Appendix H

Noise Impact Analysis

Euclid-Hazard 7-Eleven Service Station

NOISE IMPACT ANALYSIS

813 N EUCLID STREET GAS STATION PROJECT

CITY OF SANTA ANA

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Project No. 19062

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ACRONYMS AND ABBREVIATIONS

ANSI	American National Standards Institute
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
City	City of Santa Ana
cmu	Concrete masonry unit
CNEL	Community Noise Equivalent Level
dB	Decibel
dBA	A-weighted decibels
DOT	Department of Transportation
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
EPA	Environmental Protection Agency
Hz	Hertz
Ldn	Day-night average noise level
Leq	Equivalent sound level
Lmax	Maximum noise level
ONAC	Federal Office of Noise Abatement and Control
OSB	Oriented Strand Board
OSHA	Occupational Safety and Health Administration
PPV	Peak particle velocity
RMS	Root mean square
SEL	Single Event Level or Sound Exposure Level
STC	Sound Transmission Class
UMTA	Federal Urban Mass Transit Administration
VdB	Vibration velocity level in decibels

1.0 INTRODUCTION

1.1 Purpose of Analysis and Study Objectives

This Noise Impact Analysis has been prepared to determine the noise impacts associated with the proposed 813 N Euclid Street Gas Station project (proposed project). The following is provided in this report:

- A description of the study area and the proposed project;
- Information regarding the fundamentals of noise;
- Information regarding the fundamentals of vibration;
- A description of the local noise guidelines and standards;
- An evaluation of the current noise environment;
- An analysis of the potential short-term construction-related noise impacts from the proposed project; and,
- An analysis of long-term operations-related noise impacts from the proposed project.

1.2 Site Location and Study Area

The project site is located near the northwest corner of the City of Santa Ana (City). The approximately 0.64-acre project site is currently vacant and is bounded by Hazard Avenue and multi-family residential uses to the north, a Buddhist temple to the east, multi-family homes to the south, and Euclid Street and single-family homes to the west. The project study area is shown in Figure 1.

Sensitive Receptors in Project Vicinity

The nearest sensitive receptors to the project site are the multi-family homes located adjacent to the south side of the project site and the Buddhist temple located adjacent to the east side of the project site. The nearest school to the project site is Rosita Elementary School, which is located as near as 0.2 mile east of the project site.

1.3 Proposed Project Description

The proposed project consists of development of a gas station with eight fueling positions that are covered with an 1,800 square foot canopy and a 3,045 square foot convenience store. The proposed project would also include a parking lot with 16 parking spaces. The proposed site plan is shown in Figure 2.

1.4 Standard Noise Regulatory Conditions

The proposed project will be required to comply with the following regulatory conditions from the City of Santa Ana and State of California.

City of Santa Ana Municipal Code

The following lists the City of Santa Ana Municipal Code regulations that are applicable to the proposed project.

Section 18-312(a) Exterior Noise Standards

Section 18-312(a) of the City's Municipal Code limits noise created on the project site at any residential property line to 55 dBA between 7 a.m. and 10 p.m. and to 50 dBA between 10 p.m. and 7 a.m.. Compliance with this regulation will reduce the onsite operational-related noise impacts to the nearby sensitive receptors.

Section 18-314(a) Construction Noise

Section 18-314(e) of the City's Municipal Code exempts construction noise that occurs between 7:00 a.m. and 8:00 p.m. from the City's noise standards. Compliance with this regulation will reduce the construction-related noise impacts to the nearby sensitive receptors.

State of California Rules

The following lists the State of California rules that are applicable to all industrial projects in the State.

California Vehicle Code Section 27200-27207 – On-Road Vehicle Noise

California Vehicle Code Section 27200-27207 provides noise limits for vehicles operated in California. For vehicles over 10,000 pounds noise is limited to 88 dB for vehicles manufactured before 1973, 86 dB for vehicles manufactured before 1975, 83 dB for vehicles manufactured before 1988, and 80 dB for vehicles manufactured after 1987. All measurements are based at 50 feet from the vehicle.

California Vehicle Section 38365-38380 – Off-Road Vehicle Noise

California Vehicle Code Section 38365-38380 provides noise limits for off-highway motor vehicles operated in California. 92 dBA for vehicles manufactured before 1973, 88 dBA for vehicles manufactured before 1975, 86 dBA for vehicles manufactured before 1986, and 82 dBA for vehicles manufactured after December 31, 1985. All measurements are based at 50 feet from the vehicle.

1.5 Summary of Analysis Results

The following is a summary of the proposed project's impacts with regard to the State CEQA Guidelines noise checklist questions.

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?

Potentially significant impact. Implementation of Mitigation Measure 1 would reduce the impact to less than significant levels.

Generation of excessive groundborne vibration or groundborne noise levels?

Potentially significant impact. Implementation of Mitigation Measure 2 would reduce the impact to less than significant 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 two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

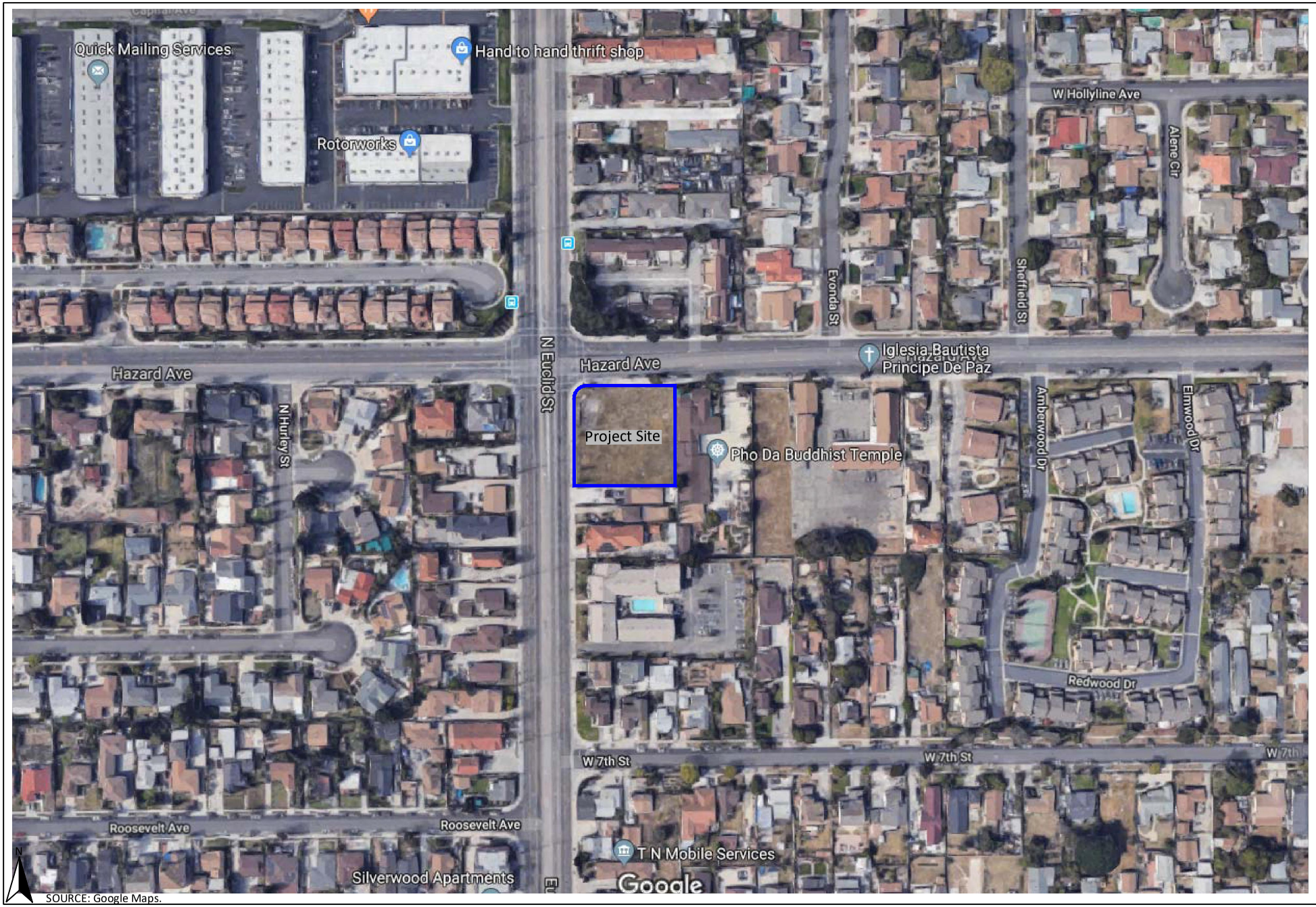
No impact.

1.6 Mitigation Measures for the Proposed Project

This analysis found that through adherence to the noise and vibration regulations detailed in Section 1.4 above and through implementation of the following mitigation all noise and vibration impacts would be reduced to less than significant levels.

Mitigation Measure 1:
The project applicant shall restrict the operation of the air/water dispensing machine between the hours of 10 p.m. and 7 a.m.. The hours of operation of the air/water dispensing machine shall be clearly detailed with signage in close proximity to the machine.

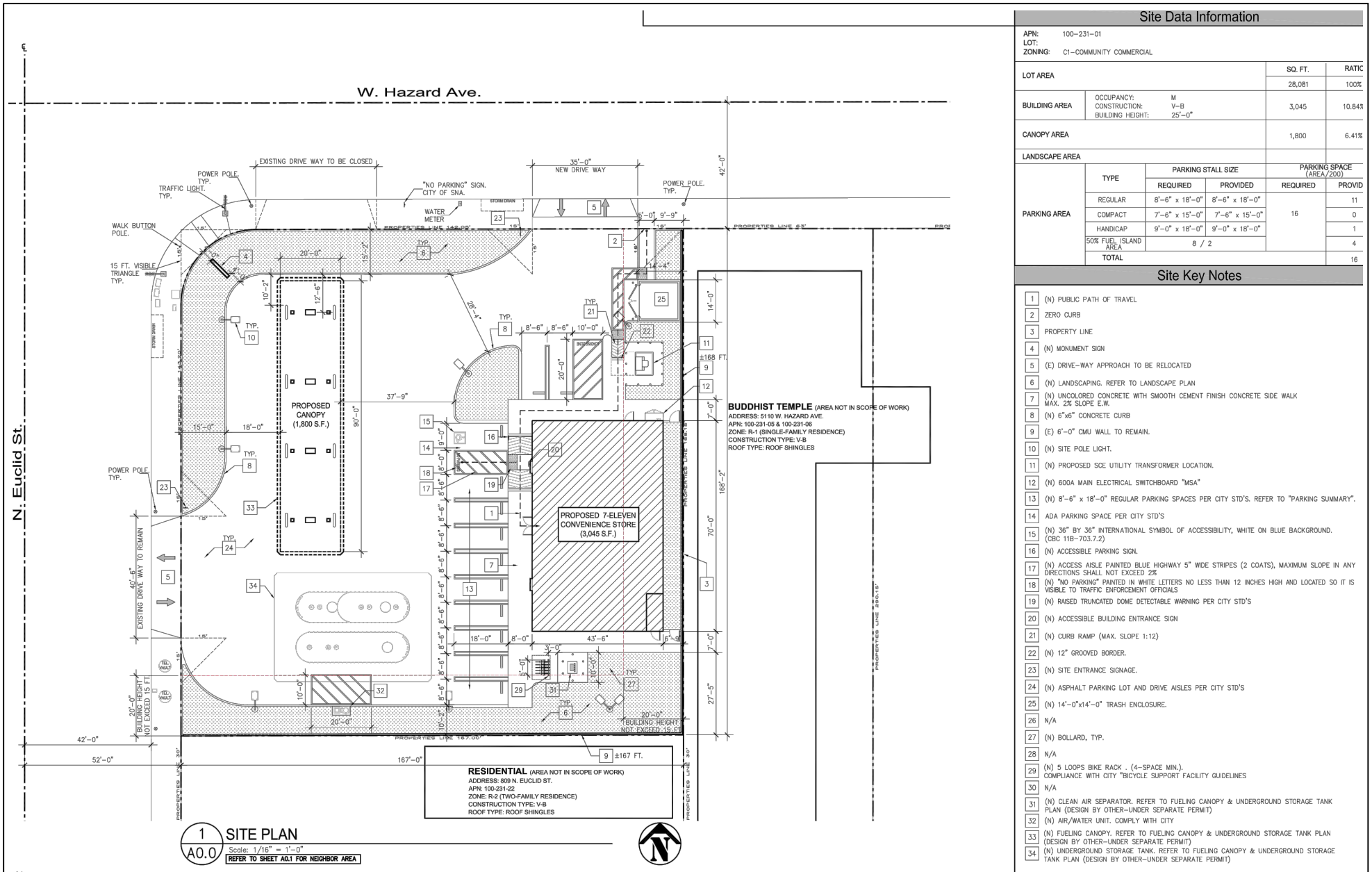
Mitigation Measure 2:
The project applicant shall restrict the use of impact pile drivers during construction of the proposed project and require the installation of piles to be installed with a sonic-style pile driver or other type of pile driver that produces similar vibration levels as a sonic pile driver.



SOURCE: Google Maps.

VISTA ENVIRONMENTAL

Figure 1
Project Location Map



Site Data Information

APN: 100-231-01
LOT:
ZONING: C1-COMMUNITY COMMERCIAL

			SQ. FT.	RATIO
LOT AREA			28,081	100%
BUILDING AREA	OCCUPANCY: M CONSTRUCTION: V-B BUILDING HEIGHT: 25'-0"		3,045	10.84%
CANOPY AREA			1,800	6.41%
LANDSCAPE AREA				

	TYPE	PARKING STALL SIZE		PARKING SPACE (AREA/200)	
		REQUIRED	PROVIDED	REQUIRED	PROVID
PARKING AREA	REGULAR	8'-6" x 18'-0"	8'-6" x 18'-0"	16	11
	COMPACT	7'-6" x 15'-0"	7'-6" x 15'-0"		0
	HANDICAP	9'-0" x 18'-0"	9'-0" x 18'-0"		1
	50% FUEL ISLAND AREA	8 / 2			4
	TOTAL				16

Site Key Notes

1. (N) PUBLIC PATH OF TRAVEL
2. ZERO CURB
3. PROPERTY LINE
4. (N) MONUMENT SIGN
5. (E) DRIVE-WAY APPROACH TO BE RELOCATED
6. (N) LANDSCAPING. REFER TO LANDSCAPE PLAN
7. (N) UNCOLORED CONCRETE WITH SMOOTH CEMENT FINISH CONCRETE SIDE WALK MAX. 2% SLOPE E.W.
8. (N) 6"x6" CONCRETE CURB
9. (E) 6'-0" CMU WALL TO REMAIN.
10. (N) SITE POLE LIGHT.
11. (N) PROPOSED SCE UTILITY TRANSFORMER LOCATION.
12. (N) 600A MAIN ELECTRICAL SWITCHBOARD "MSA"
13. (N) 8'-6" x 18'-0" REGULAR PARKING SPACES PER CITY STD'S. REFER TO "PARKING SUMMARY".
14. ADA PARKING SPACE PER CITY STD'S
15. (N) 36" BY 36" INTERNATIONAL SYMBOL OF ACCESSIBILITY, WHITE ON BLUE BACKGROUND. (CBC 11B-703.7.2)
16. (N) ACCESSIBLE PARKING SIGN.
17. (N) ACCESS AISLE PAINTED BLUE HIGHWAY 5" WIDE STRIPES (2 COATS), MAXIMUM SLOPE IN ANY DIRECTIONS SHALL NOT EXCEED 2%
18. (N) "NO PARKING" PAINTED IN WHITE LETTERS NO LESS THAN 12 INCHES HIGH AND LOCATED SO IT IS VISIBLE TO TRAFFIC ENFORCEMENT OFFICIALS
19. (N) RAISED TRUNCATED DOME DETECTABLE WARNING PER CITY STD'S
20. (N) ACCESSIBLE BUILDING ENTRANCE SIGN
21. (N) CURB RAMP (MAX. SLOPE 1:12)
22. (N) 12" GROOVED BORDER.
23. (N) SITE ENTRANCE SIGNAGE.
24. (N) ASPHALT PARKING LOT AND DRIVE AISLES PER CITY STD'S
25. (N) 14'-0"x14'-0" TRASH ENCLOSURE.
26. N/A
27. (N) BOLLARD, TYP.
28. N/A
29. (N) 5 LOOPS BIKE RACK . (4-SPACE MIN.). COMPLIANCE WITH CITY "BICYCLE SUPPORT FACILITY GUIDELINES
30. N/A
31. (N) CLEAN AIR SEPARATOR. REFER TO FUELING CANOPY & UNDERGROUND STORAGE TANK PLAN (DESIGN BY OTHER-UNDER SEPARATE PERMIT)
32. (N) AIR/WATER UNIT. COMPLY WITH CITY
33. (N) FUELING CANOPY. REFER TO FUELING CANOPY & UNDERGROUND STORAGE TANK PLAN (DESIGN BY OTHER-UNDER SEPARATE PERMIT)
34. (N) UNDERGROUND STORAGE TANK. REFER TO FUELING CANOPY & UNDERGROUND STORAGE TANK PLAN (DESIGN BY OTHER-UNDER SEPARATE PERMIT)

SOURCE: ASI Development.

VISTA ENVIRONMENTAL

Figure 2
Proposed Site Plan

2.0 NOISE FUNDAMENTALS

Noise is defined as unwanted sound. Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Sound is produced by the vibration of sound pressure waves in the air. Sound pressure levels are used to measure the intensity of sound and are described in terms of decibels. The decibel (dB) is a logarithmic unit which expresses the ratio of the sound pressure level being measured to a standard reference level. A-weighted decibels (dBA) approximate the subjective response of the human ear to a broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear.

2.1 Noise Descriptors

Noise Equivalent sound levels are not measured directly, but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (Leq) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. The peak traffic hour Leq is the noise metric used by California Department of Transportation (Caltrans) for all traffic noise impact analyses.

The Day-Night Average Level (Ldn) is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time of day corrections require the addition of ten decibels to sound levels at night between 10 p.m. and 7 a.m. While the Community Noise Equivalent Level (CNEL) is similar to the Ldn, except that it has another addition of 4.77 decibels to sound levels during the evening hours between 7 p.m. and 10 p.m. These additions are made to the sound levels at these time periods because during the evening and nighttime hours, when compared to daytime hours, there is a decrease in the ambient noise levels, which creates an increased sensitivity to sounds. For this reason the sound appears louder in the evening and nighttime hours and is weighted accordingly. The City of Santa Ana relies on the CNEL noise standard to assess transportation-related impacts on noise sensitive land uses.

2.2 Tone Noise

A pure tone noise is a noise produced at a single frequency and laboratory tests have shown that humans are more perceptible to changes in noise levels of a pure tone. For a noise source to contain a “pure tone,” there must be a significantly higher A-weighted sound energy in a given frequency band than in the neighboring bands, thereby causing the noise source to “stand out” against other noise sources. A pure tone occurs if the sound pressure level in the one-third octave band with the tone exceeds the average of the sound pressure levels of the two contiguous one-third octave bands by:

- 5 dB for center frequencies of 500 hertz (Hz) and above
- 8 dB for center frequencies between 160 and 400 Hz
- 15 dB for center frequencies of 125 Hz or less

2.3 Noise Propagation

From the noise source to the receiver, noise changes both in level and frequency spectrum. The most obvious is the decrease in noise as the distance from the source increases. The manner in which noise reduces with distance depends on whether the source is a point or line source as well as ground absorption, atmospheric effects and refraction, and shielding by natural and manmade features. Sound

from point sources, such as air conditioning condensers, radiate uniformly outward as it travels away from the source in a spherical pattern. The noise drop-off rate associated with this geometric spreading is 6 dBA per each doubling of the distance (dBA/DD). Transportation noise sources such as roadways are typically analyzed as line sources, since at any given moment the receiver may be impacted by noise from multiple vehicles at various locations along the roadway. Because of the geometry of a line source, the noise drop-off rate associated with the geometric spreading of a line source is 3 dBA/DD.

2.4 Ground Absorption

The sound drop-off rate is highly dependent on the conditions of the land between the noise source and receiver. To account for this ground-effect attenuation (absorption), two types of site conditions are commonly used in traffic noise models, soft-site and hard-site conditions. Soft-site conditions account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation. For point sources, a drop-off rate of 7.5 dBA/DD is typically observed over soft ground with landscaping, as compared with a 6.0 dBA/DD drop-off rate over hard ground such as asphalt, concrete, stone and very hard packed earth. For line sources a 4.5 dBA/DD is typically observed for soft-site conditions compared to the 3.0 dBA/DD drop-off rate for hard-site conditions. Caltrans research has shown that the use of soft-site conditions is more appropriate for the application of the Federal Highway Administration (FHWA) traffic noise prediction model used in this analysis.

3.0 GROUND-BORNE VIBRATION FUNDAMENTALS

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.

3.1 Vibration Descriptors

There are several different methods that are used to quantify vibration amplitude such as the maximum instantaneous peak in the vibrations velocity, which is known as the peak particle velocity (PPV) or the root mean square (rms) amplitude of the vibration velocity. Due to the typically small amplitudes of vibrations, vibration velocity is often expressed in decibels and is denoted as (L_v) and is based on the rms velocity amplitude. A commonly used abbreviation is "VdB", which in this text, is when L_v is based on the reference quantity of 1 micro inch per second.

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. Off-site 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.

3.3 Vibration Propagation

The propagation of ground-borne vibration is not as simple to model as airborne noise. This is due to the fact that noise in the air travels through a relatively uniform median, while ground-borne vibrations travel through the earth which may contain significant geological differences. 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 project site is located in the City of Santa Ana. 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:

- Promulgating noise emission standards for interstate commerce
- Assisting state and local abatement efforts
- Promoting noise education and research

The Federal Office of Noise Abatement and Control (ONAC) was initially tasked with implementing the Noise Control Act. However, the ONAC has since been eliminated, leaving the development of federal noise policies and programs to other federal agencies and interagency committees. For example, the Occupational Safety and Health Administration (OSHA) agency prohibits exposure of workers to excessive sound levels. The Department of Transportation (DOT) assumed a significant role in noise control through its various operating agencies. The Federal Aviation Administration (FAA) regulates noise of aircraft and airports. Surface transportation system noise is regulated by a host of agencies, including the Federal Transit Administration (FTA). Transit noise is regulated by the federal Urban Mass Transit Administration (UMTA), while freeways that are part of the interstate highway system are regulated by the Federal Highway Administration (FHWA). Finally, the federal government actively advocates that local jurisdictions use their land use regulatory authority to arrange new development in such a way that "noise sensitive" uses are either prohibited from being sited adjacent to a highway or, alternately that the developments are planned and constructed in such a manner that potential noise impacts are minimized.

Although the proposed project is not under the jurisdiction of the FTA, the FTA is the only agency that has defined what constitutes a significant noise impact from implementing a project. The FTA standards are based on extensive studies by the FTA and other governmental agencies on the human effects and reaction to noise and a summary of the FTA findings are provided below in Table A.

Table A – FTA Project Effects on Cumulative Noise Exposure

Existing Noise Exposure (dBA Leq or Ldn)	Allowable Noise Impact Exposure dBA Leq or Ldn		
	Project Only	Combined	Noise Exposure Increase
45	51	52	+7
50	53	55	+5
55	55	58	+3
60	57	62	+2
65	60	66	+1
70	64	71	+1
75	65	75	0

Source: Federal Transit Administration, 2018.

The FTA also provides specific guidance for construction noise and recommends developing construction noise criteria on a project-specific basis that utilizes local noise ordinances if possible. However, local noise ordinances usually relates to nuisance and hours of allowed activity and sometimes specify limits in terms of maximum levels, but are generally not practical for assessing the noise impacts of a construction project. Project construction noise criteria should take into account the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land uses. The FTA standards are based on extensive studies by the FTA and other governmental agencies on the human effects and reaction to noise and a summary of the FTA findings for a general construction noise assessment are provided below in Table B.

Table B – FTA General Assessment Construction Noise Criteria

Land Use	Day (dBA $Leq_{(1\text{-hour})}$)	Night (dBA $Leq_{(1\text{-hour})}$)
Residential	90	80
Commercial	100	100
Industrial	100	100

Source: Federal Transit Administration, 2018.

Since the federal government has preempted the setting of standards for noise levels that can be emitted by the transportation sources, 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

Noise Standards

California Department of Health Services Office of Noise Control

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," which allows the local jurisdiction to clearly delineate compatibility of sensitive uses with various incremental levels of noise.

California Noise Insulation Standards

Title 24, Chapter 1, Article 4 of the California Administrative Code (California Noise Insulation Standards) requires noise insulation in new hotels, motels, apartment houses, and dwellings (other than single-family detached housing) that provides an annual average noise level of no more than 45 dBA CNEL. When such structures are located within a 60-dBA CNEL (or greater) noise contour, an acoustical analysis is required to ensure that interior levels do not exceed the 45-dBA CNEL annual threshold. In addition, Title 21, Chapter 6, Article 1 of the California Administrative Code requires that all habitable rooms, hospitals, convalescent homes, and places of worship shall have an interior CNEL of 45 dB or less due to aircraft noise.

Government Code Section 65302

Government Code Section 65302 mandates that the legislative body of each county and city in California 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.

Vibration Standards

Title 14 of the California Administrative Code Section 15000 requires that all state and local agencies implement the California Environmental Quality Act (CEQA) Guidelines, which requires the analysis of exposure of persons to excessive groundborne vibration. However, no statute has been adopted by the state that quantifies the level at which excessive groundborne vibration occurs.

Caltrans prepared the *Transportation- and Construction-Induced Vibration Guidance Manual,* dated September 2013. The manual provides practical guidance to Caltrans engineers, planners, and consultants who must address vibration issues associated with the construction, operation, and maintenance of Caltrans projects. However, this manual is also used as a reference point by many lead agencies and CEQA practitioners throughout California, as it provides numeric thresholds for vibration impacts. Thresholds are established for continuous and transient sources of vibration, which found that the human response becomes distinctly perceptible at 0.25 inch per second PPV for transient sources and 0.04 inch per second PPV for continuous sources.

4.3 Local Regulations

The City of Santa Ana General Plan and Municipal Code establishes the following applicable policies related to noise and vibration.

City of Santa Ana General Plan Noise Element

Definition of undesirable or unhealthful noise levels must precede the goal of minimizing noise problems. The City of Santa Ana adopts the following standards and guidelines for noise levels for land uses:

Table C – City of Santa Ana Interior and Exterior Noise Standards

Categories	Land Use Categories	Noise Standard (dBA)	
		Interior[(1)]	Exterior[(2)]
Residential	Single-family, duplex, multi-family	45[(3)]	65
Institutional	Hospital, school classroom/playgrounds	45	65
	Church, library	45	--
Open Space	Parks	--	65

Notes:
[(1)] Interior areas (to include but are not limited to: bedrooms, bathrooms, kitchens, living rooms, dining rooms, closets, corridors/hallways, private offices, and conference rooms.
[(2)] Exterior areas shall mean: private yards of single-family homes, park picnic areas, school playgrounds, common areas, private open space, such as atriums on balconies, shall be excluded form exterior areas provided sufficient common area is included within the project.
[(3)] Interior noise level requirements contemplate a closed window condition. Mechanical ventilation system or other means of natural ventilation shall be provided per Chapter 12, Section 1305 of the Uniform Building Code.
Source: City of Santa Ana General Plan Noise Element, 2010.

Goal 1 **Prevent significant increases in noise levels in the community and minimize the adverse effects of currently-existing noise sources.**

Policies:

- Require consideration of noise generation potential and susceptibility to noise impacts in the siting, design, and construction of new developments.
- Require mitigating site and building design features, traffic circulation alternatives, insulation, and other noise prevention measures of those new developments which generate high noise levels.
- Sound insulate and/or buffer sensitive land uses such as housing from adverse noise impacts in noise-prone areas.
- Minimize noise generation in residential neighborhoods through control or elimination of truck traffic and through-traffic from these areas.

City of Santa Ana Municipal Code

The City of Santa Ana Municipal Code establishes the following applicable standards related to noise.

Sec. 18-312 Exterior noise standards

(a) The following noise standards, unless otherwise specifically indicated, shall apply to all residential property within a designated noise zone:

Table D – City of Santa Ana Exterior Noise Standards

Noise Zone[1]	Noise Level	Time Period
1	55 dB(A)	7 a.m. – 10 p.m.
	50 dB(A)	10 p.m. – 7 a.m.

Notes:
[1] Section 18-311 states: "The entire City of Santa Ana is hereby designated as "Noise Zone 1."
Source: City of Santa Ana Municipal Code, Section 18-312.

In the event the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five (5) dB(A).

(b) It is unlawful for any person at any location within the City of Santa Ana to create any noise, or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, when the foregoing causes the noise level, when measured on any other residential property, either incorporated or unincorporated, to exceed:

(1) The noise standard for a cumulative period of more than thirty (30) minute in any hour; or

(2) The noise standard plus five (5) dB(A) for a cumulative period of more than fifteen (15) minutes in any hour; or

(3) The noise standard plus ten (10) dB(A) for a cumulative period of more than five (5) minutes in any hour; or

(4) The noise standard plus fifteen (15) dB(A) for a cumulative period of more than one minute in any hour; or

(5) The noise standard plus twenty (20) dB(A) for any period of time.

(c) In the event the ambient noise level exceeds any of the first four (4) noise limit categories set forth in subsection (b) of this section, the cumulative period applicable to said category shall be increased to reflect said ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

Sec. 18-313 Interior noise standards

(a) The following interior noise standards, unless otherwise specifically indicated, shall apply to all residential property within a designated noise zone:

Table E – City of Santa Ana Interior Noise Standards

Noise Zone[1]	Noise Level	Time Period
1	55 dB(A)	7 a.m. – 10 p.m.
	45 dB(A)	10 p.m. – 7 a.m.

Notes:
[1] Section 18-311 states: "The entire City of Santa Ana is hereby designated as "Noise Zone 1."
Source: City of Santa Ana Municipal Code, Section 18-313.

In the even the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five (5) dB(A).

(b) It is unlawful for any person at any location within the City of Santa Ana to create any noise, or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, when the foregoing causes the noise level, when measured on any other residential property, either incorporated or unincorporated, to exceed:

(1) The noise standard for a cumulative period of more than five (5) minutes in any hour; or

(2) The interior noise standard plus five (5) dB(A) for a cumulative period of more than one minute in any hour; or

(3) The interior noise standard plus ten (10) dB(A) for any period of time.

(c) In the event the ambient noise level exceeds any of the first two (2) noise limit categories above, the cumulative period applicable to said category shall be increased to reflect said ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

Sec. 18-314 Special provisions

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

(e) Noise sources associated with construction, repair, remodeling, or grading of any real property, provided said activities do not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a federal holiday.

Sec. 18-315 Schools, hospitals and churches; special provisions

It shall be unlawful for any person to create any noise which causes the noise level at any school, hospital or church while the same is in use to exceed the noise limits as specified in Section 18-312 prescribed for the assigned noise zone in which the school, hospital or church is located, or which noise level

unreasonably interferes with the use of such institutions or which unreasonably disturbs or annoys patients in the hospital, provided conspicuous signs are displayed in three (3) separate locations within one-tenth (1/10) of a mile of the institution indicating the presence of a school, church or hospital.

5.0 EXISTING NOISE CONDITIONS

To determine the existing noise levels, noise measurements have been taken in the vicinity of the project site. The field survey noted that noise within the proposed project area is generally characterized by vehicle traffic on Euclid Street that is located adjacent to the west side of the project site and Hazard Avenue that is located adjacent to the north side of the project site. The following describes the measurement procedures, measurement locations, noise measurement results, and the modeling of the existing noise environment.

5.1 Noise Measurement Equipment

The noise measurements were taken using two Extech Model 407780 Type 2 integrating sound level meters programmed in "slow" mode to record the sound pressure level at 3-second intervals for approximately 24 hours in "A" weighted form. In addition, the L_{eq} averaged over the entire measuring time and L_{max} were recorded. The sound level meters and microphones were mounted approximately four to seven feet above the ground and were equipped with a windscreen. The sound level meters were calibrated before and after the monitoring using an Extech calibrator, Model 407766. The noise level measurement equipment meets American National Standards Institute specifications for sound level meters (S1.4-1983 identified in Chapter 19.68.020.AA).

Noise Measurement Location

The noise monitoring locations were selected in order to obtain noise measurements of the current noise levels on the project site's shared property lines with sensitive receptors. Descriptions of the noise monitoring sites are provided below in Table F. Appendix A includes a photo index of the study area and noise level measurement locations.

Noise Measurement Timing and Climate

The noise measurements were recorded between 2:17 p.m. on Wednesday, September 25, 2019 and 2:42 p.m. on Thursday, September 26, 2019. When the noise measurements were started the sky was partly cloudy, the temperature was 84 degrees Fahrenheit, the humidity was 60 percent, barometric pressure was 29.66 inches of mercury, and the wind was blowing around 2 miles per hour. Overnight, the sky was cloudy and the temperature dropped to 67 degrees Fahrenheit. At the conclusion of the noise measurements, the sky was cloudy, the temperature was 80 degrees Fahrenheit, the humidity was 63 percent, barometric pressure was 29.85 inches of mercury, and the wind was blowing around four miles per hour.

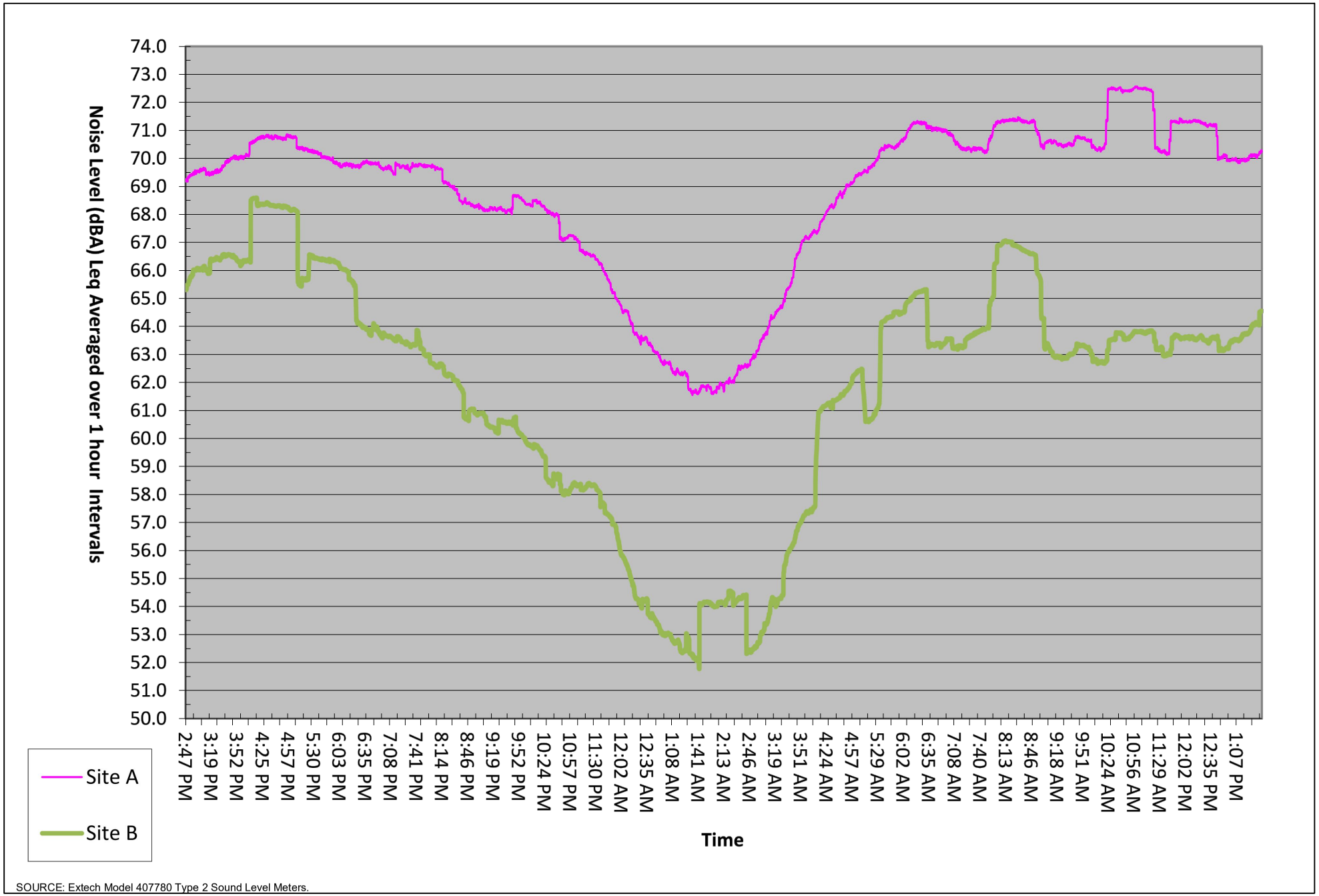
5.2 Noise Measurement Results

The results of the noise level measurements are presented in Table F. The measured sound pressure levels in dBA have been used to calculate the minimum and maximum L_{eq} averaged over 1-hour intervals. Table F also shows the L_{eq}, L_{max}, and CNEL, based on the entire measurement time. The noise monitoring data printouts are included in Appendix B. Figure 3 shows a graph of the 24-hour noise measurements.

Table F – Existing (Ambient) Noise Level Measurements

Site No.	Site Description	Average (dBA L_{eq})	Maximum (dBA L_{max})	(dBA $L_{eq\ 1\text{-}hour}$/Time) Minimum	(dBA $L_{eq\ 1\text{-}hour}$/Time) Maximum	Average (dBA CNEL)
A	Located on a power pole on the south property line of the project site, approximately 80 feet east of the Euclid Street centerline.	69.4	89.2	61.6 2:04 a.m.	72.6 11:30 a.m.	74.4
B	Located on the fence on the east property line of the project site, approximately 60 feet south of the Hazard Avenue centerline.	63.4	91.9	51.8 1:41 a.m.	68.6 4:11 p.m.	67.6

Source: Noise measurements were taken with two Extech Model 407780 Type 2 sound level meters between Wednesday, September 25 and Thursday, September 26, 2019.



SOURCE: Extech Model 407780 Type 2 Sound Level Meters.

VISTA ENVIRONMENTAL

Figure 3
Field Noise Measurements Graph

6.0 MODELING PARAMETERS AND ASSUMPTIONS

6.1 Construction Noise

The noise impacts from construction of the proposed project have been analyzed through use of the FHWA's Roadway Construction Noise Model (RCNM). The FHWA compiled noise measurement data regarding the noise generating characteristics of several different types of construction equipment used during the Central Artery/Tunnel project in Boston. Table G below provides a list of the construction equipment anticipated to be used for each phase of construction as detailed in *Air Quality, Energy, and Greenhouse Gas Emissions Impact Analysis 813 N Euclid Street Gas Station Project* (Air Quality Analysis), prepared by Vista Environmental, October 4, 2019.

Table G – Construction Equipment Noise Emissions and Usage Factors

Equipment Description	Number of Equipment	Acoustical Use Factor[1] (percent)	Spec 721.560 Lmax at 50 feet[2] (dBA, slow[3])	Actual Measured Lmax at 50 feet[4] (dBA, slow[3])
Grading				
Bore/Drill Rigs	1	20	85	84
Concrete/Industrial Saw	1	20	90	90
Excavators	1	40	85	81
Rubber Tired Dozer	1	40	85	82
Tractor, Loader or Backhoe[5]	2	40	84	N/A
Building Construction and Architectural Coating				
Crane	1	16	85	81
Forklift (Gradall)	2	40	85	83
Tractor, Loader or Backhoe[5]	2	40	84	N/A
Air Compressor	1	40	80	78
Paving				
Cement & Mortar Mixer[6]	4	50	80	80
Paver	1	50	85	77
Roller	1	20	85	80
Tractor, Loader or Backhoe[5]	1	40	84	N/A

Notes:
[1] Acoustical use factor is the percentage of time each piece of equipment is operational during a typical workday.
[2] Spec 721.560 is the equipment noise level utilized by the RCNM program.
[3] The "slow" response averages sound levels over 1-second increments. A "fast" response averages sound levels over 0.125-second increments.
[4] Actual Measured is the average noise level measured of each piece of equipment during the Central Artery/Tunnel project in Boston, Massachusetts primarily during the 1990s.
[5] For the tractor/loader/backhoe, the tractor noise level was utilized, since it is the loudest of the three types of equipment.
[6] For the cement & mortar mixer, the concrete mixer truck noise level was utilized.
Source: Federal Highway Administration, 2006 and CalEEMod default equipment mix.

Table G also shows the associated measured noise emissions for each piece of equipment from the RCNM model and measured percentage of typical equipment use per day. Construction noise impacts to the nearby sensitive receptors have been calculated according to the equipment noise levels and usage factors listed in Table G and through use of the RCNM. For each phase of construction, the equipment was placed at the middle of the proposed joint use field, since due to the small sizes of the fields, it is anticipated that each piece of equipment would operate over the entire site during a typical workday.

6.2 Operational Noise

FHWA Model Methodology

The proposed project would result in increases in traffic noise to the nearby roadways as well as introduce new sensitive receptors to the project site. The project impacts to the offsite roadways were analyzed through use of the FHWA Traffic Noise Prediction Model - FHWA-RD-77-108 (FHWA Model). The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). Adjustments are then made to the reference energy mean emission level to account for: the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT) and the percentage of ADT which flows during the day, evening and night, the travel speed, the vehicle mix on the roadway, which is a percentage of the volume of automobiles, medium trucks and heavy trucks, the roadway grade, the angle of view of the observer exposed to the roadway and site conditions ("hard" or "soft" relates to the absorption of the ground, pavement or landscaping). The following section provides a discussion of the software and modeling input parameters used in this analysis and a discussion of the resultant existing noise model.

FHWA Model Traffic Noise Prediction Model Inputs

The roadway parameters used for this study are presented in Table H. The roadway classifications are based on the City's General Plan Circulation Element. The roadway speeds are based on the posted speed limits. The distance to the nearest sensitive receptor was determined by measuring the distance from the roadway centerline to the nearest structure with a sensitive receptor (i.e., home or church). Since the study area is located in a suburban environment and landscaping exists along the sides of all analyzed roadways, soft site conditions were modeled.

Table H – FHWA Model Roadway Parameters

Roadway	Segment	General Plan Classification	Vehicle Speed (MPH)	Distance to Nearest Receptor[1] (feet)
Euclid Street	North of Hazard Avenue	Major Arterial	40	75
Euclid Street	South of Hazard Avenue	Major Arterial	40	55
Euclid Street	South of Project Driveway	Major Arterial	40	60
Hazard Avenue	West of Euclid Street	Secondary Arterial	40	45
Hazard Avenue	East of Euclid Street	Secondary Arterial	40	60
Hazard Avenue	East of Project Driveway	Secondary Arterial	40	50

Notes:
[1] Distance measured from nearest structure with sensitive receptor to centerline of roadway.
Source: Linscott Law & Greenspan., 2019; and City of Santa Ana, 2010.

The average daily traffic (ADT) volumes were obtained from the *Focused Traffic Impact Assessment for the Proposed 813 N. Euclid Street Gas Station Project* (Traffic Memo), prepared by Linscott Law & Greenspan, September 20, 2019. The ADT volumes were calculated by multiplying the PM peak hour volumes by 12. The ADT volumes used in this analysis are shown in Table I.

Table I – Average Daily Traffic Volumes

Roadway	Segment	Average Daily Traffic Volumes			
		Existing	Existing + Project	Cumulative	Cumulative + Project
Euclid Street	North of Hazard Avenue	43,400	44,170	44,900	45,670
Euclid Street	South of Hazard Avenue	41,600	43,020	43,070	44,490
Euclid Street	South of Project Driveway	41,600	42,370	43,070	43,840
Hazard Avenue	West of Euclid Street	17,030	17,550	17,950	18,470
Hazard Avenue	East of Euclid Street	12,040	12,690	13,190	13,840
Hazard Avenue	East of Project Driveway	12,040	12,560	13,190	13,710

Source: Linscott Law & Greenspan., 2019.

The vehicle mix used in the FHWA-RD-77-108 Model is shown in Table J and is based on State Route 39 (Beach Boulevard) south of State Route 22, which is the nearest similar roadway where the vehicle mix has been calculated in *2016 Annual Average Daily Truck Traffic on the California State Highway System,* prepared by Caltrans, 2018. The vehicle mix provides the hourly distribution percentages of automobiles, medium trucks, and heavy trucks for input into the FHWA model.

Table J – Roadway Vehicle Mix

Vehicle Type	Traffic Flow Distributions			
	Day (7 a.m. to 7 p.m.)	Evening (7 p.m. to 10 p.m.)	Night (10 p.m. to 7 a.m.)	Overall
Automobiles	67.5%	13.8%	16.2%	97.6%
Medium Trucks	1.0%	0.2%	0.5%	1.6%
Heavy Trucks	0.4%	0.0%	0.3%	0.8%

Source: Caltrans, 2018.

FHWA Model Source Assumptions

To assess the roadway noise generation in a uniform manner, all vehicles are analyzed at the single lane equivalent acoustic center of the roadway being analyzed. In order to determine the height above the road grade where the noise is being emitted from, each type of vehicle has been analyzed independently with autos at road grade, medium trucks at 2.3 feet above road grade, and heavy trucks at 8 feet above road grade. These elevations were determined through a noise-weighted average of the elevation of the exhaust pipe, tires and mechanical parts in the engine, which are the primary noise emitters from a vehicle.

6.3 Vibration

Construction activity can result in varying degrees of ground vibration, depending on the equipment used on the site. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Buildings in the vicinity of the construction site respond to these vibrations with varying results ranging from no perceptible effects at the low levels to slight

damage at the highest levels. Table K gives approximate vibration levels for particular construction activities. The data in Table K provides a reasonable estimate for a wide range of soil conditions.

Table K – Vibration Source Levels for Construction Equipment

Equipment		Peak Particle Velocity (inches/second)	Approximate Vibration Level (L_v)at 25 feet
Pile driver (impact)	Upper range	1.518	112
	typical	0.644	104
Pile driver (sonic)	Upper range	0.734	105
	typical	0.170	93
Clam shovel drop (slurry wall)		0.202	94
Vibratory Roller		0.210	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

Source: Federal Transit Administration, 2018.

The construction-related vibration impacts have been calculated through the vibration levels shown above in Table K and through typical vibration propagation rates. The equipment assumptions were based on the equipment lists provided above in Table G.

7.0 IMPACT ANALYSIS

7.1 CEQA Thresholds of Significance

Consistent with the California Environmental Quality Act (CEQA) and the State CEQA Guidelines, a significant impact related to noise would occur if a proposed project is determined to 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;
- Generation of excessive groundborne vibration or groundborne noise levels; or
- 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 two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.

7.2 Generation of Noise Levels in Excess of Standards

The proposed project would not generate 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. The following section calculates the potential noise emissions associated with the temporary construction activities and long-term operations of the proposed project and compares the noise levels to the City standards.

Construction-Related Noise

The construction activities for the proposed project are anticipated to include grading of the project site, building construction and application of architectural coatings to the proposed convenience market and gas station, and paving of the proposed parking lot and driveways. Noise impacts from construction activities associated with the proposed project would be a function of the noise generated by construction equipment, equipment location, sensitivity of nearby land uses, and the timing and duration of the construction activities. The nearest sensitive receptors to the project site are the multi-family homes located adjacent to the south side of the project site and the Buddhist temple located adjacent to the east side of the project site.

Section 18-314(e) of the City's Municipal Code exempts construction noise that occurs between 7:00 a.m. and 8:00 p.m. from the City's noise standards. All construction activities associated with the proposed project would occur during the allowable hours for construction activities as detailed in Section 18-314(e) of the Municipal Code. However, the City construction noise standards do not provide any limits to the noise levels that may be created from construction activities and even with adherence to the City standards, the resultant construction noise levels may result in a significant substantial temporary noise increase to the nearby residents.

In order to determine if the proposed construction activities would create a significant substantial temporary noise increase, the FTA construction noise criteria thresholds detailed above in Section 4.1 have been utilized, which shows that a significant construction noise impact would occur if construction noise exceeds 90 dBA Leq at any of the nearby sensitive receptors.

Construction noise impacts to the nearby sensitive receptors have been calculated through use of the RCNM and the parameters and assumptions detailed in Section 6.1 of this report. The results are shown below in Table L and the RCNM printouts are provided in Appendix C.

Table L – Construction Noise Levels at the Nearby Sensitive Receptors

Construction Phase	Construction Noise Level (dBA Leq) at:	
	Multi-Family Homes to South	Buddhist Temple to East
Grading	81	82
Building Construction & Painting	79	81
Paving	79	80
FTA Construction Noise Threshold	**90**	**90**
Exceed Threshold?	**No**	**No**

Source: RCNM, Federal Highway Administration, 2018

Table L shows that the greatest noise impacts would occur during the grading phase of construction, with a noise level as high as 82 dBA Leq at the Buddhist Temple to the east. Table L also shows that none of the construction phases would exceed the FTA construction noise standard of 90 dBA. Therefore, through adherence to allowable construction times provided in Section 18-314(e) of the Municipal Code, the construction activities for the proposed project would not create a substantial temporary increase in ambient noise levels that are in excess of applicable noise standards. Impacts would be less than significant.

Operational-Related Noise

The proposed project would consist of the development of a convenience market and gas station. Potential noise impacts associated with the operations of the proposed project would be from project-generated vehicular traffic on the nearby roadways and from onsite activities, which have been analyzed separately below.

Roadway Vehicular Noise

Vehicle noise is a combination of the noise produced by the engine, exhaust and tires. The level of traffic noise depends on three primary factors (1) the volume of traffic, (2) the speed of traffic, and (3) the number of trucks in the flow of traffic. The proposed project does not propose any uses that would require a substantial number of truck trips and the proposed project would not alter the speed limit on any existing roadway so the proposed project's potential offsite noise impacts have been focused on the noise impacts associated with the change of volume of traffic that would occur with development of the proposed project.

Goal 1 of the City's General Plan Noise Element, prevents significant increases in noise levels in the community. However, the General Plan does not define what constitutes a "significant increase in noise levels", as such, this impact analysis has utilized guidance from the Federal Transit Administration for a moderate impact that has been detailed above in Table A that shows that the project contribution to the noise environment can range between 0 and 7 dB, which is dependent on the existing noise levels.

The potential offsite traffic noise impacts created by the on-going operations of the proposed project have been analyzed through utilization of the FHWA model and parameters described above in Section 6.2 and the FHWA model traffic noise calculation spreadsheets are provided in Appendix D. The proposed

project's potential offsite traffic noise impacts have been analyzed for the existing and year 2020 plus cumulative projects conditions that are discussed separately below.

Existing Year Conditions

The proposed project's offsite traffic noise impacts have been calculated through a comparison of the existing year scenario to the existing year with project scenario. The results of this comparison are shown in Table M.

Table M – Existing Year Project Traffic Noise Contributions

		dBA CNEL at Nearest Receptor[1]			
Roadway	Segment	Existing	Existing Plus Project	Project Contribution	Increase Threshold[2]
Euclid Street	North of Hazard Avenue	69.7	69.8	0.1	+1 dBA
Euclid Street	South of Hazard Avenue	72.5	72.6	0.1	+1 dBA
Euclid Street	South of Project Driveway	71.6	71.6	0.0	+1 dBA
Hazard Avenue	West of Euclid Street	68.8	68.9	0.1	+1 dBA
Hazard Avenue	East of Euclid Street	65.1	65.4	0.3	+1 dBA
Hazard Avenue	East of Project Driveway	66.5	66.7	0.2	+1 dBA
Euclid Street	North of Hazard Avenue	69.7	69.8	0.1	+1 dBA

Notes:
[1] Distance to nearest sensitive receptors use shown in Table H, does not take into account existing noise barriers.
[2] Increase Threshold obtained from the FTA's allowable noise impact exposures detailed above in Table A..
Source: FHWA Traffic Noise Prediction Model FHWA-RD-77-108.

Table M shows that the proposed project's permanent noise increases to the nearby sensitive receptors from the generation of additional vehicular traffic would not exceed the traffic noise increase thresholds detailed above. Therefore, the proposed project would not result in a substantial permanent increase in ambient noise levels for the existing year conditions. Impacts would be less than significant.

Year 2020 Plus Cumulative Projects Conditions

The proposed project's offsite traffic noise impacts have been calculated through a comparison of the year 2020 plus cumulative projects scenario to the year 2020 plus cumulative projects plus project scenario. The results of this comparison are shown in Table N.

Table N – Year 2020 Plus Cumulative Projects Traffic Noise Contributions

		dBA CNEL at Nearest Receptor[1]			
Roadway	Segment	Year 2020	Year 2020 Plus Project	Project Contribution	Increase Threshold[2]
Euclid Street	North of Hazard Avenue	69.9	70.0	0.1	+1 dBA
Euclid Street	South of Hazard Avenue	72.6	72.8	0.2	+1 dBA
Euclid Street	South of Project Driveway	71.7	71.8	0.1	+1 dBA
Hazard Avenue	West of Euclid Street	69.0	69.1	0.1	+1 dBA
Hazard Avenue	East of Euclid Street	65.5	65.7	0.2	+1 dBA
Hazard Avenue	East of Project Driveway	66.9	67.0	0.1	+1 dBA
Euclid Street	North of Hazard Avenue	69.9	70.0	0.1	+1 dBA

Notes:

[1] Distance to nearest sensitive receptors use shown in Table H, does not take into account existing noise barriers.
[2] Increase Threshold obtained from the FTA's allowable noise impact exposures detailed above in Table A..
Source: FHWA Traffic Noise Prediction Model FHWA-RD-77-108.

Table N shows that the proposed project's permanent noise increases to the nearby sensitive receptors from the generation of additional vehicular traffic would not exceed the traffic noise increase thresholds detailed above. Therefore, the proposed project would not result in a substantial permanent increase in ambient noise levels for the year 2020 plus cumulative projects conditions. Impacts would be less than significant.

Onsite Noise Sources

The operation of the proposed project may create an increase in onsite noise levels from the operation of rooftop mechanical equipment, parking lots, delivery trucks, gas pumps, and air/water machine. Section 18-312(a) of the City's Municipal Code limits noise created on any residential property line to 55 dBA between 7 a.m. and 10 p.m. and to 50 dBA between 10 p.m. and 7 a.m..

In order to determine the noise impacts from the operation of rooftop mechanical equipment, parking lots, delivery trucks, gas pumps, and air/water machine, reference noise measurements were taken of each noise source and are shown in Table O. In order to account for the noise reduction provided by the existing 6-foot high sound walls on the south and east property lines, the wall attenuation algorithms from the *Technical Noise Supplement to the Traffic Noise Analysis Protocol* (TeNS), prepared by Caltrans, September 2013, were utilized and the noise calculation spreadsheet along with the reference noise measurements are provided in Appendix E.

Table O – Operational Noise Levels at the Adjacent Land Uses

	Multi-Family Homes to South		Buddhist Temple to East	
Noise Source	**Distance - Source to Property Line (feet)**	**Noise Level[1] (dBA Leq)**	**Distance - Source to Property Line (feet)**	**Noise Level[1] (dBA Leq)**
Rooftop Equipment[2]	35	40	10	49
Parking Lot[3]	10	46	35	38
Truck Delivery[4]	75	39	80	39
Air/Water[5]	7	53	90	34
Fueling Pumps[6]	75	37	100	34
Combined Noise Levels		**54**		**50**
City Noise Standard (day/night)		**55/50**		**55/50**
Exceed City Noise Standard?		**No/Yes**		**No/No**

Notes:
[1] The calculated noise levels account for the noise reduction provided by the existing 6-foot high walls on the south and east property lines.
[2] Rooftop equipment is based on a reference noise measurement of 66.6 dBA at 10 feet.
[3] Parking lot is based on a reference noise measurement of 63.1 dBA at 5 feet.
[4] Truck delivery is based on a reference noise measurement of 54.8 dBA at 30 feet.
[5] Air/water machine is based on a reference noise measurement of 66.9 dBA at 5 feet.
[6] Fueling pumps is based on a reference noise measurement of 61.7 dBA at 10 feet.
Source: Noise calculation methodology from Caltrans, 2013 (see Appendix E).

Table O shows that the proposed project's worst-case operational noise from the simultaneous operation of all noise sources on the project site would create a noise level of 54 dBA at the multi-family homes to the south and 50 dBA at the Buddhist Temple to the east. The worst-case operational noise level of 50

dBA at the Buddhist Temple to the east would be within the City's noise standards of 55 dBA between 7 a.m. and 10 p.m. and to 50 dBA between 10 p.m. and 7 a.m.. However, the worst-case operational noise level at the multi-family homes to the south would be within the City's daytime noise standard of 55 dBA but would exceed the City's nighttime noise standard of 50 dBA. This would be considered a significant impact.

Upon review of the noise contributions of each noise source to the multi-family homes to the south, the primary source of noise is generated from the air/water dispensing machine that is located as near as 7 feet from the south property line and would create a noise level of 53 dBA at the multi-family homes to the south. Mitigation Measure 1 has been provided that would require that the air/water dispensing machine to be turned off between the hours of 10 p.m. and 7 a.m.. The worst-case combined noise levels at the multi-family homes to the south were calculated in Appendix E and found the noise level would be 48 dBA with the Air/Water dispensing machine turned off. Therefore, with implementation of Mitigation Measure 1, the onsite operational noise impacts would be less than significant.

Level of Significance Before Mitigation

Potentially significant impact.

Mitigation Measures

Mitigation Measure 1:

The project applicant shall restrict the operation of the air/water dispensing machine between the hours of 10 p.m. and 7 a.m.. The hours of operation of the air/water dispensing machine shall be clearly detailed with signage in close proximity to the machine.

Level of Significance After Mitigation

Less than significant impact.

7.3 Generation of Excessive Groundborne Vibration

The proposed project would not expose persons to or generation of excessive groundborne vibration or groundborne noise levels. The following section analyzes the potential vibration impacts associated with the construction and operations of the proposed project.

Construction-Related Vibration Impacts

The construction activities for the proposed project are anticipated to include grading of the project site that includes the pile driving of 30 piles in order to anchor the underground storage tanks to prevent uplift of the tanks, if the groundwater rises, building construction and application of architectural coatings to the proposed convenience market and gas station, and paving of the proposed parking lot and driveways. Vibration impacts from construction activities associated with the proposed project would typically be created from the operation of heavy off-road equipment. The nearest sensitive receptors to the project site are the multi-family homes located adjacent to the south side of the project site and the Buddhist temple located adjacent to the east side of the project site.

Since neither the City's Municipal Code nor the General Plan provides a quantifiable vibration threshold level, Caltrans guidance that is detailed above in Section 4.2 has been utilized, which defines the threshold of perception from transient sources at 0.25 inch per second PPV.

The primary source of vibration during construction would be from the operation of a pile driver that would operate as near as 25 feet from the multi-family homes to the south. From Table K above an impact style pile driver typically creates a vibration level of 0.644 inch per second PPV at 25 feet. The vibration level at the nearest offsite residential structure would exceed the 0.25 inch per second PPV threshold detailed above. This would be considered a significant impact.

Mitigation Measure 2 has been provided that would restrict the use of impact pile drivers during construction of the proposed project and require the installation of piles to be installed with a sonic-style pile driver or other type of pile driver that produces similar vibration levels as a sonic pile driver. From Table K above a sonic style pile driver typically creates a vibration level of 0.0170 inch per second PPV at 25 feet. Therefore, with implementation of Mitigation Measure 2, the construction-related vibration impacts would be less than significant.

Operations-Related Vibration Impacts

The proposed project would consist of the operation of a convenience market and gas station. The on-going operation of the proposed project would not include the operation of any known vibration sources. Therefore, a less than significant vibration impact is anticipated from the operation of the proposed project.

Level of Significance Before Mitigation

Potentially significant impact.

Mitigation Measures

Mitigation Measure 2:

The project applicant shall restrict the use of impact pile drivers during construction of the proposed project and require the installation of piles to be installed with a sonic-style pile driver or other type of pile driver that produces similar vibration levels as a sonic pile driver.

Level of Significance After Mitigation

Less than significant impact.

7.4 Aircraft Noise

The proposed project would not expose people residing or working in the project area to excessive noise levels from aircraft. The nearest airport is the Joint Forces Training Base Los Alamitos Airfield, located approximately 6.8 miles northwest of the project site. The project site is located outside of the 60 dBA CNEL noise contours of the Airfield. No impacts would occur from aircraft noise.

Level of Significance

No impact.

8.0 REFERENCES

Breeze Software, *California Emissions Estimator Model* (CalEEMod) version 2016.3.2.

California Department of Transportation, *2016 Annual Average Daily Truck Traffic on the California State Highway System*, 2018.

California Department of Transportation (Caltrans), *Technical Noise Supplement to the Traffic Noise Analytics Protocol*, September 2013.

California Department of Transportation, *Transportation and Construction Vibration Guidance Manual*, September 2013.

City of Santa Ana, *City of Santa Ana General Plan Noise Element,* January 2010.

City of Santa Ana, *Santa Ana Municipal Code,* 2015.

Federal Transit Administration, *Transit Noise and Vibration Impact Assessment,* September 2018.

Linscott Law & Greenspan, *Focused Traffic Impact Assessment for the Proposed 813 N. Euclid Street Gas Station Project,* September 2019.

U.S. Department of Transportation, *FHWA Roadway Construction Noise Model User's Guide,* January, 2006.

Vista Environmental, *Air Quality, Energy, and Greenhouse Gas Emissions Impact Analysis 813 N Euclid Street Gas Station Project,* October 4, 2019.

APPENDIX A

Field Noise Measurements Photo Index

Noise Measurement Site A - looking north

Noise Measurement Site A - looking northeast

Noise Measurement Site A - looking east

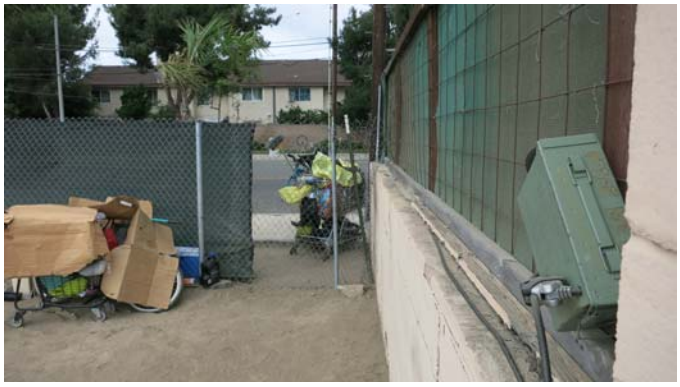
Noise Measurement Site A - looking southeast

Noise Measurement Site A - looking south

Noise Measurement Site A - looking southwest

Noise Measurement Site A - looking west

Noise Measurement Site A - looking northwest



Noise Measurement Site B - looking north

Noise Measurement Site B - looking northeast

Noise Measurement Site B - looking east

Noise Measurement Site B - looking southeast

Noise Measurement Site B - looking south

Noise Measurement Site B - looking southwest

Noise Measurement Site B - looking north

Noise Measurement Site B - looking northwest

APPENDIX B

Field Noise Measurements Printouts

Site A - On Power Pole on South Property Line

Date	Time=09/25/19	2:42:00 PM			
Sampling	Time=3	Weighting=A			
Record	Num=	29200	Weighting=Slow	CNEL(24hr)=	74.4
Leq	69.4	SEL	Value=118.9	Ldn(24hr)=	74.1
MAX	89.2		Min Leq1hr =	61.6	2:04 AM
MIN	36.9		Max Leq1hr =	72.6	11:30 AM

Site B - On Fence on East Property Line

Date	Time=09/25/19	2:17:00 PM			
Sampling	Time=3	Freq Weighting=A			
Record	Num=	29000	Weighting=Slow	CNEL(24hr)=	67.6
Leq	63.4	SEL	Value=113.5	Ldn(24hr)=	67.3
MAX	91.9		Min Leq1hr =	51.8	1:41 AM
MIN	38.5		Max Leq1hr =	68.6	4:11 PM

Site A - On Power Pole on South Property Line

SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
63	14:42:00		63	63
62.7	14:42:03		62.7	62.7
70.1	14:42:06		70.1	70.1
66.9	14:42:09		66.9	66.9
73.2	14:42:12		73.2	73.2
72.2	14:42:15		72.2	72.2
74.6	14:42:18		74.6	74.6
74.2	14:42:21		74.2	74.2
77.3	14:42:24		77.3	77.3
71.4	14:42:27		71.4	71.4
74.6	14:42:30		74.6	74.6
71.1	14:42:33		71.1	71.1
71.1	14:42:36		71.1	71.1
66.4	14:42:39		66.4	66.4
71.9	14:42:42		71.9	71.9
75.5	14:42:45		75.5	75.5
74.8	14:42:48		74.8	74.8
72.7	14:42:51		72.7	72.7
69.1	14:42:54		69.1	69.1
70.8	14:42:57		70.8	70.8
68.3	14:43:00		68.3	68.3
64.5	14:43:03		64.5	64.5
74.7	14:43:06		74.7	74.7
71.4	14:43:09		71.4	71.4
70.2	14:43:12		70.2	70.2
67	14:43:15		67	67
67.6	14:43:18		67.6	67.6
73.2	14:43:21		73.2	73.2
72.5	14:43:24		72.5	72.5
74.4	14:43:27		74.4	74.4
67	14:43:30		67	67
70.6	14:43:33		70.6	70.6
65.1	14:43:36		65.1	65.1
68.7	14:43:39		68.7	68.7
66.1	14:43:42		66.1	66.1
62.5	14:43:45		62.5	62.5
59.6	14:43:48		59.6	59.6
61.7	14:43:51		61.7	61.7
60.5	14:43:54		60.5	60.5
59.5	14:43:57		59.5	59.5
59.5	14:44:00		59.5	59.5
63.1	14:44:03		63.1	63.1
67.6	14:44:06		67.6	67.6
66	14:44:09		66	66
66.8	14:44:12		66.8	66.8
68.3	14:44:15		68.3	68.3
67	14:44:18		67	67
66.2	14:44:21		66.2	66.2
71	14:44:24		71	71
71.6	14:44:27		71.6	71.6
72.6	14:44:30		72.6	72.6
73.5	14:44:33		73.5	73.5
71.7	14:44:36		71.7	71.7
71.8	14:44:39		71.8	71.8
71.4	14:44:42		71.4	71.4
70.4	14:44:45		70.4	70.4
69.7	14:44:48		69.7	69.7
68.8	14:44:51		68.8	68.8
67.8	14:44:54		67.8	67.8
66.9	14:44:57		66.9	66.9
63.2	14:45:00		63.2	63.2
59	14:45:03		59	59
68.7	14:45:06		68.7	68.7
65.4	14:45:09		65.4	65.4
68.5	14:45:12		68.5	68.5
65.2	14:45:15		65.2	65.2
68.5	14:45:18		68.5	68.5
64.6	14:45:21		64.6	64.6
63.5	14:45:24		63.5	63.5
65.9	14:45:27		65.9	65.9
65.3	14:45:30		65.3	65.3
64.8	14:45:33		64.8	64.8
62.7	14:45:36		62.7	62.7
65.8	14:45:39		65.8	65.8
67	14:45:42		67	67
61.9	14:45:45		61.9	61.9
56.8	14:45:48		56.8	56.8

Site B - On Fence on East Property Line

SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
57.2	14:17:00		57.2	57.2
60.4	14:17:03		60.4	60.4
64.9	14:17:06		64.9	64.9
64.9	14:17:09		64.9	64.9
60.5	14:17:12		60.5	60.5
67.6	14:17:15		67.6	67.6
66.4	14:17:18		66.4	66.4
61.8	14:17:21		61.8	61.8
60.7	14:17:24		60.7	60.7
60	14:17:27		60	60
64.9	14:17:30		64.9	64.9
66.3	14:17:33		66.3	66.3
65.7	14:17:36		65.7	65.7
58.3	14:17:39		58.3	58.3
68.9	14:17:42		68.9	68.9
62.6	14:17:45		62.6	62.6
67.7	14:17:48		67.7	67.7
64.9	14:17:51		64.9	64.9
68	14:17:54		68	68
63	14:17:57		63	63
68.8	14:18:00		68.8	68.8
64.2	14:18:03		64.2	64.2
62.7	14:18:06		62.7	62.7
62	14:18:09		62	62
61.9	14:18:12		61.9	61.9
63.2	14:18:15		63.2	63.2
63.4	14:18:18		63.4	63.4
63.3	14:18:21		63.3	63.3
62.2	14:18:24		62.2	62.2
60.6	14:18:27		60.6	60.6
64.2	14:18:30		64.2	64.2
60.1	14:18:33		60.1	60.1
60.6	14:18:36		60.6	60.6
59.9	14:18:39		59.9	59.9
59.8	14:18:42		59.8	59.8
63.4	14:18:45		63.4	63.4
60.3	14:18:48		60.3	60.3
62.6	14:18:51		62.6	62.6
59.1	14:18:54		59.1	59.1
57.6	14:18:57		57.6	57.6
56.9	14:19:00		56.9	56.9
56.6	14:19:03		56.6	56.6
55.6	14:19:06		55.6	55.6
56	14:19:09		56	56
59.6	14:19:12		59.6	59.6
58.5	14:19:15		58.5	58.5
64.7	14:19:18		64.7	64.7
65.3	14:19:21		65.3	65.3
58.5	14:19:24		58.5	58.5
60.4	14:19:27		60.4	60.4
61.8	14:19:30		61.8	61.8
60	14:19:33		60	60
68.6	14:19:36		68.6	68.6
65.1	14:19:39		65.1	65.1
63.8	14:19:42		63.8	63.8
64.7	14:19:45		64.7	64.7
64.3	14:19:48		64.3	64.3
60.9	14:19:51		60.9	60.9
56.9	14:19:54		56.9	56.9
57.9	14:19:57		57.9	57.9
58.5	14:20:00		58.5	58.5
63.9	14:20:03		63.9	63.9
62.9	14:20:06		62.9	62.9
61.6	14:20:09		61.6	61.6
64.8	14:20:12		64.8	64.8
60.8	14:20:15		60.8	60.8
62.6	14:20:18		62.6	62.6
63	14:20:21		63	63
62	14:20:24		62	62
64.6	14:20:27		64.6	64.6
62.4	14:20:30		62.4	62.4
61.9	14:20:33		61.9	61.9
64.2	14:20:36		64.2	64.2
66.2	14:20:39		66.2	66.2
64.2	14:20:42		64.2	64.2
63.6	14:20:45		63.6	63.6
63.1	14:20:48		63.1	63.1

Site A - On Power Pole on South Property Line					Site B - On Fence on East Property Line				
SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL	SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
55.9	14:45:51		55.9	55.9	61.7	14:20:51		61.7	61.7
55.2	14:45:54		55.2	55.2	60.5	14:20:54		60.5	60.5
60.7	14:45:57		60.7	60.7	61.5	14:20:57		61.5	61.5
63.2	14:46:00		63.2	63.2	65.1	14:21:00		65.1	65.1
61.5	14:46:03		61.5	61.5	61	14:21:03		61	61
64.3	14:46:06		64.3	64.3	58.9	14:21:06		58.9	58.9
65.6	14:46:09		65.6	65.6	60	14:21:09		60	60
66.9	14:46:12		66.9	66.9	58.5	14:21:12		58.5	58.5
68.4	14:46:15		68.4	68.4	57	14:21:15		57	57
72.8	14:46:18		72.8	72.8	57.4	14:21:18		57.4	57.4
72.6	14:46:21		72.6	72.6	64.2	14:21:21		64.2	64.2
74.1	14:46:24		74.1	74.1	65.7	14:21:24		65.7	65.7
73.4	14:46:27		73.4	73.4	60.3	14:21:27		60.3	60.3
72.6	14:46:30		72.6	72.6	59.9	14:21:30		59.9	59.9
75	14:46:33		75	75	59.5	14:21:33		59.5	59.5
72.6	14:46:36		72.6	72.6	60.3	14:21:36		60.3	60.3
73.2	14:46:39		73.2	73.2	62.2	14:21:39		62.2	62.2
74.4	14:46:42		74.4	74.4	68.2	14:21:42		68.2	68.2
74	14:46:45		74	74	67.2	14:21:45		67.2	67.2
72.6	14:46:48		72.6	72.6	66.2	14:21:48		66.2	66.2
74.3	14:46:51		74.3	74.3	65.9	14:21:51		65.9	65.9
71.8	14:46:54		71.8	71.8	67.8	14:21:54		67.8	67.8
73.7	14:46:57		73.7	73.7	64.9	14:21:57		64.9	64.9
73	14:47:00		73	73	64.1	14:22:00		64.1	64.1
72.4	14:47:03		72.4	72.4	55.8	14:22:03		55.8	55.8
72.8	14:47:06		72.8	72.8	57.2	14:22:06		57.2	57.2
68.9	14:47:09		68.9	68.9	58.8	14:22:09		58.8	58.8
66.1	14:47:12		66.1	66.1	66.8	14:22:12		66.8	66.8
66.2	14:47:15		66.2	66.2	67.2	14:22:15		67.2	67.2
60.1	14:47:18		60.1	60.1	61.7	14:22:18		61.7	61.7
55.9	14:47:21		55.9	55.9	61.9	14:22:21		61.9	61.9
64.2	14:47:24		64.2	64.2	63	14:22:24		63	63
61.6	14:47:27		61.6	61.6	60.7	14:22:27		60.7	60.7
55.3	14:47:30		55.3	55.3	60	14:22:30		60	60
60.6	14:47:33		60.6	60.6	62	14:22:33		62	62
63.5	14:47:36		63.5	63.5	62.9	14:22:36		62.9	62.9
64.7	14:47:39		64.7	64.7	63.6	14:22:39		63.6	63.6
57.9	14:47:42		57.9	57.9	62.8	14:22:42		62.8	62.8
53.3	14:47:45		53.3	53.3	61.7	14:22:45		61.7	61.7
59.3	14:47:48		59.3	59.3	62.5	14:22:48		62.5	62.5
62.6	14:47:51		62.6	62.6	62.2	14:22:51		62.2	62.2
60.3	14:47:54		60.3	60.3	62.1	14:22:54		62.1	62.1
61	14:47:57		61	61	62	14:22:57		62	62
59.3	14:48:00		59.3	59.3	61	14:23:00		61	61
61.3	14:48:03		61.3	61.3	61.1	14:23:03		61.1	61.1
64	14:48:06		64	64	63	14:23:06		63	63
67	14:48:09		67	67	64.8	14:23:09		64.8	64.8
64.7	14:48:12		64.7	64.7	61.3	14:23:12		61.3	61.3
65.7	14:48:15		65.7	65.7	62.8	14:23:15		62.8	62.8
66.7	14:48:18		66.7	66.7	62.6	14:23:18		62.6	62.6
71.1	14:48:21		71.1	71.1	63.2	14:23:21		63.2	63.2
71.4	14:48:24		71.4	71.4	62.5	14:23:24		62.5	62.5
72.1	14:48:27		72.1	72.1	60.5	14:23:27		60.5	60.5
68.4	14:48:30		68.4	68.4	60.5	14:23:30		60.5	60.5
72.4	14:48:33		72.4	72.4	61.8	14:23:33		61.8	61.8
72.5	14:48:36		72.5	72.5	58.3	14:23:36		58.3	58.3
72.9	14:48:39		72.9	72.9	57.6	14:23:39		57.6	57.6
73	14:48:42		73	73	59.5	14:23:42		59.5	59.5
73.7	14:48:45		73.7	73.7	59.5	14:23:45		59.5	59.5
75.5	14:48:48		75.5	75.5	59.4	14:23:48		59.4	59.4
72.7	14:48:51		72.7	72.7	65.4	14:23:51		65.4	65.4
72	14:48:54		72	72	72.3	14:23:54		72.3	72.3
70.7	14:48:57		70.7	70.7	67.9	14:23:57		67.9	67.9
71.2	14:49:00		71.2	71.2	66.8	14:24:00		66.8	66.8
68.8	14:49:03		68.8	68.8	62.2	14:24:03		62.2	62.2
68.8	14:49:06		68.8	68.8	65.8	14:24:06		65.8	65.8
68.8	14:49:09		68.8	68.8	65.3	14:24:09		65.3	65.3
69.8	14:49:12		69.8	69.8	65.7	14:24:12		65.7	65.7
69.5	14:49:15		69.5	69.5	65.8	14:24:15		65.8	65.8
68.3	14:49:18		68.3	68.3	70.8	14:24:18		70.8	70.8
66.3	14:49:21		66.3	66.3	66.1	14:24:21		66.1	66.1
64.6	14:49:24		64.6	64.6	70	14:24:24		70	70
69.7	14:49:27		69.7	69.7	61.8	14:24:27		61.8	61.8
62.9	14:49:30		62.9	62.9	61.2	14:24:30		61.2	61.2
67.4	14:49:33		67.4	67.4	59.9	14:24:33		59.9	59.9
67.2	14:49:36		67.2	67.2	60.6	14:24:36		60.6	60.6
61.5	14:49:39		61.5	61.5	68.1	14:24:39		68.1	68.1
67.2	14:49:42		67.2	67.2	68	14:24:42		68	68
68.7	14:49:45		68.7	68.7	63.7	14:24:45		63.7	63.7
67	14:49:48		67	67	66.5	14:24:48		66.5	66.5
64.1	14:49:51		64.1	64.1	64.1	14:24:51		64.1	64.1
64	14:49:54		64	64	62.2	14:24:54		62.2	62.2
59.7	14:49:57		59.7	59.7	60.2	14:24:57		60.2	60.2
57.7	14:50:00		57.7	57.7	61.2	14:25:00		61.2	61.2
57.8	14:50:03		57.8	57.8	61.3	14:25:03		61.3	61.3
58.4	14:50:06		58.4	58.4	61.3	14:25:06		61.3	61.3
59.1	14:50:09		59.1	59.1	60.8	14:25:09		60.8	60.8
56.7	14:50:12		56.7	56.7	61.2	14:25:12		61.2	61.2
55.3	14:50:15		55.3	55.3	62.5	14:25:15		62.5	62.5

Site A - On Power Pole on South Property Line					Site B - On Fence on East Property Line				
SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL	SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
56.9	14:50:18		56.9	56.9	61.2	14:25:18		61.2	61.2
61.9	14:50:21		61.9	61.9	62.4	14:25:21		62.4	62.4
61.6	14:50:24		61.6	61.6	63.7	14:25:24		63.7	63.7
59.7	14:50:27		59.7	59.7	62.6	14:25:27		62.6	62.6
61.5	14:50:30		61.5	61.5	60.7	14:25:30		60.7	60.7
64.1	14:50:33		64.1	64.1	57.8	14:25:33		57.8	57.8
66	14:50:36		66	66	59.4	14:25:36		59.4	59.4
66.2	14:50:39		66.2	66.2	60.6	14:25:39		60.6	60.6
66.6	14:50:42		66.6	66.6	65.9	14:25:42		65.9	65.9
73.4	14:50:45		73.4	73.4	73.4	14:25:45		73.4	73.4
70.7	14:50:48		70.7	70.7	65.2	14:25:48		65.2	65.2
71.6	14:50:51		71.6	71.6	64.2	14:25:51		64.2	64.2
74.8	14:50:54		74.8	74.8	59.3	14:25:54		59.3	59.3
73.6	14:50:57		73.6	73.6	62	14:25:57		62	62
72.9	14:51:00		72.9	72.9	63.2	14:26:00		63.2	63.2
73.4	14:51:03		73.4	73.4	68.9	14:26:03		68.9	68.9
73	14:51:06		73	73	69	14:26:06		69	69
72.7	14:51:09		72.7	72.7	66.2	14:26:09		66.2	66.2
73.6	14:51:12		73.6	73.6	67.7	14:26:12		67.7	67.7
74.5	14:51:15		74.5	74.5	66.9	14:26:15		66.9	66.9
74.1	14:51:18		74.1	74.1	67	14:26:18		67	67
71.3	14:51:21		71.3	71.3	64.9	14:26:21		64.9	64.9
67.2	14:51:24		67.2	67.2	65.6	14:26:24		65.6	65.6
70	14:51:27		70	70	66.1	14:26:27		66.1	66.1
67.1	14:51:30		67.1	67.1	65.9	14:26:30		65.9	65.9
69.9	14:51:33		69.9	69.9	62.9	14:26:33		62.9	62.9
64.3	14:51:36		64.3	64.3	67.2	14:26:36		67.2	67.2
66.4	14:51:39		66.4	66.4	65.4	14:26:39		65.4	65.4
63.8	14:51:42		63.8	63.8	68.5	14:26:42		68.5	68.5
53.2	14:51:45		53.2	53.2	61.3	14:26:45		61.3	61.3
52.1	14:51:48		52.1	52.1	59.8	14:26:48		59.8	59.8
54.4	14:51:51		54.4	54.4	62.2	14:26:51		62.2	62.2
65.7	14:51:54		65.7	65.7	65.8	14:26:54		65.8	65.8
66.6	14:51:57		66.6	66.6	63.1	14:26:57		63.1	63.1
64	14:52:00		64	64	63.5	14:27:00		63.5	63.5
66.6	14:52:03		66.6	66.6	64	14:27:03		64	64
65.3	14:52:06		65.3	65.3	69	14:27:06		69	69
63.9	14:52:09		63.9	63.9	65.2	14:27:09		65.2	65.2
60.9	14:52:12		60.9	60.9	67	14:27:12		67	67
59.3	14:52:15		59.3	59.3	64.6	14:27:15		64.6	64.6
57.9	14:52:18		57.9	57.9	64.4	14:27:18		64.4	64.4
57.2	14:52:21		57.2	57.2	66.1	14:27:21		66.1	66.1
59.5	14:52:24		59.5	59.5	63.4	14:27:24		63.4	63.4
60.7	14:52:27		60.7	60.7	62.1	14:27:27		62.1	62.1
58	14:52:30		58	58	62.5	14:27:30		62.5	62.5
56.5	14:52:33		56.5	56.5	62	14:27:33		62	62
56.4	14:52:36		56.4	56.4	61.6	14:27:36		61.6	61.6
56.9	14:52:39		56.9	56.9	57.6	14:27:39		57.6	57.6
58	14:52:42		58	58	56.4	14:27:42		56.4	56.4
60.5	14:52:45		60.5	60.5	60.9	14:27:45		60.9	60.9
63.1	14:52:48		63.1	63.1	58.4	14:27:48		58.4	58.4
66.1	14:52:51		66.1	66.1	61.4	14:27:51		61.4	61.4
66.6	14:52:54		66.6	66.6	68.4	14:27:54		68.4	68.4
65.8	14:52:57		65.8	65.8	66.2	14:27:57		66.2	66.2
69.6	14:53:00		69.6	69.6	64.7	14:28:00		64.7	64.7
72.6	14:53:03		72.6	72.6	61.8	14:28:03		61.8	61.8
75.1	14:53:06		75.1	75.1	57.1	14:28:06		57.1	57.1
73.6	14:53:09		73.6	73.6	61.1	14:28:09		61.1	61.1
72	14:53:12		72	72	63.2	14:28:12		63.2	63.2
72.2	14:53:15		72.2	72.2	67.2	14:28:15		67.2	67.2
72.1	14:53:18		72.1	72.1	68.4	14:28:18		68.4	68.4
70.4	14:53:21		70.4	70.4	66.3	14:28:21		66.3	66.3
69.8	14:53:24		69.8	69.8	65	14:28:24		65	65
71.8	14:53:27		71.8	71.8	66.2	14:28:27		66.2	66.2
71.1	14:53:30		71.1	71.1	66.1	14:28:30		66.1	66.1
68.7	14:53:33		68.7	68.7	63.2	14:28:33		63.2	63.2
67.9	14:53:36		67.9	67.9	62.5	14:28:36		62.5	62.5
68.6	14:53:39		68.6	68.6	62.5	14:28:39		62.5	62.5
65.6	14:53:42		65.6	65.6	69	14:28:42		69	69
70	14:53:45		70	70	70.3	14:28:45		70.3	70.3
74.5	14:53:48		74.5	74.5	68.2	14:28:48		68.2	68.2
73.7	14:53:51		73.7	73.7	64	14:28:51		64	64
72.6	14:53:54		72.6	72.6	65.7	14:28:54		65.7	65.7
69.4	14:53:57		69.4	69.4	64.9	14:28:57		64.9	64.9
69.9	14:54:00		69.9	69.9	60.7	14:29:00		60.7	60.7
71.4	14:54:03		71.4	71.4	61.2	14:29:03		61.2	61.2
69.4	14:54:06		69.4	69.4	63.5	14:29:06		63.5	63.5
64.3	14:54:09		64.3	64.3	64.3	14:29:09		64.3	64.3
66.5	14:54:12		66.5	66.5	64.1	14:29:12		64.1	64.1
71.3	14:54:15		71.3	71.3	65.7	14:29:15		65.7	65.7
64.6	14:54:18		64.6	64.6	63.9	14:29:18		63.9	63.9
62.6	14:54:21		62.6	62.6	64	14:29:21		64	64
64.3	14:54:24		64.3	64.3	65.8	14:29:24		65.8	65.8
58.6	14:54:27		58.6	58.6	65	14:29:27		65	65
66.9	14:54:30		66.9	66.9	65.3	14:29:30		65.3	65.3
64.7	14:54:33		64.7	64.7	61.5	14:29:33		61.5	61.5
63	14:54:36		63	63	60.7	14:29:36		60.7	60.7
62.9	14:54:39		62.9	62.9	60.4	14:29:39		60.4	60.4
63.2	14:54:42		63.2	63.2	58.7	14:29:42		58.7	58.7

Site A - On Power Pole on South Property Line					Site B - On Fence on East Property Line				
SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL	SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
57.8	14:54:45		57.8	57.8	58	14:29:45		58	58
61	14:54:48		61	61	69.8	14:29:48		69.8	69.8
61.2	14:54:51		61.2	61.2	63.5	14:29:51		63.5	63.5
64.9	14:54:54		64.9	64.9	63	14:29:54		63	63
69.8	14:54:57		69.8	69.8	64.3	14:29:57		64.3	64.3
71	14:55:00		71	71	62.9	14:30:00		62.9	62.9
67.8	14:55:03		67.8	67.8	65.3	14:30:03		65.3	65.3
71.3	14:55:06		71.3	71.3	66.6	14:30:06		66.6	66.6
72	14:55:09		72	72	68.3	14:30:09		68.3	68.3
72.9	14:55:12		72.9	72.9	64.1	14:30:12		64.1	64.1
74.1	14:55:15		74.1	74.1	65.7	14:30:15		65.7	65.7
74.8	14:55:18		74.8	74.8	64.1	14:30:18		64.1	64.1
74.8	14:55:21		74.8	74.8	66.5	14:30:21		66.5	66.5
72.8	14:55:24		72.8	72.8	66.5	14:30:24		66.5	66.5
69.6	14:55:27		69.6	69.6	56.2	14:30:27		56.2	56.2
70.7	14:55:30		70.7	70.7	56.8	14:30:30		56.8	56.8
69.1	14:55:33		69.1	69.1	61.3	14:30:33		61.3	61.3
69.8	14:55:36		69.8	69.8	63.3	14:30:36		63.3	63.3
68.4	14:55:39		68.4	68.4	62.8	14:30:39		62.8	62.8
69.3	14:55:42		69.3	69.3	61.4	14:30:42		61.4	61.4
70.3	14:55:45		70.3	70.3	61.3	14:30:45		61.3	61.3
68.9	14:55:48		68.9	68.9	61.4	14:30:48		61.4	61.4
72.9	14:55:51		72.9	72.9	62.2	14:30:51		62.2	62.2
72.5	14:55:54		72.5	72.5	63.2	14:30:54		63.2	63.2
72.5	14:55:57		72.5	72.5	64.5	14:30:57		64.5	64.5
70.9	14:56:00		70.9	70.9	67.4	14:31:00		67.4	67.4
64.7	14:56:03		64.7	64.7	64.1	14:31:03		64.1	64.1
63.4	14:56:06		63.4	63.4	62.6	14:31:06		62.6	62.6
69.6	14:56:09		69.6	69.6	62.9	14:31:09		62.9	62.9
65.5	14:56:12		65.5	65.5	63.9	14:31:12		63.9	63.9
62.6	14:56:15		62.6	62.6	61.9	14:31:15		61.9	61.9
58.7	14:56:18		58.7	58.7	63	14:31:18		63	63
61.6	14:56:21		61.6	61.6	65	14:31:21		65	65
60.8	14:56:24		60.8	60.8	60.7	14:31:24		60.7	60.7
58.4	14:56:27		58.4	58.4	62	14:31:27		62	62
60	14:56:30		60	60	62.5	14:31:30		62.5	62.5
62.6	14:56:33		62.6	62.6	65.4	14:31:33		65.4	65.4
60.7	14:56:36		60.7	60.7	62.8	14:31:36		62.8	62.8
57.2	14:56:39		57.2	57.2	62.6	14:31:39		62.6	62.6
56.8	14:56:42		56.8	56.8	63.1	14:31:42		63.1	63.1
58.7	14:56:45		58.7	58.7	62.9	14:31:45		62.9	62.9
65.9	14:56:48		65.9	65.9	59.7	14:31:48		59.7	59.7
68.5	14:56:51		68.5	68.5	58.8	14:31:51		58.8	58.8
60.9	14:56:54		60.9	60.9	63.2	14:31:54		63.2	63.2
58.5	14:56:57		58.5	58.5	70	14:31:57		70	70
57.4	14:57:00		57.4	57.4	58.6	14:32:00		58.6	58.6
56.1	14:57:03		56.1	56.1	58.5	14:32:03		58.5	58.5
70.3	14:57:06		70.3	70.3	59.4	14:32:06		59.4	59.4
69.4	14:57:09		69.4	69.4	59.7	14:32:09		59.7	59.7
68.3	14:57:12		68.3	68.3	63.2	14:32:12		63.2	63.2
66.2	14:57:15		66.2	66.2	67.4	14:32:15		67.4	67.4
65.6	14:57:18		65.6	65.6	65.9	14:32:18		65.9	65.9
67.8	14:57:21		67.8	67.8	65.9	14:32:21		65.9	65.9
69.8	14:57:24		69.8	69.8	67.7	14:32:24		67.7	67.7
68	14:57:27		68	68	66.5	14:32:27		66.5	66.5
69.3	14:57:30		69.3	69.3	71.3	14:32:30		71.3	71.3
70.8	14:57:33		70.8	70.8	67.9	14:32:33		67.9	67.9
73.2	14:57:36		73.2	73.2	66.6	14:32:36		66.6	66.6
74.1	14:57:39		74.1	74.1	66.1	14:32:39		66.1	66.1
73.4	14:57:42		73.4	73.4	66.9	14:32:42		66.9	66.9
71.9	14:57:45		71.9	71.9	64.4	14:32:45		64.4	64.4
70.6	14:57:48		70.6	70.6	67.2	14:32:48		67.2	67.2
71.6	14:57:51		71.6	71.6	66.6	14:32:51		66.6	66.6
69.9	14:57:54		69.9	69.9	62.1	14:32:54		62.1	62.1
68.8	14:57:57		68.8	68.8	62.5	14:32:57		62.5	62.5
69.7	14:58:00		69.7	69.7	65.5	14:33:00		65.5	65.5
69	14:58:03		69	69	66.4	14:33:03		66.4	66.4
67.9	14:58:06		67.9	67.9	68.9	14:33:06		68.9	68.9
60.7	14:58:09		60.7	60.7	68.4	14:33:09		68.4	68.4
61.8	14:58:12		61.8	61.8	67.7	14:33:12		67.7	67.7
56.4	14:58:15		56.4	56.4	63.8	14:33:15		63.8	63.8
52.4	14:58:18		52.4	52.4	66	14:33:18		66	66
53.1	14:58:21		53.1	53.1	65.3	14:33:21		65.3	65.3
58.4	14:58:24		58.4	58.4	72.5	14:33:24		72.5	72.5
54.4	14:58:27		54.4	54.4	71.3	14:33:27		71.3	71.3
52	14:58:30		52	52	63.8	14:33:30		63.8	63.8
51.8	14:58:33		51.8	51.8	62.5	14:33:33		62.5	62.5
53.9	14:58:36		53.9	53.9	62.9	14:33:36		62.9	62.9
58.6	14:58:39		58.6	58.6	68.4	14:33:39		68.4	68.4
62.4	14:58:42		62.4	62.4	76.4	14:33:42		76.4	76.4
65.6	14:58:45		65.6	65.6	70.6	14:33:45		70.6	70.6
62.4	14:58:48		62.4	62.4	63.2	14:33:48		63.2	63.2
61	14:58:51		61	61	63.3	14:33:51		63.3	63.3
62.2	14:58:54		62.2	62.2	62.6	14:33:54		62.6	62.6
61.4	14:58:57		61.4	61.4	60.9	14:33:57		60.9	60.9
58.1	14:59:00		58.1	58.1	61	14:34:00		61	61
62.5	14:59:03		62.5	62.5	60.4	14:34:03		60.4	60.4
64.6	14:59:06		64.6	64.6	63.7	14:34:06		63.7	63.7
63.7	14:59:09		63.7	63.7	69	14:34:09		69	69

Site A - On Power Pole on South Property Line					Site B - On Fence on East Property Line				
SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL	SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
71.7	14:59:12		71.7	71.7	62.5	14:34:12		62.5	62.5
71.9	14:59:15		71.9	71.9	57.9	14:34:15		57.9	57.9
71.6	14:59:18		71.6	71.6	55.6	14:34:18		55.6	55.6
69.8	14:59:21		69.8	69.8	60.6	14:34:21		60.6	60.6
72.7	14:59:24		72.7	72.7	62.2	14:34:24		62.2	62.2
72	14:59:27		72	72	69.1	14:34:27		69.1	69.1
68.5	14:59:30		68.5	68.5	66.6	14:34:30		66.6	66.6
71.5	14:59:33		71.5	71.5	68.2	14:34:33		68.2	68.2
74	14:59:36		74	74	66.6	14:34:36		66.6	66.6
72.8	14:59:39		72.8	72.8	60.9	14:34:39		60.9	60.9
75.4	14:59:42		75.4	75.4	62.2	14:34:42		62.2	62.2
73.8	14:59:45		73.8	73.8	65.7	14:34:45		65.7	65.7
73.9	14:59:48		73.9	73.9	61.8	14:34:48		61.8	61.8
73.4	14:59:51		73.4	73.4	58.8	14:34:51		58.8	58.8
72.3	14:59:54		72.3	72.3	59.4	14:34:54		59.4	59.4
70	14:59:57		70	70	62.9	14:34:57		62.9	62.9
71.7	15:00:00		71.7	71.7	66.1	14:35:00		66.1	66.1
69.7	15:00:03		69.7	69.7	59.6	14:35:03		59.6	59.6
67.1	15:00:06		67.1	67.1	59.2	14:35:06		59.2	59.2
68.8	15:00:09		68.8	68.8	59.4	14:35:09		59.4	59.4
63.4	15:00:12		63.4	63.4	60.5	14:35:12		60.5	60.5
57	15:00:15		57	57	63.1	14:35:15		63.1	63.1
53.4	15:00:18		53.4	53.4	60.2	14:35:18		60.2	60.2
51.3	15:00:21		51.3	51.3	60.6	14:35:21		60.6	60.6
60.1	15:00:24		60.1	60.1	61.5	14:35:24		61.5	61.5
62	15:00:27		62	62	61.9	14:35:27		61.9	61.9
56.1	15:00:30		56.1	56.1	61.2	14:35:30		61.2	61.2
58.5	15:00:33		58.5	58.5	63.6	14:35:33		63.6	63.6
56.6	15:00:36		56.6	56.6	66.2	14:35:36		66.2	66.2
56.9	15:00:39		56.9	56.9	61.8	14:35:39		61.8	61.8
60.6	15:00:42		60.6	60.6	61.3	14:35:42		61.3	61.3
66.8	15:00:45		66.8	66.8	62.1	14:35:45		62.1	62.1
65	15:00:48		65	65	62.9	14:35:48		62.9	62.9
61.5	15:00:51		61.5	61.5	62.4	14:35:51		62.4	62.4
60.8	15:00:54		60.8	60.8	61.5	14:35:54		61.5	61.5
62.9	15:00:57		62.9	62.9	61.1	14:35:57		61.1	61.1
66.2	15:01:00		66.2	66.2	60.8	14:36:00		60.8	60.8
71.4	15:01:03		71.4	71.4	61.3	14:36:03		61.3	61.3
69.6	15:01:06		69.6	69.6	61.1	14:36:06		61.1	61.1
70.6	15:01:09		70.6	70.6	60.2	14:36:09		60.2	60.2
70.4	15:01:12		70.4	70.4	61	14:36:12		61	61
71.6	15:01:15		71.6	71.6	66.7	14:36:15		66.7	66.7
70.2	15:01:18		70.2	70.2	63.9	14:36:18		63.9	63.9
72.6	15:01:21		72.6	72.6	62.3	14:36:21		62.3	62.3
73.4	15:01:24		73.4	73.4	60	14:36:24		60	60
74.1	15:01:27		74.1	74.1	58.1	14:36:27		58.1	58.1
74	15:01:30		74	74	59.2	14:36:30		59.2	59.2
76	15:01:33		76	76	65	14:36:33		65	65
75.8	15:01:36		75.8	75.8	69.5	14:36:36		69.5	69.5
73.1	15:01:39		73.1	73.1	68	14:36:39		68	68
75.1	15:01:42		75.1	75.1	64.5	14:36:42		64.5	64.5
70.4	15:01:45		70.4	70.4	66.9	14:36:45		66.9	66.9
72.2	15:01:48		72.2	72.2	67	14:36:48		67	67
70.8	15:01:51		70.8	70.8	66.8	14:36:51		66.8	66.8
72.2	15:01:54		72.2	72.2	69	14:36:54		69	69
71.6	15:01:57		71.6	71.6	68.8	14:36:57		68.8	68.8
71.9	15:02:00		71.9	71.9	67.2	14:37:00		67.2	67.2
70.6	15:02:03		70.6	70.6	63.5	14:37:03		63.5	63.5
74.7	15:02:06		74.7	74.7	64	14:37:06		64	64
70.5	15:02:09		70.5	70.5	59.9	14:37:09		59.9	59.9
72.9	15:02:12		72.9	72.9	64.6	14:37:12		64.6	64.6
73.8	15:02:15		73.8	73.8	65.6	14:37:15		65.6	65.6
69.1	15:02:18		69.1	69.1	66.7	14:37:18		66.7	66.7
65.3	15:02:21		65.3	65.3	63.3	14:37:21		63.3	63.3
65.2	15:02:24		65.2	65.2	61.6	14:37:24		61.6	61.6
63.7	15:02:27		63.7	63.7	64.6	14:37:27		64.6	64.6
58.4	15:02:30		58.4	58.4	66.1	14:37:30		66.1	66.1
56.1	15:02:33		56.1	56.1	65.8	14:37:33		65.8	65.8
58.4	15:02:36		58.4	58.4	65.8	14:37:36		65.8	65.8
60	15:02:39		60	60	66.6	14:37:39		66.6	66.6
58.5	15:02:42		58.5	58.5	64.5	14:37:42		64.5	64.5
59.1	15:02:45		59.1	59.1	69	14:37:45		69	69
61	15:02:48		61	61	64.2	14:37:48		64.2	64.2
58.2	15:02:51		58.2	58.2	63.9	14:37:51		63.9	63.9
57.6	15:02:54		57.6	57.6	64.1	14:37:54		64.1	64.1
59.2	15:02:57		59.2	59.2	64.3	14:37:57		64.3	64.3
58.2	15:03:00		58.2	58.2	64	14:38:00		64	64
59.9	15:03:03		59.9	59.9	64.1	14:38:03		64.1	64.1
60.6	15:03:06		60.6	60.6	65.4	14:38:06		65.4	65.4
59.5	15:03:09		59.5	59.5	62.5	14:38:09		62.5	62.5
62	15:03:12		62	62	60.3	14:38:12		60.3	60.3
65.2	15:03:15		65.2	65.2	61.2	14:38:15		61.2	61.2
66.5	15:03:18		66.5	66.5	60.7	14:38:18		60.7	60.7
62.4	15:03:21		62.4	62.4	59.6	14:38:21		59.6	59.6
65.9	15:03:24		65.9	65.9	59.9	14:38:24		59.9	59.9
68	15:03:27		68	68	64	14:38:27		64	64
65.7	15:03:30		65.7	65.7	64.3	14:38:30		64.3	64.3
68.1	15:03:33		68.1	68.1	61.6	14:38:33		61.6	61.6
68.5	15:03:36		68.5	68.5	60.4	14:38:36		60.4	60.4

Site A - On Power Pole on South Property Line					Site B - On Fence on East Property Line				
SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL	SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
68.1	15:03:39		68.1	68.1	70.5	14:38:39		70.5	70.5
69.6	15:03:42		69.6	69.6	70.4	14:38:42		70.4	70.4
70	15:03:45		70	70	72.3	14:38:45		72.3	72.3
72.1	15:03:48		72.1	72.1	69.3	14:38:48		69.3	69.3
71.3	15:03:51		71.3	71.3	71	14:38:51		71	71
71.9	15:03:54		71.9	71.9	75.2	14:38:54		75.2	75.2
72.1	15:03:57		72.1	72.1	66.8	14:38:57		66.8	66.8
71.8	15:04:00		71.8	71.8	64.8	14:39:00		64.8	64.8
70.6	15:04:03		70.6	70.6	61.1	14:39:03		61.1	61.1
69.9	15:04:06		69.9	69.9	57.3	14:39:06		57.3	57.3
69.8	15:04:09		69.8	69.8	57	14:39:09		57	57
68.9	15:04:12		68.9	68.9	57	14:39:12		57	57
69.2	15:04:15		69.2	69.2	59.2	14:39:15		59.2	59.2
71.1	15:04:18		71.1	71.1	60.1	14:39:18		60.1	60.1
72.5	15:04:21		72.5	72.5	59.7	14:39:21		59.7	59.7
71.5	15:04:24		71.5	71.5	64.6	14:39:24		64.6	64.6
70	15:04:27		70	70	65.1	14:39:27		65.1	65.1
67.8	15:04:30		67.8	67.8	64.8	14:39:30		64.8	64.8
66.2	15:04:33		66.2	66.2	64	14:39:33		64	64
66.8	15:04:36		66.8	66.8	64.2	14:39:36		64.2	64.2
65.3	15:04:39		65.3	65.3	62.8	14:39:39		62.8	62.8
69.7	15:04:42		69.7	69.7	62.1	14:39:42		62.1	62.1
63.4	15:04:45		63.4	63.4	60.8	14:39:45		60.8	60.8
57	15:04:48		57	57	63.4	14:39:48		63.4	63.4
53.6	15:04:51		53.6	53.6	65.3	14:39:51		65.3	65.3
54.2	15:04:54		54.2	54.2	61.3	14:39:54		61.3	61.3
55.4	15:04:57		55.4	55.4	61.9	14:39:57		61.9	61.9
56	15:05:00		56	56	61.2	14:40:00		61.2	61.2
56.4	15:05:03		56.4	56.4	63.3	14:40:03		63.3	63.3
57	15:05:06		57	57	65.5	14:40:06		65.5	65.5
62.2	15:05:09		62.2	62.2	64.5	14:40:09		64.5	64.5
69.3	15:05:12		69.3	69.3	61.8	14:40:12		61.8	61.8
67.2	15:05:15		67.2	67.2	60.7	14:40:15		60.7	60.7
65.1	15:05:18		65.1	65.1	60.7	14:40:18		60.7	60.7
65.6	15:05:21		65.6	65.6	61.7	14:40:21		61.7	61.7
63.8	15:05:24		63.8	63.8	60.7	14:40:24		60.7	60.7
63.6	15:05:27		63.6	63.6	60	14:40:27		60	60
61.5	15:05:30		61.5	61.5	59.7	14:40:30		59.7	59.7
62	15:05:33		62	62	65.4	14:40:33		65.4	65.4
61.7	15:05:36		61.7	61.7	67.5	14:40:36		67.5	67.5
62.5	15:05:39		62.5	62.5	58.4	14:40:39		58.4	58.4
65.9	15:05:42		65.9	65.9	56.7	14:40:42		56.7	56.7
66.2	15:05:45		66.2	66.2	57.4	14:40:45		57.4	57.4
68.5	15:05:48		68.5	68.5	57.5	14:40:48		57.5	57.5
71.8	15:05:51		71.8	71.8	58.2	14:40:51		58.2	58.2
72.8	15:05:54		72.8	72.8	59.7	14:40:54		59.7	59.7
72.7	15:05:57		72.7	72.7	60.5	14:40:57		60.5	60.5
72.2	15:06:00		72.2	72.2	61.3	14:41:00		61.3	61.3
72.5	15:06:03		72.5	72.5	71	14:41:03		71	71
70.9	15:06:06		70.9	70.9	63.4	14:41:06		63.4	63.4
70.2	15:06:09		70.2	70.2	66.7	14:41:09		66.7	66.7
70.5	15:06:12		70.5	70.5	65	14:41:12		65	65
72.4	15:06:15		72.4	72.4	63.8	14:41:15		63.8	63.8
71.2	15:06:18		71.2	71.2	63	14:41:18		63	63
71	15:06:21		71	71	57	14:41:21		57	57
68.6	15:06:24		68.6	68.6	62.8	14:41:24		62.8	62.8
69.9	15:06:27		69.9	69.9	69.6	14:41:27		69.6	69.6
69	15:06:30		69	69	71.6	14:41:30		71.6	71.6
67.7	15:06:33		67.7	67.7	63.2	14:41:33		63.2	63.2
69.2	15:06:36		69.2	69.2	62.7	14:41:36		62.7	62.7
68.9	15:06:39		68.9	68.9	60	14:41:39		60	60
68.4	15:06:42		68.4	68.4	60.4	14:41:42		60.4	60.4
69.8	15:06:45		69.8	69.8	63.9	14:41:45		63.9	63.9
67.1	15:06:48		67.1	67.1	64.1	14:41:48		64.1	64.1
62.9	15:06:51		62.9	62.9	62.9	14:41:51		62.9	62.9
63.9	15:06:54		63.9	63.9	65.1	14:41:54		65.1	65.1
65.3	15:06:57		65.3	65.3	63.6	14:41:57		63.6	63.6
64.7	15:07:00		64.7	64.7	65.6	14:42:00		65.6	65.6
61.4	15:07:03		61.4	61.4	65	14:42:03		65	65
62.5	15:07:06		62.5	62.5	63.6	14:42:06		63.6	63.6
63.2	15:07:09		63.2	63.2	65.1	14:42:09		65.1	65.1
59.6	15:07:12		59.6	59.6	62.5	14:42:12		62.5	62.5
58.1	15:07:15		58.1	58.1	60.7	14:42:15		60.7	60.7
57	15:07:18		57	57	61.4	14:42:18		61.4	61.4
57	15:07:21		57	57	59.7	14:42:21		59.7	59.7
59.5	15:07:24		59.5	59.5	59.3	14:42:24		59.3	59.3
58.3	15:07:27		58.3	58.3	60.6	14:42:27		60.6	60.6
56.7	15:07:30		56.7	56.7	60.3	14:42:30		60.3	60.3
57.3	15:07:33		57.3	57.3	59.6	14:42:33		59.6	59.6
56.7	15:07:36		56.7	56.7	60	14:42:36		60	60
56.9	15:07:39		56.9	56.9	63.1	14:42:39		63.1	63.1
59.9	15:07:42		59.9	59.9	63.2	14:42:42		63.2	63.2
62.5	15:07:45		62.5	62.5	73.1	14:42:45		73.1	73.1
65.8	15:07:48		65.8	65.8	74.6	14:42:48		74.6	74.6
66.7	15:07:51		66.7	66.7	60.6	14:42:51		60.6	60.6
68	15:07:54		68	68	56	14:42:54		56	56
70	15:07:57		70	70	59.9	14:42:57		59.9	59.9
70.1	15:08:00		70.1	70.1	71.4	14:43:00		71.4	71.4
69.3	15:08:03		69.3	69.3	67.3	14:43:03		67.3	67.3
71	15:08:06		71	71	65.5	14:43:06		65.5	65.5
71.9	15:08:09		71.9	71.9	67.7	14:43:09		67.7	67.7
74.4	15:08:12		74.4	74.4	67.9	14:43:12		67.9	67.9
72.5	15:08:15		72.5	72.5	68.1	14:43:15		68.1	68.1
72.2	15:08:18		72.2	72.2	63.3	14:43:18		63.3	63.3
71.8	15:08:21		71.8	71.8	69.6	14:43:21		69.6	69.6

Site A - On Power Pole on South Property Line					Site B - On Fence on East Property Line				
SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL	SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
72.5	15:08:24		72.5	72.5	67.4	14:43:24		67.4	67.4
73.3	15:08:27		73.3	73.3	65.1	14:43:27		65.1	65.1
72.4	15:08:30		72.4	72.4	64	14:43:30		64	64
75.6	15:08:33		75.6	75.6	59.3	14:43:33		59.3	59.3
74	15:08:36		74	74	64	14:43:36		64	64
69.4	15:08:39		69.4	69.4	67.5	14:43:39		67.5	67.5
62.5	15:08:42		62.5	62.5	63.6	14:43:42		63.6	63.6
65.2	15:08:45		65.2	65.2	65.6	14:43:45		65.6	65.6
68.2	15:08:48		68.2	68.2	66.2	14:43:48		66.2	66.2
63.8	15:08:51		63.8	63.8	63.6	14:43:51		63.6	63.6
60.9	15:08:54		60.9	60.9	63.7	14:43:54		63.7	63.7
57.3	15:08:57		57.3	57.3	62.3	14:43:57		62.3	62.3
63.6	15:09:00		63.6	63.6	64.3	14:44:00		64.3	64.3
67.2	15:09:03		67.2	67.2	62.8	14:44:03		62.8	62.8
62.9	15:09:06		62.9	62.9	62.7	14:44:06		62.7	62.7
66	15:09:09		66	66	62.6	14:44:09		62.6	62.6
68.1	15:09:12		68.1	68.1	62.6	14:44:12		62.6	62.6
66.8	15:09:15		66.8	66.8	69.1	14:44:15		69.1	69.1
64.4	15:09:18		64.4	64.4	74.8	14:44:18		74.8	74.8
62.9	15:09:21		62.9	62.9	68.8	14:44:21		68.8	68.8
61.9	15:09:24		61.9	61.9	63.2	14:44:24		63.2	63.2
56.8	15:09:27		56.8	56.8	62	14:44:27		62	62
62.6	15:09:30		62.6	62.6	61.4	14:44:30		61.4	61.4
63.8	15:09:33		63.8	63.8	63.4	14:44:33		63.4	63.4
64	15:09:36		64	64	65.8	14:44:36		65.8	65.8
64.2	15:09:39		64.2	64.2	63.7	14:44:39		63.7	63.7
59.7	15:09:42		59.7	59.7	61.3	14:44:42		61.3	61.3
58.2	15:09:45		58.2	58.2	61.8	14:44:45		61.8	61.8
63.6	15:09:48		63.6	63.6	59.2	14:44:48		59.2	59.2
61.3	15:09:51		61.3	61.3	62.8	14:44:51		62.8	62.8
70.7	15:09:54		70.7	70.7	63.2	14:44:54		63.2	63.2
69.2	15:09:57		69.2	69.2	72	14:44:57		72	72
69.6	15:10:00		69.6	69.6	77.6	14:45:00		77.6	77.6
70.5	15:10:03		70.5	70.5	68.7	14:45:03		68.7	68.7
71	15:10:06		71	71	63	14:45:06		63	63
70	15:10:09		70	70	64.4	14:45:09		64.4	64.4
69.8	15:10:12		69.8	69.8	67.8	14:45:12		67.8	67.8
70.3	15:10:15		70.3	70.3	68.2	14:45:15		68.2	68.2
70.9	15:10:18		70.9	70.9	68.3	14:45:18		68.3	68.3
70.6	15:10:21		70.6	70.6	69	14:45:21		69	69
70.6	15:10:24		70.6	70.6	67.6	14:45:24		67.6	67.6
72.6	15:10:27		72.6	72.6	65.5	14:45:27		65.5	65.5
71.5	15:10:30		71.5	71.5	69.8	14:45:30		69.8	69.8
69.5	15:10:33		69.5	69.5	63.2	14:45:33		63.2	63.2
72.9	15:10:36		72.9	72.9	69.7	14:45:36		69.7	69.7
72.6	15:10:39		72.6	72.6	67.9	14:45:39		67.9	67.9
70.1	15:10:42		70.1	70.1	59.4	14:45:42		59.4	59.4
67.8	15:10:45		67.8	67.8	56.7	14:45:45		56.7	56.7
67.7	15:10:48		67.7	67.7	57.8	14:45:48		57.8	57.8
68.2	15:10:51		68.2	68.2	61.5	14:45:51		61.5	61.5
71.4	15:10:54		71.4	71.4	61	14:45:54		61	61
68.8	15:10:57		68.8	68.8	63.8	14:45:57		63.8	63.8
67.3	15:11:00		67.3	67.3	65.7	14:46:00		65.7	65.7
66.9	15:11:03		66.9	66.9	64.9	14:46:03		64.9	64.9
62.3	15:11:06		62.3	62.3	64.2	14:46:06		64.2	64.2
65	15:11:09		65	65	68	14:46:09		68	68
57.5	15:11:12		57.5	57.5	63.3	14:46:12		63.3	63.3
61.9	15:11:15		61.9	61.9	62.9	14:46:15		62.9	62.9
64.7	15:11:18		64.7	64.7	63.3	14:46:18		63.3	63.3
57.3	15:11:21		57.3	57.3	63.8	14:46:21		63.8	63.8
54.6	15:11:24		54.6	54.6	63.9	14:46:24		63.9	63.9
56.7	15:11:27		56.7	56.7	64.1	14:46:27		64.1	64.1
58.7	15:11:30		58.7	58.7	63.9	14:46:30		63.9	63.9
59.6	15:11:33		59.6	59.6	67	14:46:33		67	67
58.5	15:11:36		58.5	58.5	64	14:46:36		64	64
64.3	15:11:39		64.3	64.3	63.6	14:46:39		63.6	63.6
62.2	15:11:42		62.2	62.2	64.6	14:46:42		64.6	64.6
58.2	15:11:45		58.2	58.2	65.6	14:46:45		65.6	65.6
60.8	15:11:48		60.8	60.8	63.7	14:46:48		63.7	63.7
61.6	15:11:51		61.6	61.6	62.2	14:46:51		62.2	62.2
65.3	15:11:54		65.3	65.3	62.1	14:46:54		62.1	62.1
73.4	15:11:57		73.4	73.4	60.4	14:46:57		60.4	60.4
70.8	15:12:00	69.3	70.8	70.8	59	14:47:00	65.3	59	59
67.2	15:12:03	69.3	67.2	67.2	59.4	14:47:03	65.3	59.4	59.4
70.7	15:12:06	69.3	70.7	70.7	63.2	14:47:06	65.3	63.2	63.2
70.4	15:12:09	69.3	70.4	70.4	61.6	14:47:09	65.3	61.6	61.6
71.6	15:12:12	69.3	71.6	71.6	59.8	14:47:12	65.3	59.8	59.8
70.7	15:12:15	69.3	70.7	70.7	58.4	14:47:15	65.3	58.4	58.4
70.9	15:12:18	69.3	70.9	70.9	57	14:47:18	65.3	57	57
72.4	15:12:21	69.3	72.4	72.4	58.8	14:47:21	65.3	58.8	58.8
71.5	15:12:24	69.3	71.5	71.5	63.3	14:47:24	65.3	63.3	63.3
71.7	15:12:27	69.3	71.7	71.7	70.3	14:47:27	65.3	70.3	70.3
73.2	15:12:30	69.3	73.2	73.2	67.2	14:47:30	65.3	67.2	67.2
70.1	15:12:33	69.3	70.1	70.1	65.3	14:47:33	65.3	65.3	65.3
78.6	15:12:36	69.3	78.6	78.6	68.8	14:47:36	65.3	68.8	68.8
71.2	15:12:39	69.3	71.2	71.2	62	14:47:39	65.3	62	62
72.9	15:12:42	69.3	72.9	72.9	59.6	14:47:42	65.3	59.6	59.6
71.5	15:12:45	69.3	71.5	71.5	60	14:47:45	65.3	60	60
71.1	15:12:48	69.3	71.1	71.1	58.5	14:47:48	65.3	58.5	58.5
67.9	15:12:51	69.3	67.9	67.9	64.8	14:47:51	65.3	64.8	64.8
66	15:12:54	69.3	66	66	61.1	14:47:54	65.3	61.1	61.1
67.9	15:12:57	69.3	67.9	67.9	63.3	14:47:57	65.3	63.3	63.3
68.2	15:13:00	69.3	68.2	68.2	67.2	14:48:00	65.3	67.2	67.2
68	15:13:03	69.3	68	68	66.1	14:48:03	65.3	66.1	66.1
66.3	15:13:06	69.3	66.3	66.3	66.4	14:48:06	65.3	66.4	66.4
66.7	15:13:09	69.3	66.7	66.7	64.1	14:48:09	65.3	64.1	64.1
62.6	15:13:12	69.3	62.6	62.6	63.9	14:48:12	65.4	63.9	63.9
69.8	15:13:15	69.3	69.8	69.8	62.3	14:48:15	65.4	62.3	62.3
65.6	15:13:18	69.3	65.6	65.6	63.1	14:48:18	65.4	63.1	63.1
55.9	15:13:21	69.3	55.9	55.9	66.3	14:48:21	65.4	66.3	66.3
56.9	15:13:24	69.3	56.9	56.9	62.8	14:48:24	65.4	62.8	62.8
60.2	15:13:27	69.3	60.2	60.2	63.1	14:48:27	65.4	63.1	63.1
67.7	15:13:30	69.3	67.7	67.7	63.2	14:48:30	65.4	63.2	63.2

APPENDIX C

RCNM Model Construction Noise Calculations

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 10/7/2019
Case Description: 813 N Euclid St Gas Station - Grading

				---- Receptor #1 ----
		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Multi-Family Homes to South	Residential	69.4	69.4	69.4

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Drill Rig Truck	No	20		79.1	90	0
Concrete Saw	No	20		89.6	90	0
Excavator	No	40		80.7	90	0
Tractor	No	40	84		90	0
Backhoe	No	40		77.6	90	0

		Results					
		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Drill Rig Truck		74.0	67.0	N/A	N/A	N/A	N/A
Concrete Saw		84.5	77.5	N/A	N/A	N/A	N/A
Excavator		75.6	71.6	N/A	N/A	N/A	N/A
Tractor		78.9	74.9	N/A	N/A	N/A	N/A
Backhoe		72.5	68.5	N/A	N/A	N/A	N/A
	Total	**85**	**81**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 10/7/2019
Case Description: 813 N Euclid St Gas Station - Grading

		Baselines (dBA)			---- Receptor #2 ----
Description	Land Use	Daytime	Evening	Night	
Buddhist Temple to East	Residential	63	63	63.4	

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Drill Rig Truck	No	20.0		79.1	80	0
Concrete Saw	No	20		89.6	80	0
Excavator	No	40		80.7	80	0
Tractor	No	40	84		80	0
Backhoe	No	40.0		77.6	80	0

	Results					
	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Drill Rig Truck	75.1	68.1	N/A	N/A	N/A	N/A
Concrete Saw	85.5	78.5	N/A	N/A	N/A	N/A
Excavator	76.6	72.6	N/A	N/A	N/A	N/A
Tractor	79.9	75.9	N/A	N/A	N/A	N/A
Backhoe	73.5	69.5	N/A	N/A	N/A	N/A
Total	**86**	**82**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 10/7/2019
Case Description: 813 N Euclid St Gas Station - Building Construction & Painting

					---- Receptor #1 ----
		Baselines (dBA)			
Description	Land Use	Daytime	Evening	Night	
Multi-Family Homes to South	Residential	69.4	69.4	69.4	

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	90	0
Gradall	No	40		83.4	90	0
Compressor (air)	No	40		77.7	90	0
Tractor	No	40	84		90	0
Backhoe	No	40		77.6	90	0
Front End Loader	No	40		79.1	90	0

		Results					
		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane		75.4	67.5	N/A	N/A	N/A	N/A
Gradall		78.3	74.3	N/A	N/A	N/A	N/A
Compressor (air)		72.6	68.6	N/A	N/A	N/A	N/A
Tractor		78.9	74.9	N/A	N/A	N/A	N/A
Backhoe		72.5	68.5	N/A	N/A	N/A	N/A
Front End Loader		74.0	70.0	N/A	N/A	N/A	N/A
	Total	**79**	**79**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 10/7/2019
Case Description: 813 N Euclid St Gas Station - Building Construction & Painting

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Buddhist Temple to East	Residential	63	63	63.4

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16.0		80.6	80	0
Gradall	No	40		83.4	80	0
Compressor (air)	No	40		77.7	80	0
Tractor	No	40	84		80	0
Backhoe	No	40		77.6	80	0
Front End Loader	No	40		79.1	80	0

		Calculated (dBA)		Results Noise Limits (dBA) Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane		76.5	68.5	N/A	N/A	N/A	N/A
Gradall		79.3	75.3	N/A	N/A	N/A	N/A
Compressor (air)		73.6	69.6	N/A	N/A	N/A	N/A
Tractor		79.9	75.9	N/A	N/A	N/A	N/A
Backhoe		73.5	69.5	N/A	N/A	N/A	N/A
Front End Loader		75.0	71.0	N/A	N/A	N/A	N/A
	Total	**80**	**81**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 10/7/2019
Case Description: 813 N Euclid St Gas Station - Paving

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Multi-Family Homes to South	Residential	69.4	69.4	69.4

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Mixer Truck	No	40		78.8	90	0
Concrete Mixer Truck	No	40		78.8	90	0
Concrete Mixer Truck	No	40		78.8	90	0
Concrete Pump Truck	No	20		81.4	90	0
Paver	No	50		77.2	90	0
Roller	No	20		80	90	0
Tractor	No	40		84	90	0

Equipment	Calculated (dBA) *Lmax	Leq	Results Day Lmax	Noise Limits (dBA) Day Leq	Evening Lmax	Evening Leq
Concrete Mixer Truck	73.7	69.7	N/A	N/A	N/A	N/A
Concrete Mixer Truck	73.7	69.7	N/A	N/A	N/A	N/A
Concrete Mixer Truck	73.7	69.7	N/A	N/A	N/A	N/A
Concrete Pump Truck	76.3	69.3	N/A	N/A	N/A	N/A
Paver	72.1	69.1	N/A	N/A	N/A	N/A
Roller	74.9	67.9	N/A	N/A	N/A	N/A
Tractor	78.9	74.9	N/A	N/A	N/A	N/A
Total	**79**	**79**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 10/7/2019
Case Description: 813 N Euclid St Gas Station - Paving

		Baselines (dBA)			---- Receptor #2 ----
Description	Land Use	Daytime	Evening	Night	
Buddhist Temple to East	Residential	63	63	63.4	

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Mixer Truck	No	40		78.8	80	0
Concrete Mixer Truck	No	40		78.8	80	0
Concrete Mixer Truck	No	40		78.8	80	0
Concrete Pump Truck	No	20		81.4	80	0
Paver	No	50		77.2	80	0
Roller	No	20		80	80	0
Tractor	No	40	84		80	0

		Calculated (dBA)		Results Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Mixer Truck		74.7	70.7	N/A	N/A	N/A	N/A
Concrete Mixer Truck		74.7	70.7	N/A	N/A	N/A	N/A
Concrete Mixer Truck		74.7	70.7	N/A	N/A	N/A	N/A
Concrete Pump Truck		77.3	70.3	N/A	N/A	N/A	N/A
Paver		73.1	70.1	N/A	N/A	N/A	N/A
Roller		75.9	68.9	N/A	N/A	N/A	N/A
Tractor		79.9	75.9	N/A	N/A	N/A	N/A
	Total	**80**	**80**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

APPENDIX D

FHWA Model Off-Site Roadway Noise Contour Calculations

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING CONDITIONS

Project: 813 N Euclid St Gas Station
Site Conditions: Soft

	Vehicle Mix 1 (Local)				Vehicle Mix 2 (Arterials)				Vehicle Mix 3 (SR-39)			
Vehicle Type	Day	Evening	Night	Daily	Day	Evening	Night	Daily	Day	Evenin	Night	Daily
Automobiles	73.60%	13.60%	10.22%	97.42%	69.50%	12.90%	9.60%	92.00%	67.53%	13.84%	16.19%	97.56%
Medium Trucks	0.90%	0.90%	0.04%	1.84%	1.44%	0.06%	1.50%	3.00%	0.97%	0.18%	0.49%	1.63%
Heavy Trucks	0.35%	0.04%	0.35%	0.74%	2.40%	0.10%	2.50%	5.00%	0.44%	0.04%	0.32%	0.81%

Road Name: Euclid Street **Segment: North of Hazard Avenue**

Average Daily Traffic: 43400 Vehicles Vehicle Speed: 40 MPH Vehicle Mix: 3 Roadway Classification: Major Arterial

	NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 66.33 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	4.94	-1.94	-1.20	69.16	66.66	65.80	61.71	69.22	69.72	70 dBA:	**67**	**72**
Medium Trucks	76.31	-12.82	-1.94	-1.20	60.35	39.42	38.02	37.71	44.36	44.62	65 dBA:	**144**	**155**
Heavy Trucks	81.16	-15.89	-1.94	-1.20	62.13	37.79	33.62	37.67	44.02	44.13	60 dBA:	**310**	**335**
				Total:	**70.39**	**66.67**	**65.81**	**61.74**	**69.24**	**69.74**	55 dBA:	**668**	**721**

Road Name: Euclid Street **Segment: South of Hazard Avenue**

Average Daily Traffic: 41600 Vehicles Vehicle Speed: 40 MPH Vehicle Mix: 3 Roadway Classification: Major Arterial

	NOISE PARAMETERS AT 55 FEET FROM CENTERLINE (Equiv. Lane Dist: 42.43 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	4.76	0.97	-1.20	71.88	69.39	68.52	64.43	71.94	72.45	70 dBA:	**74**	**80**
Medium Trucks	76.31	-13.00	0.97	-1.20	63.08	42.14	40.74	40.44	47.09	47.35	65 dBA:	**160**	**173**
Heavy Trucks	81.16	-16.07	0.97	-1.20	64.86	40.51	36.35	40.40	46.75	46.85	60 dBA:	**345**	**373**
				Total:	**73.12**	**69.40**	**68.53**	**64.47**	**71.97**	**72.47**	55 dBA:	**744**	**804**

Road Name: Euclid Street **Segment: South of Project Driveway**

Average Daily Traffic: 41600 Vehicles Vehicle Speed: 40 MPH Vehicle Mix: 3 Roadway Classification: Major Arterial

	NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 48.73 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	4.76	0.06	-1.20	70.98	68.48	67.62	63.53	71.04	71.54	70 dBA:	**71**	**76**
Medium Trucks	76.31	-13.00	0.06	-1.20	62.17	41.24	39.84	39.53	46.18	46.45	65 dBA:	**152**	**164**
Heavy Trucks	81.16	-16.07	0.06	-1.20	63.95	39.61	35.45	39.50	45.84	45.95	60 dBA:	**328**	**354**
				Total:	**72.22**	**68.50**	**67.63**	**63.57**	**71.07**	**71.57**	55 dBA:	**707**	**763**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING CONDITIONS

Project: 813 N Euclid St Gas Station
Site Conditions: Soft

Road Name: Hazard Avenue **Segment: West of Euclid Street**

Average Daily Traffic: 17030 Vehicles | Vehicle Speed: 40 MPH | Vehicle Mix: 3 | Roadway Classification: Secondary Arterial

	NOISE PARAMETERS AT 45 FEET FROM CENTERLINE (Equiv. Lane Dist: 41.24 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	0.88	1.15	-1.20	68.19	65.69	64.83	60.74	68.25	68.75	70 dBA:	**35**	**37**
Medium Trucks	76.31	-16.88	1.15	-1.20	59.38	38.45	37.05	36.74	43.39	43.66	65 dBA:	**74**	**80**
Heavy Trucks	81.16	-19.95	1.15	-1.20	61.16	36.82	32.66	36.71	43.05	43.16	60 dBA:	**160**	**173**
				Total:	**69.43**	**65.71**	**64.84**	**60.77**	**68.28**	**68.78**	55 dBA:	**345**	**373**

Road Name: Hazard Avenue **Segment: East of Euclid Street**

Average Daily Traffic: 12040 Vehicles | Vehicle Speed: 40 MPH | Vehicle Mix: 3 | Roadway Classification: Secondary Arterial

	NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 57.24 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	-0.63	-0.98	-1.20	64.55	62.05	61.19	57.10	64.61	65.11	70 dBA:	**26**	**28**
Medium Trucks	76.31	-18.39	-0.98	-1.20	55.74	34.81	33.41	33.10	39.75	40.02	65 dBA:	**57**	**61**
Heavy Trucks	81.16	-21.45	-0.98	-1.20	57.52	33.18	29.02	33.07	39.41	39.52	60 dBA:	**122**	**132**
				Total:	**65.79**	**62.07**	**61.20**	**57.13**	**64.63**	**65.14**	55 dBA:	**263**	**284**

Road Name: Hazard Avenue **Segment: East of Project Driveway**

Average Daily Traffic: 12040 Vehicles | Vehicle Speed: 40 MPH | Vehicle Mix: 3 | Roadway Classification: Secondary Arterial

	NOISE PARAMETERS AT 50 FEET FROM CENTERLINE (Equiv. Lane Dist: 46.65 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	-0.63	0.35	-1.20	65.88	63.38	62.52	58.43	65.94	66.44	70 dBA:	**27**	**29**
Medium Trucks	76.31	-18.39	0.35	-1.20	57.07	36.14	34.74	34.43	41.08	41.35	65 dBA:	**58**	**63**
Heavy Trucks	81.16	-21.45	0.35	-1.20	58.85	34.51	30.35	34.40	40.75	40.85	60 dBA:	**125**	**135**
				Total:	**67.12**	**63.40**	**62.53**	**58.47**	**65.97**	**66.47**	55 dBA:	**269**	**291**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT CONDITIONS

Project: 813 N Euclid St Gas Station
Site Conditions: Soft

	Vehicle Mix 1 (Local)				Vehicle Mix 2 (Arterials)				Vehicle Mix 3 (SR-39)			
Vehicle Type	Day	Evening	Night	Daily	Day	Evening	Night	Daily	Day	Evenin	Night	Daily
Automobiles	73.60%	13.60%	10.22%	97.42%	69.50%	12.90%	9.60%	92.00%	67.53%	13.84%	16.19%	97.56%
Medium Trucks	0.90%	0.90%	0.04%	1.84%	1.44%	0.06%	1.50%	3.00%	0.97%	0.18%	0.49%	1.63%
Heavy Trucks	0.35%	0.04%	0.35%	0.74%	2.40%	0.10%	2.50%	5.00%	0.44%	0.04%	0.32%	0.81%

Road Name: Euclid Street **Segment: North of Hazard Avenue**

Average Daily Traffic: 44170 Vehicles Vehicle Speed: 40 MPH Vehicle Mix: 3 Roadway Classification: Major Arterial

	NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 66.33 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	5.02	-1.94	-1.20	69.23	66.74	65.87	61.78	69.29	69.80	70 dBA:	**68**	**73**
Medium Trucks	76.31	-12.74	-1.94	-1.20	60.42	39.49	38.09	37.78	44.44	44.70	65 dBA:	**146**	**157**
Heavy Trucks	81.16	-15.81	-1.94	-1.20	62.21	37.86	33.70	37.75	44.10	44.20	60 dBA:	**314**	**339**
				Total:	**70.47**	**66.75**	**65.88**	**61.82**	**69.32**	**69.82**	55 dBA:	**676**	**730**

Road Name: Euclid Street **Segment: South of Hazard Avenue**

Average Daily Traffic: 43020 Vehicles Vehicle Speed: 40 MPH Vehicle Mix: 3 Roadway Classification: Major Arterial

	NOISE PARAMETERS AT 55 FEET FROM CENTERLINE (Equiv. Lane Dist: 42.43 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	4.90	0.97	-1.20	72.03	69.53	68.67	64.58	72.09	72.59	70 dBA:	**76**	**82**
Medium Trucks	76.31	-12.86	0.97	-1.20	63.22	42.29	40.89	40.58	47.23	47.50	65 dBA:	**164**	**177**
Heavy Trucks	81.16	-15.92	0.97	-1.20	65.00	40.66	36.50	40.55	46.89	47.00	60 dBA:	**353**	**382**
				Total:	**73.27**	**69.55**	**68.68**	**64.61**	**72.12**	**72.62**	55 dBA:	**761**	**822**

Road Name: Euclid Street **Segment: South of Project Driveway**

Average Daily Traffic: 42370 Vehicles Vehicle Speed: 40 MPH Vehicle Mix: 3 Roadway Classification: Major Arterial

	NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 48.73 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	4.84	0.06	-1.20	71.06	68.56	67.70	63.61	71.12	71.62	70 dBA:	**72**	**77**
Medium Trucks	76.31	-12.92	0.06	-1.20	62.25	41.32	39.92	39.61	46.26	46.53	65 dBA:	**154**	**166**
Heavy Trucks	81.16	-15.99	0.06	-1.20	64.03	39.69	35.53	39.58	45.92	46.03	60 dBA:	**332**	**359**
				Total:	**72.30**	**68.58**	**67.71**	**63.65**	**71.15**	**71.65**	55 dBA:	**716**	**773**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT CONDITIONS

Project: 813 N Euclid St Gas Station
Site Conditions: Soft

Road Name: Hazard Avenue **Segment: West of Euclid Street**

Average Daily Traffic: 17550 Vehicles | Vehicle Speed: 40 MPH | Vehicle Mix: 3 | Roadway Classification: Secondary Arterial

	NOISE PARAMETERS AT 45 FEET FROM CENTERLINE (Equiv. Lane Dist: 41.24 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	1.01	1.15	-1.20	68.32	65.82	64.96	60.87	68.38	68.88	70 dBA:	**35**	**38**
Medium Trucks	76.31	-16.75	1.15	-1.20	59.51	38.58	37.18	36.87	43.52	43.79	65 dBA:	**76**	**82**
Heavy Trucks	81.16	-19.82	1.15	-1.20	61.29	36.95	32.79	36.84	43.18	43.29	60 dBA:	**164**	**177**
				Total:	**69.56**	**65.84**	**64.97**	**60.90**	**68.41**	**68.91**	55 dBA:	**352**	**381**

Road Name: Hazard Avenue **Segment: East of Euclid Street**

Average Daily Traffic: 12690 Vehicles | Vehicle Speed: 40 MPH | Vehicle Mix: 3 | Roadway Classification: Secondary Arterial

	NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 57.24 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	-0.40	-0.98	-1.20	64.78	62.28	61.42	57.33	64.84	65.34	70 dBA:	**27**	**29**
Medium Trucks	76.31	-18.16	-0.98	-1.20	55.97	35.04	33.64	33.33	39.98	40.24	65 dBA:	**59**	**63**
Heavy Trucks	81.16	-21.23	-0.98	-1.20	57.75	33.41	29.24	33.29	39.64	39.75	60 dBA:	**127**	**137**
				Total:	**66.02**	**62.29**	**61.43**	**57.36**	**64.86**	**65.37**	55 dBA:	**273**	**295**

Road Name: Hazard Avenue **Segment: East of Project Driveway**

Average Daily Traffic: 12560 Vehicles | Vehicle Speed: 40 MPH | Vehicle Mix: 3 | Roadway Classification: Secondary Arterial

	NOISE PARAMETERS AT 50 FEET FROM CENTERLINE (Equiv. Lane Dist: 46.65 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	-0.44	0.35	-1.20	66.07	63.57	62.71	58.62	66.12	66.63	70 dBA:	**28**	**30**
Medium Trucks	76.31	-18.20	0.35	-1.20	57.26	36.32	34.93	34.62	41.27	41.53	65 dBA:	**60**	**64**
Heavy Trucks	81.16	-21.27	0.35	-1.20	59.04	34.70	30.53	34.58	40.93	41.03	60 dBA:	**129**	**139**
				Total:	**67.30**	**63.58**	**62.72**	**58.65**	**66.15**	**66.65**	55 dBA:	**277**	**299**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: YEAR 2020 CUMULATIVE PROJECTS WITHOUT PROJECT CONDITIONS

Project: 813 N Euclid St Gas Station
Site Conditions: Soft

	Vehicle Mix 1 (Local)				Vehicle Mix 2 (Arterials)				Vehicle Mix 3 (SR-39)			
Vehicle Type	Day	Evening	Night	Daily	Day	Evening	Night	Daily	Day	Evenin	Night	Daily
Automobiles	73.60%	13.60%	10.22%	97.42%	69.50%	12.90%	9.60%	92.00%	67.53%	13.84%	16.19%	97.56%
Medium Trucks	0.90%	0.90%	0.04%	1.84%	1.44%	0.06%	1.50%	3.00%	0.97%	0.18%	0.49%	1.63%
Heavy Trucks	0.35%	0.04%	0.35%	0.74%	2.40%	0.10%	2.50%	5.00%	0.44%	0.04%	0.32%	0.81%

Road Name: Euclid Street **Segment: North of Hazard Avenue**

Average Daily Traffic: 44900 Vehicles Vehicle Speed: 40 MPH Vehicle Mix: 3 Roadway Classification: Major Arterial

	NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 66.33 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	5.09	-1.94	-1.20	69.30	66.81	65.94	61.85	69.36	69.87	70 dBA:	**68**	**74**
Medium Trucks	76.31	-12.67	-1.94	-1.20	60.50	39.56	38.16	37.86	44.51	44.77	65 dBA:	**147**	**159**
Heavy Trucks	81.16	-15.74	-1.94	-1.20	62.28	37.93	33.77	37.82	44.17	44.27	60 dBA:	**317**	**342**
				Total:	**70.54**	**66.82**	**65.95**	**61.89**	**69.39**	**69.89**	55 dBA:	**683**	**738**

Road Name: Euclid Street **Segment: South of Hazard Avenue**

Average Daily Traffic: 43070 Vehicles Vehicle Speed: 40 MPH Vehicle Mix: 3 Roadway Classification: Major Arterial

	NOISE PARAMETERS AT 55 FEET FROM CENTERLINE (Equiv. Lane Dist: 42.43 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	4.91	0.97	-1.20	72.04	69.54	68.68	64.59	72.09	72.60	70 dBA:	**76**	**82**
Medium Trucks	76.31	-12.85	0.97	-1.20	63.23	42.29	40.90	40.59	47.24	47.50	65 dBA:	**164**	**177**
Heavy Trucks	81.16	-15.92	0.97	-1.20	65.01	40.67	36.50	40.55	46.90	47.00	60 dBA:	**354**	**382**
				Total:	**73.27**	**69.55**	**68.68**	**64.62**	**72.12**	**72.62**	55 dBA:	**762**	**823**

Road Name: Euclid Street **Segment: South of Project Driveway**

Average Daily Traffic: 43070 Vehicles Vehicle Speed: 40 MPH Vehicle Mix: 3 Roadway Classification: Major Arterial

	NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 48.73 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	4.91	0.06	-1.20	71.13	68.64	67.77	63.68	71.19	71.69	70 dBA:	**72**	**78**
Medium Trucks	76.31	-12.85	0.06	-1.20	62.32	41.39	39.99	39.68	46.33	46.60	65 dBA:	**156**	**168**
Heavy Trucks	81.16	-15.92	0.06	-1.20	64.10	39.76	35.60	39.65	46.00	46.10	60 dBA:	**336**	**363**
				Total:	**72.37**	**68.65**	**67.78**	**63.72**	**71.22**	**71.72**	55 dBA:	**723**	**781**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: YEAR 2020 CUMULATIVE PROJECTS WITHOUT PROJECT CONDITIONS

Project: 813 N Euclid St Gas Station
Site Conditions: Soft

Road Name: Hazard Avenue **Segment: West of Euclid Street**

Average Daily Traffic: 17950 Vehicles | Vehicle Speed: 40 MPH | Vehicle Mix: 3 | Roadway Classification: Secondary Arterial

	NOISE PARAMETERS AT 45 FEET FROM CENTERLINE (Equiv. Lane Dist: 41.24 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	1.11	1.15	-1.20	68.42	65.92	65.06	60.97	68.48	68.98	70 dBA:	**36**	**39**
Medium Trucks	76.31	-16.65	1.15	-1.20	59.61	38.68	37.28	36.97	43.62	43.89	65 dBA:	**77**	**83**
Heavy Trucks	81.16	-19.72	1.15	-1.20	61.39	37.05	32.88	36.93	43.28	43.39	60 dBA:	**166**	**179**
				Total:	**69.66**	**65.94**	**65.07**	**61.00**	**68.50**	**69.01**	55 dBA:	**358**	**386**

Road Name: Hazard Avenue **Segment: East of Euclid Street**

Average Daily Traffic: 13190 Vehicles | Vehicle Speed: 40 MPH | Vehicle Mix: 3 | Roadway Classification: Secondary Arterial

	NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 57.24 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	-0.23	-0.98	-1.20	64.95	62.45	61.59	57.50	65.00	65.51	70 dBA:	**28**	**30**
Medium Trucks	76.31	-17.99	-0.98	-1.20	56.14	35.20	33.81	33.50	40.15	40.41	65 dBA:	**60**	**65**
Heavy Trucks	81.16	-21.06	-0.98	-1.20	57.92	33.58	29.41	33.46	39.81	39.91	60 dBA:	**130**	**140**
				Total:	**66.18**	**62.46**	**61.60**	**57.53**	**65.03**	**65.53**	55 dBA:	**280**	**302**

Road Name: Hazard Avenue **Segment: East of Project Driveway**

Average Daily Traffic: 13190 Vehicles | Vehicle Speed: 40 MPH | Vehicle Mix: 3 | Roadway Classification: Secondary Arterial

	NOISE PARAMETERS AT 50 FEET FROM CENTERLINE (Equiv. Lane Dist: 46.65 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	-0.23	0.35	-1.20	66.28	63.78	62.92	58.83	66.34	66.84	70 dBA:	**29**	**31**
Medium Trucks	76.31	-17.99	0.35	-1.20	57.47	36.54	35.14	34.83	41.48	41.74	65 dBA:	**62**	**67**
Heavy Trucks	81.16	-21.06	0.35	-1.20	59.25	34.91	30.74	34.79	41.14	41.25	60 dBA:	**133**	**143**
				Total:	**67.52**	**63.79**	**62.93**	**58.86**	**66.36**	**66.87**	55 dBA:	**286**	**309**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: YEAR 2020 CUMULATIVE PROJECTS WITH PROJECT CONDITIONS

Project: 813 N Euclid St Gas Station
Site Conditions: Soft

	Vehicle Mix 1 (Local)				Vehicle Mix 2 (Arterials)				Vehicle Mix 3 (SR-39)			
Vehicle Type	Day	Evening	Night	Daily	Day	Evening	Night	Daily	Day	Evenin	Night	Daily
Automobiles	73.60%	13.60%	10.22%	97.42%	69.50%	12.90%	9.60%	92.00%	67.53%	13.84%	16.19%	97.56%
Medium Trucks	0.90%	0.90%	0.04%	1.84%	1.44%	0.06%	1.50%	3.00%	0.97%	0.18%	0.49%	1.63%
Heavy Trucks	0.35%	0.04%	0.35%	0.74%	2.40%	0.10%	2.50%	5.00%	0.44%	0.04%	0.32%	0.81%

Road Name: Euclid Street **Segment: North of Hazard Avenue**

Average Daily Traffic: 45670 Vehicles Vehicle Speed: 40 MPH Vehicle Mix: 3 Roadway Classification: Major Arterial

	NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 66.33 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	5.16	-1.94	-1.20	69.38	66.88	66.02	61.93	69.44	69.94	70 dBA:	**69**	**75**
Medium Trucks	76.31	-12.60	-1.94	-1.20	60.57	39.64	38.24	37.93	44.58	44.85	65 dBA:	**149**	**161**
Heavy Trucks	81.16	-15.66	-1.94	-1.20	62.35	38.01	33.84	37.89	44.24	44.35	60 dBA:	**321**	**346**
				Total:	**70.62**	**66.90**	**66.03**	**61.96**	**69.46**	**69.97**	55 dBA:	**691**	**746**

Road Name: Euclid Street **Segment: South of Hazard Avenue**

Average Daily Traffic: 44490 Vehicles Vehicle Speed: 40 MPH Vehicle Mix: 3 Roadway Classification: Major Arterial

	NOISE PARAMETERS AT 55 FEET FROM CENTERLINE (Equiv. Lane Dist: 42.43 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	5.05	0.97	-1.20	72.18	69.68	68.82	64.73	72.23	72.74	70 dBA:	**78**	**84**
Medium Trucks	76.31	-12.71	0.97	-1.20	63.37	42.43	41.04	40.73	47.38	47.64	65 dBA:	**168**	**181**
Heavy Trucks	81.16	-15.78	0.97	-1.20	65.15	40.81	36.64	40.69	47.04	47.15	60 dBA:	**361**	**390**
				Total:	**73.41**	**69.69**	**68.83**	**64.76**	**72.26**	**72.76**	55 dBA:	**778**	**841**

Road Name: Euclid Street **Segment: South of Project Driveway**

Average Daily Traffic: 43840 Vehicles Vehicle Speed: 40 MPH Vehicle Mix: 3 Roadway Classification: Major Arterial

	NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 48.73 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	4.99	0.06	-1.20	71.21	68.71	67.85	63.76	71.27	71.77	70 dBA:	**73**	**79**
Medium Trucks	76.31	-12.78	0.06	-1.20	62.40	41.47	40.07	39.76	46.41	46.68	65 dBA:	**158**	**170**
Heavy Trucks	81.16	-15.84	0.06	-1.20	64.18	39.84	35.68	39.73	46.07	46.18	60 dBA:	**340**	**367**
				Total:	**72.45**	**68.73**	**67.86**	**63.79**	**71.30**	**71.80**	55 dBA:	**732**	**791**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: YEAR 2020 CUMULATIVE PROJECTS WITH PROJECT CONDITIONS

Project: 813 N Euclid St Gas Station
Site Conditions: Soft

Road Name: Hazard Avenue **Segment: West of Euclid Street**

Average Daily Traffic: 18470 Vehicles | Vehicle Speed: 40 MPH | Vehicle Mix: 3 | Roadway Classification: Secondary Arterial

	NOISE PARAMETERS AT 45 FEET FROM CENTERLINE (Equiv. Lane Dist: 41.24 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	1.23	1.15	-1.20	68.54	66.05	65.18	61.09	68.60	69.10	70 dBA:	**36**	**39**
Medium Trucks	76.31	-16.53	1.15	-1.20	59.73	38.80	37.40	37.09	43.75	44.01	65 dBA:	**79**	**85**
Heavy Trucks	81.16	-19.60	1.15	-1.20	61.51	37.17	33.01	37.06	43.41	43.51	60 dBA:	**169**	**183**
				Total:	**69.78**	**66.06**	**65.19**	**61.13**	**68.63**	**69.13**	55 dBA:	**365**	**394**

Road Name: Hazard Avenue **Segment: East of Euclid Street**

Average Daily Traffic: 13840 Vehicles | Vehicle Speed: 40 MPH | Vehicle Mix: 3 | Roadway Classification: Secondary Arterial

	NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 57.24 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	-0.02	-0.98	-1.20	65.15	62.66	61.79	57.70	65.21	65.72	70 dBA:	**29**	**31**
Medium Trucks	76.31	-17.78	-0.98	-1.20	56.35	35.41	34.01	33.71	40.36	40.62	65 dBA:	**62**	**67**
Heavy Trucks	81.16	-20.85	-0.98	-1.20	58.13	33.78	29.62	33.67	40.02	40.12	60 dBA:	**134**	**145**
				Total:	**66.39**	**62.67**	**61.80**	**57.74**	**65.24**	**65.74**	55 dBA:	**289**	**312**

Road Name: Hazard Avenue **Segment: East of Project Driveway**

Average Daily Traffic: 13710 Vehicles | Vehicle Speed: 40 MPH | Vehicle Mix: 3 | Roadway Classification: Secondary Arterial

	NOISE PARAMETERS AT 50 FEET FROM CENTERLINE (Equiv. Lane Dist: 46.65 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	-0.06	0.35	-1.20	66.45	63.95	63.09	59.00	66.50	67.01	70 dBA:	**29**	**32**
Medium Trucks	76.31	-17.82	0.35	-1.20	57.64	36.70	35.31	35.00	41.65	41.91	65 dBA:	**63**	**68**
Heavy Trucks	81.16	-20.89	0.35	-1.20	59.42	35.08	30.91	34.96	41.31	41.42	60 dBA:	**136**	**147**
				Total:	**67.68**	**63.96**	**63.10**	**59.03**	**66.53**	**67.03**	55 dBA:	**294**	**317**

APPENDIX E

Operational Reference Noise Measurements and Sound Wall Calculations

General Information

Serial Number	02509
Model	831
Firmware Version	2.112
Filename	831_Data.005
User	GT
Job Description	Northwest Fresno Walmart Relocation
Location	Rooftop HVAC Unit
Measurement Description	
Start Time	Saturday, 2013 July 27 18:31:43
Stop Time	Saturday, 2013 July 27 18:41:44
Duration	00:10:01.1
Run Time	00:10:01.1
Pause	00:00:00.0
Pre Calibration	Saturday, 2013 July 27 17:53:07
Post Calibration	None
Calibration Deviation	---

Note

Located 10 feet southeast of rooftop HVAC Unit 14 located on western side of roof
94 F, 30% Hu., 29.45 in Hg, no wind, partly cloudy

Overall Data

LAeq		66.6	dB
LASmax	2013 Jul 27 18:33:16	67.6	dB
LApeak (max)	2013 Jul 27 18:32:17	81.6	dB
LASmin	2013 Jul 27 18:41:08	65.8	dB
LCeq		75.8	dB
LAeq		66.6	dB
LCeq - LAeq		9.2	dB
LAIeq		67.2	dB
LAeq		66.6	dB
LAIeq - LAeq		0.6	dB
Ldn		66.6	dB
LDay 07:00-23:00		66.6	dB
LNight 23:00-07:00		---	dB
Lden		66.6	dB
LDay 07:00-19:00		66.6	dB
LEvening 19:00-23:00		---	dB
LNight 23:00-07:00		---	dB
LAE		94.4	dB
# Overloads		0	
Overload Duration		0.0	s
# OBA Overloads		0	
OBA Overload Duration		0.0	s

Statistics

LAS5.00	67.0	dBA
LAS10.00	66.9	dBA
LAS33.30	66.7	dBA
LAS50.00	66.6	dBA
LAS66.60	66.5	dBA
LAS90.00	66.3	dBA
LAS > 65.0 dB (Exceedence Counts / Duration)	1 / 601.1	s
LAS > 85.0 dB (Exceedence Counts / Duration)	0 / 0.0	s
LApeak > 135.0 dB (Exceedence Counts / Duration)	0 / 0.0	s
LApeak > 137.0 dB (Exceedence Counts / Duration)	0 / 0.0	s
LApeak > 140.0 dB (Exceedence Counts / Duration)	0 / 0.0	s

Settings

RMS Weight	A Weighting	
Peak Weight	A Weighting	
Detector	Slow	
Preamp	PRM831	
Integration Method	Linear	
OBA Range	Normal	
OBA Bandwidth	1/1 and 1/3	
OBA Freq. Weighting	Z Weighting	
OBA Max Spectrum	Bin Max	
Gain	+0	dB
Under Range Limit	26.2	dB
Under Range Peak	75.8	dB
Noise Floor	17.1	dB
Overload	143.4	dB

1/1 Spectra

Freq. (Hz):	8.0	16.0	31.5	63.0	125	250	500	1k	2k	4k	8k	16k
LZeq	70.9	64.4	61.4	74.2	68.2	64.9	66.3	61.7	55.1	49.9	44.3	44.0
LZSmax	83.8	78.9	70.0	78.4	72.3	66.1	67.8	63.1	56.9	53.2	46.7	45.4
LZSmin	53.2	56.5	56.7	67.7	66.1	63.5	65.0	60.7	53.9	48.4	43.2	43.7

1/3 Spectra

Freq. (Hz):	6.3	8.0	10.0	12.5	16.0	20.0	25.0	31.5	40.0	50.0	63.0	80.0
LZeq	68.1	65.7	63.2	61.0	58.0	59.3	56.0	57.8	55.8	69.7	72.0	59.3
LZSmax	82.3	79.5	78.7	77.2	72.8	72.3	67.9	63.5	64.0	74.2	76.1	72.0
LZSmin	41.9	46.3	48.8	48.7	46.5	49.7	50.1	51.8	41.2	63.9	67.9	54.5

Freq. (Hz):	100	125	160	200	250	315	400	500	630	800	1k	1.25k
LZeq	61.6	63.7	64.5	59.0	58.7	60.9	63.2	60.8	59.9	59.2	56.1	54.6
LZSmax	71.3	68.0	67.3	61.6	61.7	64.1	65.5	64.2	62.0	60.7	57.6	58.6
LZSmin	52.9	60.0	57.2	45.1	56.0	58.9	61.1	58.4	58.4	57.1	54.9	53.3

Freq. (Hz):	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	10k	12.5k	16k	20k
LZeq	52.0	49.8	48.4	46.4	45.4	42.8	41.1	38.6	38.5	38.4	39.0	40.2
LZSmax	54.4	52.3	51.2	50.2	49.7	45.7	45.4	41.6	40.4	40.4	41.4	41.3
LZSmin	50.9	48.4	46.9	45.0	43.7	41.4	39.6	37.5	37.9	38.0	38.7	39.9

Calibration History

Preamp	Date	dB re. 1V/Pa
PRM831	27 Jul 2013 17:53:07	-25.9
PRM831	27 Jul 2013 13:36:08	-25.6
PRM831	28 Apr 2013 15:34:24	-25.9
PRM831	23 Apr 2013 10:17:33	-25.0
PRM831	27 Feb 2013 19:15:30	-25.7
PRM831	24 Jan 2013 12:00:16	-25.6
PRM831	15 Jan 2013 07:50:44	-26.2
PRM831	04 Jan 2013 13:47:46	-26.5

General Information

Serial Number	02509
Model	831
Firmware Version	2.112
Filename	831_Data.002
User	GT
Job Description	Northwest Fresno Walmart Relocation
Location	Northwest Fresno Walmart
Measurement Description	
Start Time	Saturday, 2013 July 27 15:49:15
Stop Time	Saturday, 2013 July 27 16:09:15
Duration	00:20:00.6
Run Time	00:20:00.6
Pause	00:00:00.0
Pre Calibration	Saturday, 2013 July 27 13:36:08
Post Calibration	None
Calibration Deviation	---

Note

Located at the eastern portion of the southern parking lot and approx 140 feet south of the front door
96 F, 35% Humidity, 29.48 in Hg, 3 mph wind, partly cloudy

Overall Data

LAeq		63.1	dB
LASmax	2013 Jul 27 15:59:44	79.2	dB
LApeak (max)	2013 Jul 27 16:06:25	102.2	dB
LASmin	2013 Jul 27 15:50:20	49.6	dB
LCeq		74.0	dB
LAeq		63.1	dB
LCeq - LAeq		10.9	dB
LAIeq		67.4	dB
LAeq		63.1	dB
LAIeq - LAeq		4.3	dB
Ldn		63.1	dB
LDay 07:00-23:00		63.1	dB
LNight 23:00-07:00		---	dB
Lden		63.1	dB
LDay 07:00-19:00		63.1	dB
LEvening 19:00-23:00		---	dB
LNight 23:00-07:00		---	dB
LAE		93.9	dB
# Overloads		0	
Overload Duration		0.0	s
# OBA Overloads		0	
OBA Overload Duration		0.0	s

Statistics

LAS5.00	66.7	dBA
LAS10.00	66.3	dBA
LAS33.30	62.8	dBA
LAS50.00	61.7	dBA
LAS66.60	57.7	dBA
LAS90.00	52.8	dBA
LAS > 65.0 dB (Exceedence Counts / Duration)	17 / 347.8	s
LAS > 85.0 dB (Exceedence Counts / Duration)	0 / 0.0	s
LApeak > 135.0 dB (Exceedence Counts / Duration)	0 / 0.0	s
LApeak > 137.0 dB (Exceedence Counts / Duration)	0 / 0.0	s
LApeak > 140.0 dB (Exceedence Counts / Duration)	0 / 0.0	s

Settings

RMS Weight	A Weighting	
Peak Weight	A Weighting	
Detector	Slow	
Preamp	PRM831	
Integration Method	Linear	
OBA Range	Normal	
OBA Bandwidth	1/1 and 1/3	
OBA Freq. Weighting	Z Weighting	
OBA Max Spectrum	Bin Max	
Gain	+0	dB
Under Range Limit	26.1	dB
Under Range Peak	75.6	dB
Noise Floor	17.0	dB
Overload	143.1	dB

1/1 Spectra

Freq. (Hz):	8.0	16.0	31.5	63.0	125	250	500	1k	2k	4k	8k	16k
LZeq	66.7	66.1	71.1	71.6	64.9	59.5	59.6	58.3	56.2	51.8	46.8	44.6
LZSmax	82.6	84.9	82.2	89.3	77.1	67.1	72.4	76.6	76.6	69.0	67.7	63.1
LZSmin	46.5	55.4	53.6	59.0	55.2	49.9	45.5	43.6	40.9	37.7	39.6	42.8

1/3 Spectra

Freq. (Hz):	6.3	8.0	10.0	12.5	16.0	20.0	25.0	31.5	40.0	50.0	63.0	80.0
LZeq	63.6	61.5	59.8	58.7	60.7	63.4	67.2	66.6	65.3	65.7	67.5	67.2
LZSmax	80.9	76.9	73.6	75.5	79.8	83.7	80.9	76.8	78.9	83.8	87.4	88.8
LZSmin	37.3	40.3	43.7	45.3	48.2	51.5	55.9	60.4	54.9	53.2	57.5	47.0

Freq. (Hz):	100	125	160	200	250	315	400	500	630	800	1k	1.25k
LZeq	61.7	61.0	54.9	52.9	57.0	53.2	57.3	54.1	52.1	54.5	53.3	52.7
LZSmax	76.0	71.0	69.8	65.8	64.6	65.6	67.0	71.0	67.1	65.9	72.9	73.0
LZSmin	52.1	48.8	46.7	42.4	46.2	44.6	43.2	38.5	38.6	39.0	39.4	38.2

Freq. (Hz):	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	10k	12.5k	16k	20k
LZeq	52.5	50.9	50.7	49.0	46.4	44.5	43.0	41.7	41.1	40.0	39.6	40.0
LZSmax	75.9	69.6	63.7	63.8	64.4	64.7	63.3	62.7	62.7	60.8	57.9	52.5
LZSmin	37.2	35.4	34.6	33.1	32.6	32.8	33.6	34.7	35.9	36.7	37.7	39.4

Calibration History

Preamp	Date	dB re. 1V/Pa
PRM831	27 Jul 2013 13:36:08	-25.6
PRM831	28 Apr 2013 15:34:24	-25.9
PRM831	23 Apr 2013 10:17:33	-25.0
PRM831	27 Feb 2013 19:15:30	-25.7
PRM831	24 Jan 2013 12:00:16	-25.6
PRM831	15 Jan 2013 07:50:44	-26.2
PRM831	04 Jan 2013 13:47:46	-26.5

File Translated: V:\Vista Env\2010\10022-Fresno Walmart\Noise Measurements\LD\15.slmdl
Model/Serial Number: 824 / A3176
Firmware/Software Revs: 4.283 / 3.120
Name:
Descr1: 1021 Didrikson Way
Descr2: Laguna Beach, CA 92651
Setup/Setup Descr: slm&rta.ssa / SLM & Real-Time Analyzer
Location: 30' N of vendor truck loading area for Fresno Walmart
Note1: Approx 70' S of Locust Ave CL
Note2: 52F, 29.57 in Hg, 67% Humid., no wind, clear sky

Overall Any Data
Start Time: 19-May-2011 07:05:53
Elapsed Time: 00:08:30.5

	A Weight		C Weight		Flat	
Leq:	54.8 dBA		65.1 dBC		66.1 dBF	
SEL:	81.9 dBA		92.2 dBC		93.2 dBF	
Peak:	85.2 dBA		85.8 dBC		86.0 dBF	
	19-May-2011	07:09:58	19-May-2011	07:09:52	19-May-2011	07:09:52
Lmax (slow):	67.9 dBA		73.2 dBC		73.8 dBF	
	19-May-2011	07:09:50	19-May-2011	07:13:57	19-May-2011	07:13:57
Lmin (slow):	43.7 dBA		60.0 dBC		61.6 dBF	
	19-May-2011	07:11:17	19-May-2011	07:06:52	19-May-2011	07:06:51
Lmax (fast):	70.7 dBA		75.5 dBC		75.7 dBF	
	19-May-2011	07:09:58	19-May-2011	07:11:34	19-May-2011	07:11:34
Lmin (fast):	43.1 dBA		57.8 dBC		58.9 dBF	
	19-May-2011	07:11:17	19-May-2011	07:09:10	19-May-2011	07:09:10
Lmax (impulse):	72.1 dBA		76.8 dBC		77.1 dBF	
	19-May-2011	07:09:58	19-May-2011	07:11:34	19-May-2011	07:11:34
Lmin (impulse):	43.6 dBA		61.1 dBC		62.4 dBF	
	19-May-2011	07:11:17	19-May-2011	07:06:51	19-May-2011	07:09:10

Spectra

Date	Time	Run Time
19-May-2011	07:05:53	00:08:30.5

Hz	Leq1/3	Leq1/1	Max1/3	Max1/1	Min1/3	Min1/1	Hz	Leq1/3	Leq1/1	Max1/3	Max1/1	Min1/3	Min1/1
12.5	50.2		56.3		35.5		630	46.5		61.4		31.0	
16.0	50.9	55.5	56.1	61.5	37.1	41.8	800	45.4		60.8		30.5	
20.0	51.0		57.6		38.0		1000	44.5	49.3	56.1	63.9	31.7	35.6
25.0	55.8		57.5		41.1		1250	43.5		59.4		30.2	
31.5	57.7	61.6	57.1	63.3	46.2	49.9	1600	42.6		56.3		28.1	
40.0	56.7		60.3		46.3		2000	41.1	46.1	56.4	61.9	24.9	30.4
50.0	56.8		57.9		44.0		2500	40.0		58.4		21.7	
63.0	55.7	61.0	56.5	62.1	45.9	49.1	3150	40.2		60.8		19.4	
80.0	56.2		57.4		42.2		4000	39.5	43.8	58.6	63.4	18.7	24.1
100	55.6		55.1		42.3		5000	36.7		54.4		19.7	
125	54.3	59.2	59.0	63.8	40.7	45.7	6300	32.8		50.2		21.5	
160	52.8		61.0		39.4		8000	30.2	35.2	57.7	58.5	21.2	25.9
200	51.1		57.3		35.5		10000	25.4		41.5		20.5	
250	51.4	55.2	70.6	71.0	34.6	39.0	12500	22.9		32.2		19.4	
315	48.2		58.2		32.0		16000	20.8	26.5	27.4	33.9	19.1	24.4
400	47.0		59.0		30.1		20000	21.2		23.8		20.3	
500	47.0	51.6	64.3	66.9	30.4	35.3							

Ln Start Level: 15 dB

L1.00	0.0 dBA	L50.00	0.0 dBA	L95.00	0.0 dBA
L5.00	0.0 dBA	L90.00	0.0 dBA	L99.00	0.0 dBA

Detector: Slow
Weighting: A
SPL Exceedance Level 1: 85.0 dB Exceeded: 0 times
SPL Exceedance level 2: 120 dB Exceeded: 0 times
Peak-1 Exceedance Level: 105 dB Exceeded: 0 times
Peak-2 Exceedance Level: 100 dB Exceeded: 0 times
Hysteresis: 2
Overloaded: 0 time(s)
Paused: 0 times for 00:00:00.0

File Translated: V:\Vista Env\2010\10022-Fresno Walmart\Noise Measurements\LD\15.slmdl
Model/Serial Number: 824 / A3176

Current Any Data
Start Time: 19-May-2011 07:05:53
Elapsed Time: 00:08:30.5

	A Weight		C Weight		Flat	
Leq:	54.8 dBA		65.1 dBC		66.1 dBF	
SEL:	81.9 dBA		92.2 dBC		93.2 dBF	
Peak:	85.2 dBA		85.8 dBC		86.0 dBF	
	19-May-2011	07:09:58	19-May-2011	07:09:52	19-May-2011	07:09:52
Lmax (slow):	67.9 dBA		73.2 dBC		73.8 dBF	
	19-May-2011	07:09:50	19-May-2011	07:13:57	19-May-2011	07:13:57
Lmin (slow):	43.7 dBA		60.0 dBC		61.6 dBF	
	19-May-2011	07:11:17	19-May-2011	07:06:52	19-May-2011	07:06:51
Lmax (fast):	70.7 dBA		75.5 dBC		75.7 dBF	
	19-May-2011	07:09:58	19-May-2011	07:11:34	19-May-2011	07:11:34
Lmin (fast):	43.1 dBA		57.8 dBC		58.9 dBF	
	19-May-2011	07:11:17	19-May-2011	07:09:10	19-May-2011	07:09:10
Lmax (impulse):	72.1 dBA		76.8 dBC		77.1 dBF	
	19-May-2011	07:09:58	19-May-2011	07:11:34	19-May-2011	07:11:34
Lmin (impulse):	43.6 dBA		61.1 dBC		62.4 dBF	
	19-May-2011	07:11:17	19-May-2011	07:06:51	19-May-2011	07:09:10

Calibrated: 18-May-2011 13:09:02 Offset: -48.2 dB
Checked: 19-May-2011 06:46:08 Level: 113.9 dB
Calibrator not set Level: 114.0 dB
Cal Records Count: 0

Interval Records: Disabled Number Interval Records: 0
History Records: Disabled Number History Records: 0
Run/Stop Records: Number Run/Stop Records: 2

General Information

Serial Number	02509
Model	831
Firmware Version	2.314
Filename	831_Data.001
User	GT
Job Description	Mobil at 104 N Coast Hwy Laguna Beach
Location	5 ft from Gas Station Air Compressor
Measurement Description	
Start Time	Friday, 2018 September 21 08:53:10
Stop Time	Friday, 2018 September 21 08:55:11
Duration	00:02:00.7
Run Time	00:02:00.7
Pause	00:00:00.0
Pre Calibration	Friday, 2018 September 21 08:51:58
Post Calibration	None
Calibration Deviation	---

Note

Noise from operational Air/Water Machine
67 F, 29.93 in Hg, 70% Hu, 2 mph wind, low clouds

Overall Data

LAeq		66.9	dB
LASmax	2018 Sep 21 08:53:27	73.6	dB
LApeak (max)	2018 Sep 21 08:53:23	92.0	dB
LASmin	2018 Sep 21 08:53:10	64.0	dB
LCeq		73.4	dB
LAeq		66.9	dB
LCeq - LAeq		6.5	dB
LAIeq		68.6	dB
LAeq		66.9	dB
LAIeq - LAeq		1.6	dB
Ldn		66.9	dB
LDay 07:00-22:00		66.9	dB
LNight 22:00-07:00		---	dB
Lden		66.9	dB
LDay 07:00-19:00		66.9	dB
LEvening 19:00-22:00		---	dB
LNight 22:00-07:00		---	dB
LAE		87.7	dB
# Overloads		0	
Overload Duration		0.0	s
# OBA Overloads		0	
OBA Overload Duration		0.0	s

Statistics

LAS5.00	70.8	dBA
LAS10.00	68.3	dBA
LAS33.30	66.3	dBA
LAS50.00	66.0	dBA
LAS66.60	65.8	dBA
LAS90.00	65.4	dBA
LAS > 65.0 dB (Exceedence Counts / Duration)	1 / 118.3	s
LAS > 85.0 dB (Exceedence Counts / Duration)	0 / 0.0	s
LApeak > 135.0 dB (Exceedence Counts / Duration)	0 / 0.0	s
LApeak > 137.0 dB (Exceedence Counts / Duration)	0 / 0.0	s
LApeak > 140.0 dB (Exceedence Counts / Duration)	0 / 0.0	s

Settings

RMS Weight	A Weighting	
Peak Weight	A Weighting	
Detector	Slow	
Preamp	PRM831	
Integration Method	Linear	
OBA Range	Low	
OBA Bandwidth	1/1 and 1/3	
OBA Freq. Weighting	Z Weighting	
OBA Max Spectrum	Bin Max	
Gain	+0	dB
Under Range Limit	26.1	dB
Under Range Peak	75.6	dB
Noise Floor	16.9	dB
Overload	143.1	dB

1/1 Spectra

Freq. (Hz):	8.0	16.0	31.5	63.0	125	250	500	1k	2k	4k	8k	16k
LZeq	61.9	61.8	66.0	69.0	67.7	63.6	63.9	61.9	55.4	57.5	58.9	58.6
LZSmax	80.0	71.1	70.2	72.0	72.6	69.8	65.8	63.7	61.1	66.8	70.7	72.9
LZSmin	49.7	57.2	59.4	67.0	63.5	60.5	60.5	57.4	50.5	48.3	47.4	46.2

1/3 Spectra

Freq. (Hz):	6.3	8.0	10.0	12.5	16.0	20.0	25.0	31.5	40.0	50.0	63.0	80.0
LZeq	55.9	58.8	55.7	55.4	57.6	57.7	60.2	61.5	61.7	62.7	66.9	59.3
LZSmax	72.8	77.1	71.2	69.4	66.2	63.7	65.5	68.8	67.2	69.0	69.7	65.6
LZSmin	41.2	41.9	43.8	46.5	51.4	52.5	54.1	54.6	53.5	58.4	64.8	53.4

Freq. (Hz):	100	125	160	200	250	315	400	500	630	800	1k	1.25k
LZeq	60.3	61.9	65.3	59.5	55.4	58.7	62.8	56.4	54.2	58.8	58.2	52.7
LZSmax	70.0	70.0	68.3	68.8	59.7	62.3	64.9	60.3	58.2	60.2	61.2	56.5
LZSmin	52.8	55.4	62.4	55.9	52.0	52.1	58.4	52.3	51.0	54.9	51.8	49.4

Freq. (Hz):	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	10k	12.5k	16k	20k
LZeq	49.7	51.1	50.8	51.4	53.4	53.1	54.0	53.9	54.4	55.2	54.1	51.8
LZSmax	56.4	56.8	57.8	59.8	63.3	63.9	67.9	65.8	67.3	70.0	68.7	63.9
LZSmin	45.8	46.0	44.7	43.5	43.6	43.3	43.4	42.4	41.9	43.4	40.5	39.6

Calibration History

Preamp	Date	dB re. 1V/Pa
PRM831	21 Sep 2018 08:51:56	-25.6
PRM831	05 Sep 2018 11:51:21	-25.9
PRM831	13 Jun 2018 13:02:21	-25.7
PRM831	30 Mar 2018 23:00:57	-25.2
PRM831	30 Mar 2018 12:23:25	-25.8
PRM831	07 Mar 2018 13:40:34	-25.8
PRM831	28 Feb 2018 12:16:10	-25.9
PRM831	30 Jan 2018 23:18:32	-26.2
PRM831	30 Jan 2018 13:42:45	-26.2
PRM831	30 Jan 2018 13:32:25	-26.0
PRM831	30 Jan 2018 10:54:43	-26.0

SLM & RTA Summary
Translated: 17-Aug-2010 14:31:20

File Translated: V:\Vista Env\2010\10021-Atascadero Walmart\Noise Measurements\1.slmdl
Model Number: 824
Serial Number: A3176
Firmware Rev: 4.283
Software Version: 3.120
Name:
Descr1: 1021 Didrikson Way
Descr2: Laguna Beach, CA 92651
Setup: SLM&RTA.ssa
Setup Descr: SLM & Real-Time Analyzer
Location: Southern edge of gas station property
Note 1: 100' west of El Camino Real CL and 150' south of Del Rio Rd CL
Note 2: 78 F 28.97 HG 32% Humid. 2 MPH wind and clear sky

Overall Any Data
Start Time: 14-Aug-2010 12:03:04
Elapsed Time: 00:15:00.6

	A Weight		C Weight		Flat	
Leq:	61.7 dBA		74.5 dBC		75.3 dBF	
SEL:	91.2 dBA		104.0 dBC		104.8 dBF	
Peak:	105.2 dBA		108.2 dBC		110.1 dBF	
	14-Aug-2010 12:09:24		14-Aug-2010 12:09:24		14-Aug-2010 12:09:24	
Lmax (slow):	73.4 dBA		88.4 dBC		90.8 dBF	
	14-Aug-2010 12:09:24		14-Aug-2010 12:09:24		14-Aug-2010 12:09:24	
Lmin (slow):	49.4 dBA		63.1 dBC		64.6 dBF	
	14-Aug-2010 12:04:03		14-Aug-2010 12:04:03		14-Aug-2010 12:04:03	
Lmax (fast):	81.1 dBA		96.0 dBC		98.4 dBF	
	14-Aug-2010 12:09:24		14-Aug-2010 12:09:24		14-Aug-2010 12:09:24	
Lmin (fast):	48.5 dBA		61.4 dBC		62.8 dBF	
	14-Aug-2010 12:04:02		14-Aug-2010 12:04:02		14-Aug-2010 12:04:02	
Lmax (impulse):	84.8 dBA		99.1 dBC		101.5 dBF	
	14-Aug-2010 12:09:24		14-Aug-2010 12:09:24		14-Aug-2010 12:09:24	
Lmin (impulse):	48.7 dBA		63.7 dBC		65.4 dBF	
	14-Aug-2010 12:04:02		14-Aug-2010 12:04:03		14-Aug-2010 12:04:03	

Spectra
Start Time: 14-Aug-2010 12:03:04 Run Time: 00:15:00.6

Freq	Leq 1/3	Leq 1/1	Max 1/3	Max 1/1	Min 1/3	Min 1/1
12.5 Hz	55.3		72.2		36.3	
16.0 Hz	57.4	63.9	79.4	90.6	38.4	43.4
20.0 Hz	62.0		90.2		40.3	
25.0 Hz	65.1		93.7		43.9	
31.5 Hz	64.2	69.1	89.6	95.4	44.9	49.1
40.0 Hz	63.7		83.4		44.1	
50.0 Hz	67.7		88.2		46.6	
63.0 Hz	65.9	71.2	84.2	90.1	45.9	51.5
80.0 Hz	65.3		79.8		47.5	
100 Hz	65.0		76.4		46.3	
125 Hz	66.0	70.0	76.5	80.7	45.4	50.7
160 Hz	64.4		74.6		46.1	
200 Hz	59.6		70.5		41.9	
250 Hz	58.7	63.0	66.2	76.1	43.2	46.8
315 Hz	55.6		74.0		40.8	
400 Hz	53.6		75.8		39.0	
500 Hz	52.9	57.7	75.4	79.0	38.5	43.8
630 Hz	52.1		67.7		39.4	
800 Hz	52.5		68.9		40.2	
1000 Hz	51.8	56.3	69.8	73.4	39.2	43.6
1250 Hz	49.9		66.4		36.4	
1600 Hz	48.1		63.6		34.8	

2000 Hz	46.5	51.5	64.3	68.5	30.1	36.6
2500 Hz	45.1		63.2		27.3	
3150 Hz	44.3		62.5		25.2	
4000 Hz	42.5	47.6	58.5	64.6	22.9	28.2
5000 Hz	40.9		56.1		21.5	
6300 Hz	38.5		52.4		20.1	
8000 Hz	36.0	41.0	51.0	55.9	18.9	23.9
10000 Hz	31.8		49.3		18.3	
12500 Hz	27.9		46.0		18.0	
16000 Hz	24.5	30.9	36.7	46.6	19.1	24.2
20000 Hz	25.3		31.5		20.7	

Ln Start Level: 15 dB

L (1.00)	0.0
L (5.00)	0.0
L (50.00)	0.0
L (90.00)	0.0
L (95.00)	0.0
L (99.00)	0.0

Detector: Slow
Weighting: A

SPL Exceedance Level 1:	85.0 dB	Exceeded:	0 times
SPL Exceedance Level 2:	120.0 dB	Exceeded:	0 times
Peak-1 Exceedance Level:	105.0 dB	Exceeded:	1 times
Peak-2 Exceedance Level:	100.0 dB	Exceeded:	1 times

Hysteresis: 2
Overloaded: 0 time(s)
Paused: 0 times for 00:00:00.0

Current Any Data
Start Time: 14-Aug-2010 12:03:04
Elapsed Time: 00:15:00.6

	A Weight	C Weight	Flat
Leq:	61.7 dBA	74.5 dBC	75.3 dBF
SEL:	91.2 dBA	104.0 dBC	104.8 dBF
Peak:	105.2 dBA	108.2 dBC	110.1 dBF
	14-Aug-2010 12:09:24	14-Aug-2010 12:09:24	14-Aug-2010 12:09:24
Lmax (slow):	73.4 dBA	88.4 dBC	90.8 dBF
	14-Aug-2010 12:09:24	14-Aug-2010 12:09:24	14-Aug-2010 12:09:24
Lmin (slow):	49.4 dBA	63.1 dBC	64.6 dBF
	14-Aug-2010 12:04:03	14-Aug-2010 12:04:03	14-Aug-2010 12:04:03
Lmax (fast):	81.1 dBA	96.0 dBC	98.4 dBF
	14-Aug-2010 12:09:24	14-Aug-2010 12:09:24	14-Aug-2010 12:09:24
Lmin (fast):	48.5 dBA	61.4 dBC	62.8 dBF
	14-Aug-2010 12:04:02	14-Aug-2010 12:04:02	14-Aug-2010 12:04:02
Lmax (impulse):	84.8 dBA	99.1 dBC	101.5 dBF
	14-Aug-2010 12:09:24	14-Aug-2010 12:09:24	14-Aug-2010 12:09:24
Lmin (impulse):	48.7 dBA	63.7 dBC	65.4 dBF
	14-Aug-2010 12:04:02	14-Aug-2010 12:04:03	14-Aug-2010 12:04:03

Calibrated:	14-Aug-2010 12:02:00	Offset:	-47.3 dB
Checked:	14-Aug-2010 12:02:00	Level:	93.3 dB
Calibrator	not set	Level:	114.0 dB
Cal Records Count:	0		

Interval Records:	Disabled	Number Interval Records:	0
Time History:	Disabled	Number History Records:	0
Run/Stop Records:		Number Run/Stop Records:	2

Stationary Noise Calculation - Homes South of Project Site

Stationary Noise Sources	Reference Distance	Reference Leq	Home Adjacent to Project Site Distance	Leq	
Rooftop HVAC	10	66.6	35	56	1 (Line Source: hard=0, soft=.5; Point Source: hard=1, soft=1.5)
Parking Lot	5	63.1	10	57	(eq. N-2141.2 of TeNS)
Truck Delivery	30	54.8	75	47	
Air/Water	5	66.9	7	64	
Gas Dispensing Facility	10	61.7	75	44	

Stationary Noise Sources	Distance from Receptor to Wall	Distance from source to Wall	Height of Wall (feet)	Without Wall Noise Level at Residence	With Wall Noise Level at Residence	Source Height (feet)	Exterior Observer Height (feet)	Source Frequency (hz)	barrier to receiver - b (all)	source to barrier - a	source to receiver - c	path difference y =a+b-c (auto)	line of sight (slope)	fresnel	Barrier Atten
Rooftop HVAC	5	35	3	56	**40**	25	5	800	5.3852	41.34005	44.72136	2.0039	1	5.699864	-15.714
Parking Lot	5	10	6	57	**46**	3	5	800	5.0990	10.44031	15.13275	0.4066	1	1.156494	-10.6
Truck Delivery	5	75	6	47	**39**	5	5	800	5.0990	75.00667	80	0.1057	1	0.300618	-7.5
Air/Water	5	7	6	64	**53**	3	5	800	5.0990	7.615773	12.16553	0.5493	1	1.562361	-11.42
Gas Dispensing Fa	5	75	6	44	**37**	5	5	800	5.0990	75.00667	80	0.1057	1	0.300618	-7.5

Combined Noise Levels	**65**	**54**
Combined Noise Levels (without Air/Water)	**60**	**48**

Stationary Noise Calculation - Buddhist Temple East of Project Site

Stationary Noise Sources	Reference Distance	Reference Leq	Home Adjacent to Project Site Distance	Leq	1 (Line Source: hard=0, soft=.5; Point Source: hard=1, soft=1.5)
Rooftop HVAC	10	66.6	10	67	(eq. N-2141.2 of TeNS)
Parking Lot	5	63.1	35	46	
Truck Delivery	30	54.8	80	46	
Air/Water	5	66.9	90	42	
Gas Dispensing Facility	10	61.7	100	42	

Stationary Noise Sources	Distance from Receptor to Wall	Distance from source to Wall	Height of Wall (feet)	Without Wall Noise Level at Residence	With Wall Noise Level at Residence	Source Height (feet)	Exterior Observer Height (feet)	Source Frequency (hz)	barrier to receiver - b (all)	source to barrier - a	source to receiver - c	path difference y =a+b-c (auto)	line of sight (slope)	fresnel	Barrier Atten
Rooftop HVAC	5	10	3	67	**49**	25	5	800	5.3852	24.16609	25	4.5513	1	12.9458	-17.453
Parking Lot	5	35	6	46	**38**	3	5	800	5.0990	35.12834	40.04997	0.1774	1	0.504567	-8.5
Truck Delivery	5	80	6	46	**39**	5	5	800	5.0990	80.00625	85	0.1053	1	0.299433	-7.43
Air/Water	5	90	6	42	**34**	3	5	800	5.0990	90.04999	95.02105	0.1280	1	0.363962	-7.8
Gas Dispensing Fa	5	100	6	42	**34**	5	5	800	5.0990	100.005	105	0.1040	1	0.295877	-7.43
		Combined Noise Levels		**67**	**50**										