Vehicle Type		**Daytime % (7AM to 7 PM)**	**Evening % (7 PM to 10 PM)**	**Night % (10 PM to 7 AM)**	**Total % of Traffic Flow**
Automobiles		75.5	14.0	10.4	92.00
Medium Trucks		48.0	2.0	50.0	3.00
Heavy Trucks		48.0	2.0	50.0	5.00

Notes:
[1] Maximum two-way traffic volume (ADT) with Level of Service C (LOS C) conditions of a major arterial roadways as outlined in the Riverside County Office of Industrial Hygiene Acoustical Modeling Parameters.
[2] Vehicle distribution data is based on Riverside County Mix data for collectors and secondary roadways.

The following outlines key adjustments to the REMEL for project site parameter inputs:

- Vertical and horizontal distances (Sensitive receptor distance from noise source)
- Noise barrier vertical and horizontal distances (Noise barrier distance from sound source and receptor).
- Traffic noise source spectra
- Topography

MD projected the traffic noise levels to the on-site receptors. The project noise calculation worksheet outputs are located in Appendix B.

5.4 SoundPLAN Model

SoundPLAN (SP) acoustical modeling software was utilized to model traffic noise level projections and future worst-case project operational noise impacts (stationary noise sources) to the on-site and nearest off-site sensitive receptors.

SP is capable of evaluating multiple stationary noise sources at various receiver locations. SP's software utilizes algorithms (based on the inverse square law) 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. MD has performed spectral noise measurements on car wash blower systems and has utilized that data as inputs for said project.

The future worst-case noise level projections associated with the automatic car wash were modeled using reference sound level data for the Sonny's enterprises BL1-45HP-1 blowers and Vacutec vacuums/turbines. The model assumes that the car wash tunnel is approximately 108 feet long, 16 to 18 feet tall with will have an approximate 10-foot-wide by 9-foot-tall exit opening. The blowers were modeled at 10 to 12 feet high with two (2) side blowers and one (1) central blower. The BL1-45HP-1 blowers will be located approximately 5 to 10 feet inside the exit of the tunnel. The car wash equipment was modeled as point sources with output noise levels reaching up to 82 dBA at the entrance of the tunnel and 92.5 dBA at the exit of the tunnel. The manufacturer's reference equipment sound level data is provided in Appendix B.

The SP model assumes a total of 21 vacuums and the dyer systems are operating simultaneously (wost-case), when in reality the noise will be intermittent and lower in level. The project proposes to house the two (2) vacuum turbine motors (FT-CO-T350HP4) inside a 4-sided enclosure.

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

In addition, the parking lot was modeled as an area source based upon the number of parking spaces with an estimated 5 to 25% turnover rate during the peak hour (depending on location and parking lot). Noise associated with parking lots include but are not limited to idling cars, doors closing, and starting engine noise. Noise levels associated with parking lots can reach peak levels of 80 dBA.

Finally, the model is able to evaluate the noise attenuating effects of existing structures and existing property line walls. The existing property line wall separating the project site from the residences to the south and east varies between 15 feet tall (to the southwest of the site) to 6 feet tall (to the southeast and east of the site). Modeling input and output assumptions are indicated 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 D. 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.

6.0 Existing Noise Environment

An ambient noise measurement was conducted at the site to determine the existing baseline levels. Noise measurement data indicates that traffic noise propagating from Sanderson Avenue and Stetson Avenue are the primary sources of noise impacting the site and surrounding areas. In addition, some on-site generated noise from the existing industrial use produces intermittent noise.

6.1 Long-Term Noise Measurement Results

The results of the long-term noise data are presented in Table 3.

Table 3: Long-Term Noise Measurement Data (dBA)[1]

Date	Time	dB(A)							
		L_{EQ}	L_{MAX}	L_{MIN}	L_2	L_8	L_{25}	L_{50}	L_{90}
9/27/2017	12PM-1PM	64.8	88.0	48.8	70.0	66.5	63.7	61.1	55.5
9/27/2017	1PM-2PM	64.5	87.4	49.0	69.9	66.3	63.8	61.3	55.4
9/27/2017	2PM-3PM	63.4	78.6	49.4	69.5	66.5	64.0	61.9	56.4
9/27/2017	3PM-4PM	64.9	89.1	49.9	71.7	67.0	64.0	61.6	57.0
9/27/2017	4PM-5PM	64.3	86.1	49.1	70.1	67.2	64.6	62.3	55.9
9/27/2017	5PM-6PM	63.8	81.2	49.3	69.7	66.7	64.2	62.2	56.8
9/27/2017	6PM-7PM	63.5	81.8	46.2	69.4	66.6	64.2	61.9	55.8
9/27/2017	7PM-8PM	64.3	91.3	47.3	69.9	66.3	63.5	60.9	54.6
9/27/2017	8PM-9PM	63.7	89.2	46.3	68.8	66.3	63.3	60.2	53.4
9/27/2017	9PM-10PM	61.8	86.1	46.3	68.4	65.0	61.8	58.7	51.6
9/27/2017	10PM-11PM	59.4	73.3	42.8	66.3	63.6	60.3	56.3	48.6
9/27/2017	11PM-12AM	59.7	79.5	42.0	67.5	63.7	60.0	55.2	47.1
9/27/2017	12AM-1AM	57.2	70.6	38.6	65.1	62.2	57.5	52.3	45.8
9/28/2017	1AM-2AM	55.4	78.6	40.0	63.8	60.2	53.4	47.6	42.8
9/28/2017	2AM-3AM	55.4	77.7	39.1	64.2	59.9	53.5	48.8	43.1
9/28/2017	3AM-4AM	57.9	75.3	40.2	66.3	62.6	58.0	52.5	46.4
9/28/2017	4AM-5AM	61.9	80.2	45.3	69.3	65.9	62.0	57.5	49.8
9/28/2017	5AM-6AM	62.9	83.0	48.8	69.4	66.6	63.7	60.3	54.0
9/28/2017	6AM-7AM	64.3	75.9	50.1	70.5	68.1	65.3	62.6	56.1
9/28/2017	7AM-8AM	64.2	79.3	52.4	69.7	67.3	65.2	63.0	57.8
9/28/2017	8AM-9AM	63.8	80.2	48.5	69.5	66.8	64.4	62.2	56.2
9/28/2017	9AM-10AM	63.6	82.3	48.0	70.2	66.9	64.1	61.4	54.3
9/28/2017	10AM-11AM	62.4	77.6	48.1	68.4	66.0	63.4	60.9	54.1
9/28/2017	11AM-12PM	64.6	92.7	48.7	69.6	67.0	63.8	61.1	55.3
CNEL		67.9							

Notes:
[1.] Long-term noise monitoring location 1 (LT1) is illustrated in Exhibit E. The highest (loudest) hourly noise interval is highlighted in orange and the lowest (quietest) in blue during operational hours.

Noise data indicates the ambient noise levels ranged between 55.4 to 64.9 dBA Leq(h) near the southern property line of the project site. It is estimated that the noise level behind the 15-foot tall property line wall (directly to the south of the proposed car wash) is 12 dBA lower and therefore the noise levels would range between 43.4 to 52.9 dBA (based on insertion loss calculations from FTA manual). Where the wall

drops from 15-feet to 6-feet, the reduction provided by the wall would be 5 dBA. Maximum levels reached 89.1 dBA (77.1 dBA behind the 15-foot wall) as a result of pass-by traffic along Sanderson Avenue. Additional field notes and photographs are provided in Appendix A.

For this evaluation, MD utilized the quietest hourly level (during daytime/operable hours) and has compared the project's projected noise levels to the quietest hourly ambient (during daytime/operable hours). The quietest (lowest) daytime hourly level occurred between 10AM and 11AM (62.4 dBA, Leq(h)). When adding the 12 dBA reduction (from the 15-foot wall) the noise level would be 50.4 dBA, Leq(h). When adding the 5 dBA reduction (from the 6-foot wall) the noise level would be 57.4 dBA, Leq(h).

6.2 Short-Term Noise Measurement Results

In addition, MD conducted a short-term 10-minute measurement along the project site's eastern property line where a parking lot will be constructed. The results of the short-term measurement are presented in Table 4.

Table 4: Short-Term Noise Measurement Data (dBA)[1]

Location	Date	Start Time	Leq	Lmax	Lmin	L(2)	L(8)	L(25)	L(50)	L(90)
Site 1	1/29/2016	12:54 PM	65.1	75.4	50.5	71.4	69.0	66.3	63.6	55.2

Notes:
1. Measurements were taken over a ten-minute interval. Measurement locations are indicated in Exhibit E.

The data provided indicates that the existing eastern property line experiences an average noise level of 65 dBA Leq with maximum levels reaching up to 75.4 dBA during the measurement.

7.0 Future Noise Environment Impacts and Mitigation

This assessment analyzes future noise impacts to and from the project compares the results to the City's Noise Standards. The analysis details the estimated exterior noise levels associated with traffic from adjacent roadways and from on-site stationary noise sources.

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 Project Generated Traffic

Traffic noise along Sanderson Avenue and Stetson Avenue will be the main source of noise impacting the project site and the surrounding area.

A worst-case project generated traffic noise level was modeled utilizing the FHWA Traffic Noise Prediction Model - FHWA-RD-77-108. Traffic noise levels were calculated 50 feet from the centerline of the analyzed roadway. The modeling is theoretical and does not take into account any existing barriers, structures, and/or topographical features that may further reduce noise levels. Therefore, the levels are shown for comparative purposes only to show the difference in with and without project conditions. In addition, the noise contours for 60, 65 and 70 dBA CNEL were calculated. The potential off-site noise impacts caused by an increase of traffic from operation of the proposed project on the nearby roadways were calculated for the following scenarios:

Existing Year (without Project): This scenario refers to existing year traffic noise conditions.

Existing Year (Plus Project): This scenario refers to existing year + project traffic noise conditions.

Table 5 compares the without and with project scenario and shows the change in traffic noise levels as a result of the proposed project. It takes a change of 3 dB or more to hear a perceptible difference. As demonstrated in Table 5, the project is anticipated to change the noise 0.5 to 0.7 dBA CNEL. Although there is a nominal increase along these two roadways, the proposed increase would still be below the 65 dBA CNEL residential standard at any off-site receptors. As shown in Table 5, the Existing Plus Project 65 dBA contour would extend an additional 32 from the centerline for the Sanderson Avenue (South of Stetson Avenue segment). All existing residences are located behind existing barriers and/or are located outside the 65 dBA contour.

Although there is an increase in traffic noise levels the impact is considered less than significant as the noise levels at or near any existing proposed sensitive receptor would be 65 dBA CNEL or less and the change in noise level is less than 3 dBA. No further mitigation is required.

Table 5: Existing Scenario – Noise Levels Along Roadways (dBA CNEL)

Roadway	Segment	CNEL at 50 Ft (dBA)	Distance to Contour (Ft)			
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Sanderson Avenue	South of Stetson Avenue	76.6	135	291	626	1,349
Sanderson Avenue	North of Stetson Avenue	75.2	108	233	503	1,083
Stetson Avenue	East of Sanderson Avenue	73.5	83	179	386	831
Stetson Avenue	West of Sanderson Avenue	76.8	138	298	643	1,385

Existing With Project Exterior Noise Levels

Roadway	Segment	CNEL at 50 Ft (dBA)	Distance to Contour (Ft)			
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Sanderson Avenue	South of Stetson Avenue	77.3	150	323	697	1,502
Sanderson Avenue	North of Stetson Avenue	75.8	120	258	556	1,198
Stetson Avenue	East of Sanderson Avenue	74.0	91	196	422	908
Stetson Avenue	West of Sanderson Avenue	77.3	149	321	692	1,491

Change in Existing Noise Levels as a Result of Project

Roadway[1]	Segment	CNEL at 50 Feet dBA[2]			
		Existing Without Project	Existing With Project	Change in Noise Level	Potential Significant Impact
Sanderson Avenue	South of Stetson Avenue	76.6	77.3	0.7	No
Sanderson Avenue	North of Stetson Avenue	75.2	75.8	0.6	No
Stetson Avenue	East of Sanderson Avenue	73.5	74.0	0.5	No
Stetson Avenue	West of Sanderson Avenue	76.8	77.3	0.5	No

Notes:
[1] Exterior noise levels calculated at 5 feet above ground level.
[2] Noise levels calculated from centerline of subject roadway.

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

Sensitive receptors that may be affected by project operational noise include adjacent land uses to the immediate south, north, and east. The worst-case stationary noise was modeled using SoundPLAN acoustical modeling software. Worst-case assumes the blowers, vacuums, equipment and parking are always operational when in reality the noise will be intermittent and cycle on/off depending on the customer usage. Project car wash operations are assumed to occur within the City's allowable daytime (7 a.m. to 10 p.m.) hours, while the gas station will operate during nighttime hours as well.

A total of seventeen (17) receptors (R1 – R17) and one (1) building receptor (R18) were modeled to evaluate the proposed project's operational impact. A receptor is denoted by a yellow or green dot in Exhibit F. All yellow dots represent either a property line or a sensitive receptor such as an outdoor sensitive area (e.g. backyard, patio, common area).

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

Project Operational Noise Levels

Exhibit F shows the project only operational noise levels at the property lines and/or sensitive receptor areas. Exhibit G illustrates the noise contours at the project site and illustrates how the noise will propagate at the site. Operational noise levels are anticipated to range between 42.8 to 57.1 dBA Leq(h) at the receptors R1 through R17. The noise projections to the residential backyards are below the City's 60 dBA limit as outlined within Table 6.4 of the City's General Plan 2030 Public Safety Chapter (Table 1 of this report).

Project Plus Ambient Operational Noise Levels

Table 6 demonstrates the project plus ambient (quietest measured hourly average level during proposed operable hours) noise levels. Project plus ambient noise level projections are anticipated to range between 42.8 to 58.1 dBA Leq(h) at the receptors R1 through R17 and 65.6 dBA Leq(h) at receptor R18 (on-site existing industrial warehouse). The noise projections to the residential backyards are below the City's 60 dBA limit.

Table 6: Worst-case Predicted Operational Noise Levels (dBA)

Receptor[1]	Existing Ambient Noise Level (dBA, Leq(h))[2]	Project Noise Level (dBA, Leq(h))[3]	Total Combined Noise Level (dBA, Leq(h))	Daytime (7AM - 10PM) Stationary Noise Limit (dBA, Leq (h))	Change in Noise Level as Result of Project
1	50.4	57.1	57.9	**60.0**	7.5
2	50.4	52.4	54.5		4.1
3	50.4	49.2	52.8		2.5
4	50.4	46.2	51.8		1.4
5	50.4	44.1	51.3		0.9
6	50.4	42.8	51.1		0.7
7	50.4	43.3	51.2		0.8
8	57.4	48.9	58.0		0.6
9	57.4	50.0	58.1		0.7
10	57.4	50.5	58.2		0.8
11	57.4	50.2	58.2		0.8
12	57.4	49.6	58.1		0.7
13	57.4	48.1	57.9		0.5
14	57.4	49.0	58.0		0.6
15	57.4	50.3	58.2		0.8
16	57.4	50.3	58.2		0.8
17	57.4	45.8	57.7		0.3
18 - Onsite	62.4	62.7	65.6	N/A	3.2

Notes:
[1.] Receptors 1 through 17 are residential areas and R18 is the on-site industrial use.
[2.] The quietest hourly noise interval was selected (see Table 3, 62.4 dBA). A 12 dBA reduction was applied to the existing ambient level for Receptors 1 through 8 and to account for the existing 14 to 15ft tall property line wall and a 5 dB reduction was applied to the existing ambient level for Receptors 9 through 17. No reduction was taken for R18.
[3.] See Exhibit F for the operational noise level projections at said receptors.

In addition, Table 6 provides the anticipated change in noise level as a result of the proposed project. As shown in Table 6, the operational noise levels will result in a change of 0.3 to 7.5 dBA at the various receptors. Depending on the receptor location, the change in the noise level has the potential to range from not perceptible to clearly noticeable. The change in noise level has the potential to be clearly noticeable at Receptors 1 and 2.

In both evaluated scenarios, the noise level projections are below the City's 60 dBA residential limit during daytime conditions at the sensitive receptors (R1 through R17). Receptor R18 is an industrial land use and typically has a 70 dBA limit. The project would not exceed the 70 dBA limit for industrial uses. As project operations are anticipated to occur during daytime hours, the project would comply with the City's noise limit and therefore the impact would be considered less than significant.

7.2 Mitigation Measures

In order to reduce the potential noise impact, the following mitigation measures are provided:

MM-1: Project shall reduce/decrease the exit opening to approximately 9-foot by 10-foot opening such that the building shell design reduces visibility to the blowers.

MM-2: Ensure vacuum turbines are enclosed with a roof and properly fitted with silencer attenuators.

MM-3: The car wash portion of the project shall not operate past the allowable daytime hours (7 a.m. to 10 p.m.).

MM-4: Mechanical equipment room shall be fitted with acoustic louver doors or equivalent.

Exhibit F

Operational Noise Levels

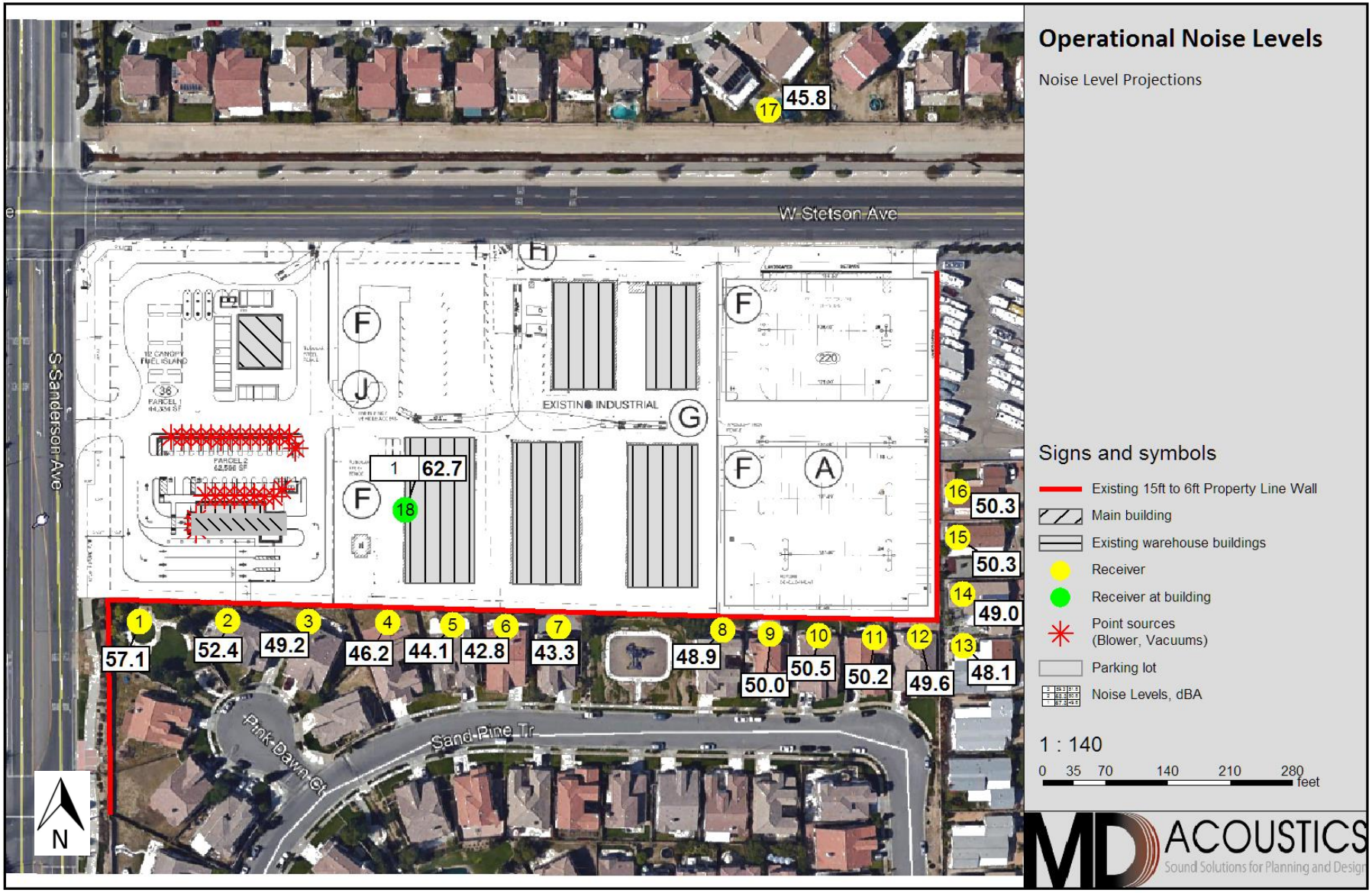
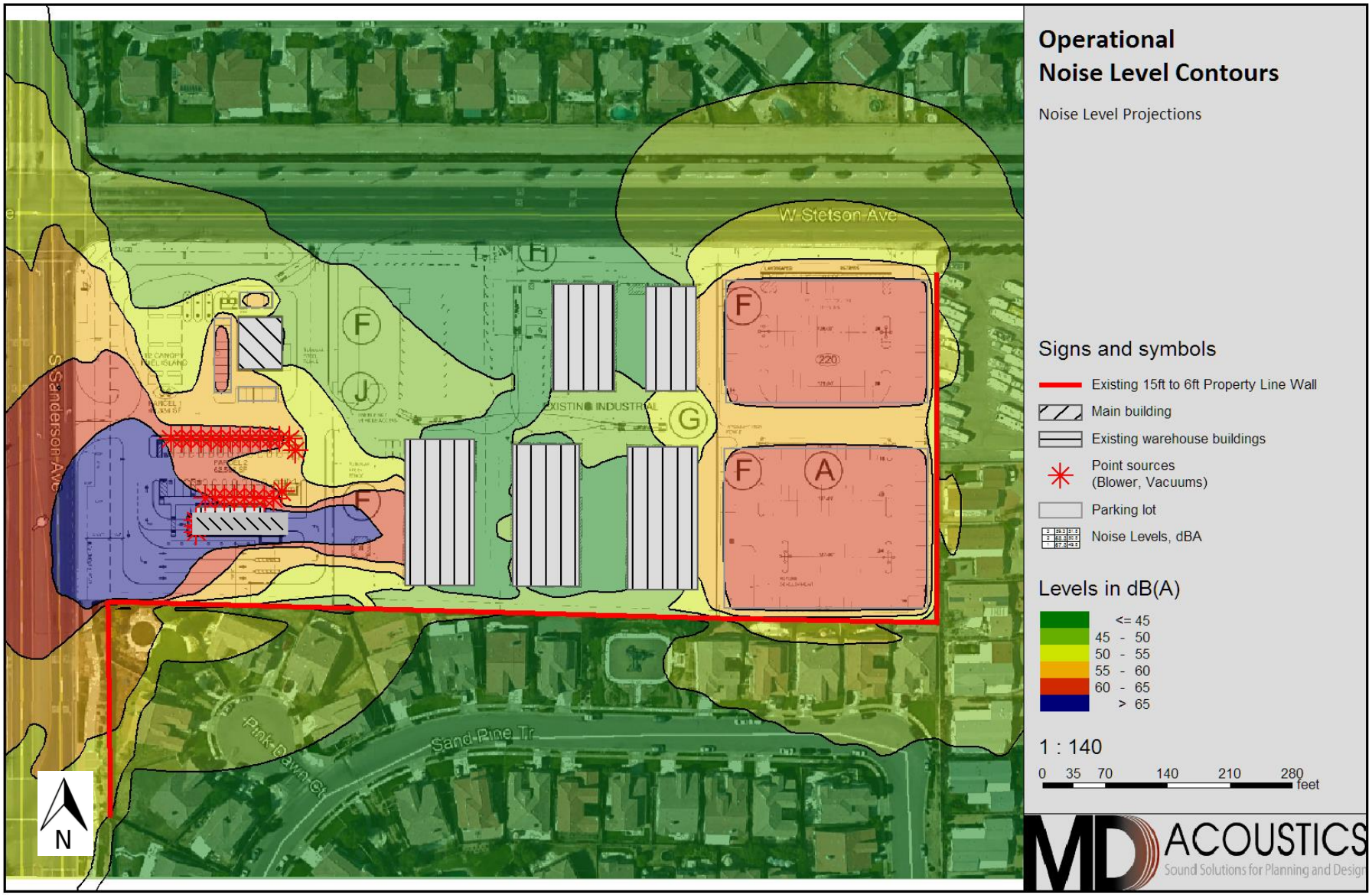


Exhibit G

Operational Noise Level Contours



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 7.

Table 7: Typical Construction Noise Levels[1]

Equipment Powered by Internal Combustion Engines

Type	Noise Levels (dBA) at 50 Feet
Earth Moving	
Compactors (Rollers)	73 - 76
Front Loaders	73 - 84
Backhoes	73 - 92
Tractors	75 - 95
Scrapers, Graders	78 - 92
Pavers	85 - 87
Trucks	81 - 94
Materials Handling	
Concrete Mixers	72 - 87
Concrete Pumps	81 - 83
Cranes (Movable)	72 - 86
Cranes (Derrick)	85 - 87
Stationary	
Pumps	68 - 71
Generators	71 - 83
Compressors	75 - 86

Impact Equipment

Type	Noise Levels (dBA) at 50 Feet
Saws	71 - 82
Vibrators	68 - 82

Notes:
[1] Referenced Noise Levels from the Environmental Protection Agency (EPA)

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 Municipal Code (Section 30-32). Existing residences to the south and east may be temporarily affected by short-term noise impacts associated the transport of workers, the movement of construction materials to and from the project site, ground clearing, excavation, grading, and building activities. The noise analysis reviews the construction noise levels during the various phases of the project.

Project generated construction noise will vary depending on the construction process, type of equipment involved, location of the construction site with respect to sensitive receptors, the schedule proposed to carry out each task (e.g., hours and days of the week) and the duration of the construction work. Site grading is expected to produce the highest sustained construction noise levels. Typical noise sources and noise levels associated with the site grading phase of construction are shown in Table 7. 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 a grader, a dozer and excavator and three (3) backhoes operating at 50 feet from the nearest sensitive receptor.

Assuming a usage factor of 40 percent for each piece of equipment, unmitigated noise levels at 50 feet have the potential to reach 88 dBA Leq and 90 dBA (Lmax) at the nearest sensitive receptors during grading. Noise levels for the other construction phases would be lower and range between 85 to 90 dBA. Output calculations are provided in Appendix D.

The project site has an approximate 15-foot tall wall along the southern property line and will attenuate noise levels by at least 15 dBA. Noise levels will range therefore between 71 to 75 dBA, depending on the construction phases.

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. As stated earlier, any construction activities that occur outside the allowable time would be considered significant. Noise reduction measures are provided to further reduce construction noise (Section 8.3). The impact is considered less than significant.

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 bull dozer. A large bull dozer 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 8 (below) provides general thresholds and guidelines as to the vibration damage potential from vibratory impacts.

Table 8: 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 9 gives approximate vibration levels for particular construction activities. This data provides a reasonable estimate for a wide range of soil conditions.

Table 9: 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 20 feet, a large bull dozer would yield a worst-case 0.114 PPV (in/sec) which may be perceptible for short periods of time during grading along the southern 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 30-32 and 90-1048.

2. During construction, the contactor 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 Hemet: 2030 General Plan, 2012.

City of Hemet: City of Hemet Noise Ordinance. Oct, 2017.

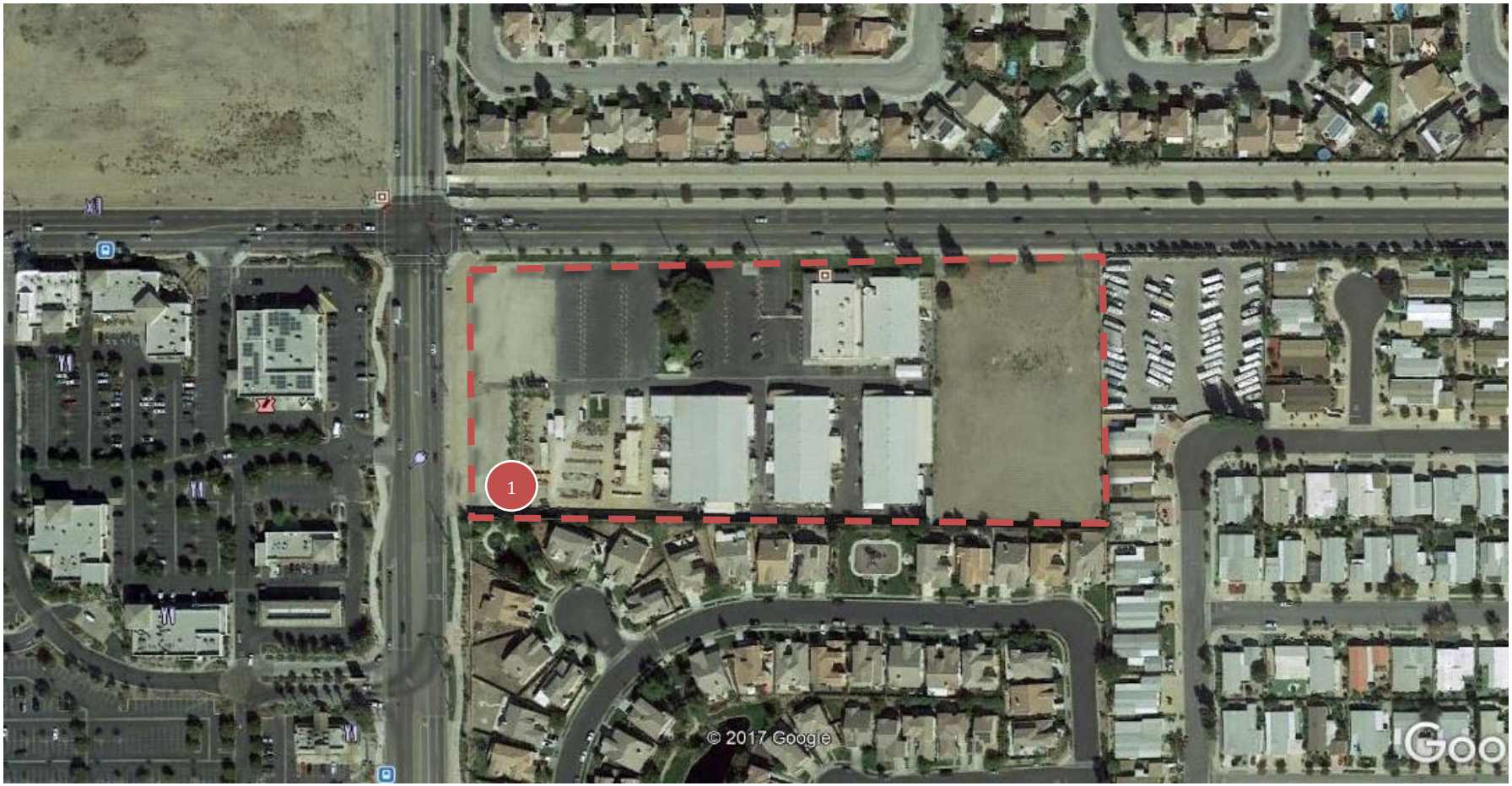
Trames Solutions, Inc.: McHolland Retail Traffic Impact Study, October 13, 2017.

Appendix A:

Field Measurement Data

LONG-TERM NOISE MONITORING LOCATIONS

Project: McHolland Retail - Noise Impact Study - Hemet, CA



MD ACOUSTICS
Sound Solutions for Planning and Design

1 = Noise Monitoring Location

= Project Boundary

FIELD SHEET - LT1

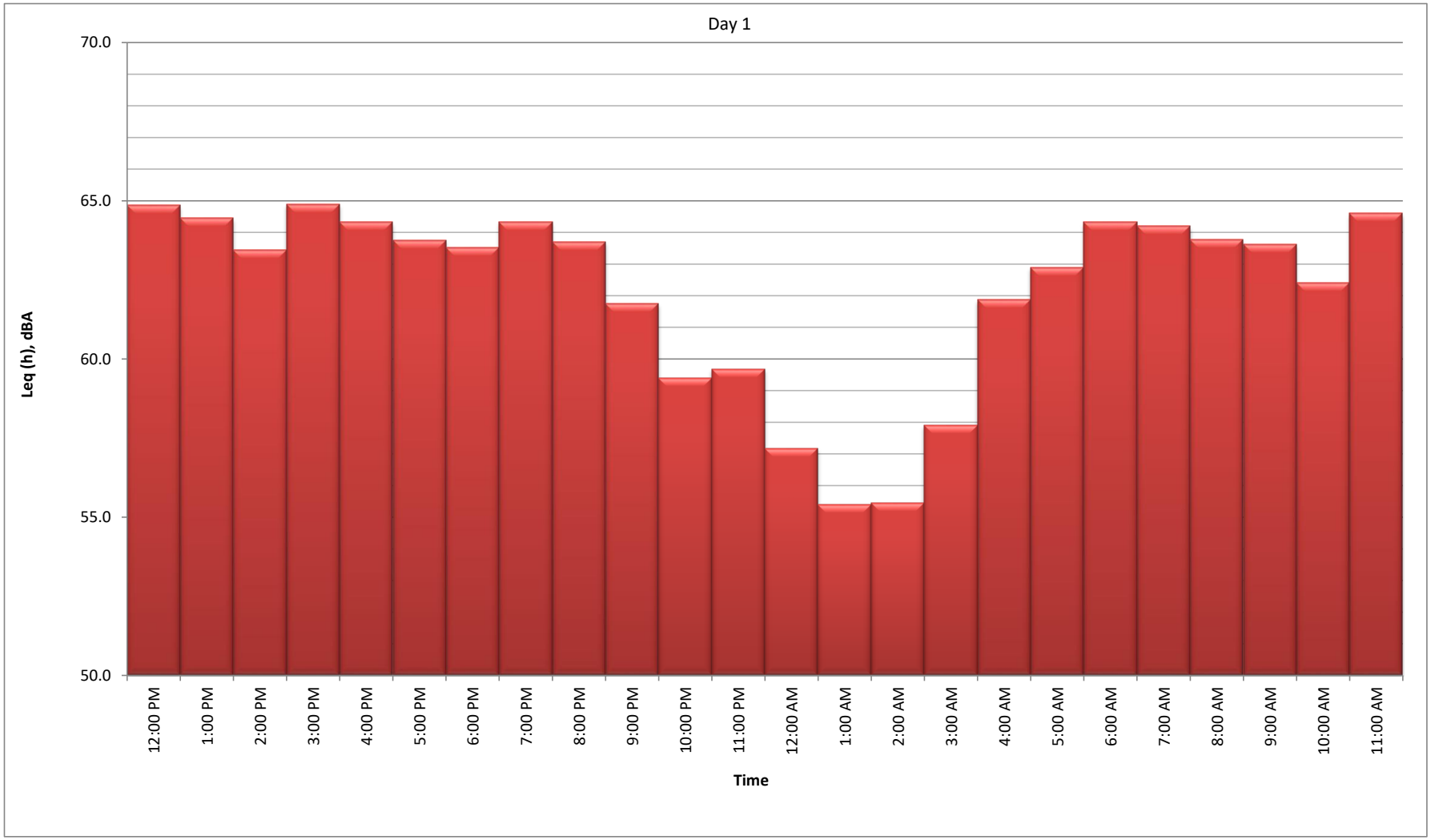
Project: McHolland Retail - Noise Impact Study - Hemet, CA
Measurement Address: W Stetson Ave/S Sanderson Ave, Hemet, CA
Date: **9/27/2017 - 9/28/2017** **Day:** 1
Sound Level Meter: Larson Davis 831 **Setting(s):** A-weighted, slow, 1-hr intervals
Engineer: Mike Dickerson, INCE **Location:** By southern property line
Notes: Near noise barrier wall. Weather was clear with temps ranging between 98 to 72 degrees.
Primarily traffic noise source roadway noise from Sanderson Avenue and Stetson Avenue.

Date	Start	Stop	Leq	Lmax	Lmin	L2	L8	L25	L50	L90
9/27/2017	12:00 PM	1:00 PM	64.8	88.0	48.8	70.0	66.5	63.7	61.1	55.5
9/27/2017	1:00 PM	2:00 PM	64.5	87.4	49.0	69.9	66.3	63.8	61.3	55.4
9/27/2017	2:00 PM	3:00 PM	63.4	78.6	49.4	69.5	66.5	64.0	61.9	56.4
9/27/2017	3:00 PM	4:00 PM	64.9	89.1	49.9	71.7	67.0	64.0	61.6	57.0
9/27/2017	4:00 PM	5:00 PM	64.3	86.1	49.1	70.1	67.2	64.6	62.3	55.9
9/27/2017	5:00 PM	6:00 PM	63.8	81.2	49.3	69.7	66.7	64.2	62.2	56.8
9/27/2017	6:00 PM	7:00 PM	63.5	81.8	46.2	69.4	66.6	64.2	61.9	55.8
9/27/2017	7:00 PM	8:00 PM	64.3	91.3	47.3	69.9	66.3	63.5	60.9	54.6
9/27/2017	8:00 PM	9:00 PM	63.7	89.2	46.3	68.8	66.3	63.3	60.2	53.4
9/27/2017	9:00 PM	10:00 PM	61.8	86.1	46.3	68.4	65.0	61.8	58.7	51.6
9/27/2017	10:00 PM	11:00 PM	59.4	73.3	42.8	66.3	63.6	60.3	56.3	48.6
9/27/2017	11:00 PM	12:00 AM	59.7	79.5	42.0	67.5	63.7	60.0	55.2	47.1
9/27/2017	12:00 AM	1:00 AM	57.2	70.6	38.6	65.1	62.2	57.5	52.3	45.8
9/28/2017	1:00 AM	2:00 AM	55.4	78.6	40.0	63.8	60.2	53.4	47.6	42.8
9/28/2017	2:00 AM	3:00 AM	55.4	77.7	39.1	64.2	59.9	53.5	48.8	43.1
9/28/2017	3:00 AM	4:00 AM	57.9	75.3	40.2	66.3	62.6	58.0	52.5	46.4
9/28/2017	4:00 AM	5:00 AM	61.9	80.2	45.3	69.3	65.9	62.0	57.5	49.8
9/28/2017	5:00 AM	6:00 AM	62.9	83.0	48.8	69.4	66.6	63.7	60.3	54.0
9/28/2017	6:00 AM	7:00 AM	64.3	75.9	50.1	70.5	68.1	65.3	62.6	56.1
9/28/2017	7:00 AM	8:00 AM	64.2	79.3	52.4	69.7	67.3	65.2	63.0	57.8
9/28/2017	8:00 AM	9:00 AM	63.8	80.2	48.5	69.5	66.8	64.4	62.2	56.2
9/28/2017	9:00 AM	10:00 AM	63.6	82.3	48.0	70.2	66.9	64.1	61.4	54.3
9/28/2017	10:00 AM	11:00 AM	62.4	77.6	48.1	68.4	66.0	63.4	60.9	54.1
9/28/2017	11:00 AM	12:00 PM	64.6	92.7	48.7	69.6	67.0	63.8	61.1	55.3

AVERAGED DAYTIME (7AM - 7PM) LEQ: **64.0** **MAX:** 92.7 **CNEL:** **67.9**
AVERAGED EVENING TIME (7PM - 10PM) LEQ: **63.4** **MIN:** 38.6
AVERAGED NIGHTTIME (10PM - 7AM) LEQ: **60.4**

LT1 HOURLY NOISE LEVELS, Leq (h)

Project: McHolland Retail - Noise Impact Study - Hemet, CA
Date: **9/27/2017 - 9/28/2017** **Day:** 1
Sound Level Meter: Larson Davis 831 **Setting(s):** A-weighted, slow, 1-hr intervals
Engineer: Mike Dickerson, INCE **Location:** By southern property line



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Project:	McHolland Retail - Noise Impact Study - Hemet, CA
Client:	Rancho Holland, LLC
Site Location:	W Stetson Ave/S Sanderson Ave, Hemet, CA
Date:	9/27/2017 - 9/28/2017
Engineer:	Mike Dickerson
Source/System:	Ambient Noise Conditions
Location	1
SLM:	NTi XL2, Type 1
Settings:	A-weighted, slow, 1-sec intervals, 1-min to 10-minute durations

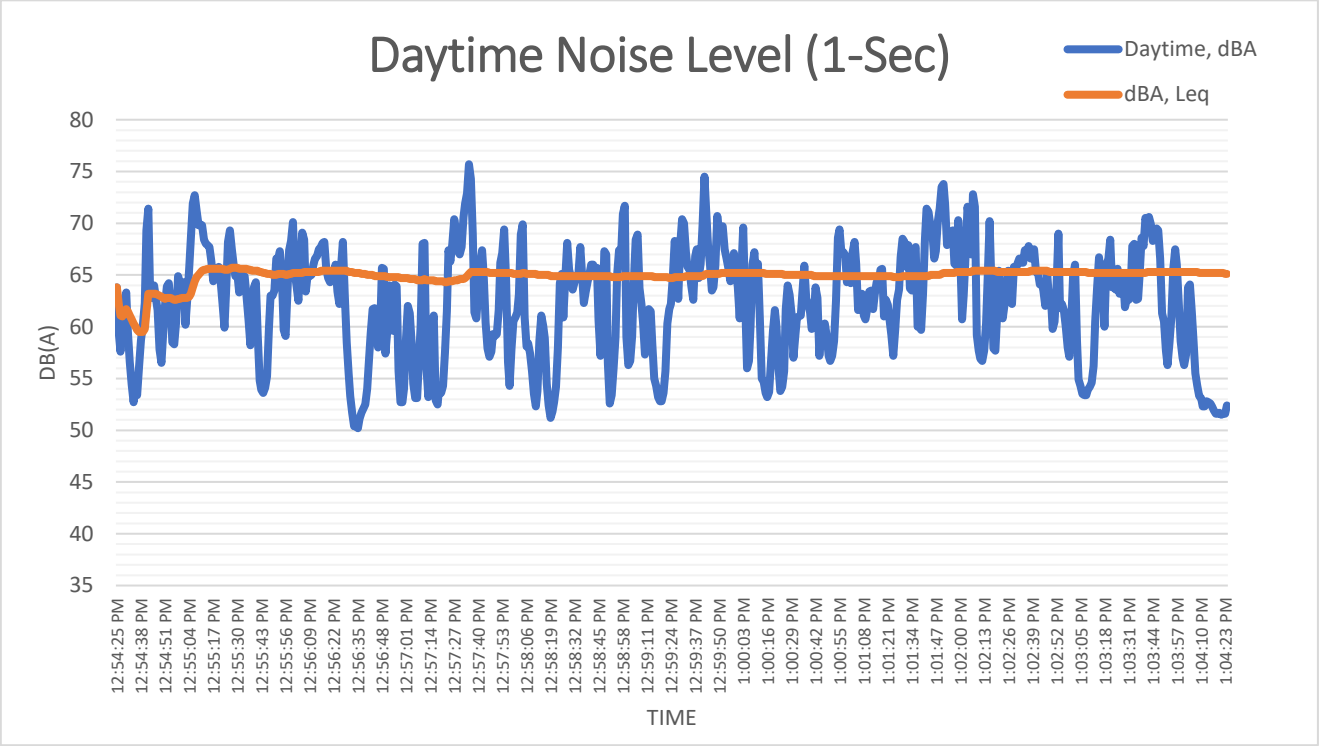
Table 1: Summary of SLM Data (dBA)

Location	Start	Stop	Leq	Lmax	Lmin	L2	L8	L25	L50	L90
1	12:54 AM	1:04 PM	65.1	75.4	50.5	71.4	69.0	66.3	63.6	55.2

*** Ambient noise consist of traffic along Sanderson Avenue.**

Figure 1: Photo of Short-Term Location#1 - Looking West

Figure 2: Location 1 - Daytime Noise Levels (dBA)



Daytime Measurement Notes:

Recording 1

Location - Near Sanderson Ave

Start time - 12:54 PM

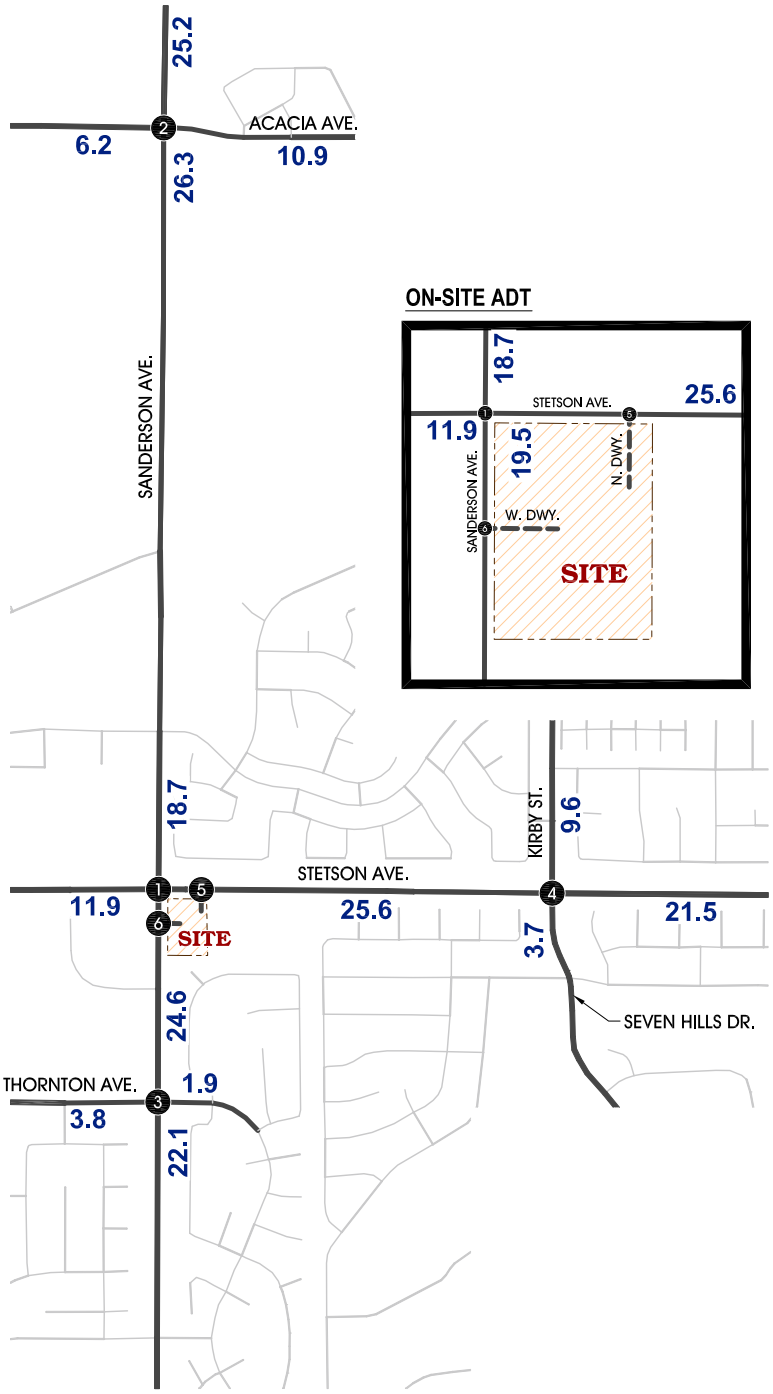
Duration - 10 Min

Notes:

Ambient noise consist of pass-by traffic along Sanderson Avenue

Appendix B:
Traffic FHWA Worksheets

FIGURE 3-D
EXISTING (2017) TRAFFIC VOLUMES



ON-SITE ADT

LEGEND:

6 = INTERSECTION ID

10.0 = VEHICLES PER DAY (1000's)

AM PEAK HOUR

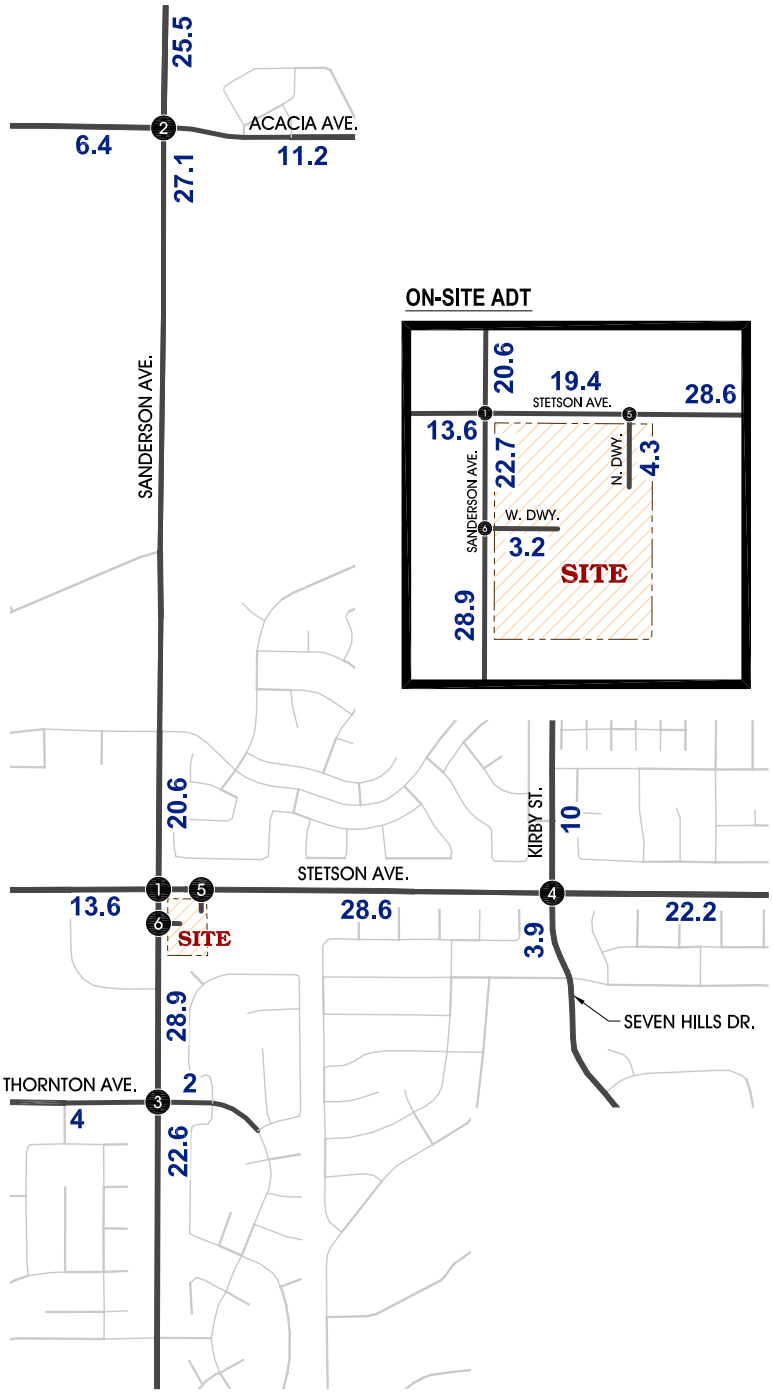
1. Sanderson Ave. / Stetson Ave.		2. Sanderson Ave. / Acacia Ave.	
89 ↓ 542 ↑ 51	← 122 ← 430 ← 432	2 ↓ 540 ↑ 67	← 132 ← 97 ← 103
→ 106 → 317 → 14	↑ 15 ↑ 478 ↑ 425	→ 8 → 97 → 90	↑ 46 ↑ 726 ↑ 65
3. Sanderson Ave. / Thornton Ave.		**4. Kirby St. - Seven Hills Dr. / Stetson Ave.**	
62 ↓ 793 ↑ 16	← 52 ← 14 ← 18	169 ↓ 34 ↑ 93	← 92 ← 778 ← 21
→ 108 → 8 → 54	↑ 35 ↑ 736 ↑ 12	→ 113 → 634 → 40	↑ 57 ↑ 57 ↑ 25
5. N. Dwy. / Stetson Ave.		**6. Sanderson Ave. / W. Dwy.**	
FUTURE INTERSECTION		FUTURE INTERSECTION	

PM PEAK HOUR

1. Sanderson Ave. / Stetson Ave.		2. Sanderson Ave. / Acacia Ave.	
137 ↓ 523 ↑ 124	← 135 ← 336 ← 340	7 ↓ 859 ↑ 167	← 180 ← 145 ← 176
→ 197 → 289 → 16	↑ 19 ↑ 445 ↑ 279	→ 7 → 160 → 128	↑ 71 ↑ 879 ↑ 79
3. Sanderson Ave. / Thornton Ave.		**4. Kirby St. - Seven Hills Dr. / Stetson Ave.**	
101 ↓ 909 ↑ 47	← 57 ← 20 ← 6	246 ↓ 86 ↑ 99	← 95 ← 700 ← 20
→ 105 → 10 → 40	↑ 42 ↑ 832 ↑ 16	→ 221 → 846 → 68	↑ 53 ↑ 54 ↑ 30
5. N. Dwy. / Stetson Ave.		**6. Sanderson Ave. / W. Dwy.**	
FUTURE INTERSECTION		FUTURE INTERSECTION	

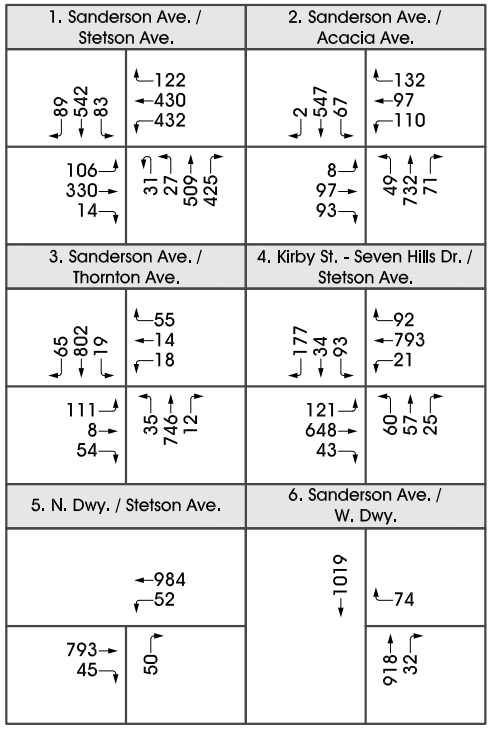
N

FIGURE 4-E
EXISTING PLUS PROJECT TRAFFIC VOLUMES

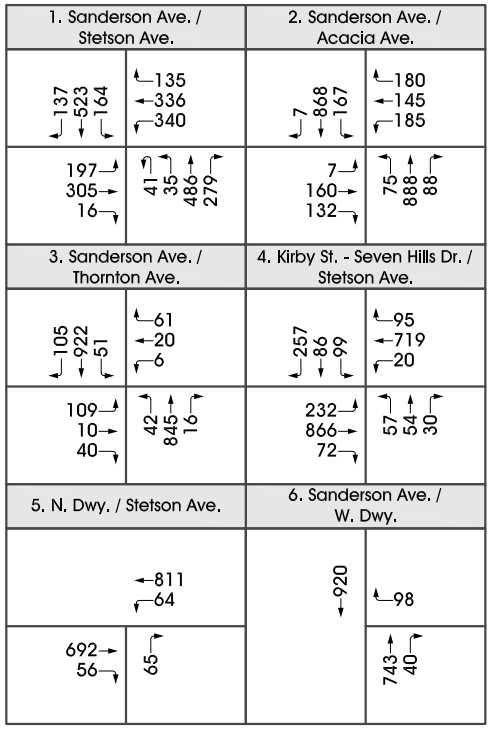


ON-SITE ADT

AM PEAK HOUR



PM PEAK HOUR



LEGEND:

6 = INTERSECTION ID

10.0 = VEHICLES PER DAY (1000's)

N

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

PROJECT:	MCHOLLAND RETAIL NOISE IMPACT STUDY	JOB #:	0144-15-1701
ROADWAY:	SANDERSON AVENUE - SOUTH OF STETSON AVENUE	DATE:	25-Oct-17
LOCATION:	EXISTING - NOISE CONTOURS	ENGINEER:	M. DICKERSON

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	24,600	
SPEED =	40	
PK HR % =	10	
NEAR LANE/FAR LANE DIST	65	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	2,460	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.755	0.140	0.104	0.9200
MEDIUM TRUCKS	0.480	0.020	0.500	0.0300
HEAVY TRUCKS	0.480	0.020	0.500	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	38.11	- -
MEDIUM TRUCKS	4.0	38.01	- -
HEAVY TRUCKS	8.0	38.12	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	70.0	68.0	66.7	60.7	69.1	69.7
MEDIUM TRUCKS	64.2	60.2	52.4	61.6	67.8	67.8
HEAVY TRUCKS	71.2	67.2	59.4	68.6	74.8	74.8
NOISE LEVELS (dBA)	74.1	71.0	67.6	70.0	76.5	76.6

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	70.0	68.0	66.7	60.7	69.1	69.7
MEDIUM TRUCKS	64.2	60.2	52.4	61.6	67.8	67.8
HEAVY TRUCKS	71.2	67.2	59.4	68.6	74.8	74.8
NOISE LEVELS (dBA)	74.1	71.0	67.6	70.0	76.5	76.6

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	138	297	641	1380
LDN	135	291	626	1349

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

PROJECT:	MCHOLLAND RETAIL NOISE IMPACT STUDY	JOB #:	0144-15-1701
ROADWAY:	SANDERSON AVENUE - NORTH OF STETSON AVENUE	DATE:	25-Oct-17
LOCATION:	EXISTING - NOISE CONTOURS	ENGINEER:	M. DICKERSON

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	17,700	
SPEED =	40	
PK HR % =	10	
NEAR LANE/FAR LANE DIST	65	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	1,770	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.755	0.140	0.104	0.9200
MEDIUM TRUCKS	0.480	0.020	0.500	0.0300
HEAVY TRUCKS	0.480	0.020	0.500	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	38.11	- -
MEDIUM TRUCKS	4.0	38.01	- -
HEAVY TRUCKS	8.0	38.12	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	68.6	66.6	65.3	59.2	67.7	68.3
MEDIUM TRUCKS	62.7	58.7	51.0	60.2	66.3	66.4
HEAVY TRUCKS	69.8	65.8	58.0	67.2	73.4	73.4
NOISE LEVELS (dBA)	72.7	69.6	66.2	68.5	75.0	75.2

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	68.6	66.6	65.3	59.2	67.7	68.3
MEDIUM TRUCKS	62.7	58.7	51.0	60.2	66.3	66.4
HEAVY TRUCKS	69.8	65.8	58.0	67.2	73.4	73.4
NOISE LEVELS (dBA)	72.7	69.6	66.2	68.5	75.0	75.2

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	111	239	514	1108
LDN	108	233	503	1083

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

PROJECT:	MCHOLLAND RETAIL NOISE IMPACT STUDY	JOB #:	0144-15-1701
ROADWAY:	STETSON AVENUE - EAST OF SANDERSON AVENUE	DATE:	25-Oct-17
LOCATION:	EXISTING - NOISE CONTOURS	ENGINEER:	M. DICKERSON

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	11,900	
SPEED =	40	
PK HR % =	10	
NEAR LANE/FAR LANE DIST	65	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	1,190	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.755	0.140	0.104	0.9200
MEDIUM TRUCKS	0.480	0.020	0.500	0.0300
HEAVY TRUCKS	0.480	0.020	0.500	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	38.11	- -
MEDIUM TRUCKS	4.0	38.01	- -
HEAVY TRUCKS	8.0	38.12	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	66.9	64.9	63.6	57.5	66.0	66.6
MEDIUM TRUCKS	61.0	57.0	49.2	58.4	64.6	64.6
HEAVY TRUCKS	68.0	64.1	56.3	65.5	71.6	71.7
NOISE LEVELS (dBA)	71.0	67.9	64.5	66.8	73.3	73.5

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	66.9	64.9	63.6	57.5	66.0	66.6
MEDIUM TRUCKS	61.0	57.0	49.2	58.4	64.6	64.6
HEAVY TRUCKS	68.0	64.1	56.3	65.5	71.6	71.7
NOISE LEVELS (dBA)	71.0	67.9	64.5	66.8	73.3	73.5

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	85	183	395	850
LDN	83	179	386	831

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

PROJECT:	MCHOLLAND RETAIL NOISE IMPACT STUDY	JOB #:	0144-15-1701
ROADWAY:	STETSON AVENUE - WEST OF SANDERSON AVENUE	DATE:	25-Oct-17
LOCATION:	EXISTING - NOISE CONTOURS	ENGINEER:	M. DICKERSON

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	25,600	
SPEED =	40	
PK HR % =	10	
NEAR LANE/FAR LANE DIST	65	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	2,560	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.755	0.140	0.104	0.9200
MEDIUM TRUCKS	0.480	0.020	0.500	0.0300
HEAVY TRUCKS	0.480	0.020	0.500	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	38.11	- -
MEDIUM TRUCKS	4.0	38.01	- -
HEAVY TRUCKS	8.0	38.12	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	70.2	68.2	66.9	60.8	69.3	69.9
MEDIUM TRUCKS	64.3	60.3	52.6	61.8	67.9	68.0
HEAVY TRUCKS	71.4	67.4	59.6	68.8	75.0	75.0
NOISE LEVELS (dBA)	74.3	71.2	67.8	70.1	76.6	76.8

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	70.2	68.2	66.9	60.8	69.3	69.9
MEDIUM TRUCKS	64.3	60.3	52.6	61.8	67.9	68.0
HEAVY TRUCKS	71.4	67.4	59.6	68.8	75.0	75.0
NOISE LEVELS (dBA)	74.3	71.2	67.8	70.1	76.6	76.8

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	142	305	658	1417
LDN	138	298	643	1385

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

PROJECT:	MCHOLLAND RETAIL NOISE IMPACT STUDY	JOB #:	0144-15-1701
ROADWAY:	SANDERSON AVENUE - SOUTH OF STETSON AVENUE	DATE:	25-Oct-17
LOCATION:	EXISTING PLUS PROJECT (E+P) - NOISE CONTOURS	ENGINEER:	M. DICKERSON

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	28,900	
SPEED =	40	
PK HR % =	10	
NEAR LANE/FAR LANE DIST	65	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	2,890	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.755	0.140	0.104	0.9200
MEDIUM TRUCKS	0.480	0.020	0.500	0.0300
HEAVY TRUCKS	0.480	0.020	0.500	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	38.11	- -
MEDIUM TRUCKS	4.0	38.01	- -
HEAVY TRUCKS	8.0	38.12	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	70.7	68.7	67.4	61.4	69.8	70.4
MEDIUM TRUCKS	64.8	60.9	53.1	62.3	68.5	68.5
HEAVY TRUCKS	71.9	67.9	60.1	69.3	75.5	75.5
NOISE LEVELS (dBA)	74.8	71.7	68.3	70.7	77.2	77.3

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	70.7	68.7	67.4	61.4	69.8	70.4
MEDIUM TRUCKS	64.8	60.9	53.1	62.3	68.5	68.5
HEAVY TRUCKS	71.9	67.9	60.1	69.3	75.5	75.5
NOISE LEVELS (dBA)	74.8	71.7	68.3	70.7	77.2	77.3

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	154	331	713	1537
LDN	150	323	697	1502

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

PROJECT:	MCHOLLAND RETAIL NOISE IMPACT STUDY	JOB #:	0144-15-1701
ROADWAY:	SANDERSON AVENUE - NORTH OF STETSON AVENUE	DATE:	25-Oct-17
LOCATION:	EXISTING PLUS PROJECT - NOISE CONTOURS	ENGINEER:	M. DICKERSON

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	20,600	
SPEED =	40	
PK HR % =	10	
NEAR LANE/FAR LANE DIST	65	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	2,060	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.755	0.140	0.104	0.9200
MEDIUM TRUCKS	0.480	0.020	0.500	0.0300
HEAVY TRUCKS	0.480	0.020	0.500	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	38.11	- -
MEDIUM TRUCKS	4.0	38.01	- -
HEAVY TRUCKS	8.0	38.12	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.3	67.3	66.0	59.9	68.3	69.0
MEDIUM TRUCKS	63.4	59.4	51.6	60.8	67.0	67.0
HEAVY TRUCKS	70.4	66.4	58.7	67.9	74.0	74.1
NOISE LEVELS (dBA)	73.4	70.3	66.8	69.2	75.7	75.8

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.3	67.3	66.0	59.9	68.3	69.0
MEDIUM TRUCKS	63.4	59.4	51.6	60.8	67.0	67.0
HEAVY TRUCKS	70.4	66.4	58.7	67.9	74.0	74.1
NOISE LEVELS (dBA)	73.4	70.3	66.8	69.2	75.7	75.8

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	123	264	569	1226
LDN	120	258	556	1198

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

PROJECT:	MCHOLLAND RETAIL NOISE IMPACT STUDY	JOB #:	0144-15-1701
ROADWAY:	STETSON AVENUE - EAST OF SANDERSON AVENUE	DATE:	25-Oct-17
LOCATION:	EXISTING PLUS PROJECT (E+P) - NOISE CONTOURS	ENGINEER:	M. DICKERSON

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	13,600	
SPEED =	40	
PK HR % =	10	
NEAR LANE/FAR LANE DIST	65	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	1,360	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.755	0.140	0.104	0.9200
MEDIUM TRUCKS	0.480	0.020	0.500	0.0300
HEAVY TRUCKS	0.480	0.020	0.500	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	38.11	- -
MEDIUM TRUCKS	4.0	38.01	- -
HEAVY TRUCKS	8.0	38.12	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	67.5	65.5	64.2	58.1	66.5	67.2
MEDIUM TRUCKS	61.6	57.6	49.8	59.0	65.2	65.2
HEAVY TRUCKS	68.6	64.6	56.9	66.1	72.2	72.3
NOISE LEVELS (dBA)	71.6	68.5	65.0	67.4	73.9	74.0

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	67.5	65.5	64.2	58.1	66.5	67.2
MEDIUM TRUCKS	61.6	57.6	49.8	59.0	65.2	65.2
HEAVY TRUCKS	68.6	64.6	56.9	66.1	72.2	72.3
NOISE LEVELS (dBA)	71.6	68.5	65.0	67.4	73.9	74.0

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	93	200	431	930
LDN	91	196	422	908

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

PROJECT:	MCHOLLAND RETAIL NOISE IMPACT STUDY	JOB #:	0144-15-1701
ROADWAY:	STETSON AVENUE - WEST OF SANDERSON AVENUE	DATE:	25-Oct-17
LOCATION:	EXISTING PLUS PROJECT - NOISE CONTOURS	ENGINEER:	M. DICKERSON

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	28,600	
SPEED =	40	
PK HR % =	10	
NEAR LANE/FAR LANE DIST	65	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	2,860	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.755	0.140	0.104	0.9200
MEDIUM TRUCKS	0.480	0.020	0.500	0.0300
HEAVY TRUCKS	0.480	0.020	0.500	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	38.11	- -
MEDIUM TRUCKS	4.0	38.01	- -
HEAVY TRUCKS	8.0	38.12	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	70.7	68.7	67.4	61.3	69.8	70.4
MEDIUM TRUCKS	64.8	60.8	53.0	62.3	68.4	68.4
HEAVY TRUCKS	71.9	67.9	60.1	69.3	75.5	75.5
NOISE LEVELS (dBA)	74.8	71.7	68.3	70.6	77.1	77.3

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

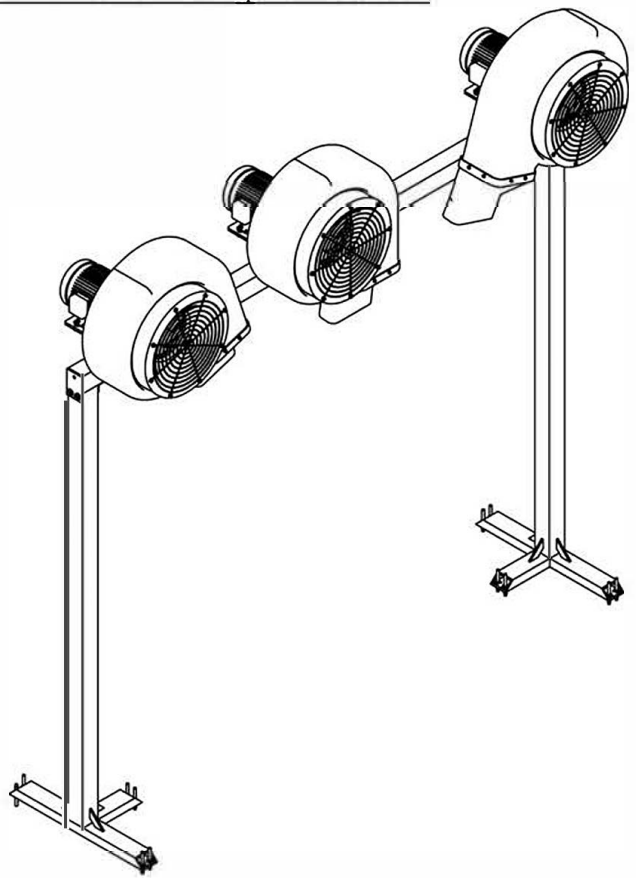
VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	70.7	68.7	67.4	61.3	69.8	70.4
MEDIUM TRUCKS	64.8	60.8	53.0	62.3	68.4	68.4
HEAVY TRUCKS	71.9	67.9	60.1	69.3	75.5	75.5
NOISE LEVELS (dBA)	74.8	71.7	68.3	70.6	77.1	77.3

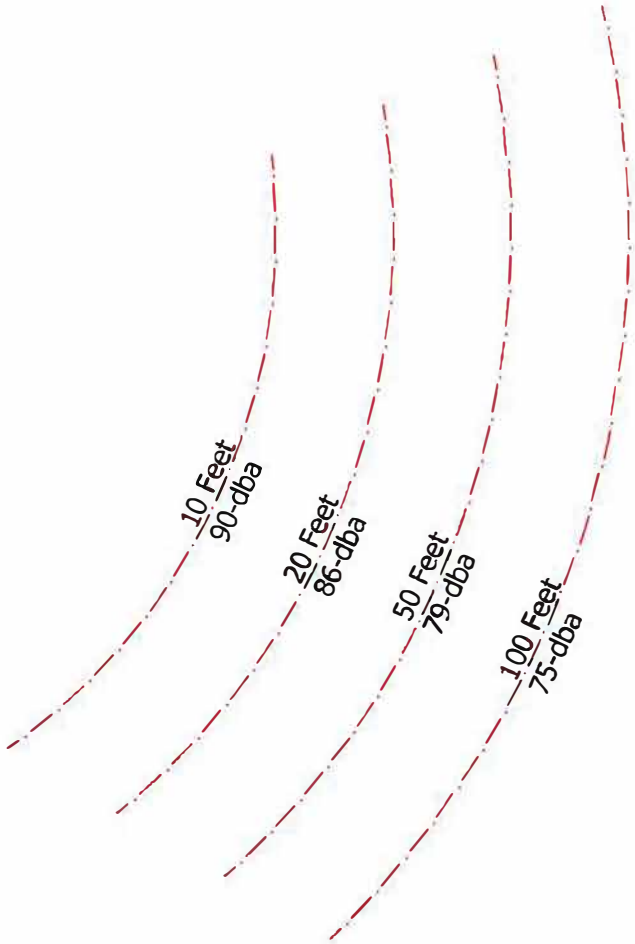
NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	153	329	708	1526
LDN	149	321	692	1491

Appendix C:

SoundPLAN Input and Output

Enviromental Noise with Dryer OFF: 70 dba





THIRD ANGLE PROJECTION BREAK ALL SHARP CORNERS PART TO BE FREE OF BURRS. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES	MACHINING TOLERANCES FRACTION± 1/16" .XX DECIMAL ± 0.030 .XXX DECIMAL ± 0.005 ANGULARITY ± 2° FINISH 125	DRAWN L'Verdecia 8/26/2011 APPROVED 8/1/2012 CATEGORY BLOWER	THIS SHEET CONTAINS CONFIDENTIAL INFORMATION, IMAGES AND TRADE SECRETS OF SONNY'S ENTERPRISES, INC. ANY UNAUTHORIZED USE OR DISCLOSURE OF ANY PORTION THEREOF IS STRICTLY PROHIBITED. THIS WORK IS THE EXCLUSIVE PROPERTY OF SONNY'S ENTERPRISES, INC. ALL RIGHTS RESERVED.	**SONNY'S ENTERPRISES** THE CARWASH FACTORY DESCRIPTION BLOWER ASSEMBLY, ONE ARCH 45HP PART NUMBER BL1-45HP-1	MATERIAL SHEET 2 OF 2 SIZE A SCALE N.T.S.

Appendix F

VACUTECH

SOUND LEVEL METER READINGS

MODEL: FT-CO-T350HP4 (50HP TURBINE COUPLED VACUUM PRODUCER) **WITH EXHAUST SILENCER**

READING ONE: 61 DB-A, 3 FEET FROM TURBINE @ 45° ANGLE
AND NO BACKGROUND NOISE OR OUTSIDE INTERFERENCE.

READING TWO: 62 DB-A, 5 FEET FROM TURBINE @ 45° ANGLE
AND NO BACKGROUND NOISE OR OUTSIDE INTERFERENCE.

READING THREE: 59 DB-A, 10 FEET FROM TURBINE @ 45° ANGLE
AND NO BACKGROUND NOISE OR OUTSIDE INTERFERENCE.

READING FOUR: 54 DB-A, 20 FEET FROM TURBINE @ 45° ANGLE
AND NO BACKGROUND NOISE OR OUTSIDE INTERFERENCE

READINGS WERE TAKEN OUTSIDE, ON CONCRETE PAD WITH NO ENCLOSURE. NO BACKGROUND NOISE OR OUTSIDE INTERFERENCE WAS PRESENT DURING READINGS.

SOUND LEVEL METER USED:

SIMPSON MODEL #40003 – MSHA APPROVED.
MEETS OSHA & WALSH-HEALY REQUIREMENTS FOR NOISE CONTROL.
CONFORMS TO ANSI S1.4-1983, IEC 651 SPECS FOR METER TYPE

Vacutech
1350 Hi-Tech Drive, Sheridan WY, 82801
PHONE: (800) 917-9444 FAX: (303) 675-1988
EMAIL: info@vacutechllc.com
WEB SITE: www.vacutechllc.com

Noise Emissions of Industry Sources

Source name	Refe	Level		Frequency spectrum [dB(A)]																														Correction		
			dB(	25 Hz	31 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.3 kHz	1.6 kHz	2 kHz	2.5 kHz	3.2 kHz	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12. kHz	16 kHz	20 kHz	Kw dB(	CI dB(	CT dB(
BL1-45HP-1 (	Unit	Le(	104	52.	57.	64.	69.	76.	80.	76.	81.	86.	84.	84.	90.	99.	98.	94.	88.	90.	90.	90.	90.	91.	87.	85.	84.	81.	78.	76.	71.	65.	54.	-	-	-
BL1-45HP-1 (	Unit	Le(	104	52.	57.	64.	69.	76.	80.	76.	81.	86.	84.	84.	90.	99.	98.	94.	88.	90.	90.	90.	90.	91.	87.	85.	84.	81.	78.	76.	71.	65.	54.	-	-	-
BL1-45HP-1 (	Unit	Le(	104	52.	57.	64.	69.	76.	80.	76.	81.	86.	84.	84.	90.	99.	98.	94.	88.	90.	90.	90.	90.	91.	87.	85.	84.	81.	78.	76.	71.	65.	54.	-	-	-
Vacutec1	Unit	Le(	74.	-	30.	35.	46.	50.	54.	46.	49.	51.	49.	52.	54.	50.	52.	53.	57.	58.	58.	64.	64.	64.	67.	67.	67.	70.	69.	67.	71.	69.	-	-	-	-
Vacutec2	Unit	Le(	74.	-	30.	35.	46.	50.	54.	46.	49.	51.	49.	52.	54.	50.	52.	53.	57.	58.	58.	64.	64.	64.	67.	67.	67.	70.	69.	67.	71.	69.	-	-	-	-
Vacutec3	Unit	Le(	74.	-	30.	35.	46.	50.	54.	46.	49.	51.	49.	52.	54.	50.	52.	53.	57.	58.	58.	64.	64.	64.	67.	67.	67.	70.	69.	67.	71.	69.	-	-	-	-
Vacutec4	Unit	Le(	74.	-	30.	35.	46.	50.	54.	46.	49.	51.	49.	52.	54.	50.	52.	53.	57.	58.	58.	64.	64.	64.	67.	67.	67.	70.	69.	67.	71.	69.	-	-	-	-
Vacutec5	Unit	Le(	74.	-	30.	35.	46.	50.	54.	46.	49.	51.	49.	52.	54.	50.	52.	53.	57.	58.	58.	64.	64.	64.	67.	67.	67.	70.	69.	67.	71.	69.	-	-	-	-
Vacutec6	Unit	Le(	74.	-	30.	35.	46.	50.	54.	46.	49.	51.	49.	52.	54.	50.	52.	53.	57.	58.	58.	64.	64.	64.	67.	67.	67.	70.	69.	67.	71.	69.	-	-	-	-
Vacutec7	Unit	Le(	74.	-	30.	35.	46.	50.	54.	46.	49.	51.	49.	52.	54.	50.	52.	53.	57.	58.	58.	64.	64.	64.	67.	67.	67.	70.	69.	67.	71.	69.	-	-	-	-
Vacutec8	Unit	Le(	74.	-	30.	35.	46.	50.	54.	46.	49.	51.	49.	52.	54.	50.	52.	53.	57.	58.	58.	64.	64.	64.	67.	67.	67.	70.	69.	67.	71.	69.	-	-	-	-
Vacutec9	Unit	Le(	74.	-	30.	35.	46.	50.	54.	46.	49.	51.	49.	52.	54.	50.	52.	53.	57.	58.	58.	64.	64.	64.	67.	67.	67.	70.	69.	67.	71.	69.	-	-	-	-
Vacutec10	Unit	Le(	74.	-	30.	35.	46.	50.	54.	46.	49.	51.	49.	52.	54.	50.	52.	53.	57.	58.	58.	64.	64.	64.	67.	67.	67.	70.	69.	67.	71.	69.	-	-	-	-
Vacutec11	Unit	Le(	74.	-	30.	35.	46.	50.	54.	46.	49.	51.	49.	52.	54.	50.	52.	53.	57.	58.	58.	64.	64.	64.	67.	67.	67.	70.	69.	67.	71.	69.	-	-	-	-
Vacutec12	Unit	Le(	74.	-	30.	35.	46.	50.	54.	46.	49.	51.	49.	52.	54.	50.	52.	53.	57.	58.	58.	64.	64.	64.	67.	67.	67.	70.	69.	67.	71.	69.	-	-	-	-
Vacutec13	Unit	Le(	74.	-	30.	35.	46.	50.	54.	46.	49.	51.	49.	52.	54.	50.	52.	53.	57.	58.	58.	64.	64.	64.	67.	67.	67.	70.	69.	67.	71.	69.	-	-	-	-
Vacutec14	Unit	Le(	74.	-	30.	35.	46.	50.	54.	46.	49.	51.	49.	52.	54.	50.	52.	53.	57.	58.	58.	64.	64.	64.	67.	67.	67.	70.	69.	67.	71.	69.	-	-	-	-
Vacutec15	Unit	Le(	74.	-	30.	35.	46.	50.	54.	46.	49.	51.	49.	52.	54.	50.	52.	53.	57.	58.	58.	64.	64.	64.	67.	67.	67.	70.	69.	67.	71.	69.	-	-	-	-
Vacutec16	Unit	Le(	74.	-	30.	35.	46.	50.	54.	46.	49.	51.	49.	52.	54.	50.	52.	53.	57.	58.	58.	64.	64.	64.	67.	67.	67.	70.	69.	67.	71.	69.	-	-	-	-
Vacutec17	Unit	Le(	74.	-	30.	35.	46.	50.	54.	46.	49.	51.	49.	52.	54.	50.	52.	53.	57.	58.	58.	64.	64.	64.	67.	67.	67.	70.	69.	67.	71.	69.	-	-	-	-
Vacutec18	Unit	Le(	74.	-	30.	35.	46.	50.	54.	46.	49.	51.	49.	52.	54.	50.	52.	53.	57.	58.	58.	64.	64.	64.	67.	67.	67.	70.	69.	67.	71.	69.	-	-	-	-
Vacutec19	Unit	Le(	74.	-	30.	35.	46.	50.	54.	46.	49.	51.	49.	52.	54.	50.	52.	53.	57.	58.	58.	64.	64.	64.	67.	67.	67.	70.	69.	67.	71.	69.	-	-	-	-
Vacutec20	Unit	Le(	74.	-	30.	35.	46.	50.	54.	46.	49.	51.	49.	52.	54.	50.	52.	53.	57.	58.	58.	64.	64.	64.	67.	67.	67.	70.	69.	67.	71.	69.	-	-	-	-
Vacutec21	Unit	Le(	74.	-	30.	35.	46.	50.	54.	46.	49.	51.	49.	52.	54.	50.	52.	53.	57.	58.	58.	64.	64.	64.	67.	67.	67.	70.	69.	67.	71.	69.	-	-	-	-
Vacutec Turbi	Unit	Le(	60.	-	16.	21.	32.	36.	40.	32.	35.	37.	35.	37.	39.	36.	38.	39.	43.	44.	44.	49.	50.	50.	53.	53.	53.	56.	55.	53.	57.	54.	-	-	-	-
Vacutec Turbi	Unit	Le(	60.	-	16.	21.	32.	36.	40.	32.	35.	37.	35.	37.	39.	36.	38.	39.	43.	44.	44.	49.	50.	50.	53.	53.	53.	56.	55.	53.	57.	54.	-	-	-	-

Noise Emissions of Parking Lot Traffic

Name	Parking lot type	Low noise trolleys	Size	Moveme per hou Leq1	Road surface	Separated method	Level dB(A)
Parking Lot 1 - North	Visitors and staff	-	101 car places	5.000	Asphaltic lanes	no	88.0
Parking Lot 2 - South	Visitors and staff	-	119 car places	5.000	Asphaltic lanes	no	88.9
Store Lot 1	Visitors and staff	-	9 car places	9.000	Asphaltic lanes	no	72.5
Store Lot 2	Visitors and staff	-	5 car places	5.000	Asphaltic lanes	no	70.0
Store Lot 5	Visitors and staff	-	4 car places	4.000	Asphaltic lanes	no	69.0

Contribution Levels of the Receivers

Source name		Level w/o NP Leq1 dB(A)	Level w. NP Leq1 dB(A)
1	1.Fl	57.1	57.1
BL1-45HP-1 (1)		54.2	54.2
BL1-45HP-1 (2)		51.2	51.2
BL1-45HP-1 (3)		50.9	50.9
Parking Lot 1 - North		22.9	22.9
Parking Lot 2 - South		26.6	26.6
Store Lot 1		20.4	20.4
Store Lot 2		10.7	10.7
Store Lot 5		5.8	5.8
Vacutec1		8.1	8.1
Vacutec2		8.0	8.0
Vacutec3		7.9	7.9
Vacutec4		7.8	7.8
Vacutec5		7.7	7.7
Vacutec6		7.6	7.6
Vacutec7		5.3	5.3
Vacutec8		5.1	5.1
Vacutec9		1.9	1.9
Vacutec10		1.7	1.7
Vacutec11		3.4	3.4
Vacutec12		3.3	3.3
Vacutec13		1.4	1.4
Vacutec14		8.4	8.4
Vacutec15		3.3	3.3
Vacutec16		2.9	2.9
Vacutec17		4.4	4.4
Vacutec18		4.2	4.2
Vacutec19		3.9	3.9
Vacutec20		3.7	3.7
Vacutec21		3.6	3.6
Vacutec Turbine1		-10.9	-10.9
Vacutec Turbine2		-12.4	-12.4
2	1.Fl	52.4	52.4
BL1-45HP-1 (1)		47.5	47.5
BL1-45HP-1 (2)		47.6	47.6
BL1-45HP-1 (3)		47.7	47.7
Parking Lot 1 - North		23.2	23.2
Parking Lot 2 - South		27.5	27.5
Store Lot 1		9.7	9.7
Store Lot 2		6.3	6.3
Store Lot 5		-0.4	-0.4
Vacutec1		2.2	2.2
Vacutec2		2.4	2.4
Vacutec3		2.4	2.4
Vacutec4		2.5	2.5
Vacutec5		2.6	2.6
Vacutec6		2.7	2.7
Vacutec7		2.7	2.7
Vacutec8		2.8	2.8
Vacutec9		2.8	2.8
Vacutec10		2.7	2.7
Vacutec11		2.7	2.7
Vacutec12		2.7	2.7
Vacutec13		2.7	2.7
Vacutec14		4.6	4.6
Vacutec15		4.7	4.7
Vacutec16		4.7	4.7
Vacutec17		5.0	5.0
Vacutec18		6.1	6.1
Vacutec19		6.0	6.0
Vacutec20		5.9	5.9
Vacutec21		5.8	5.8
Vacutec Turbine1		-8.8	-8.8

Contribution Levels of the Receivers

Source name			Level w/o NP Leq1 dB(A)	Level w. NP Leq1 dB(A)
Vacutec Turbine2			-11.0	-11.0
3	1.Fl	49.2	49.2	
BL1-45HP-1 (1)			44.4	44.4
BL1-45HP-1 (2)			44.4	44.4
BL1-45HP-1 (3)			44.4	44.4
Parking Lot 1 - North			23.6	23.6
Parking Lot 2 - South			28.5	28.5
Store Lot 1			9.8	9.8
Store Lot 2			14.8	14.8
Store Lot 5			3.7	3.7
Vacutec1			1.4	1.4
Vacutec2			1.6	1.6
Vacutec3			1.8	1.8
Vacutec4			2.2	2.2
Vacutec5			2.4	2.4
Vacutec6			2.6	2.6
Vacutec7			2.8	2.8
Vacutec8			4.3	4.3
Vacutec9			4.5	4.5
Vacutec10			7.0	7.0
Vacutec11			8.5	8.5
Vacutec12			8.1	8.1
Vacutec13			8.2	8.2
Vacutec14			1.8	1.8
Vacutec15			2.2	2.2
Vacutec16			3.5	3.5
Vacutec17			3.9	3.9
Vacutec18			4.2	4.2
Vacutec19			6.5	6.5
Vacutec20			6.7	6.7
Vacutec21			10.1	10.1
Vacutec Turbine1			-3.0	-3.0
Vacutec Turbine2			-5.3	-5.3
4	1.Fl	46.2	46.2	
BL1-45HP-1 (1)			41.3	41.3
BL1-45HP-1 (2)			41.3	41.3
BL1-45HP-1 (3)			41.2	41.2
Parking Lot 1 - North			24.0	24.0
Parking Lot 2 - South			29.6	29.6
Store Lot 1			17.5	17.5
Store Lot 2			15.3	15.3
Store Lot 5			2.9	2.9
Vacutec1			0.9	0.9
Vacutec2			1.2	1.2
Vacutec3			1.5	1.5
Vacutec4			3.1	3.1
Vacutec5			5.5	5.5
Vacutec6			5.7	5.7
Vacutec7			5.7	5.7
Vacutec8			5.9	5.9
Vacutec9			6.1	6.1
Vacutec10			5.5	5.5
Vacutec11			5.7	5.7
Vacutec12			5.9	5.9
Vacutec13			6.1	6.1
Vacutec14			0.3	0.3
Vacutec15			0.6	0.6
Vacutec16			1.3	1.3
Vacutec17			0.1	0.1
Vacutec18			5.2	5.2
Vacutec19			5.6	5.6
Vacutec20			6.1	6.1
Vacutec21			8.6	8.6

Contribution Levels of the Receivers

Source name			Level w/o NP Leq1 dB(A)	Level w. NP Leq1 dB(A)
Vacutec Turbine1			-5.6	-5.6
Vacutec Turbine2			-7.4	-7.4
5	1.Fl	44.1	44.1	
BL1-45HP-1 (1)			39.1	39.1
BL1-45HP-1 (2)			39.1	39.1
BL1-45HP-1 (3)			39.1	39.1
Parking Lot 1 - North			24.8	24.8
Parking Lot 2 - South			30.9	30.9
Store Lot 1			14.5	14.5
Store Lot 2			12.0	12.0
Store Lot 5			3.0	3.0
Vacutec1			2.9	2.9
Vacutec2			3.3	3.3
Vacutec3			3.4	3.4
Vacutec4			3.6	3.6
Vacutec5			3.8	3.8
Vacutec6			3.8	3.8
Vacutec7			4.0	4.0
Vacutec8			0.2	0.2
Vacutec9			0.3	0.3
Vacutec10			0.5	0.5
Vacutec11			0.6	0.6
Vacutec12			0.7	0.7
Vacutec13			0.8	0.8
Vacutec14			-3.8	-3.8
Vacutec15			1.2	1.2
Vacutec16			1.7	1.7
Vacutec17			2.1	2.1
Vacutec18			2.4	2.4
Vacutec19			2.8	2.8
Vacutec20			6.4	6.4
Vacutec21			6.6	6.6
Vacutec Turbine1			-7.5	-7.5
Vacutec Turbine2			-12.8	-12.8
6	1.Fl	42.8	42.8	
BL1-45HP-1 (1)			37.6	37.6
BL1-45HP-1 (2)			37.6	37.6
BL1-45HP-1 (3)			37.5	37.5
Parking Lot 1 - North			25.5	25.5
Parking Lot 2 - South			32.2	32.2
Store Lot 1			12.7	12.7
Store Lot 2			10.2	10.2
Store Lot 5			2.4	2.4
Vacutec1			-1.1	-1.1
Vacutec2			-0.9	-0.9
Vacutec3			-0.8	-0.8
Vacutec4			-0.8	-0.8
Vacutec5			-0.6	-0.6
Vacutec6			-0.5	-0.5
Vacutec7			-1.1	-1.1
Vacutec8			-1.0	-1.0
Vacutec9			-0.9	-0.9
Vacutec10			-0.8	-0.8
Vacutec11			-0.6	-0.6
Vacutec12			-0.5	-0.5
Vacutec13			-0.4	-0.4
Vacutec14			-1.1	-1.1
Vacutec15			-0.8	-0.8
Vacutec16			-0.5	-0.5
Vacutec17			-0.2	-0.2
Vacutec18			0.2	0.2
Vacutec19			0.4	0.4
Vacutec20			0.5	0.5

Contribution Levels of the Receivers

Source name		Level w/o NP Leq1 dB(A)	Level w. NP Leq1 dB(A)
Vacutec21		0.7	0.7
Vacutec Turbine1		-13.5	-13.5
Vacutec Turbine2		-14.1	-14.1
7	1.Fl	43.3	43.3
BL1-45HP-1 (1)		36.3	36.3
BL1-45HP-1 (2)		36.3	36.3
BL1-45HP-1 (3)		40.0	40.0
Parking Lot 1 - North		26.4	26.4
Parking Lot 2 - South		33.6	33.6
Store Lot 1		11.8	11.8
Store Lot 2		9.1	9.1
Store Lot 5		2.7	2.7
Vacutec1		-2.7	-2.7
Vacutec2		-2.6	-2.6
Vacutec3		-2.5	-2.5
Vacutec4		-2.4	-2.4
Vacutec5		-3.0	-3.0
Vacutec6		-2.9	-2.9
Vacutec7		-2.8	-2.8
Vacutec8		-2.7	-2.7
Vacutec9		-2.6	-2.6
Vacutec10		-2.5	-2.5
Vacutec11		-2.4	-2.4
Vacutec12		-2.3	-2.3
Vacutec13		-2.2	-2.2
Vacutec14		-2.7	-2.7
Vacutec15		-2.4	-2.4
Vacutec16		-2.2	-2.2
Vacutec17		-1.9	-1.9
Vacutec18		-1.3	-1.3
Vacutec19		-1.2	-1.2
Vacutec20		-1.0	-1.0
Vacutec21		-0.9	-0.9
Vacutec Turbine1		-15.1	-15.1
Vacutec Turbine2		-15.9	-15.9
8	1.Fl	48.9	48.9
BL1-45HP-1 (1)		38.0	38.0
BL1-45HP-1 (2)		37.6	37.6
BL1-45HP-1 (3)		37.3	37.3
Parking Lot 1 - North		37.5	37.5
Parking Lot 2 - South		47.4	47.4
Store Lot 1		9.1	9.1
Store Lot 2		6.3	6.3
Store Lot 5		1.6	1.6
Vacutec1		-6.0	-6.0
Vacutec2		-5.9	-5.9
Vacutec3		-5.9	-5.9
Vacutec4		-5.9	-5.9
Vacutec5		-5.9	-5.9
Vacutec6		-5.8	-5.8
Vacutec7		-5.8	-5.8
Vacutec8		-5.8	-5.8
Vacutec9		-5.7	-5.7
Vacutec10		-5.7	-5.7
Vacutec11		-5.6	-5.6
Vacutec12		-5.6	-5.6
Vacutec13		-5.6	-5.6
Vacutec14		-6.8	-6.8
Vacutec15		-8.5	-8.5
Vacutec16		-8.3	-8.3
Vacutec17		-4.6	-4.6
Vacutec18		-4.6	-4.6
Vacutec19		-4.6	-4.6

Contribution Levels of the Receivers

Source name			Level w/o NP Leq1 dB(A)	Level w. NP Leq1 dB(A)
Vacutec20			-4.6	-4.6
Vacutec21			-4.6	-4.6
Vacutec Turbine1			-18.8	-18.8
Vacutec Turbine2			-19.5	-19.5
9	1.Fl	50.0	50.0	
BL1-45HP-1 (1)			38.1	38.1
BL1-45HP-1 (2)			37.7	37.7
BL1-45HP-1 (3)			37.4	37.4
Parking Lot 1 - North			38.5	38.5
Parking Lot 2 - South			48.7	48.7
Store Lot 1			10.0	10.0
Store Lot 2			7.4	7.4
Store Lot 5			3.3	3.3
Vacutec1			-5.9	-5.9
Vacutec2			-6.0	-6.0
Vacutec3			-6.0	-6.0
Vacutec4			-5.9	-5.9
Vacutec5			-5.3	-5.3
Vacutec6			-4.7	-4.7
Vacutec7			-4.7	-4.7
Vacutec8			-4.8	-4.8
Vacutec9			-4.8	-4.8
Vacutec10			-4.9	-4.9
Vacutec11			-4.9	-4.9
Vacutec12			-5.0	-5.0
Vacutec13			-5.1	-5.1
Vacutec14			-7.8	-7.8
Vacutec15			-9.1	-9.1
Vacutec16			-9.0	-9.0
Vacutec17			-4.8	-4.8
Vacutec18			-4.8	-4.8
Vacutec19			-4.9	-4.9
Vacutec20			-4.9	-4.9
Vacutec21			-4.9	-4.9
Vacutec Turbine1			-19.2	-19.2
Vacutec Turbine2			-19.1	-19.1
10	1.Fl	50.5	50.5	
BL1-45HP-1 (1)			39.7	39.7
BL1-45HP-1 (2)			39.2	39.2
BL1-45HP-1 (3)			39.0	39.0
Parking Lot 1 - North			38.4	38.4
Parking Lot 2 - South			49.0	49.0
Store Lot 1			9.7	9.7
Store Lot 2			7.2	7.2
Store Lot 5			4.5	4.5
Vacutec1			-4.9	-4.9
Vacutec2			-4.9	-4.9
Vacutec3			-5.0	-5.0
Vacutec4			-5.0	-5.0
Vacutec5			-5.1	-5.1
Vacutec6			-5.1	-5.1
Vacutec7			-5.2	-5.2
Vacutec8			-5.2	-5.2
Vacutec9			-5.3	-5.3
Vacutec10			-5.4	-5.4
Vacutec11			-5.5	-5.5
Vacutec12			-5.6	-5.6
Vacutec13			-5.7	-5.7
Vacutec14			-9.4	-9.4
Vacutec15			-9.2	-9.2
Vacutec16			-9.1	-9.1
Vacutec17			-3.7	-3.7
Vacutec18			-3.7	-3.7

Contribution Levels of the Receivers

Source name		Level w/o NP Leq1 dB(A)	Level w. NP Leq1 dB(A)
Vacutec19		-3.8	-3.8
Vacutec20		-3.9	-3.9
Vacutec21		-4.5	-4.5
Vacutec Turbine1		-18.9	-18.9
Vacutec Turbine2		-19.7	-19.7
11	1.Fl	50.2	50.2
BL1-45HP-1 (1)		39.5	39.5
BL1-45HP-1 (2)		39.2	39.2
BL1-45HP-1 (3)		38.9	38.9
Parking Lot 1 - North		38.1	38.1
Parking Lot 2 - South		48.6	48.6
Store Lot 1		9.8	9.8
Store Lot 2		7.3	7.3
Store Lot 5		5.3	5.3
Vacutec1		-5.3	-5.3
Vacutec2		-5.3	-5.3
Vacutec3		-5.3	-5.3
Vacutec4		-5.3	-5.3
Vacutec5		-5.3	-5.3
Vacutec6		-5.4	-5.4
Vacutec7		-5.4	-5.4
Vacutec8		-5.5	-5.5
Vacutec9		-5.5	-5.5
Vacutec10		-5.6	-5.6
Vacutec11		-5.7	-5.7
Vacutec12		-5.8	-5.8
Vacutec13		-5.9	-5.9
Vacutec14		-10.0	-10.0
Vacutec15		-9.9	-9.9
Vacutec16		-4.6	-4.6
Vacutec17		-4.7	-4.7
Vacutec18		-4.8	-4.8
Vacutec19		-4.9	-4.9
Vacutec20		-5.1	-5.1
Vacutec21		-5.2	-5.2
Vacutec Turbine1		-19.5	-19.5
Vacutec Turbine2		-20.1	-20.1
12	1.Fl	49.6	49.6
BL1-45HP-1 (1)		42.4	42.4
BL1-45HP-1 (2)		38.3	38.3
BL1-45HP-1 (3)		35.7	35.7
Parking Lot 1 - North		37.9	37.9
Parking Lot 2 - South		47.6	47.6
Store Lot 1		9.8	9.8
Store Lot 2		7.2	7.2
Store Lot 5		5.7	5.7
Vacutec1		-5.1	-5.1
Vacutec2		-5.1	-5.1
Vacutec3		-5.2	-5.2
Vacutec4		-5.2	-5.2
Vacutec5		-5.3	-5.3
Vacutec6		-5.3	-5.3
Vacutec7		-5.4	-5.4
Vacutec8		-5.5	-5.5
Vacutec9		-5.6	-5.6
Vacutec10		-5.7	-5.7
Vacutec11		-5.8	-5.8
Vacutec12		-5.9	-5.9
Vacutec13		-6.1	-6.1
Vacutec14		-10.4	-10.4
Vacutec15		-10.2	-10.2
Vacutec16		-5.0	-5.0
Vacutec17		-5.2	-5.2

Contribution Levels of the Receivers

Source name		Level w/o NP Leq1 dB(A)	Level w. NP Leq1 dB(A)
Vacutec18		-5.3	-5.3
Vacutec19		-5.4	-5.4
Vacutec20		-5.6	-5.6
Vacutec21		-5.7	-5.7
Vacutec Turbine1		-20.0	-20.0
Vacutec Turbine2		-20.3	-20.3
13	1.Fl	48.1	48.1
BL1-45HP-1 (1)		42.7	42.7
BL1-45HP-1 (2)		38.5	38.5
BL1-45HP-1 (3)		35.9	35.9
Parking Lot 1 - North		37.2	37.2
Parking Lot 2 - South		44.7	44.7
Store Lot 1		9.7	9.7
Store Lot 2		7.1	7.1
Store Lot 5		5.7	5.7
Vacutec1		-5.0	-5.0
Vacutec2		-5.1	-5.1
Vacutec3		-5.1	-5.1
Vacutec4		-5.2	-5.2
Vacutec5		-5.3	-5.3
Vacutec6		-5.4	-5.4
Vacutec7		-5.5	-5.5
Vacutec8		-5.6	-5.6
Vacutec9		-5.7	-5.7
Vacutec10		-5.8	-5.8
Vacutec11		-6.0	-6.0
Vacutec12		-6.1	-6.1
Vacutec13		-6.3	-6.3
Vacutec14		-10.8	-10.8
Vacutec15		-10.6	-10.6
Vacutec16		-5.1	-5.1
Vacutec17		-5.3	-5.3
Vacutec18		-5.4	-5.4
Vacutec19		-5.6	-5.6
Vacutec20		-5.8	-5.8
Vacutec21		-5.9	-5.9
Vacutec Turbine1		-20.2	-20.2
Vacutec Turbine2		-20.5	-20.5
14	1.Fl	49.0	49.0
BL1-45HP-1 (1)		40.2	40.2
BL1-45HP-1 (2)		39.0	39.0
BL1-45HP-1 (3)		27.1	27.1
Parking Lot 1 - North		38.5	38.5
Parking Lot 2 - South		47.3	47.3
Store Lot 1		9.7	9.7
Store Lot 2		7.5	7.5
Store Lot 5		6.7	6.7
Vacutec1		-5.0	-5.0
Vacutec2		-5.0	-5.0
Vacutec3		-5.1	-5.1
Vacutec4		-5.1	-5.1
Vacutec5		-5.2	-5.2
Vacutec6		-5.3	-5.3
Vacutec7		-5.4	-5.4
Vacutec8		-5.5	-5.5
Vacutec9		-5.6	-5.6
Vacutec10		-5.8	-5.8
Vacutec11		-5.9	-5.9
Vacutec12		-6.1	-6.1
Vacutec13		-6.2	-6.2
Vacutec14		-5.2	-5.2
Vacutec15		-5.2	-5.2
Vacutec16		-5.3	-5.3

Contribution Levels of the Receivers

Source name	Level w/o NP Leq1 dB(A)	Level w. NP Leq1 dB(A)
Vacutec17	-5.4	-5.4
Vacutec18	-5.5	-5.5
Vacutec19	-5.7	-5.7
Vacutec20	-5.8	-5.8
Vacutec21	-5.9	-5.9
Vacutec Turbine1	-20.2	-20.2
Vacutec Turbine2	-20.5	-20.5
15 1.Fl	50.3	50.3
BL1-45HP-1 (1)	38.7	38.7
BL1-45HP-1 (2)	38.7	38.7
BL1-45HP-1 (3)	38.7	38.7
Parking Lot 1 - North	40.4	40.4
Parking Lot 2 - South	48.6	48.6
Store Lot 1	10.2	10.2
Store Lot 2	8.4	8.4
Store Lot 5	7.8	7.8
Vacutec1	-4.9	-4.9
Vacutec2	-5.0	-5.0
Vacutec3	-5.1	-5.1
Vacutec4	-5.1	-5.1
Vacutec5	-5.2	-5.2
Vacutec6	-4.7	-4.7
Vacutec7	-5.4	-5.4
Vacutec8	-5.5	-5.5
Vacutec9	-5.6	-5.6
Vacutec10	-5.7	-5.7
Vacutec11	-5.8	-5.8
Vacutec12	-6.0	-6.0
Vacutec13	-6.2	-6.2
Vacutec14	-5.1	-5.1
Vacutec15	-5.2	-5.2
Vacutec16	-5.3	-5.3
Vacutec17	-5.4	-5.4
Vacutec18	-5.5	-5.5
Vacutec19	-5.6	-5.6
Vacutec20	-5.1	-5.1
Vacutec21	-5.2	-5.2
Vacutec Turbine1	-19.5	-19.5
Vacutec Turbine2	-20.4	-20.4
16 1.Fl	50.3	50.3
BL1-45HP-1 (1)	38.7	38.7
BL1-45HP-1 (2)	38.7	38.7
BL1-45HP-1 (3)	38.7	38.7
Parking Lot 1 - North	42.2	42.2
Parking Lot 2 - South	48.4	48.4
Store Lot 1	10.9	10.9
Store Lot 2	9.7	9.7
Store Lot 5	5.7	5.7
Vacutec1	-4.9	-4.9
Vacutec2	-5.0	-5.0
Vacutec3	-5.1	-5.1
Vacutec4	-5.1	-5.1
Vacutec5	-5.2	-5.2
Vacutec6	-5.3	-5.3
Vacutec7	-5.4	-5.4
Vacutec8	-5.5	-5.5
Vacutec9	-5.6	-5.6
Vacutec10	-5.7	-5.7
Vacutec11	-5.8	-5.8
Vacutec12	-6.0	-6.0
Vacutec13	-6.1	-6.1
Vacutec14	-4.5	-4.5
Vacutec15	-4.5	-4.5

Contribution Levels of the Receivers

Source name		Level w/o NP Leq1 dB(A)	Level w. NP Leq1 dB(A)
Vacutec16		-4.6	-4.6
Vacutec17		-4.7	-4.7
Vacutec18		-4.8	-4.8
Vacutec19		-4.9	-4.9
Vacutec20		-5.7	-5.7
Vacutec21		-5.9	-5.9
Vacutec Turbine1		-20.1	-20.1
Vacutec Turbine2		-20.4	-20.4
17	1.Fl	45.8	45.8
BL1-45HP-1 (1)		31.2	31.2
BL1-45HP-1 (2)		31.3	31.3
BL1-45HP-1 (3)		31.4	31.4
Parking Lot 1 - North		43.9	43.9
Parking Lot 2 - South		39.6	39.6
Store Lot 1		14.7	14.7
Store Lot 2		16.8	16.8
Store Lot 5		15.9	15.9
Vacutec1		7.5	7.5
Vacutec2		6.5	6.5
Vacutec3		6.0	6.0
Vacutec4		6.1	6.1
Vacutec5		6.3	6.3
Vacutec6		6.5	6.5
Vacutec7		6.6	6.6
Vacutec8		6.8	6.8
Vacutec9		6.9	6.9
Vacutec10		7.1	7.1
Vacutec11		7.3	7.3
Vacutec12		7.5	7.5
Vacutec13		7.6	7.6
Vacutec14		8.0	8.0
Vacutec15		8.2	8.2
Vacutec16		8.4	8.4
Vacutec17		8.5	8.5
Vacutec18		8.6	8.6
Vacutec19		7.0	7.0
Vacutec20		6.5	6.5
Vacutec21		6.7	6.7
Vacutec Turbine1		-7.2	-7.2
Vacutec Turbine2		-6.5	-6.5
18	1.Fl	62.7	62.7
BL1-45HP-1 (1)		58.1	58.1
BL1-45HP-1 (2)		57.5	57.5
BL1-45HP-1 (3)		58.1	58.1
Parking Lot 1 - North		19.3	19.3
Parking Lot 2 - South		20.4	20.4
Store Lot 1		29.5	29.5
Store Lot 2		29.0	29.0
Store Lot 5		15.7	15.7
Vacutec1		19.4	19.4
Vacutec2		19.8	19.8
Vacutec3		20.2	20.2
Vacutec4		20.7	20.7
Vacutec5		21.2	21.2
Vacutec6		21.6	21.6
Vacutec7		21.1	21.1
Vacutec8		22.4	22.4
Vacutec9		22.9	22.9
Vacutec10		23.5	23.5
Vacutec11		24.1	24.1
Vacutec12		24.8	24.8
Vacutec13		25.5	25.5
Vacutec14		20.4	20.4

Contribution Levels of the Receivers

Source name	Level w/o NP Leq1 dB(A)	Level w. NP Leq1 dB(A)
Vacutec15	21.0	21.0
Vacutec16	21.7	21.7
Vacutec17	22.4	22.4
Vacutec18	23.1	23.1
Vacutec19	23.8	23.8
Vacutec20	24.7	24.7
Vacutec21	26.1	26.1
Vacutec Turbine1	12.6	12.6
Vacutec Turbine2	12.4	12.4

Appendix D:

Construction Noise Modeling Output

Activity	L_{eq} at 50 feet dBA	L_{Max} at 50 feet dBA	L_{eq} at 50 feet dBA (w/ Existing 15-ft Wall	L_{Max} at 50 feet dBA (w/ Existing 15-ft Wall)
Grading	88	89	73	74
Building Construction	85	87	71	72
Paving	87	90	72	75

Equipment Summary	Reference (dBA) 50 ft Lmax
Rock Drills	96
Jack Hammers	82
Pneumatic Tools	85
Pumps	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	Calculated (dBA) Leq	Energy
1	Grader	86	1	40	50	0.5	0	86.0	82.0	159242868
2	Dozer	85	1	40	50	0.5	0	85.0	81.0	126491106
3	Excavator	86	1	40	50	0.5	0	86.0	82.0	159242868
4	Tractor/Backhoe	80	3	40	50	0.5	0	84.8	80.8	120000000
							Lmax*	**89**	**Leq**	**88**
							Lw	**120**	**Lw**	**119**

Source: MD Acoustics, Oct 2017.

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**	**88**	**87**	**86**	**85**	**84**	**83**	**82**	**81**	**80**	**79**	**78**	**77**	**76**	**75**	**74**	**73**
60	18.3	0.5	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71
70	21.3	0.5	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69
80	24.4	0.5	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67
90	27.4	0.5	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66
100	30.5	0.5	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65
110	33.5	0.5	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
120	36.6	0.5	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63
130	39.6	0.5	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62
140	42.7	0.5	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61
150	45.7	0.5	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61
160	48.8	0.5	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60
170	51.8	0.5	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59
180	54.9	0.5	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59
190	57.9	0.5	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58
200	61.0	0.5	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57
210	64.0	0.5	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57
220	67.1	0.5	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56
230	70.1	0.5	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56
240	73.1	0.5	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55
250	76.2	0.5	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55
260	79.2	0.5	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55
270	82.3	0.5	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54
280	85.3	0.5	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54
290	88.4	0.5	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53
300	91.4	0.5	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53
310	94.5	0.5	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53
320	97.5	0.5	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52
330	100.6	0.5	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52
340	103.6	0.5	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52
350	106.7	0.5	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51
360	109.7	0.5	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51
370	112.8	0.5	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51

Building Construction

		Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements								
								Calculated (dBA)		
No.	Equipment Description	Reference (dBA) 50 ft Lmax	Quantity	Usage Factor[1]	Distance to Receptor (ft)	Ground Effect	Shielding (dBA)	Lmax	Leq	Energy
1	Cranes	82	1	40	50	0.5	0	82.0	78.0	63395727.7
2	Forklift/Tractor	80	3	40	50	0.5	0	84.8	80.8	120000000
3	Generator	80	1	40	50	0.5	0	80.0	76.0	40000000
4	Tractor/Backhoe	80	3	40	50	0.5	0	84.8	80.8	120000000
							Lmax*	**87**	**Leq**	**85**
							Lw	**118**	**Lw**	**117**

Source: MD Acoustics, Oct 2017.

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**	**85**	**84**	**83**	**82**	**81**	**80**	**79**	**78**	**77**	**76**	**75**	**74**	**73**	**72**	**71**	**70**
60	18.3	0.5	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68
70	21.3	0.5	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67
80	24.4	0.5	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65
90	27.4	0.5	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
100	30.5	0.5	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63
110	33.5	0.5	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62
120	36.6	0.5	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61
130	39.6	0.5	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60
140	42.7	0.5	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59
150	45.7	0.5	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58
160	48.8	0.5	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58
170	51.8	0.5	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57
180	54.9	0.5	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56
190	57.9	0.5	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56
200	61.0	0.5	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55
210	64.0	0.5	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55
220	67.1	0.5	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54
230	70.1	0.5	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54
240	73.1	0.5	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53
250	76.2	0.5	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53
260	79.2	0.5	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52
270	82.3	0.5	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52
280	85.3	0.5	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52
290	88.4	0.5	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51
300	91.4	0.5	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51
310	94.5	0.5	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51
320	97.5	0.5	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50
330	100.6	0.5	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50
340	103.6	0.5	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50
350	106.7	0.5	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
360	109.7	0.5	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
370	112.8	0.5	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49

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	2	40	50	0.5	0	89.0	85.0	318485736
2	Rollers	80	2	40	50	0.5	0	83.0	79.0	80000000
3	Paving Equipment	80	2	40	50	0.5	0	83.0	79.0	80000000
							Lmax*	**90**	**Leq**	**87**
							Lw	**125**	**Lw**	**118**

Source: MD Acoustics, Oct 2017.

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**	**87**	**86**	**85**	**84**	**83**	**82**	**81**	**80**	**79**	**78**	**77**	**76**	**75**	**74**	**73**	**72**
60	18.3	0.5	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70
70	21.3	0.5	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68
80	24.4	0.5	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67
90	27.4	0.5	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65
100	30.5	0.5	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64
110	33.5	0.5	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63
120	36.6	0.5	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62
130	39.6	0.5	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61
140	42.7	0.5	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61
150	45.7	0.5	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60
160	48.8	0.5	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59
170	51.8	0.5	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59
180	54.9	0.5	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58
190	57.9	0.5	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57
200	61.0	0.5	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57
210	64.0	0.5	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56
220	67.1	0.5	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56
230	70.1	0.5	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55
240	73.1	0.5	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55
250	76.2	0.5	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54
260	79.2	0.5	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54
270	82.3	0.5	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53
280	85.3	0.5	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53
290	88.4	0.5	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53
300	91.4	0.5	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52
310	94.5	0.5	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52
320	97.5	0.5	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52
330	100.6	0.5	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51
340	103.6	0.5	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51
350	106.7	0.5	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51
360	109.7	0.5	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50
370	112.8	0.5	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50

Barrier insertion loss For Flat Ground

Receiver - North P/L

Enter variables here:

Source Height H_s(ft)	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Receiver Height H_R(ft)	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Barrier Height H_B(ft)	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Distance Source to barrier (ft)	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Distance Receiver to Barrier (ft)	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Soft Ground = 1; Hard Ground = 0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Calculations

A	50.487622	50.635956	50.80354318	50.990195	51.195703	51.419841	51.662365	51.92302	52.201533	52.497619	52.810984	53.141321	53.488316	53.851648	54.230987	54.626001
B	14.142136	14.866069	15.62049935	16.401219	17.204651	18.027756	18.867962	19.723083	20.59126	21.470911	22.36068	23.259407	24.166092	25.079872	26	26.925824
C	60.074953	60.074953	60.07495318	60.074953	60.074953	60.074953	60.074953	60.074953	60.074953	60.074953	60.074953	60.074953	60.074953	60.074953	60.074953	60.074953
P	4.5548047	5.4270712	6.349089352	7.3164614	8.3254003	9.3726437	10.455374	11.57115	12.71784	13.893576	15.09671	16.325775	17.579455	18.856567	20.156034	21.476872
Ground type H_{eff} (with barrier)	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Ground type H_{eff} (no barrier)	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
H_{eff} (with barrier)	21.5	22.5	23.5	24.5	25.5	26.5	27.5	28.5	29.5	30.5	31.5	32.5	33.5	34.5	35.5	36.5
H_{eff} no barrier	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
G_B	0.3660714	0.3482143	0.330357143	0.3125	0.2946429	0.2767857	0.2589286	0.2410714	0.2232143	0.2053571	0.1875	0.1696429	0.1517857	0.1339286	0.1160714	0.0982143
G_{NB}	0.6339286	0.6339286	0.633928571	0.6339286	0.6339286	0.6339286	0.6339286	0.6339286	0.6339286	0.6339286	0.6339286	0.6339286	0.6339286	0.6339286	0.6339286	0.6339286
$A_{barrier}$	19.578172	20.33913	21.02058882	21.636485	22.197526	22.712096	23.18687	23.62724	24.037608	24.421615	24.782298	25.122212	25.443529	25.748101	26.037525	26.313185
$IL_{barrier}$	**14.8**	**14.8**	**14.8**	**14.7**	**14.7**	**14.7**	**14.7**	**14.7**	**14.7**	**14.7**	**14.6**	**14.6**	**14.6**	**14.6**	**14.6**	**14.6**

Barrier Height (ft)	**IL (dBA)**
5	15
6	15
7	15
8	15
9	15
10	15
11	15
12	15
13	15
14	15
15	15
16	15
17	15
18	15
19	15
20	15

VIBRATION LEVEL IMPACT

Project:	McHolland Retail	Date: 10/27/17
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 =	20.00	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 =	**0.114**	IN/SEC	OUTPUT IN RED

Attachment B

Acoustic Terminology and Definitions

ATTACHMENT B
Acoustic Terminology and Definitions

Term	Definition
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
A-Weighted Sound Level (dBA)	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 frequency response of the human ear.
Community Equivalent Sound Level (CNEL)	CNEL is the A-weighted equivalent continuous sound pressure level for a 24-hour period with a 10 dB adjustment added to sound levels occurring during the nighttime hours (10 p.m. to 7 a.m.) and 5 dB added to the sound during the evening hours (7 p.m. to 10 p.m.).
Decibel (dB)	A unit for measuring sound pressure level, equal to 10 times the logarithm to the base 10 of the ratio of the measured sound pressure squared to a reference pressure, which is 20 micropascals.
Equivalent Sound Level	L_{eq} is the sound level corresponding to a steady state sound level and containing the same total energy as a time varying signal over a given sample period.

Attachment C

Traffic Noise Model (v. 2.5) Input and Output Data

<Organization?> 1 May 2020
<Analysis By?> TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: <Project Name?>
RUN: <Run Title?>

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway		Points					Flow Control			Segment	
Name	Width	Name	No.	Coordinates (pavement)			Control Device	Speed Constraint	Percent Vehicles Affected	Pvmt Type	On Struct?
				X	Y	Z					
	ft			ft	ft	ft		mph	%		
Stetson	60.0	point6	6	1,638,698.6	12,243,909.0	0.00				Average	
		point7	7	1,639,963.6	12,243,909.0	0.00					
Sanderson	65.0	point8	8	1,638,653.2	12,243,873.0	0.00				Average	
		point9	9	1,638,656.9	12,243,437.0	0.00				Average	
		point10	10	1,638,660.6	12,242,844.0	0.00					

<Organization?> 1 May 2020
<Analysis By?> TNM 2.5

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: <Project Name?>
RUN: <Run Title?>

Roadway Name	Points Name	No.	Segment Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Stetson	point6	6	2314	40	122	40	122	40	0	0	0	0
	point7	7										
Sanderson	point8	8	2223	40	118	40	118	40	0	0	0	0
	point9	9	2223	40	118	40	118	40	0	0	0	0
	point10	10										

<Organization?>
<Analysis By?>
1 May 2020
TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: <Project Name?>
RUN: <Run Title?>

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria: Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
M1	1	1	1,638,748.8	12,243,530.0	0.00	4.92	0.00	66	10.0	8.0	Y
M2	2	1	1,639,821.2	12,243,834.0	0.00	4.92	0.00	66	10.0	8.0	Y
M3	3	1	1,638,818.2	12,244,040.0	0.00	4.92	0.00	66	10.0	8.0	Y
M4	4	1	1,639,273.8	12,244,042.0	0.00	4.92	0.00	66	10.0	8.0	Y
M5	5	1	1,639,753.1	12,244,038.0	0.00	4.92	0.00	66	10.0	8.0	Y
M6	6	1	1,638,781.4	12,243,422.0	0.00	4.92	0.00	66	10.0	8.0	Y
M7	7	1	1,639,134.9	12,243,400.0	0.00	4.92	0.00	66	10.0	8.0	Y
M8	8	1	1,639,508.0	12,243,383.0	0.00	4.92	0.00	66	10.0	8.0	Y

<Organization?> 1 May 2020
<Analysis By?> TNM 2.5

INPUT: BARRIERS
PROJECT/CONTRACT: <Project Name?>
RUN: <Run Title?>

Barrier									Points										
Name	Type	Height		If Wall	If Berm			Add'tnl	Name	No.	Coordinates (bottom)			Height	Segment				
		Min	Max	$ per Unit Area	$ per Unit Vol.	Top Width	Run:Rise	$ per Unit Length			X	Y	Z	at Point	Seg Ht Incre-ment	Perturbs #Up	#Dn	On Struct?	Important Reflec-tions?
		ft	ft	$/sq ft	$/cu yd	ft	ft:ft	$/ft			ft	ft	ft	ft	ft				
Barrier3	W	0.00	99.99	0.00				0.00	point5	5	1,638,723.5	12,244,010.0	0.00	8.00	0.00	0	0		
									point6	6	1,639,868.0	12,244,007.0	0.00	8.00					
Barrier4	W	0.00	99.99	0.00				0.00	point7	7	1,638,743.8	12,243,473.0	0.00	15.00	0.00	0	0		
									point8	8	1,639,665.6	12,243,450.0	0.00	15.00					
Barrier5	W	0.00	99.99	0.00				0.00	point9	9	1,638,743.8	12,243,473.0	0.00	6.00	0.00	0	0		
									point10	10	1,638,742.2	12,243,159.0	0.00	6.00					

<Organization?>
<Analysis By?>

1 May 2020
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: <Project Name?>
RUN: <Run Title?>
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h		Increase over existing		Type Impact	With Barrier Calculated LAeq1h	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc			Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
M1	1	1	0.0	68.5	66	68.5	10	Snd Lvl	68.5	0.0	8	-8.0
M2	2	1	0.0	69.1	66	69.1	10	Snd Lvl	69.1	0.0	8	-8.0
M3	3	1	0.0	57.8	66	57.8	10	----	57.8	0.0	8	-8.0
M4	4	1	0.0	58.2	66	58.2	10	----	58.2	0.0	8	-8.0
M5	5	1	0.0	57.6	66	57.6	10	----	57.6	0.0	8	-8.0
M6	6	1	0.0	60.9	66	60.9	10	----	60.9	0.0	8	-8.0
M7	7	1	0.0	52.2	66	52.2	10	----	52.2	0.0	8	-8.0
M8	8	1	0.0	48.6	66	48.6	10	----	48.6	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	8	0.0	0.0	0.0
All Impacted	2	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

<Organization?> 21 October 2020
<Analysis By?> TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: <Project Name?>
RUN: 2020 Existing

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway Name	Width	Points Name	No.	Coordinates (pavement) X	Y	Z	Flow Control Control Device	Speed Constraint	Percent Vehicles Affected	Segment Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
Stetson	60.0	point6	6	1,638,698.6	12,243,909.0	0.00				Average	
		point7	7	1,639,963.6	12,243,909.0	0.00					
Sanderson	65.0	point8	8	1,638,653.2	12,243,873.0	0.00				Average	
		point9	9	1,638,656.9	12,243,437.0	0.00				Average	
		point10	10	1,638,660.6	12,242,844.0	0.00					

<Organization?> 21 October 2020
<Analysis By?> TNM 2.5

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: <Project Name?>
RUN: 2020 Existing

Roadway	Points		Segment									
Name	Name	No.	Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Stetson	point6	6	2773	40	120	40	120	40	0	0	0	0
	point7	7										
Sanderson	point8	8	2746	40	119	40	119	40	0	0	0	0
	point9	9	2746	40	119	40	119	40	0	0	0	0
	point10	10										

<Organization?>
<Analysis By?>

21 October 2020
TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: <Project Name?>
RUN: 2020 Existing

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria: Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
M1	1	1	1,638,748.8	12,243,530.0	0.00	4.92	0.00	66	10.0	8.0	Y
M2	2	1	1,639,821.2	12,243,834.0	0.00	4.92	0.00	66	10.0	8.0	Y
M3	3	1	1,638,818.2	12,244,040.0	0.00	4.92	0.00	66	10.0	8.0	Y
M4	4	1	1,639,273.8	12,244,042.0	0.00	4.92	0.00	66	10.0	8.0	Y
M5	5	1	1,639,753.1	12,244,038.0	0.00	4.92	0.00	66	10.0	8.0	Y
M6	6	1	1,638,781.4	12,243,422.0	0.00	4.92	0.00	66	10.0	8.0	Y
M7	7	1	1,639,134.9	12,243,400.0	0.00	4.92	0.00	66	10.0	8.0	Y
M8	8	1	1,639,508.0	12,243,383.0	0.00	4.92	0.00	66	10.0	8.0	Y

<Organization?>
<Analysis By?>

21 October 2020
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: <Project Name?>
RUN: 2020 Existing
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
M1	1	1	0.0	69.0	66	69.0	10	Snd Lvl	69.0	0.0	8	-8.0
M2	2	1	0.0	69.5	66	69.5	10	Snd Lvl	69.5	0.0	8	-8.0
M3	3	1	0.0	58.1	66	58.1	10	----	58.1	0.0	8	-8.0
M4	4	1	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0
M5	5	1	0.0	57.9	66	57.9	10	----	57.9	0.0	8	-8.0
M6	6	1	0.0	61.3	66	61.3	10	----	61.3	0.0	8	-8.0
M7	7	1	0.0	52.5	66	52.5	10	----	52.5	0.0	8	-8.0
M8	8	1	0.0	48.9	66	48.9	10	----	48.9	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	8	0.0	0.0	0.0
All Impacted	2	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

<Organization?> 21 October 2020
<Analysis By?> TNM 2.5

INPUT: BARRIERS
PROJECT/CONTRACT: <Project Name?>
RUN: 2020 Existing

Barrier									Points										
Name	Type	Height		If Wall	If Berm			Add'tnl	Name	No.	Coordinates (bottom)			Height	Segment				
		Min	Max	$ per Unit Area	$ per Unit Vol.	Top Width	Run:Rise	$ per Unit Length			X	Y	Z	at Point	Seg Ht Incre-ment	#Up	#Dn	On Struct?	Important Reflec-tions?
		ft	ft	$/sq ft	$/cu yd	ft	ft:ft	$/ft			ft	ft	ft	ft	ft				
Barrier3	W	0.00	99.99	0.00				0.00	point5	5	1,638,723.5	12,244,010.0	0.00	8.00	0.00	0	0		
									point6	6	1,639,868.0	12,244,007.0	0.00	8.00					
Barrier4	W	0.00	99.99	0.00				0.00	point7	7	1,638,743.8	12,243,473.0	0.00	15.00	0.00	0	0		
									point8	8	1,639,665.6	12,243,450.0	0.00	15.00					
Barrier5	W	0.00	99.99	0.00				0.00	point9	9	1,638,743.8	12,243,473.0	0.00	6.00	0.00	0	0		
									point10	10	1,638,742.2	12,243,159.0	0.00	6.00					

Dudek					**1 May 2020**						
CB					**TNM 2.5**						
INPUT: ROADWAYS							**Average pavement type shall be used unless**				
PROJECT/CONTRACT:	**Stetson Corner**						**a State highway agency substantiates the use**				
RUN:	**Opening Year 2022**						**of a different type with the approval of FHWA**				
Roadway		**Points**									
Name	**Width**	**Name**	**No.**	**Coordinates (pavement)**			**Flow Control**			**Segment**	
				X	**Y**	**Z**	**Control Device**	**Speed Constraint**	**Percent Vehicles Affected**	**Pvmt Type**	**On Struct?**
	ft			ft	ft	ft		mph	%		
Stetson	60.0	point6	6	1,638,698.6	12,243,909.0	0.00				Average	
		point7	7	1,639,963.6	12,243,909.0	0.00					
Sanderson	65.0	point8	8	1,638,653.2	12,243,873.0	0.00				Average	
		point9	9	1,638,656.9	12,243,437.0	0.00				Average	
		point10	10	1,638,660.6	12,242,844.0	0.00					

Dudek **1 May 2020**
CB **TNM 2.5**

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: **Stetson Corner**
RUN: **Opening Year 2022**

Roadway Name	Points Name	No.	Segment Autos V	Autos S	MTrucks V	MTrucks S	HTrucks V	HTrucks S	Buses V	Buses S	Motorcycles V	Motorcycles S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Stetson	point6	6	2490	40	108	40	108	40	0	0	0	0
	point7	7										
Sanderson	point8	8	2725	40	118	40	118	40	0	0	0	0
	point9	9	2725	40	118	40	118	40	0	0	0	0
	point10	10										

Dudek 1 May 2020
CB TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: Stetson Corner
RUN: Opening Year 2022

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
M1	1	1	1,638,748.8	12,243,530.0	0.00	4.92	0.00	66	10.0	8.0	Y
M2	2	1	1,639,821.2	12,243,834.0	0.00	4.92	0.00	66	10.0	8.0	Y
M3	3	1	1,638,818.2	12,244,040.0	0.00	4.92	0.00	66	10.0	8.0	Y
M4	4	1	1,639,273.8	12,244,042.0	0.00	4.92	0.00	66	10.0	8.0	Y
M5	5	1	1,639,753.1	12,244,038.0	0.00	4.92	0.00	66	10.0	8.0	Y
M6	6	1	1,638,781.4	12,243,422.0	0.00	4.92	0.00	66	10.0	8.0	Y
M7	7	1	1,639,134.9	12,243,400.0	0.00	4.92	0.00	66	10.0	8.0	Y
M8	8	1	1,639,508.0	12,243,383.0	0.00	4.92	0.00	66	10.0	8.0	Y

Dudek 1 May 2020
CB TNM 2.5

INPUT: BARRIERS
PROJECT/CONTRACT: Stetson Corner
RUN: Opening Year 2022

Barrier									Points										
Name	Type	Height		If Wall	If Berm			Add'tnl	Name	No.	Coordinates (bottom)			Height	Segment				
		Min	Max	$ per Unit Area	$ per Unit Vol.	Top Width	Run:Rise	$ per Unit Length			X	Y	Z	at Point	Seg Ht Incre-ment	#Up	#Dn	On Struct?	Important Reflec-tions?
		ft	ft	$/sq ft	$/cu yd	ft	ft:ft	$/ft			ft	ft	ft	ft	ft				
Barrier3	W	0.00	99.99	0.00				0.00	point5	5	1,638,723.5	12,244,010.0	0.00	8.00	0.00	0	0		
									point6	6	1,639,868.0	12,244,007.0	0.00	8.00					
Barrier4	W	0.00	99.99	0.00				0.00	point7	7	1,638,743.8	12,243,473.0	0.00	15.00	0.00	0	0		
									point8	8	1,639,665.6	12,243,450.0	0.00	15.00					
Barrier5	W	0.00	99.99	0.00				0.00	point9	9	1,638,743.8	12,243,473.0	0.00	6.00	0.00	0	0		
									point10	10	1,638,742.2	12,243,159.0	0.00	6.00					

Dudek
CB
1 May 2020
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Stetson Corner
RUN: Opening Year 2022
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
M1	1	1	0.0	68.9	66	68.9	10	Snd Lvl	68.9	0.0	8	-8.0
M2	2	1	0.0	69.1	66	69.1	10	Snd Lvl	69.1	0.0	8	-8.0
M3	3	1	0.0	57.7	66	57.7	10	----	57.7	0.0	8	-8.0
M4	4	1	0.0	58.0	66	58.0	10	----	58.0	0.0	8	-8.0
M5	5	1	0.0	57.5	66	57.5	10	----	57.5	0.0	8	-8.0
M6	6	1	0.0	61.2	66	61.2	10	----	61.2	0.0	8	-8.0
M7	7	1	0.0	52.4	66	52.4	10	----	52.4	0.0	8	-8.0
M8	8	1	0.0	48.6	66	48.6	10	----	48.6	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	8	0.0	0.0	0.0
All Impacted	2	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Dudek	21 October 2020
CB	TNM 2.5

INPUT: ROADWAYS	Average pavement type shall be used unless
PROJECT/CONTRACT:	Stetson Corner a State highway agency substantiates the use
RUN:	Opening Year 2022 + Project of a different type with the approval of FHWA

Roadway		Points		Coordinates (pavement)			Flow Control			Segment	
Name	Width	Name	No.	X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected	Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
Stetson	60.0	point6	6	1,638,698.6	12,243,909.0	0.00				Average	
		point7	7	1,639,963.6	12,243,909.0	0.00					
Sanderson	65.0	point8	8	1,638,653.2	12,243,873.0	0.00				Average	
		point9	9	1,638,656.9	12,243,437.0	0.00				Average	
		point10	10	1,638,660.6	12,242,844.0	0.00					

Dudek **21 October 2020**
CB **TNM 2.5**

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: **Stetson Corner**
RUN: **Opening Year 2022 + Project**

Roadway	Points											
Name	Name	No.	Segment									
			Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Stetson	point6	6	2868	40	124	40	124	40	0	0	0	0
	point7	7										
Sanderson	point8	8	2851	40	124	40	124	40	0	0	0	0
	point9	9	2851	40	124	40	124	40	0	0	0	0
	point10	10										

Dudek 21 October 2020
CB TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: Stetson Corner
RUN: Opening Year 2022 + Project

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria: Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
M1	1	1	1,638,748.8	12,243,530.0	0.00	4.92	0.00	66	10.0	8.0	Y
M2	2	1	1,639,821.2	12,243,834.0	0.00	4.92	0.00	66	10.0	8.0	Y
M3	3	1	1,638,818.2	12,244,040.0	0.00	4.92	0.00	66	10.0	8.0	Y
M4	4	1	1,639,273.8	12,244,042.0	0.00	4.92	0.00	66	10.0	8.0	Y
M5	5	1	1,639,753.1	12,244,038.0	0.00	4.92	0.00	66	10.0	8.0	Y
M6	6	1	1,638,781.4	12,243,422.0	0.00	4.92	0.00	66	10.0	8.0	Y
M7	7	1	1,639,134.9	12,243,400.0	0.00	4.92	0.00	66	10.0	8.0	Y
M8	8	1	1,639,508.0	12,243,383.0	0.00	4.92	0.00	66	10.0	8.0	Y

Dudek 21 October 2020
CB TNM 2.5

INPUT: BARRIERS
PROJECT/CONTRACT: Stetson Corner
RUN: Opening Year 2022 + Project

Barrier									Points										
Name	Type	Height		If Wall	If Berm			Add'tnl	Name	No.	Coordinates (bottom)			Height	Segment				
		Min	Max	$ per	$ per	Top	Run:Rise	$ per			X	Y	Z	at	Seg Ht	Perturbs		On	Important
				Unit	Unit	Width		Unit						Point	Incre-	#Up	#Dn	Struct?	Reflec-
				Area	Vol.			Length							ment				tions?
		ft	ft	$/sq ft	$/cu yd	ft	ft:ft	$/ft			ft	ft	ft	ft	ft				
Barrier3	W	0.00	99.99	0.00				0.00	point5	5	1,638,723.5	12,244,010.0	0.00	8.00	0.00	0	0		
									point6	6	1,639,868.0	12,244,007.0	0.00	8.00					
Barrier4	W	0.00	99.99	0.00				0.00	point7	7	1,638,743.8	12,243,473.0	0.00	15.00	0.00	0	0		
									point8	8	1,639,665.6	12,243,450.0	0.00	15.00					
Barrier5	W	0.00	99.99	0.00				0.00	point9	9	1,638,743.8	12,243,473.0	0.00	6.00	0.00	0	0		
									point10	10	1,638,742.2	12,243,159.0	0.00	6.00					

Dudek
CB

21 October 2020
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Stetson Corner
RUN: Opening Year 2022 + Project
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h		Increase over existing		Type Impact	With Barrier Calculated LAeq1h	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc			Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
M1	1	1	0.0	69.1	66	69.1	10	Snd Lvl	69.1	0.0	8	-8.0
M2	2	1	0.0	69.7	66	69.7	10	Snd Lvl	69.7	0.0	8	-8.0
M3	3	1	0.0	58.3	66	58.3	10	----	58.3	0.0	8	-8.0
M4	4	1	0.0	58.6	66	58.6	10	----	58.6	0.0	8	-8.0
M5	5	1	0.0	58.1	66	58.1	10	----	58.1	0.0	8	-8.0
M6	6	1	0.0	61.4	66	61.4	10	----	61.4	0.0	8	-8.0
M7	7	1	0.0	52.7	66	52.7	10	----	52.7	0.0	8	-8.0
M8	8	1	0.0	49.1	66	49.1	10	----	49.1	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	8	0.0	0.0	0.0
All Impacted	2	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Dudek 1 May 2020
CB TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: Stetson Corner
RUN: Cumulative (Existing + Ambient)

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway Name	Width	Points Name	No.	Coordinates (pavement) X	Y	Z	Flow Control Control Device	Speed Constraint	Percent Vehicles Affected	Segment Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
Stetson	60.0	point6	6	1,638,698.6	12,243,909.0	0.00				Average	
		point7	7	1,639,963.6	12,243,909.0	0.00					
Sanderson	65.0	point8	8	1,638,653.2	12,243,873.0	0.00				Average	
		point9	9	1,638,656.9	12,243,437.0	0.00				Average	
		point10	10	1,638,660.6	12,242,844.0	0.00					

Dudek **1 May 2020**
CB **TNM 2.5**

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: **Stetson Corner**
RUN: **Cumulative (Existing + Ambient)**

Roadway	Points											
Name	Name	No.	Segment									
			Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Stetson	point6	6	3025	40	131	40	131	40	0	0	0	0
	point7	7										
Sanderson	point8	8	3055	40	132	40	132	40	0	0	0	0
	point9	9	3055	40	132	40	132	40	0	0	0	0
	point10	10										

Dudek 1 May 2020
CB TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: Stetson Corner
RUN: Cumulative (Existing + Ambient)

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
M1	1	1	1,638,748.8	12,243,530.0	0.00	4.92	0.00	66	10.0	8.0	Y
M2	2	1	1,639,821.2	12,243,834.0	0.00	4.92	0.00	66	10.0	8.0	Y
M3	3	1	1,638,818.2	12,244,040.0	0.00	4.92	0.00	66	10.0	8.0	Y
M4	4	1	1,639,273.8	12,244,042.0	0.00	4.92	0.00	66	10.0	8.0	Y
M5	5	1	1,639,753.1	12,244,038.0	0.00	4.92	0.00	66	10.0	8.0	Y
M6	6	1	1,638,781.4	12,243,422.0	0.00	4.92	0.00	66	10.0	8.0	Y
M7	7	1	1,639,134.9	12,243,400.0	0.00	4.92	0.00	66	10.0	8.0	Y
M8	8	1	1,639,508.0	12,243,383.0	0.00	4.92	0.00	66	10.0	8.0	Y

Dudek 1 May 2020
CB TNM 2.5

INPUT: BARRIERS
PROJECT/CONTRACT: Stetson Corner
RUN: Cumulative (Existing + Ambient)

Barrier									Points										
Name	Type	Height		If Wall	If Berm			Add'tnl	Name	No.	Coordinates (bottom)			Height	Segment				
		Min	Max	$ per Unit Area	$ per Unit Vol.	Top Width	Run:Rise	$ per Unit Length			X	Y	Z	at Point	Seg Ht Incre-ment	#Up	#Dn	On Struct?	Important Reflec-tions?
		ft	ft	$/sq ft	$/cu yd	ft	ft:ft	$/ft			ft	ft	ft	ft	ft				
Barrier3	W	0.00	99.99	0.00				0.00	point5	5	1,638,723.5	12,244,010.0	0.00	8.00	0.00	0	0		
									point6	6	1,639,868.0	12,244,007.0	0.00	8.00					
Barrier4	W	0.00	99.99	0.00				0.00	point7	7	1,638,743.8	12,243,473.0	0.00	15.00	0.00	0	0		
									point8	8	1,639,665.6	12,243,450.0	0.00	15.00					
Barrier5	W	0.00	99.99	0.00				0.00	point9	9	1,638,743.8	12,243,473.0	0.00	6.00	0.00	0	0		
									point10	10	1,638,742.2	12,243,159.0	0.00	6.00					

Dudek
CB
1 May 2020
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Stetson Corner
RUN: Cumulative (Existing + Ambient)
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h		Increase over existing		Type Impact	With Barrier Calculated LAeq1h	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc			Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
M1	1	1	0.0	69.4	66	69.4	10	Snd Lvl	69.4	0.0	8	-8.0
M2	2	1	0.0	69.9	66	69.9	10	Snd Lvl	69.9	0.0	8	-8.0
M3	3	1	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0
M4	4	1	0.0	58.9	66	58.9	10	----	58.9	0.0	8	-8.0
M5	5	1	0.0	58.3	66	58.3	10	----	58.3	0.0	8	-8.0
M6	6	1	0.0	61.7	66	61.7	10	----	61.7	0.0	8	-8.0
M7	7	1	0.0	53.0	66	53.0	10	----	53.0	0.0	8	-8.0
M8	8	1	0.0	49.3	66	49.3	10	----	49.3	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	8	0.0	0.0	0.0
All Impacted	2	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Dudek 21 October 2020
CB TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: Stetson Corner
RUN: Cumulative + Project

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway Name	Width	Points Name	No.	Coordinates (pavement) X	Y	Z	Flow Control Control Device	Speed Constraint	Percent Vehicles Affected	Segment Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
Stetson	60.0	point6	6	1,638,698.6	12,243,909.0	0.00				Average	
		point7	7	1,639,963.6	12,243,909.0	0.00					
Sanderson	65.0	point8	8	1,638,653.2	12,243,873.0	0.00				Average	
		point9	9	1,638,656.9	12,243,437.0	0.00				Average	
		point10	10	1,638,660.6	12,242,844.0	0.00					

Dudek				**21 October 2020**								
CB				**TNM 2.5**								
INPUT: TRAFFIC FOR LAeq1h Volumes												
PROJECT/CONTRACT:	**Stetson Corner**											
RUN:	**Cumulative + Project**											
Roadway	**Points**											
Name	**Name**	**No.**	**Segment**									
			Autos		**MTrucks**		**HTrucks**		**Buses**		**Motorcycles**	
			V	**S**	**V**	**S**	**V**	**S**	**V**	**S**	**V**	**S**
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Stetson	point6	6	3404	40	148	40	148	40	0	0	0	0
	point7	7										
Sanderson	point8	8	3181	40	138	40	138	40	0	0	0	0
	point9	9	3181	40	138	40	138	40	0	0	0	0
	point10	10										

Dudek 21 October 2020
CB TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: Stetson Corner
RUN: Cumulative + Project

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
M1	1	1	1,638,748.8	12,243,530.0	0.00	4.92	0.00	66	10.0	8.0	Y
M2	2	1	1,639,821.2	12,243,834.0	0.00	4.92	0.00	66	10.0	8.0	Y
M3	3	1	1,638,818.2	12,244,040.0	0.00	4.92	0.00	66	10.0	8.0	Y
M4	4	1	1,639,273.8	12,244,042.0	0.00	4.92	0.00	66	10.0	8.0	Y
M5	5	1	1,639,753.1	12,244,038.0	0.00	4.92	0.00	66	10.0	8.0	Y
M6	6	1	1,638,781.4	12,243,422.0	0.00	4.92	0.00	66	10.0	8.0	Y
M7	7	1	1,639,134.9	12,243,400.0	0.00	4.92	0.00	66	10.0	8.0	Y
M8	8	1	1,639,508.0	12,243,383.0	0.00	4.92	0.00	66	10.0	8.0	Y

Dudek 21 October 2020
CB TNM 2.5

INPUT: BARRIERS
PROJECT/CONTRACT: Stetson Corner
RUN: Cumulative + Project

Barrier									Points										
Name	Type	Height		If Wall	If Berm			Add'tnl	Name	No.	Coordinates (bottom)			Height	Segment				
		Min	Max	$ per Unit Area	$ per Unit Vol.	Top Width	Run:Rise	$ per Unit Length			X	Y	Z	at Point	Seg Ht Incre-ment	Perturbs #Up	#Dn	On Struct?	Important Reflec-tions?
		ft	ft	$/sq ft	$/cu yd	ft	ft:ft	$/ft			ft	ft	ft	ft	ft				
Barrier3	W	0.00	99.99	0.00				0.00	point5	5	1,638,723.5	12,244,010.0	0.00	8.00	0.00	0	0		
									point6	6	1,639,868.0	12,244,007.0	0.00	8.00					
Barrier4	W	0.00	99.99	0.00				0.00	point7	7	1,638,743.8	12,243,473.0	0.00	15.00	0.00	0	0		
									point8	8	1,639,665.6	12,243,450.0	0.00	15.00					
Barrier5	W	0.00	99.99	0.00				0.00	point9	9	1,638,743.8	12,243,473.0	0.00	6.00	0.00	0	0		
									point10	10	1,638,742.2	12,243,159.0	0.00	6.00					

Dudek
CB

21 October 2020
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Stetson Corner
RUN: Cumulative + Project
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
M1	1	1	0.0	69.6	66	69.6	10	Snd Lvl	69.6	0.0	8	-8.0
M2	2	1	0.0	70.4	66	70.4	10	Snd Lvl	70.4	0.0	8	-8.0
M3	3	1	0.0	59.0	66	59.0	10	----	59.0	0.0	8	-8.0
M4	4	1	0.0	59.4	66	59.4	10	----	59.4	0.0	8	-8.0
M5	5	1	0.0	58.8	66	58.8	10	----	58.8	0.0	8	-8.0
M6	6	1	0.0	61.9	66	61.9	10	----	61.9	0.0	8	-8.0
M7	7	1	0.0	53.2	66	53.2	10	----	53.2	0.0	8	-8.0
M8	8	1	0.0	49.7	66	49.7	10	----	49.7	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	8	0.0	0.0	0.0
All Impacted	2	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Attachment D

Operational Noise Model Input and Output Data

Daytime Calculation

Source Library

Name	ID	Type	Oktave Spectrum (dB) Weight.	31.5	63	125	250	500	1000	2000	4000	8000	A	lin	Source
5 Ton Carri	ACU	Lw	A	50	53	56.5	62.5	66.5	68	63	59.5	51.5	72.1	90	
Idling Car	Car	Lw	A	67	76	87	92	92	92	88	79	69	97.8	109.9	Car
Idling RV	RV	Lw	A	68	77	88	93	93	93	89	80	79	98.8	110.9	RV
Vacuum Isl	VAC	Lw	A	30	50	49	52	52	58	64	67	69	76.9	84.1	Vacutec
Car Wash 1	BL1	Lw	A	57	76	81	84	98	90	90	85	78	104.2	111.2	Blower

Point Source

Name	M.	ID	Result. PWL Day (dBA)	Evening (dBA)	Night (dBA)	Lw / Li Type	Value	norm. dB(A)	Correction Day dB(A)	Evening dB(A)	Night dB(A)	Sound Reduction R	Area (ft²)	Attenuatio Day (min)	Special (min)	Night (min)	K0 (dB)	Freq. (Hz)	Direct.	Height (ft)		Coordinates X (ft)	Y (ft)	Z (ft)	
Vacutec1			76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	550.82	521.35		4
Gas Pump	-		80.1	80.1	80.1	SET											0		(none)	4	r	476.63	540.33		4
Gas Pump	-		80.1	80.1	80.1	SET											0		(none)	4	r	401.39	515.19		4
7-11 HVAC		HVAC1	72.1	72.1	72.1	Lw	ACU		0	0	0						0		(none)	22	r	427.24	417.42		22
Drive Thru		HVAC2	72.1	72.1	72.1	Lw	ACU		0	0	0						0		(none)	24	r	421.29	331.43		24
Gas Pump			80.1	80.1	80.1	SET											0		(none)	4	r	470.41	539.47		4
Gas Pump	-		80.1	80.1	80.1	SET											0		(none)	4	r	475.34	514.27		4
Gas Pump			80.1	80.1	80.1	SET											0		(none)	4	r	469.76	514.49		4
Gas Pump	-		80.1	80.1	80.1	SET											0		(none)	4	r	440.14	515.13		4
Gas Pump			80.1	80.1	80.1	SET											0		(none)	4	r	435.85	514.49		4
Gas Pump	-		80.1	80.1	80.1	SET											0		(none)	4	r	440.57	540.03		4
Gas Pump			80.1	80.1	80.1	SET											0		(none)	4	r	436.5	540.67		4
Gas Pump			80.1	80.1	80.1	SET											0		(none)	4	r	405.81	539.81		4
Gas Pump	-		80.1	80.1	80.1	SET											0		(none)	4	r	399.94	540.19		4
Gas Pump			80.1	80.1	80.1	SET											0		(none)	4	r	406.11	514.98		4
Vacutec1			76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	550.79	509.97		4
Vacutec1			76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	550.98	498.91		4
Vacutec1			76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	550.66	487.54		4
Vacutec1			76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	550.45	476.7		4
Vacutec1			76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	550.45	441.26		4
Vacutec1			76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	550.02	464.25		4
Vacutec1			76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	550.07	452.1		4
Vacutec1			76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	550.63	429.89		4
Vacutec1			76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	550.3	418.06		4
Vacutec1			76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	550.63	406.9		4
Vacutec1			76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	551.72	336.46		4
Vacutec1			76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	551.99	324.43		4
Vacutec1			76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	551.85	301.98		4
Vacutec1			76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	551.99	290.49		4
Vacutec1			76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	551.72	278.05		4
Vacutec1			76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	552.22	243.78		4
Vacutec1			76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	551.01	232.01		4
Vacutec1			76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	552.19	255.67		4
Vacutec1			76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	551.92	268.11		4
Vacutec1			76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	551.58	313.88		4
Idling Car	+		97.8	97.8	97.8	Lw	Car		0	0	0						0		(none)	3	r	580.72	372.84		3
Idling Car	+		97.8	97.8	97.8	Lw	Car		0	0	0						0		(none)	4	r	596.22	253.43		4
Idling Car	+		97.8	97.8	97.8	Lw	Car		0	0	0						0		(none)	4	r	581.51	254.07		4
Idling Car	+		97.8	97.8	97.8	Lw	Car		0	0	0						0		(none)	4	r	581.25	274.3		4
Idling Car	+		97.8	97.8	97.8	Lw	Car		0	0	0						0		(none)	4	r	596.11	274.68		4
Idling Car	+		97.8	97.8	97.8	Lw	Car		0	0	0						0		(none)	4	r	595.68	293.99		4
Idling Car	+		97.8	97.8	97.8	Lw	Car		0	0	0						0		(none)	4	r	580.23	295.71		4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0						0		(none)	4	r	580.23	315.45		4
Idling Car	+		97.8	97.8	97.8	Lw	Car		0	0	0						0		(none)	4	r	595.68	316.74		4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0						0		(none)	4	r	579.83	338.51		4
Idling Car	+		97.8	97.8	97.8	Lw	Car		0	0	0						0		(none)	4	r	597	338.08		4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0						0		(none)	4	r	481.96	284.43		4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0						0		(none)	4	r	481.1	305.46		4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0						0		(none)	4	r	482.82	326.06		4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0						0		(none)	4	r	482.82	346.67		4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0						0		(none)	4	r	461.78	361.69		4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0						0		(none)	4	r	441.61	360.4		4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0						0		(none)	4	r	419.72	359.97		4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0						0		(none)	4	r	456.2	460.42		4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0						0		(none)	4	r	427.44	460.42		4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0						0		(none)	4	r	484.53	419.64		4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0						0		(none)	4	r	435.39	255.49		4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0						0		(none)	4	r	387.37	256.03		4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0						0		(none)	4	r	454.86	254.41		4

Area Source

Name	M.	ID	Result. PWL Day (dBA)	Evening (dBA)	Night (dBA)	Result. PWL" Day (dBA)	Evening (dBA)	Night (dBA)	Lw / Li Type	Value	norm. dB(A)	Correction Day dB(A)	Evening dB(A)	Night dB(A)	Sound Reduction R	Area (ft²)	Attenuatio Day (min)	Operating Time Special (min)	Night (min)	K0 (dB)	Freq. (Hz)	Direct.	Moving Pt. Src Number Day	Evening	Night
Idling RV			98.8	98.8	98.8	86.7	86.7	86.7	Lw	RV		0	0	0						0		(none)			

Vertical Area Source

Name	M.	ID	Result. PWL Day (dBA)	Evening (dBA)	Night (dBA)	Result. PWL" Day (dBA)	Evening (dBA)	Night (dBA)	Lw / Li Type	Value	norm. dB(A)	Correction Day dB(A)	Evening dB(A)	Night dB(A)	Sound Reduction R	Area (ft²)	Attenuatio Day (min)	Operating Time Special (min)	Night (min)	K0 (dB)	Freq. (Hz)	Direct.
Dryer			109.2	109.2	109.2	101.4	101.4	101.4	Lw	BL1		0	0	0			-5			3		(none)

Nighttime Calculation

Source Library

Name	ID	Type	Oktave Spectrum (dB) Weight.	31.5	63	125	250	500	1000	2000	4000	8000	A	lin	Source
5 Ton Carri	ACU	Lw	A	50	53	56.5	62.5	66.5	68	63	59.5	51.5	72.1	90	
Idling Car	Car	Lw	A	67	76	87	92	92	92	88	79	69	97.8	109.9	Car
Idling RV	RV	Lw	A	68	77	88	93	93	93	89	80	79	98.8	110.9	RV
Vacuum Isl	VAC	Lw	A	30	50	49	52	52	58	64	67	69	76.9	84.1	Vacutec
Car Wash 1	BL1	Lw	A	57	76	81	84	98	90	90	85	78	104.2	111.2	Blower

Point Source

Name	M.	ID	Result. PWL Day (dBA)	Evening (dBA)	Night (dBA)	Lw / Li Type	Value	norm. dB(A)	Correction Day dB(A)	Evening dB(A)	Night dB(A)	Sound Reduction R	Area (ft²)	Attenuatio Day (min)	Special (min)	Night (min)	K0 (dB)	Freq. (Hz)	Direct.	Height (ft)		Coordinates X (ft)	Y (ft)	Z (ft)	
Vacutec1	-		76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	550.82	521.35		4
Gas Pump	-		80.1	80.1	80.1	SET											0		(none)	4	r	476.63	540.33		4
Gas Pump	-		80.1	80.1	80.1	SET											0		(none)	4	r	401.39	515.19		4
7-11 HVAC		HVAC1	72.1	72.1	72.1	Lw	ACU		0	0	0						0		(none)	22	r	427.24	417.42		22
Drive Thru		HVAC2	72.1	72.1	72.1	Lw	ACU		0	0	0						0		(none)	24	r	421.29	331.43		24
Gas Pump	-		80.1	80.1	80.1	SET											0		(none)	4	r	470.41	539.47		4
Gas Pump	-		80.1	80.1	80.1	SET											0		(none)	4	r	475.34	514.27		4
Gas Pump			80.1	80.1	80.1	SET											0		(none)	4	r	469.76	514.49		4
Gas Pump	-		80.1	80.1	80.1	SET											0		(none)	4	r	440.14	515.13		4
Gas Pump	-		80.1	80.1	80.1	SET											0		(none)	4	r	435.85	514.49		4
Gas Pump	-		80.1	80.1	80.1	SET											0		(none)	4	r	440.57	540.03		4
Gas Pump	-		80.1	80.1	80.1	SET											0		(none)	4	r	436.5	540.67		4
Gas Pump	-		80.1	80.1	80.1	SET											0		(none)	4	r	405.81	539.81		4
Gas Pump	-		80.1	80.1	80.1	SET											0		(none)	4	r	399.94	540.19		4
Gas Pump			80.1	80.1	80.1	SET											0		(none)	4	r	406.11	514.98		4
Vacutec1	-		76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	550.79	509.97		4
Vacutec1	-		76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	550.98	498.91		4
Vacutec1	-		76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	550.66	487.54		4
Vacutec1	-		76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	550.45	476.7		4
Vacutec1	-		76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	550.45	441.26		4
Vacutec1	-		76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	550.02	464.25		4
Vacutec1	-		76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	550.07	452.1		4
Vacutec1	-		76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	550.63	429.89		4
Vacutec1	-		76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	550.3	418.06		4
Vacutec1	-		76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	550.63	406.9		4
Vacutec1	-		76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	551.72	336.46		4
Vacutec1	-		76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	551.99	324.43		4
Vacutec1	-		76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	551.85	301.98		4
Vacutec1	-		76.9	76.9	76.9	Lw	VAC		0	0	0						0		(none)	4	r	551.99	290.49		4

Vacutec1	-		76.9	76.9	76.9	Lw	VAC		0	0	0								0	(none)		4	r	551.72	278.05		4
Vacutec1	-		76.9	76.9	76.9	Lw	VAC		0	0	0								0	(none)		4	r	552.22	243.78		4
Vacutec1	-		76.9	76.9	76.9	Lw	VAC		0	0	0								0	(none)		4	r	551.01	232.01		4
Vacutec1	-		76.9	76.9	76.9	Lw	VAC		0	0	0								0	(none)		4	r	552.19	255.67		4
Vacutec1	-		76.9	76.9	76.9	Lw	VAC		0	0	0								0	(none)		4	r	551.92	268.11		4
Vacutec1	-		76.9	76.9	76.9	Lw	VAC		0	0	0								0	(none)		4	r	551.58	313.88		4
Idling Car	-		97.8	97.8	97.8	Lw	Car		0	0	0								0	(none)		3	r	580.72	372.84		3
Idling Car	-		97.8	97.8	97.8	Lw	Car		0	0	0								0	(none)		4	r	596.22	253.43		4
Idling Car	-		97.8	97.8	97.8	Lw	Car		0	0	0								0	(none)		4	r	581.51	254.07		4
Idling Car	-		97.8	97.8	97.8	Lw	Car		0	0	0								0	(none)		4	r	581.25	274.3		4
Idling Car	-		97.8	97.8	97.8	Lw	Car		0	0	0								0	(none)		4	r	596.11	274.68		4
Idling Car	-		97.8	97.8	97.8	Lw	Car		0	0	0								0	(none)		4	r	595.68	293.99		4
Idling Car	-		97.8	97.8	97.8	Lw	Car		0	0	0								0	(none)		4	r	580.23	295.71		4
Idling Car	-		97.8	97.8	97.8	Lw	Car		0	0	0								0	(none)		4	r	580.23	315.45		4
Idling Car	-		97.8	97.8	97.8	Lw	Car		0	0	0								0	(none)		4	r	595.68	316.74		4
Idling Car	-		97.8	97.8	97.8	Lw	Car		0	0	0								0	(none)		4	r	579.83	338.51		4
Idling Car	-		97.8	97.8	97.8	Lw	Car		0	0	0								0	(none)		4	r	597	338.08		4
Idling Car	-		97.8	97.8	97.8	Lw	Car		0	0	0								0	(none)		4	r	481.96	284.43		4
Idling Car	-		97.8	97.8	97.8	Lw	Car		0	0	0								0	(none)		4	r	481.1	305.46		4
Idling Car	-		97.8	97.8	97.8	Lw	Car		0	0	0								0	(none)		4	r	482.82	326.06		4
Idling Car	-		97.8	97.8	97.8	Lw	Car		0	0	0								0	(none)		4	r	482.82	346.67		4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0								0	(none)		4	r	461.78	361.69		4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0								0	(none)		4	r	441.61	360.4		4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0								0	(none)		4	r	419.72	359.97		4
Idling Car	-		97.8	97.8	97.8	Lw	Car		0	0	0								0	(none)		4	r	456.2	460.42		4
Idling Car			97.8	97.8	97.8	Lw	Car		0	0	0								0	(none)		4	r	427.44	460.42		4
Idling Car	+		97.8	97.8	97.8	Lw	Car		0	0	0								0	(none)		4	r	484.53	419.64		4
Idling Car	-		97.8	97.8	97.8	Lw	Car		0	0	0								0	(none)		4	r	435.39	255.49		4
Idling Car	-		97.8	97.8	97.8	Lw	Car		0	0	0								0	(none)		4	r	387.37	256.03		4
Idling Car	-		97.8	97.8	97.8	Lw	Car		0	0	0								0	(none)		4	r	454.86	254.41		4

Area Source

Name	M.	ID	Result. PWL			Result. PWL"			Lw / Li		Correction			Sound Reduction		Attenuatio	Operating Time			K0	Freq.	Direct.	Moving Pt. Src		
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night				Number		
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(ft^2)		(min)	(min)	(min)	(dB)	(Hz)		Day	Evening	Night
fueling RV	-	FRV	98.8	98.8	98.8	86.7	86.7	86.7	Lw	RV		0	0	0							0	(none)				

Vertical Area Source

Name	M.	ID	Result. PWL			Result. PWL"			Lw / Li		Correction			Sound Reduction		Attenuatio	Operating Time			K0	Freq.	Direct.
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night			
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(ft^2)		(min)	(min)	(min)	(dB)	(Hz)	
Dryer	-		109.2	109.2	109.2	101.4	101.4	101.4	Lw	BL1		0	0	0			-5				3	(none)	