APPENDIX 8.0

Noise and Vibration Analysis

(Noise Study)

Apple Valley 3PL Center

NOISE AND VIBRATION ANALYSIS

TOWN OF APPLE VALLEY

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TABLE OF CONTENTS

TABLE OF CONTENTS ..... **III**
APPENDICES ..... **IV**
LIST OF EXHIBITS ..... **IV**
LIST OF TABLES ..... **V**
LIST OF ABBREVIATED TERMS ..... **VI**
EXECUTIVE SUMMARY **1**
1 INTRODUCTION **3**
1.1 Site Location 3
1.2 Project Description 3
1.3 2009 General Plan EIR (GPEIR) 3
2 FUNDAMENTALS **7**
2.1 Range of Noise 7
2.2 Noise Descriptors 8
2.3 Sound Propagation 8
2.4 Noise Control 9
2.5 Noise Barrier Attenuation 9
2.6 Land Use Compatibility With Noise 10
2.7 Community Response to Noise 10
2.8 Vibration 11
3 REGULATORY SETTING **13**
3.1 State of California Noise Requirements 13
3.2 Town of Apple Valley General Plan Noise Element 13
3.3 Operational Noise Standards 14
3.4 Construction Noise Standards 16
3.5 Construction Vibration Standards 17
3.6 Apple Valley Airport (APV) 17
4 SIGNIFICANCE CRITERIA **19**
4.1 Noise Level Increases (Threshold A) 19
4.2 Vibration (Threshold B) 21
4.3 CEQA Guidelines Not Further Analyzed (Threshold C) 21
4.4 Significance Criteria Summary 21
5 NOISE LEVEL MEASUREMENTS **23**
5.1 Measurement Procedure and Criteria 23
5.2 Noise Measurement Locations 23
5.3 Noise Measurement Results 23
6 OFF-SITE TRAFFIC NOISE ANALYSIS **27**
7 SENSITIVE RECEIVER LOCATIONS **29**
8 OPERATIONAL NOISE IMPACTS **31**
8.1 Operational Noise Sources 31
8.2 Reference Noise Levels 31
8.3 CadnaA Noise Prediction Model 34
8.4 Project Operational Noise Levels 35

8.5 Project Operational Noise Level Compliance 36
8.6 Project Operational Noise Level Increases 37
9 CONSTRUCTION IMPACTS 39
9.1 Construction Noise Levels 39
9.2 Construction Reference Noise Levels 39
9.3 Construction Noise Analysis 41
9.4 Project Site Construction Noise Level Compliance 42
9.5 Nighttime Concrete Pour Noise Analysis 43
9.6 Construction Vibration Analysis 45
10 REFERENCES 47
11 CERTIFICATION 49

APPENDICES

APPENDIX 3.1: TOWN OF APPLE VALLEY MUNICIPAL CODE
APPENDIX 8.1: OPERATIONAL NOISE MODEL INPUTS
APPENDIX 9.1: CONSTRUCTION NOISE MODEL INPUTS
APPENDIX 9.2: NIGHTTIME CONCRETE POUR NOISE MODEL INPUTS

LIST OF EXHIBITS

EXHIBIT 1-A: LOCATION MAP 4
EXHIBIT 1-B: SITE PLAN 5
EXHIBIT 2-A: TYPICAL NOISE LEVELS 7
EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION 10
EXHIBIT 2-C: TYPICAL LEVELS OF GROUND-BORNE VIBRATION 12
EXHIBIT 3-A: LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS 15
EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS 24
EXHIBIT 7-A: RECEIVER LOCATIONS 30
EXHIBIT 8-A: OPERATIONAL NOISE SOURCE LOCATIONS 32
EXHIBIT 9-A: CONSTRUCTION NOISE SOURCE LOCATIONS 40
EXHIBIT 9-B: NIGHTTIME CONCRETE POUR NOISE SOURCE AND RECEIVER LOCATIONS 44

LIST OF TABLES

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS 1
TABLE 3-1: TOWN OF APPLE VALLEY OPERATIONAL NOISE STANDARDS 16
TABLE 4-1: SIGNIFICANCE CRITERIA SUMMARY 21
TABLE 5-1: NOISE LEVEL MEASUREMENTS 25
TABLE 8-1: REFERENCE NOISE LEVEL MEASUREMENTS 33
TABLE 8-2: DAYTIME PROJECT OPERATIONAL NOISE LEVELS 35
TABLE 8-3: NIGHTTIME PROJECT OPERATIONAL NOISE LEVELS 36
TABLE 8-4: OPERATIONAL NOISE LEVEL COMPLIANCE 36
TABLE 8-5: DAYTIME PROJECT OPERATIONAL NOISE LEVEL INCREASES 37
TABLE 8-6: NIGHTTIME OPERATIONAL NOISE LEVEL INCREASES 38
TABLE 9-1: PCONSTRUCTION REFERENCE NOISE LEVELS 41
TABLE 9-2: CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY 42
TABLE 9-3: PROJECT SITE CONSTRUCTION NOISE LEVEL COMPLIANCE 42
TABLE 9-4: NIGHTTIME CONCRETE POUR NOISE LEVEL COMPLIANCE 45
TABLE 9-5: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT 45
TABLE 9-6: PROJECT CONSTRUCTION VIBRATION LEVELS 46

LIST OF ABBREVIATED TERMS

(1)	Reference
ANSI	American National Standards Institute
Calveno	California Vehicle Noise
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GPEIR	Town of Apple Valley adopted the General Plan Update and Annexation Areas 2008-001 & 2008-002 Annexation Areas Environmental Impact Report
INCE	Institute of Noise Control Engineering
L_{eq}	Equivalent continuous (average) sound level
L_{max}	Maximum level measured over the time interval
mph	Miles per hour
NAVISP	North Apple Valley Industrial Specific Plan
PPV	Peak Particle Velocity
Project	Apple Valley 3PL Center
REMEL	Reference Energy Mean Emission Level
RMS	Root-mean-square
VdB	Vibration Decibels

EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise study to determine the noise exposure and the necessary noise mitigation measures for the proposed Apple Valley 3PL Center development (Project). The Project site is located within the North Apple Valley Industrial Specific Plan (NAVISP) on either side of Central Avenue north of Johnson Road in the Town of Apple Valley. The Project is proposed to consist of 2,134,000 square feet of warehousing and distribution uses within two buildings. This noise study has been prepared to satisfy applicable Town of Apple Valley noise standards and significance criteria based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1)

The results of this Noise and Vibration Analysis are summarized below based on the significance criteria in Section 4 of this report consistent with Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1) Table ES-1 shows the findings of significance for each potential noise and/or vibration impact under CEQA before and after any required mitigation measures.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Off-Site Traffic Noise	7	*Less Than Significant*	-
Operational Noise	9	*Less Than Significant*	-
Construction Noise		*Less Than Significant*	-
Nighttime Concrete Pour	10	*Less Than Significant*	-
Construction Vibration		*Less Than Significant*	-

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1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the proposed Apple Valley 3PL Center **("Project")**. This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, sets out the local regulatory setting, presents the study methods and procedures, and evaluates the future exterior noise environment. In addition, this study includes an analysis of the potential Project-related long-term stationary-source operational noise and short-term construction noise and vibration impacts. The following analysis compares the proposed Project to the use evaluated previously to determine if the proposed Project falls within the overall envelope of analysis included in the Environmental Impact Report (**EIR**) (SCH No. 2008091077) for the Apple Valley General Plan and Annexations 2008-001 & 2008-002 (certified August 11, 2009, referred to as **2009 GPEIR**).

1.1 SITE LOCATION

The proposed Project is located within the North Apple Valley Industrial Specific Plan (NAVISP) on either side of Central Avenue north of Johnson Road in the Town of Apple Valley as shown on Exhibit 1-A. The nearest existing noise-sensitive residential use is located approximately 1,842 feet south of the Project site.

1.2 PROJECT DESCRIPTION

A preliminary site plan for the proposed Project is shown on Exhibit 1-B. The Project is proposed to consist of 2,134,000 square feet of warehousing and distribution uses within two buildings. The on-site Project-related noise sources are expected to include: loading dock activity, parking lot vehicle activities, roof-top air conditioning units, trash enclosure activity, and truck movements. This noise analysis is intended to describe the noise level impacts associated with the expected typical operational activities at the Project site.

1.3 2009 GENERAL PLAN EIR (GPEIR)

The 2009 the Town of Apple Valley adopted the General Plan Update and Annexation Areas 2008-001 & 2008-002 Annexation Areas Environmental Impact Report (EIR) which included the preparation of the Town of Apple Valley Noise Element Update Technical Study Report by Urban Crossroads, Inc. (4) This report identifies noise sensitive land uses and noise sources, and defines areas of noise impact for the purpose of developing programs to insure that the residents of the community will be protected from excessive noise intrusion. According to the GPEIR, the major sources of community noise in the Town of Apple Valley are transportation noise associated with vehicle traffic on the I-15 Freeway, Highway 18, major Town streets, aircraft over flights and rail operations from the two railroads that occur in or near Town.

EXHIBIT 1-A: LOCATION MAP

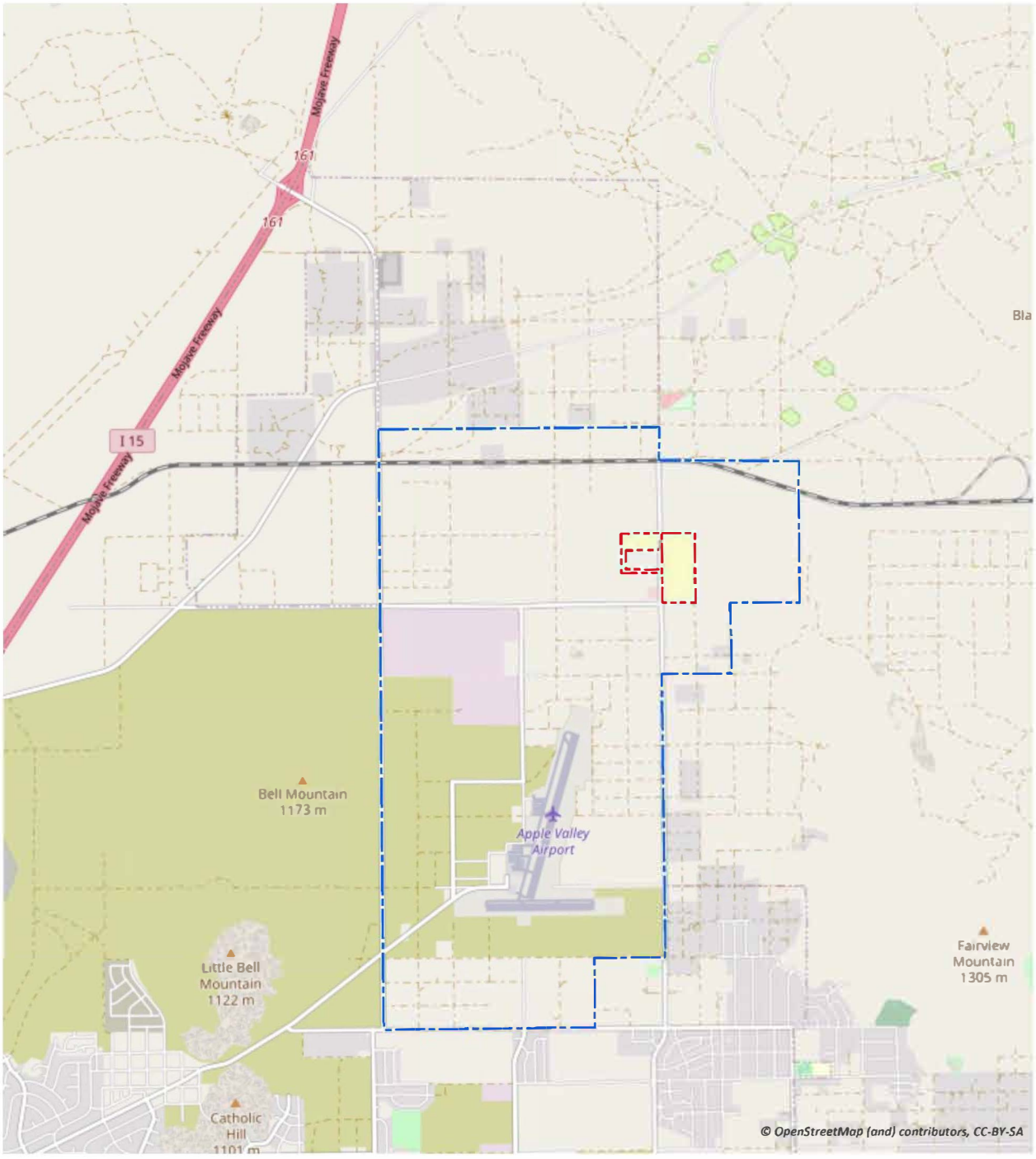
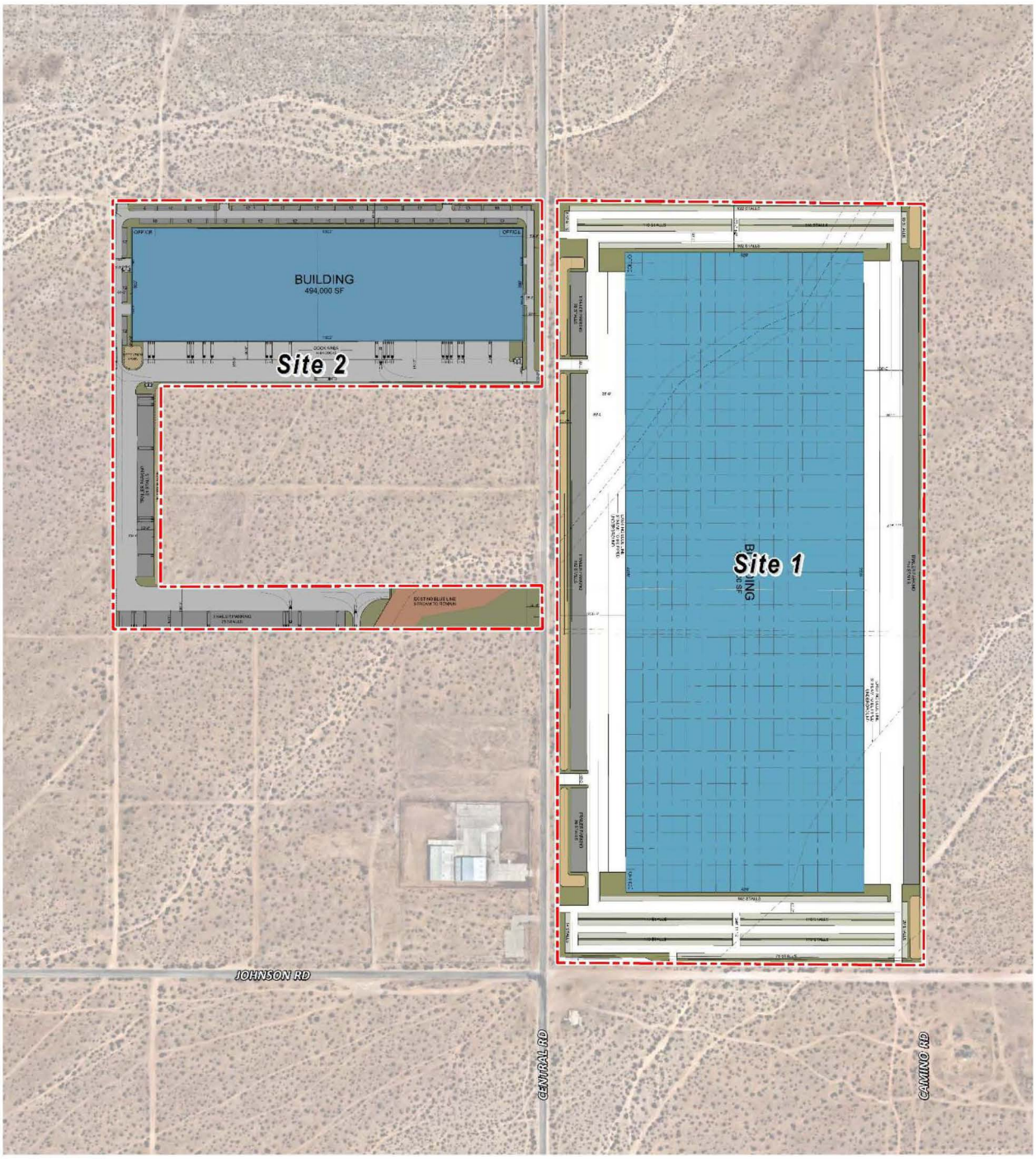


EXHIBIT 1-B: SITE PLAN



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2 FUNDAMENTALS

Noise is simply 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. Noise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). A-weighted decibels (dBA) approximate the subjective response of the human ear to 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. Exhibit 2-A presents a summary of the typical noise levels and their subjective loudness and effects that are described in more detail below.

EXHIBIT 2-A: TYPICAL NOISE LEVELS

COMMON OUTDOOR ACTIVITIES	COMMON INDOOR ACTIVITIES	A - WEIGHTED SOUND LEVEL dBA	SUBJECTIVE LOUDNESS	EFFECTS OF NOISE
THRESHOLD OF PAIN		140	INTOLERABLE OR DEAFENING	HEARING LOSS
NEAR JET ENGINE		130		
		120		
JET FLY-OVER AT 300m (1000 ft)	ROCK BAND	110		
LOUD AUTO HORN		100	VERY NOISY	
GAS LAWN MOWER AT 1m (3 ft)		90		
DIESEL TRUCK AT 15m (50 ft), at 80 km/hr (50 mph)	FOOD BLENDER AT 1m (3 ft)	80		SPEECH INTERFERENCE
NOISY URBAN AREA, DAYTIME	VACUUM CLEANER AT 3m (10 ft)	70	LOUD	
HEAVY TRAFFIC AT 90m (300 ft)	NORMAL SPEECH AT 1m (3 ft)	60		
QUIET URBAN DAYTIME	LARGE BUSINESS OFFICE	50	MODERATE	
QUIET URBAN NIGHTTIME	THEATER, LARGE CONFERENCE ROOM (BACKGROUND)	40		SLEEP DISTURBANCE
QUIET SUBURBAN NIGHTTIME	LIBRARY	30	FAINT	NO EFFECT
QUIET RURAL NIGHTTIME	BEDROOM AT NIGHT, CONCERT HALL (BACKGROUND)	20		
	BROADCAST/RECORDING STUDIO	10	VERY FAINT	
LOWEST THRESHOLD OF HUMAN HEARING	LOWEST THRESHOLD OF HUMAN HEARING	0		

Source: Environmental Protection Agency Office of Noise Abatement and Control, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (EPA/ONAC 550/9-74-004) March 1974.

2.1 RANGE OF NOISE

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. (5) The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is roughly at 60 dBA, while loud jet engine noises equate to 110 dBA

at approximately 1,000 feet, which can cause serious discomfort. (6) Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

2.2 NOISE DESCRIPTORS

Environmental noise descriptors are generally based on averages, rather than instantaneous, noise levels. The most used metric is the equivalent level (L_{eq}). 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 (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period and is **commonly used to describe the "average" noi**se levels within the environment.

Peak hour or average noise levels, while useful, do not completely describe a given noise environment. Noise levels lower than peak hour may be disturbing if they occur during times when quiet is most desirable, namely evening and nighttime (sleeping) hours. To account for this, the Community Noise Equivalent Level (CNEL), representing a composite 24-hour noise level is utilized. The CNEL 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 5 decibels to dBA L_{eq} sound levels in the evening from 7:00 p.m. to 10:00 p.m., and the addition of 10 decibels to dBA L_{eq} sound levels at night between 10:00 p.m. and 7:00 a.m. These additions are made to account for the noise sensitive time periods during the evening and night hours when noise can become more intrusive. CNEL does not represent the actual sound level heard at any time, but rather represents the total sound exposure. The Town of Apple Valley relies on the 24-hour CNEL level to assess land use compatibility with transportation related noise sources.

2.3 SOUND PROPAGATION

When sound propagates over a distance, it changes in level and frequency content. The way noise reduces with distance depends on the following factors.

2.3.1 GEOMETRIC SPREADING

Sound from a localized source (i.e., a stationary point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source. (5)

2.3.2 GROUND ABSORPTION

The propagation path of noise from a highway to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually

sufficiently accurate for distances of less than 200 ft. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance from a line source. (7)

2.3.3 ATMOSPHERIC EFFECTS

Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects. (5)

2.3.4 SHIELDING

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Shielding by trees and other such vegetation typically only has an "out of sight, out of mind" effect. That is, the perception of noise impact tends to decrease when vegetation blocks the line-of-sight to nearby residents. However, for vegetation to provide a substantial, or even noticeable, noise reduction, the vegetation area must be at least 15 feet in height, 100 feet wide and dense enough to completely obstruct the line-of-sight between the source and the receiver. This size of vegetation may provide up to 5 dBA of noise reduction. The Federal Highway Administration (FHWA) does not consider the planting of vegetation to be a noise abatement measure. (8)

2.4 NOISE CONTROL

Noise control is the process of obtaining an acceptable noise environment for an observation point or receiver by controlling the noise source, transmission path, receiver, or all three. This concept is known as the source-path-receiver concept. In general, noise control measures can be applied to these three elements.

2.5 NOISE BARRIER ATTENUATION

Effective noise barriers can reduce noise levels by 10 to 15 dBA, cutting the loudness of traffic noise in half. A noise barrier is most effective when placed close to the noise source or receiver. Noise barriers, however, do have limitations. For a noise barrier to work, it must block the line-of-sight path of sound from the noise source.

2.6 LAND USE COMPATIBILITY WITH NOISE

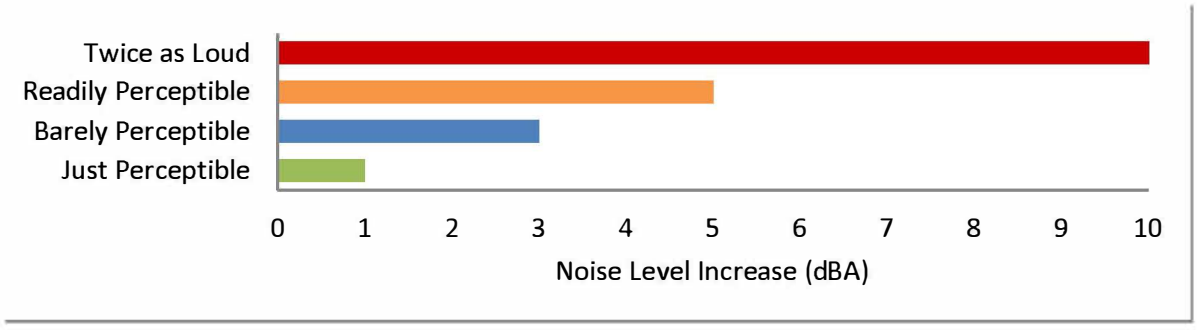
Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are more sensitive to noise intrusion than are commercial or industrial developments and related activities. As ambient noise levels affect the perceived amenity or livability of a development, so too can the mismanagement of noise impacts impair the economic **health and growth potential of a community by reducing the area's desirability as a place to live,** shop and work. For this reason, land use compatibility with the noise environment is an important consideration in the planning and design process. The FHWA encourages State and Local government to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway, or that the developments are planned, designed, and constructed in such a way that noise impacts are minimized. (9)

2.7 COMMUNITY RESPONSE TO NOISE

Approximately sixteen percent of the population has a very low tolerance for noise and will object to any noise not of their making. Consequently, even in the quietest environment, some complaints may occur. Twenty to thirty percent of the population will not complain even in very severe noise environments. (10 pp. 8-6) Thus, a variety of reactions can be expected from people exposed to any given noise environment.

Surveys have shown that community response to noise varies from no reaction to vigorous action for newly introduced noises averaging from 10 dB below existing to 25 dB above existing. (11) According to research originally published in the Noise Effects Handbook (10), the percentage of high annoyance ranges from approximately 0 percent at 45 dB or less, 10 percent are highly annoyed around 60 dB, and increases rapidly to approximately 70 percent being highly annoyed at approximately 85 dB or greater. Despite this variability in behavior on an individual level, the population can be expected to exhibit the following responses to changes in noise levels as shown on Exhibit 2-B. A change of 3 dBA is considered barely perceptible, and changes of 5 dBA are considered readily perceptible. (7)

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



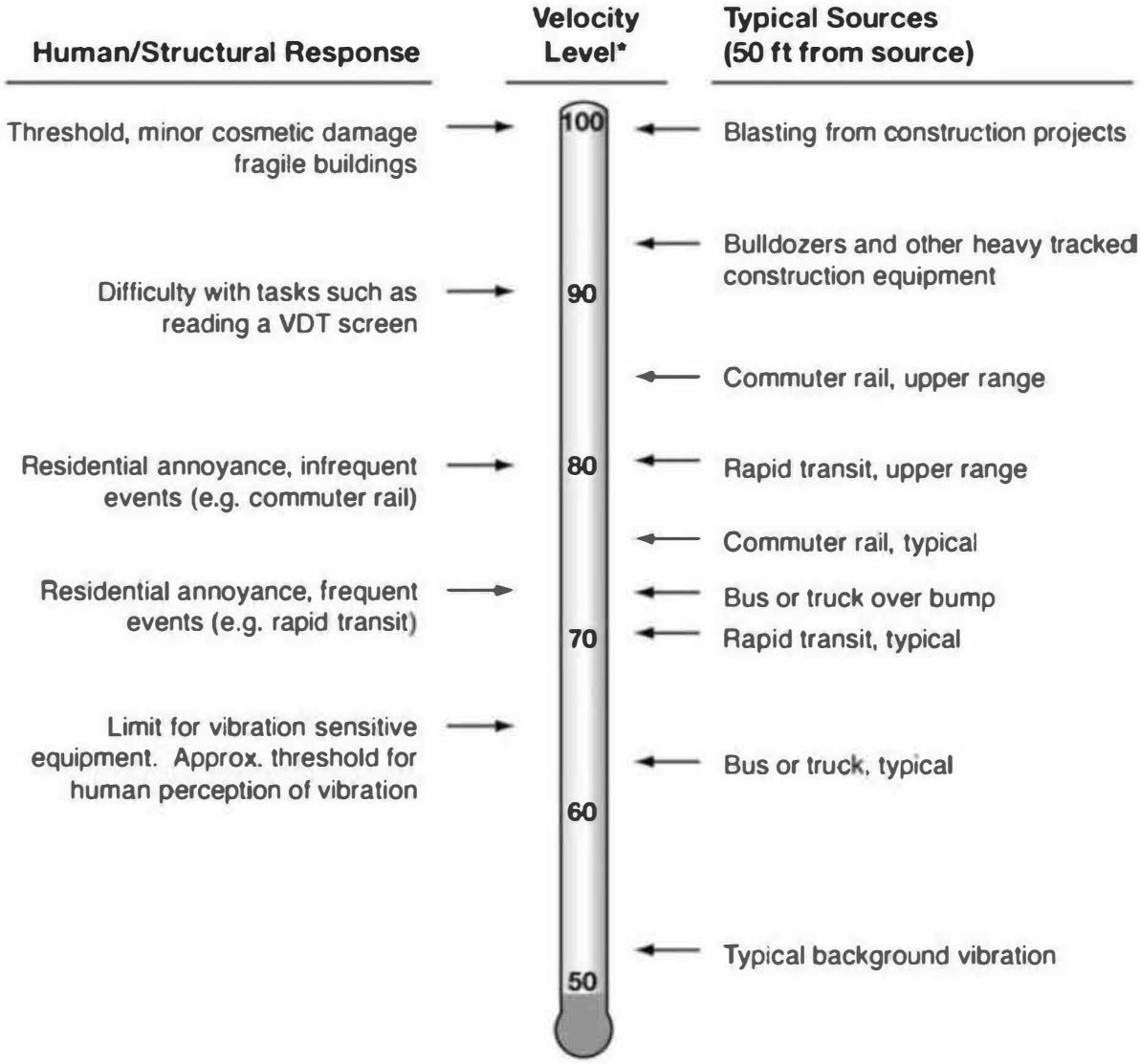
2.8 VIBRATION

Per the Federal Transit Administration (FTA) *Transit Noise Impact and Vibration Impact Assessment Manual* (11) , vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions. As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings but is not always suitable for evaluating human response (annoyance) because it takes some time for the human body to respond to vibration signals. Instead, the human body responds to average vibration amplitude often described as the root mean square (RMS). The RMS amplitude is defined as the average of the squared amplitude of the signal and is most frequently used to describe the effect of vibration on the human body. Decibel notation (VdB) is commonly used to measure RMS. Decibel notation (VdB) serves to reduce the range of numbers used to describe human response to vibration. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receivers for vibration include structures (especially older masonry structures), people (especially residents, the elderly, and sick), and vibration-sensitive equipment and/or activities.

The background vibration-velocity level in residential areas is generally 50 VdB. Ground-borne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground-borne vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Exhibit 2-C illustrates common vibration sources and the human and structural response to ground-borne vibration.

EXHIBIT 2-C: TYPICAL LEVELS OF GROUND-BORNE VIBRATION



** RMS Vibration Velocity Level in VdB relative to 10^{-6} inches/second*

Source: Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual.

3 REGULATORY SETTING

To limit population exposure to physically and/or psychologically damaging as well as intrusive noise levels, the federal government, the State of California, various county governments, and most municipalities in the state have established standards and ordinances to control noise. In most areas, automobile and truck traffic is the major source of environmental noise. Traffic activity generally produces an average sound level that remains constant with time. Air and rail traffic, and commercial and industrial activities are also major sources of noise in some areas. Federal, state, and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, while regulation of stationary sources is left to local agencies.

3.1 STATE OF CALIFORNIA NOISE REQUIREMENTS

The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires that each county and city adopt a General Plan that **includes a Noise Element which is to be prepared per guidelines adopted by the Governor's Office** of Planning and Research (OPR). (12) The purpose of the Noise Element is to *limit the exposure of the community to excessive noise levels*. In addition, the California Environmental Quality Act (CEQA) requires that all known environmental effects of a project be analyzed, including environmental noise impacts.

3.2 TOWN OF APPLE VALLEY GENERAL PLAN NOISE ELEMENT

The Town of Apple Valley has adopted a Noise Element of the General Plan to consider the land use patterns of the Land Use Element in the context of the noise it will generate. (13) The state and federal government regulate sources of noise from transportation sources or the workplace. Therefore, the Town of Apple Valley works to control noise through the following policies:

Policy 1.A ***The Town shall adhere to the standards of "Land Use Compatibility for Community Environments."***

Policy 1.B *New development projects shall assure that exterior noise levels in back yards and/or usable open space do not exceed 65 dBA CNEL, and that interior noise levels are consistent with the requirements of the Building Code.*

Policy 1.C *The Town shall assure low levels of traffic within neighborhoods by assigning truck routes to major roadways only.*

Policy 1.D *The development review and environmental review process shall require all development proposals within the noise impact area of U.S. I-15, State Route 18, the High Desert Corridor or the railroads to mitigate both noise and vibration to acceptable levels through the preparation of focused studies.*

Policy 1.E *The Town shall coordinate with adjoining jurisdictions to ensure noise-compatible land uses across jurisdictional boundaries.*

Policy 1.F *The Town shall ensure that flight paths and airport improvements adhere to all local, state and federal noise regulations.*

Policy 1.G *The Town shall monitor bus route expansions to assure that any expansion on a collector or local street does not significantly impact the noise levels of adjacent sensitive receptors.*

Policy 1.H *The Town shall coordinate, to the greatest extent possible, with the owners of the two rail lines to assure that significant increases in train activity do not occur.*

3.2.1 LAND USE COMPATIBILITY

The *Land Use Compatibility for Community Noise Environments* identified in the Town of Apple Valley Noise Element (Table IV-4) are guidelines to evaluate the land use compatibility of transportation related noise. The compatibility criteria, shown on Exhibit 3-A, provides the Town with a planning tool to gauge the compatibility of land uses relative to existing and future exterior noise levels.

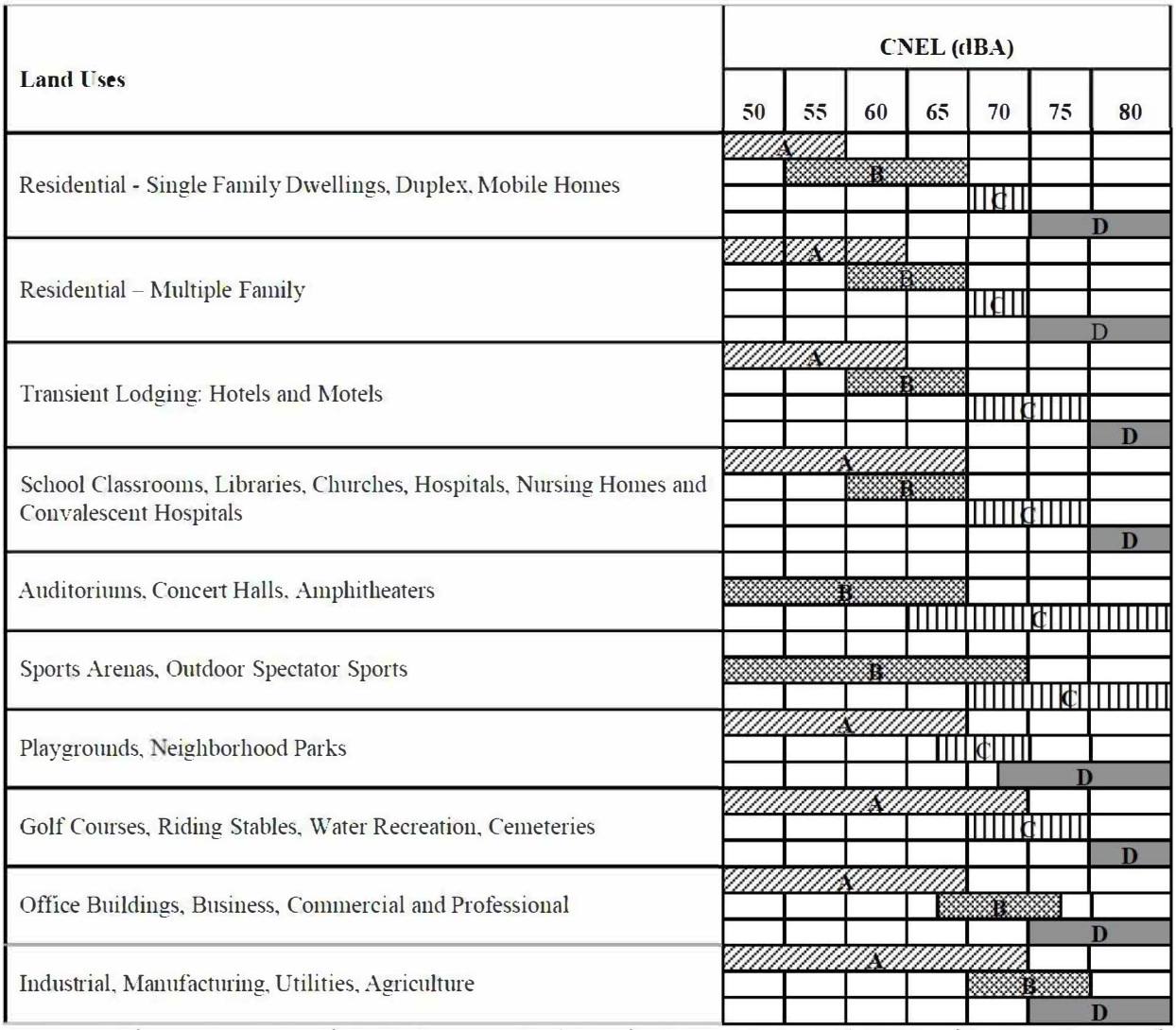
The *Land Use Compatibility for Community Noise Environments* matrix describes categories of compatibility and not specific noise standards. Noise sensitive residential designated land uses in the Project study area are considered *normally acceptable* with exterior noise levels below 60 dBA CNEL, and *conditionally acceptable* with exterior noise levels of up to 70 dBA CNEL. The non-noise sensitive Project warehouse/industrial land use is considered *normally acceptable* with unmitigated exterior noise levels of less than 75 dBA CNEL and *conditionally acceptable* with exterior noise levels ranging from 70 to 80 dBA CNEL based on the *Industrial, Manufacturing, Utilities, Agriculture* land use as shown on Exhibit 3-A. (13)

3.3 OPERATIONAL NOISE STANDARDS

To analyze noise impacts originating from a designated fixed location or private property such as the Apple Valley 3PL Center Project, stationary-source (operational) noise such as the expected loading dock activity, parking lot vehicle activities, roof-top air conditioning units, trash enclosure activity, and truck movements are typically evaluated against standards established under a **jurisdiction's Municipal Code or General Plan**. The Town of Apple Valley Municipal Code, Table 9.73.050-A, establishes the exterior noise level limits by the receiving land use. To present a conservative approach, potential Project operational noise impacts are evaluated based on the lowest, most conservative standards for single-family residential homes, shown on Table 3-1. (15)

For noise-sensitive residential properties, the Town of Apple Valley Municipal Code, Table 9.73.050-A, identifies a base daytime (7:00 a.m. to 10:00 p.m.) exterior noise level limit of 50 dBA L_{eq} and 40 dBA L_{eq} during the nighttime (10:00 p.m. to 7:00 a.m.) hours. In addition, Section 9.73.050 [A][1][c], states that in the event the measured ambient noise level exceeds the base exterior noise level limit, the allowable noise exposure standard shall be adjusted in five dBA increments in each category as appropriate to encompass or reflect said ambient noise level. In effect, when the ambient noise levels exceed the base exterior noise level limits, the noise level standard shall be adjusted as appropriate to encompass or reflect the ambient noise level.

EXHIBIT 3-A: LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS



Source: *California Department of Health Services, "Guidelines for the Preparation and Content of the Noise Element of the General Plan," 1990*

A Normally Acceptable: With no special noise reduction requirements assuming standard construction.

B Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirement is made and needed noise insulation features included in the design

C **Normally Unacceptable**: New construction is discouraged. If new construction does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

D **Clearly Unacceptable**: New construction or development should generally not be undertaken.

Source: Town of Apple Valley General Plan Noise Element, Table IV-4.

TABLE 3-1: TOWN OF APPLE VALLEY OPERATIONAL NOISE STANDARDS

Receiving Land Use	Time Period	Base Noise Level Limit (dBA L_{eq})[1]	Exterior Noise Standards (dBA)[2]				
			L_{50} (30 mins)	L_{25} (15 mins)	L_8 (5 mins)	L_2 (1 min)	L_{max} (0 min)
Single-Family Residential	Daytime	50	50	55	60	65	70
	Nighttime	40	40	45	50	55	60
Multi-Family Residential	Daytime	50	50	55	60	65	70
	Nighttime	45	45	50	55	60	65
Commercial & Office	Daytime	60	60	65	70	75	80
	Nighttime	55	55	60	65	70	75
General Commercial	Daytime	65	65	70	75	80	85
	Nighttime	60	60	65	70	75	80
Light Industrial	Anytime	70	70	75	80	85	90
Heavy Industrial	Anytime	75	75	80	85	90	95

[1] Section 9.73.050 base exterior noise level limits of the Town of Apple Valley Municipal Code.
[2] Noise levels shall not exceed for the duration periods specified in Town of Apple Valley Municipal Code Section 9.73.050[A][1][b]. The percent noise level is the level exceeded "n" percent of the time during the measurement period. L_{50} is the noise level exceeded 50% of the time. "Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

The Town of Apple Valley percentile noise descriptors are provided to ensure that the duration of the noise source is fully considered. However, due to the relatively constant intensity of the Project stationary operational activities, the (base exterior noise level limit) or the average L_{eq} noise level metric best describes the loading dock activity, parking lot vehicle activities, roof-top air conditioning units, trash enclosure activity, and truck movements. The equivalent L_{eq} noise level metric accounts for noise fluctuations over time by averaging the louder and quieter events and giving more weight to the louder events. In addition, a review of the existing ambient noise level measurements shows that the L_{eq} is generally greater than the L_{25}. Therefore, this noise study conservatively relies on the average L_{eq} sound level limits to describe the Project stationary operational noise levels.

3.4 CONSTRUCTION NOISE STANDARDS

The Town of Apple Valley has set restrictions to control noise impacts associated with the construction of the proposed Project. Section 9.73.060[F][1], Construction/Demolition indicates that *operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work between weekday hours of 7 p.m. and 7 a.m., or at any time on weekends or holidays, such that the sound therefrom creates a noise disturbance across a residential or commercial real property line, except for emergency work of public service utilities or by variance issued by the Town.*

In addition, Municipal Code Section 9.73.060[F][2] requires construction activities to be conducted in such a manner that the noise levels at affected residential properties will not exceed the daytime (7:00 a.m. to 7:00 p.m.) mobile exterior noise level limit of 75 dBA L_{eq} and 60 dBA L_{eq} during the nighttime hours of 7:00 p.m. to 7:00 a.m. Construction projects involve various stages, and activities frequently shift from one location to another. For example, during the initial stages,

noise-generating activities might concentrate in one area, and then move to another section as construction progresses. The mobile construction noise level threshold captures these changes and ensures that noise impacts are assessed accurately throughout the entire Project site.

3.5 CONSTRUCTION VIBRATION STANDARDS

Construction activity can result in varying degrees of ground-borne vibration, depending on the equipment and methods used, distance to the affected structures and soil type. Construction vibration is generally associated with pile driving and rock blasting. Other construction equipment such as air compressors, light trucks, hydraulic loaders, etc., generates little or no ground vibration (11). To analyze vibration impacts originating from the operation and construction of the Apple Valley 3PL Center, vibration-generating activities are appropriately evaluated against standards established under the Municipal Code.

The Town of Apple Valley Municipal Code, Section 9.73.060[G], states that *operating or permitting the operation of any device that creates a vibration which is above the vibration perception threshold of an individual at or beyond the property boundary of the source if on private property or at one hundred fifty (150) feet (46 meters) from the source if on a public space or public right-of-way.* The Town of Apple Valley Municipal Code Section 9.73.020[34] defines the vibration perception threshold to be a motion velocity of 0.01 RMS inches per second (in/sec) over the range of one to 100 Hz. An RMS of 0.01 in/sec is equivalent to a peak particle velocity (PPV) level of 0.04 in/sec.

3.6 APPLE VALLEY AIRPORT (APV)

The Apple Valley Airport (APV) is located approximately one mile south of the Project Site. According to the Town of Apple Valley General Plan Noise Element, aircraft noise associated with the operation of the Apple Valley Airport, which is owned and operated by the County of San Bernardino, is limited to general aviation aircraft. The 60 dBA noise contour boundary for the **airport has been identified as occurring within the Airport's property, and noise levels on** surrounding lands are not significantly affected. While aircraft overflights may be heard within the Town, aircraft noise does not create significant noise impacts outside the immediate area.

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4 SIGNIFICANCE CRITERIA

The following significance criteria are based on currently adopted guidance provided by Appendix G of the Guidelines for Implementation of the California Environmental Quality Act (CEQA) Guidelines. (1) For the purposes of this report, impacts would be potentially significant if the Project results in or causes:

A. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

B. Generation of excessive ground-borne vibration or ground-borne noise levels?

C. 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?

4.1 NOISE LEVEL INCREASES (THRESHOLD A)

Noise level increases resulting from the Project are evaluated based on the Appendix G CEQA Guidelines described above at the closest sensitive receiver locations. Under CEQA, consideration must be given to the magnitude of the increase, the existing baseline ambient noise levels, and the location of noise-sensitive receivers to determine if a noise increase represents a significant adverse environmental impact. This approach recognizes *that there is no single noise increase that renders a noise impact significant.* (16) This is primarily because of the wide variation in individual thresholds of annoyance and differing individual experiences with noise. **Thus, an important way of determining a person's subjective reaction to a new noise is** the comparison of it to the existing environment to which one has adapted—the so-called *ambient* environment. In general, the more a new noise level exceeds the previously existing ambient noise level, the less acceptable the new noise level will typically be judged.

Sensitive receivers are areas where humans are participating in activities that may be subject to the stress of significant interference from noise and often include residential dwellings, mobile homes, hotels, motels, hospitals, nursing homes, educational facilities, and libraries. Other receivers include office and industrial buildings, which are not considered as sensitive as single-family homes, but are still protected by the Town of Apple Valley land use compatibility standards, as discussed below.

4.1.1 NOISE-SENSITIVE RECEIVERS

The Federal Interagency Committee on Noise (FICON) (17) developed guidance to be used for the assessment of project-generated increases in noise levels that consider the ambient noise level. The FICON recommendations are based on studies that relate aircraft noise levels to the percentage of persons highly annoyed by aircraft noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these recommendations are often used in environmental noise impact assessments involving the use of cumulative noise exposure metrics, such as the average-daily noise level (CNEL) and equivalent continuous noise level (L_{eq}).

As previously stated, the approach used in this noise study recognizes *that there is no single noise increase that renders a noise impact significant*, based on a 2008 California Court of Appeal ruling on Gray v. County of Madera. (16) For example, if the ambient noise environment is quiet (<60 dBA) and the new noise source greatly increases the noise levels, an impact may occur if the noise criteria may be exceeded. Therefore, for this analysis, a *readily perceptible* 5 dBA or greater project-related noise level increase is considered a significant impact when the without project noise levels are below 60 dBA. Per the FICON, in areas where the without project noise levels range from 60 to 65 dBA, a 3 dBA *barely perceptible* noise level increase appears to be appropriate for most people. When the without project noise levels already exceed 65 dBA, any increase in community noise louder than 1.5 dBA or greater is considered a significant impact if the noise criteria for a given land use is exceeded, since it likely contributes to an existing noise exposure exceedance. The FICON guidance provides an established source of criteria to assess the impacts of substantial temporary or permanent increase in baseline ambient noise levels. Based on the FICON criteria, the amount to which a given noise level increase is considered acceptable is reduced when the without Project (baseline) noise levels are already shown to exceed certain land-use specific exterior noise level criteria. The specific levels are based on typical responses to noise level increases of 5 dBA or *readily perceptible*, 3 dBA or *barely perceptible*, and 1.5 dBA depending on the underlying without Project noise levels for noise-sensitive uses. These levels of increases and their perceived acceptance are consistent with guidance provided by both the Federal Highway Administration (7 p. 9) and Caltrans (18 p. 2_48).

4.1.2 NON-NOISE-SENSITIVE RECEIVERS

The Town of Apple Valley General Plan Noise Element, Table IV-4, *Land Use Compatibility for Community Noise Environments* was used to establish the satisfactory noise levels of significance for non-noise-sensitive land uses in the Project study area. As previously shown on Exhibit 3-A, the *normally acceptable* exterior noise level for non-noise-sensitive land use is 75 dBA CNEL. Non-noise sensitive noise levels greater than 75 dBA CNEL are considered *conditionally acceptable* per the *Land Use Compatibility for Community Noise Environments*. (13)

To determine if Project-related traffic noise level increases are significant at off-site non-noise-sensitive warehouse/industrial land uses, a *barely perceptible* 3 dBA criteria is used. When the without Project noise levels are greater than the *normally acceptable* 75 dBA CNEL land use compatibility criteria, a *barely perceptible* 3 dBA or greater noise level increase is considered a significant impact since the noise level criteria is already exceeded. The noise level increases used to determine significant impacts for non-noise-sensitive land uses is generally consistent with the FICON noise level increase thresholds for noise-sensitive land uses but instead rely on the Town of Apple Valley General Plan Noise Element, Table IV-4, *Land Use Compatibility for Community Noise Environments* 75 dBA CNEL *normally acceptable* exterior noise level criteria for warehouse/industrial land uses.

4.2 VIBRATION (THRESHOLD B)

As described in Section 3.5, the vibration generating activities originating from the construction of Apple Valley 3PL Center, vibration-generating activities are appropriately evaluated using a peak particle velocity (PPV) level of 0.04 in/sec.

4.3 CEQA GUIDELINES NOT FURTHER ANALYZED (THRESHOLD C)

The closest airport which would require additional noise analysis under CEQA guideline C is the Apple Valley Airport (APV) which is located approximately one mile south of the Project Site. As previously indicated in Section 3.6, the 60 dBA noise contour boundary for the airport has been **identified as occurring within the Airport's property, and noise levels on surrounding lands are** not significantly affected. While aircraft overflights may be heard within the Town, aircraft noise does not create significant noise impacts outside the immediate area. Therefore, airport noise impacts are considered *less than significant,* and no further noise analysis is provided under Guideline C.

4.4 SIGNIFICANCE CRITERIA SUMMARY

Noise impacts shall be considered significant if any of the following occur as a direct result of the proposed development. Table 4-1 shows the significance criteria summary matrix that includes the allowable criteria used to identify potentially significant incremental noise level increases.

TABLE 4-1: SIGNIFICANCE CRITERIA SUMMARY

Analysis	Receiving Land Use	Condition(s)	Significance Criteria	
			Daytime	Nighttime
Off-Site Traffic	Noise-Sensitive[1]	If ambient is < 60 dBA CNEL	≥ 5 dBA CNEL Project increase	
		If ambient is 60 - 65 dBA CNEL	≥ 3 dBA CNEL Project increase	
		If ambient is > 65 dBA CNEL	≥ 1.5 dBA CNEL Project increase	
	Non-Noise-Sensitive[2]	If ambient is > 75 dBA CNEL	≥ 3 dBA CNEL Project increase	
Operational	Noise-Sensitive	Exterior Noise Level Standards[3]	50 dBA L_{eq}	40 dBA L_{eq}
		If ambient is < 60 dBA L_{eq}[1]	≥ 5 dBA L_{eq} Project increase	
		If ambient is 60 - 65 dBA L_{eq}[1]	≥ 3 dBA L_{eq} Project increase	
		If ambient is > 65 dBA L_{eq}[1]	≥ 1.5 dBA L_{eq} Project increase	
Construction	Noise-Sensitive	Noise Level Threshold[4]	75 dBA L_{eq}	60 dBA L_{eq}
		Vibration Level Threshold[5]	0.04 PPV (in/sec)	

[1] FICON, 1992.
[2] Town of Apple Valley General Plan Noise Element Table IV-4 (See Exhibit 3-A)
[3] Town of Apple Valley Municipal Code, Table 9.73.050-A, Single-Family Residential (Table 3-1, Appendix 3.1)
[4] Town of Apple Valley Municipal Code Section 9.73.060[F][2], (Appendix 3.1)
[5] Town of Apple Valley Municipal Code 9.73.020[34], (Appendix 3.1)
Operational: "Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m. (Table 9.73.050-A)
Construction: "Daytime" = 7:00 a.m. to 7:00 p.m.; "Nighttime" = 7:00 p.m. to 7:00 a.m. (Section 9.73.060[F][2])

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5 NOISE LEVEL MEASUREMENTS

The GPEIR included 30 (thirty) short-term and 4 (four) 24-hour noise level measurements to describe the baseline conditions. Three of these baseline noise level measurements (L6, L7 and L8) presented on Table III-41 of the GPEIR are located near the Project site. Exhibit 5-A provides the boundaries of the Project study area, and the nearby GPEIR noise level measurement locations.

5.1 MEASUREMENT PROCEDURE AND CRITERIA

Noise measurements were taken using a Larson-Davis Model 824 Type 1 precision sound level meter, programmed in "fast" mode to record noise levels in "A" weighted form. The sound level meter and microphone were mounted on a tripod, five feet above the ground and equipped with a windscreen during all measurements. The sound level meter was calibrated before and after the monitoring using a Larson-Davis calibrator, Model CAL 150. All noise level measurement equipment meets American National Standards Institute (ANSI) specifications for sound level meters (S1.4-1983 identified in Chapter 19.68.020.AA).

5.2 NOISE MEASUREMENT LOCATIONS

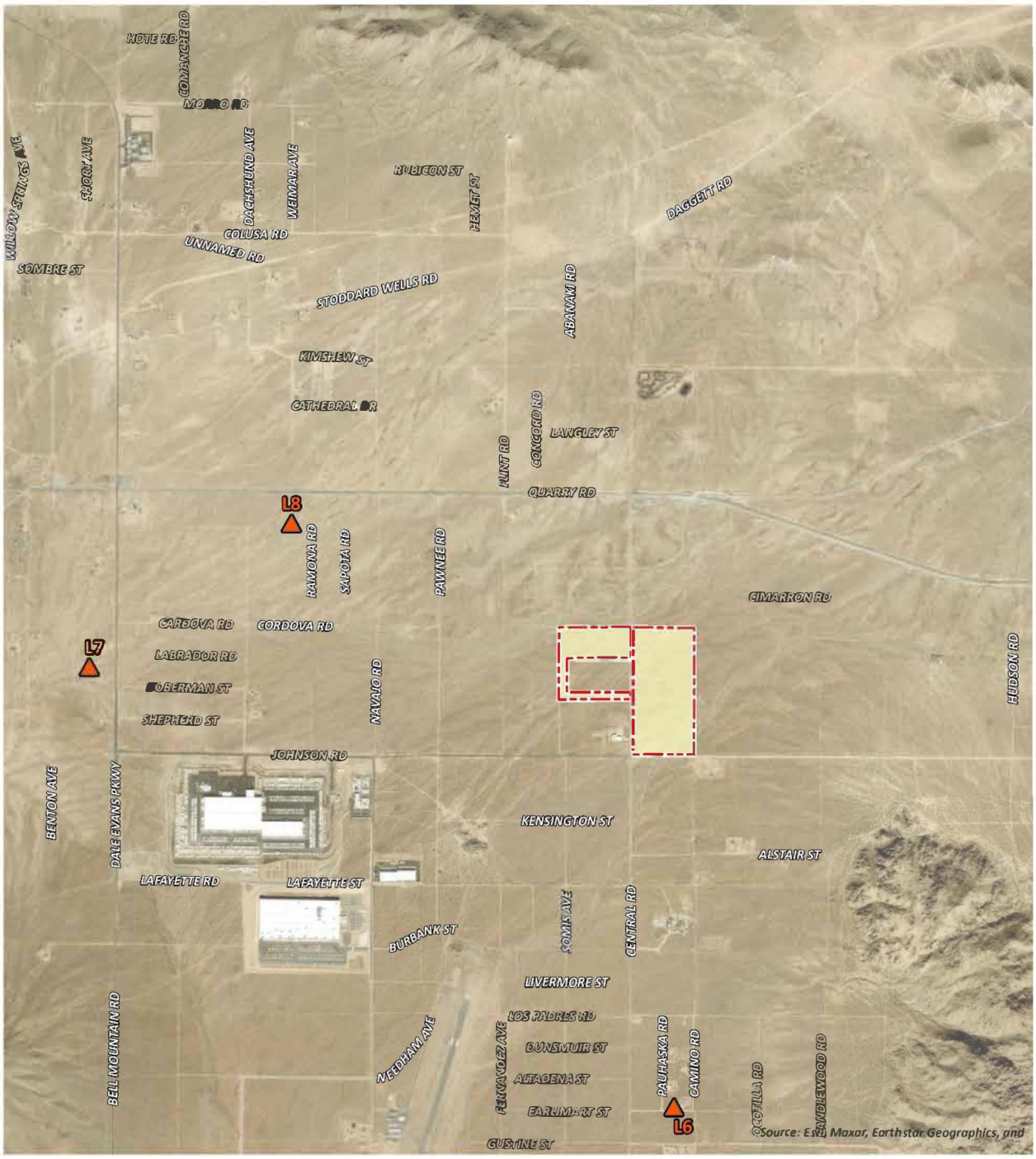
Site 6 is located 50 feet from Central Road near residential developments. Site 7 is located approximately 100 feet from Dale Evans Parkway south of Johnson. Site 8 is located 50 feet from Quarry Road centerline east of Dale Evans Pkwy. The GPEIR noise level measurements indicate that the primary source of noise in the study area is associated with vehicle traffic. Existing traffic volumes are generally low and traffic speed in the study area roads typically range usually between 45 and 55 miles per hour with a higher-than-average percentage of heavy truck traffic. The existing noise environment is somewhat different than the typical freeway and arterial roadway noise. The noise levels identified within the project study area can be characterized by both high and low traffic noise levels that depend on the number and type of vehicle passing by in each period.

5.3 NOISE MEASUREMENT RESULTS

The results of the noise level measurements are presented in Table 5-1. The short-term noise level measurements were monitored for a minimum period of 10 minutes and ranged from 59.4 to 62.5 dBA L_{eq}. To estimate the long-term 24-hour Community Equivalent Noise Levels (CNEL), each of the short-term noise level measurements were converted to CNEL. The CNEL calculations are based on a typical traffic vehicle distribution. When converted to CNEL, the existing noise levels range from 60.0 to 63.1 dBA CNEL.

The existing noise level measurements show that the primary source of noise in the study area is associated with vehicle traffic. Existing traffic volumes are generally low and traffic speed in the study area roads typically range usually between 45 and 55 miles per hour with a higher-than-average percentage of heavy truck traffic. The existing noise environment is somewhat different than the typical freeway and arterial roadway noise.

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS



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Site Boundary

EIR Measurement Locations

The noise levels identified within the project study area can be characterized by both high and low traffic noise levels that depend on the number and type of vehicle passing by in a given period. Aircraft noise from the Apple Valley Airport is limited to general aviation aircraft and was perceived as barely perceptible throughout most of the study area.

TABLE 5-1: NOISE LEVEL MEASUREMENTS

Location[1]	Description	Measured Noise Level (dBA L_{eq})[2]	Calculated CNEL[2]
L6	Located 50 feet from Central Road near residential developments.	62.5	63.1
L7	Located approximately 100 feet from Dale Evans Parkway south of Johnson.	59.4	60.0
L8	Located 50 feet from Quarry Road centerline east of Dale Evans Pkwy.	62.1	62.6

[1] See Exhibit 5-A for the noise level measurement locations.
[2] General Plan Update and Annexation Areas 2008-001 & 2008-002 Annexation Areas EIR Table III-41
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

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6 OFF-SITE TRAFFIC NOISE ANALYSIS

Traffic generated by the operation of the proposed Project will influence the traffic noise levels in surrounding off-site areas and at the Project site. According to the March 2024 *Apple Valley 3PL Center Traffic Generation Assessment prepared by Urban Crossroads, Inc.*, (18) the Project is anticipated to generate 1,378 fewer two-way trip ends per day as compared to the currently adopted General Plan land use.

Therefore, since the Project represents a net reduction in trips from the approved General Plan the off-site traffic noise levels generated by the Project are considered less than significant and no further analysis is required.

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7 SENSITIVE RECEIVER LOCATIONS

To assess the potential for long-term stationary operational and short-term construction noise impacts, the following sensitive receiver locations, as shown on Exhibit 7-A, were identified as representative locations for analysis. Sensitive receivers are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Noise-sensitive land uses are generally considered to include schools, hospitals, single-family dwellings, mobile home parks, churches, libraries, and recreation areas. Moderately noise-sensitive land uses typically include multi-family dwellings, hotels, motels, dormitories, out-patient clinics, cemeteries, golf courses, country clubs, athletic/tennis clubs, and equestrian clubs. Land uses that are considered relatively insensitive to noise include business, commercial, and professional developments. Land uses that are typically not affected by noise include: industrial, manufacturing, utilities, agriculture, undeveloped land, parking lots, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals.

To describe the potential off-site Project noise levels, six receiver locations in the vicinity of the Project site were identified. The selection of receiver locations is based on FHWA guidelines and is consistent with additional guidance provided by Caltrans and the FTA. Other sensitive land uses in the Project study area that are located at greater distances than those identified in this noise study will experience lower noise levels than those presented in this report due to the additional attenuation from distance and the shielding of intervening structures. Distance is measured in a straight line from the project boundary to each receiver location.

R1: Location R1 represents the existing noise sensitive residence at 22673 Stoddard Wells Road, approximately 7,881 feet north of the Project site.

R2: Location R2 represents the existing noise sensitive residence at 22952 Leaping Lizard Lane, approximately 7,798 feet north of the Project site.

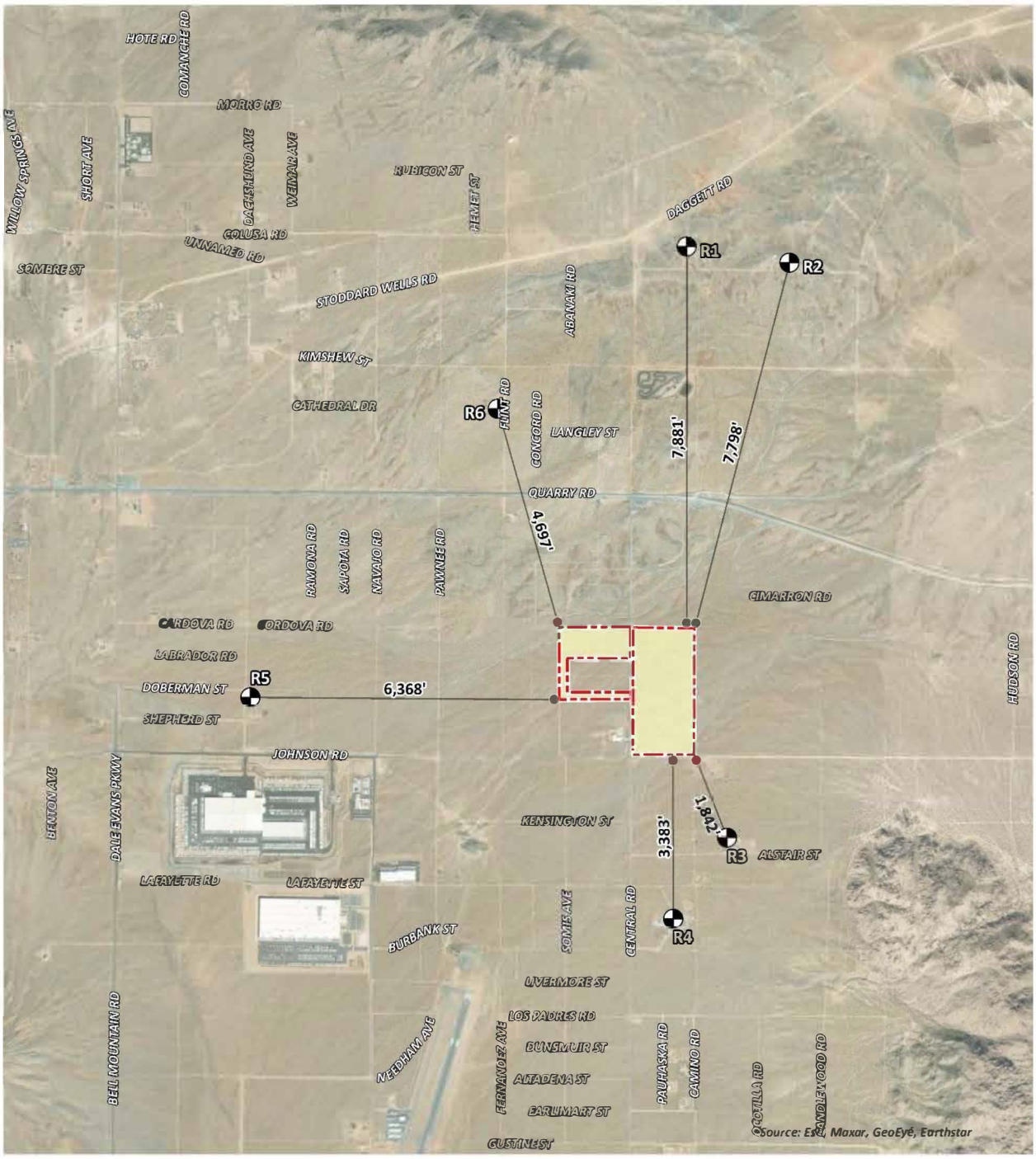
R3: Location R3 represents the existing noise sensitive residence at 19019 Llanto Road approximately 1,842 feet southeast of the Project site.

R4: Location R4 represents the Apple Valley Fire Center at 18809 Central Road, approximately 3,383 feet south of the Project site.

R5: Location R5 represents the existing noise sensitive residence at 19493 Dachshund Avenue approximately 6,368 feet west of the Project site.

R6: Location R6 represents the existing noise sensitive residence at 20374 Flint Road, approximately 4,697 feet north of the Project site.

EXHIBIT 7-A: RECEIVER LOCATIONS



8 OPERATIONAL NOISE IMPACTS

This section analyzes the potential stationary-source operational noise impacts at the nearest receiver locations, identified in Section 7, resulting from the operation of the proposed Apple Valley 3PL Center Project. Exhibit 8-A of the Noise Study includes over 184 individual noise sources to conservatively describe the potential worst-case noise environment. This includes a combination of noise sources such as loading dock activity, parking lot vehicle activities, roof-top air conditioning units, trash enclosure activity, and truck movements.

8.1 OPERATIONAL NOISE SOURCES

This operational noise analysis is intended to describe noise level impacts associated with the expected typical of daytime and nighttime activities at the Project site. Consistent with similar warehouse uses, the Project business operations would primarily be conducted within the enclosed building, except for traffic movement, parking, as well as loading and unloading of trucks at designated loading bays. The on-site Project-related noise sources are expected to include: loading dock activity, parking lot vehicle activities, roof-top air conditioning units, trash enclosure activity, and truck movements.

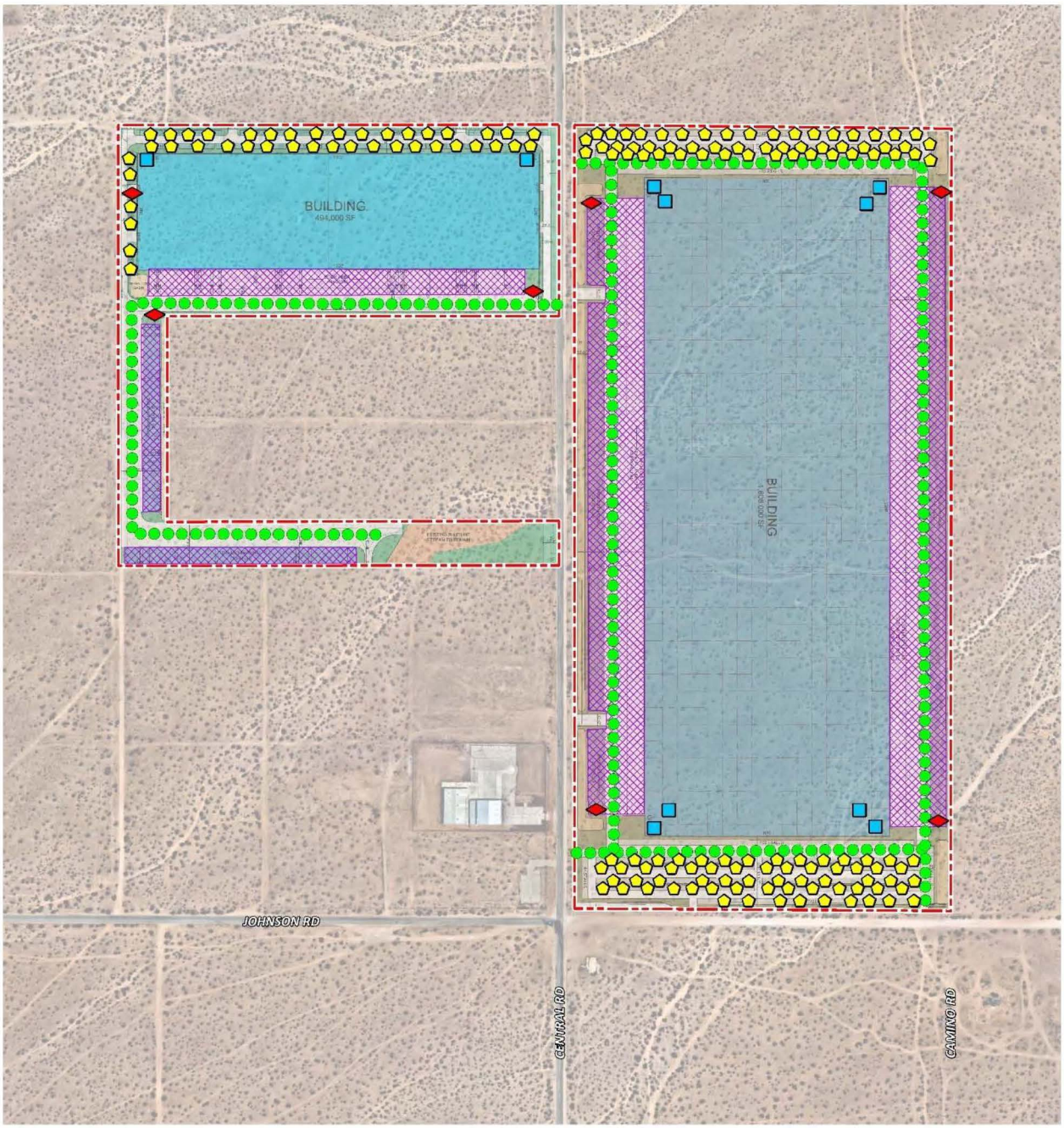
8.2 REFERENCE NOISE LEVELS

To estimate the Project operational noise impacts, reference noise level measurements were collected from similar types of activities to represent the noise levels expected with the development of the proposed Project. This section provides a detailed description of the reference noise level measurements shown on Table 8-1 used to estimate the Project operational noise impacts. It is important to note that the following projected noise levels assume the worst-case noise environment with the loading dock activity, parking lot vehicle activities, roof-top air conditioning units, trash enclosure activity, and truck movements all operating at the same time. These sources of noise activity will likely vary throughout the day.

8.2.1 MEASUREMENT PROCEDURES

The reference noise level measurements presented in this section were collected using a Larson Davis LxT Type 1 precision sound level meter (serial number 01146). The LxT sound level meter was calibrated using a Larson-Davis calibrator, Model CAL 200, was programmed in "slow" mode to record noise levels in "A" weighted form and was located at approximately five feet above the ground elevation for each measurement. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (20)

EXHIBIT 8-A: OPERATIONAL NOISE SOURCE LOCATIONS



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Site Boundary
Loading Dock Activity
Roof-Top Air Conditioning Unit
Parking Lot Vehicle Movements
Trash Enclosure Activity
Truck Movements

TABLE 8-1: REFERENCE NOISE LEVEL MEASUREMENTS

Reference Noise Source	Noise Source Height (Feet)	Min./ Hour[1]		Reference Noise Level (dBA L_{eq}) @ 50 Feet	Sound Power Level (dBA)[2]
		Day	Night		
Loading Dock Activity	8'	60	60	62.8	103.4
Parking Lot Vehicle Movements	5'	60	60	52.6	81.1
Roof-Top Air Conditioning Units	5'	39	28	57.2	88.9
Trash Enclosure Activity	5'	60	30	57.3	89.0
Truck Movements	8'	60	60	59.8	93.2

[1] Anticipated duration (minutes within the hour) of noise activity during typical hourly conditions expected at the Project site. "Daytime" = 7:00 a.m. - 10:00 p.m.; "Nighttime" = 10:00 p.m. - 7:00 a.m.

[2] Sound power level represents the total amount of acoustical energy (noise level) produced by a sound source independent of distance or surroundings. Sound power levels calculated using the CadnaA noise model at the reference distance to the noise source. Numbers may vary due to size differences between point and area noise sources.

8.2.2 LOADING DOCK ACTIVITY

The reference loading dock activities are intended to describe the typical operational noise source levels associated with the Project. This includes truck idling, deliveries, backup alarms, unloading/loading, docking including a combination of tractor trailer semi-trucks, two-axle delivery trucks, and background forklift operations. At a uniform reference distance of 50 feet, Urban Crossroads collected a reference noise level of 62.8 dBA L_{eq}. The loading dock activity noise level measurement was taken over a fifteen-minute period and represents multiple noise sources taken from the center of activity. The reference noise level measurement includes **employees unloading a docked truck container included the squeaking of the truck's shocks when** weight was removed from the truck, employees playing music over a radio, as well as a forklift horn and backup alarm. In addition, during the noise level measurement a truck entered the loading dock area and proceeded to reverse and dock in a nearby loading bay, adding truck engine, idling, air brakes noise, in addition to on-going idling of an already docked truck. Loading dock activity is estimated during all the daytime, evening, and nighttime hours.

8.2.3 PARKING LOT VEHICLE MOVEMENTS

To describe the on-site parking lot activity, a long-term 29-hour reference noise level measurement was collected in the center of activity within the staff parking lot of an Amazon warehouse distribution center. At 50 feet from the center of activity, the parking lot produced a reference noise level of 52.6 dBA L_{eq}. Parking activities are expected to take place during the full hour (60 minutes) throughout the daytime and evening hours. The parking lot noise levels are mainly due to cars pulling in and out of parking spaces in combination with car doors opening and closing.

8.2.4 ROOF-TOP AIR CONDITIONING UNITS

The noise level measurements describe a single mechanical roof-top air conditioning unit. The reference noise level represents a Lennox SCA120 series 10-ton model packaged air conditioning unit. At the uniform reference distance of 50 feet, the reference noise level is 57.2 dBA L_{eq}. Based on the typical operating conditions observed over a four-day measurement period, the roof-top air conditioning units are estimated to operate for and average 39 minutes per hour during the daytime hours, and 28 minutes per hour during the nighttime hours. These operating conditions reflect peak summer cooling requirements with measured temperatures approaching 96 degrees Fahrenheit (°F) with average daytime temperatures of 82°F. For this noise analysis, the air conditioning units are expected to be located on the roof of the Project buildings.

8.2.5 TRASH ENCLOSURE ACTIVITY

To describe the noise levels associated with a trash enclosure activity, Urban Crossroads collected a reference noise level measurement at an existing trash enclosure containing two dumpster bins. The trash enclosure noise levels describe metal gates opening and closing, metal scraping against concrete floor sounds, dumpster movement on metal wheels, and trash dropping into the metal dumpster. The reference noise levels describe trash enclosure noise activities when trash is dropped into an empty metal dumpster, as would occur at the Project Site. The measured reference noise level at the uniform 50-foot reference distance is 57.3 dBA L_{eq} for the trash enclosure activity. The reference noise level describes the expected noise source activities **associated with the trash enclosures for the Project's proposed building.**

8.2.6 TRUCK MOVEMENTS

The truck movements reference noise level measurement was collected over a period of 1 hour and 28 minutes and represent multiple heavy trucks entering and exiting the outdoor loading dock area producing a reference noise level of 59.8 dBA L_{eq} at 50 feet. The noise sources included at this measurement location account for trucks entering and existing the Project driveways and maneuvering in and out of the outdoor loading dock activity area.

8.3 CADNAA NOISE PREDICTION MODEL

To fully describe the exterior operational noise levels from the Project, Urban Crossroads, Inc. developed a noise prediction model using the CadnaA (Computer Aided Noise Abatement) computer program. CadnaA can analyze multiple types of noise sources using the spatially accurate Project site plan, georeferenced Nearmap aerial imagery, topography, buildings, and barriers in its calculations to predict outdoor noise levels. Using the ISO 9613-2 protocol, CadnaA will calculate the distance from each noise source to the noise receiver locations, using the ground absorption, distance, and barrier/building attenuation inputs to provide a summary of noise level at each receiver and the partial noise level contributions by noise source. Consistent with the ISO 9613-2 protocol, the CadnaA noise prediction model relies on the reference sound power level (L_w) to describe individual noise sources. While sound pressure levels (e.g., L_{eq}) quantify in decibels the intensity of given sound sources at a reference distance, sound power levels (L_w) are connected to the sound source and are independent of distance. Sound pressure

levels vary substantially with distance from the source and diminish because of intervening obstacles and barriers, air absorption, wind, and other factors. Sound power is the acoustical energy emitted by the sound source and is an absolute value that is not affected by the environment.

The operational noise level calculations provided in this noise study account for the distance attenuation provided due to geometric spreading, when sound from a localized stationary source (i.e., a point source) propagates uniformly outward in a spherical pattern. A default ground attenuation factor of 0.5 was used in the CadnaA noise analysis to account for mixed ground representing a combination of hard and soft surfaces. Appendix 8.1 includes the detailed noise model inputs including the planned screenwall used to estimate the Project operational noise levels presented in this section.

8.4 PROJECT OPERATIONAL NOISE LEVELS

Using the reference noise levels to represent the proposed Project operations that include loading dock activity, parking lot vehicle activities, roof-top air conditioning units, trash enclosure activity, and truck movements, Urban Crossroads, Inc. calculated the operational source noise levels that are expected to be generated at the Project site and the Project-related noise level increases that would be experienced at each of the sensitive receiver locations. Table 8-2 shows the Project operational noise levels during the daytime hours of 7:00 a.m. to 10:00 p.m. The daytime hourly noise levels at the off-site receiver locations are expected to range from 22.9 to 36.1 dBA L_{eq}.

TABLE 8-2: DAYTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)					
	R1	R2	R3	R4	R5	R6
Loading Dock Activity	22.0	21.2	34.2	31.9	27.8	27.3
Parking Lot Vehicle Movements	15.3	14.9	28.3	23.7	15.5	20.8
Roof-Top Air Conditioning Units	11.6	11.3	23.1	19.3	12.1	16.9
Trash Enclosure Activity	8.0	9.1	22.4	18.6	12.7	14.7
Truck Movements	10.4	10.4	25.9	22.4	15.4	15.0
Total (All Noise Sources)	**23.5**	**22.9**	**36.1**	**33.3**	**28.5**	**28.9**

[1] See Exhibit 8-A for the noise source locations. CadnaA noise model calculations are included in Appendix 8.1.

Table 8-3 shows the Project operational noise levels during the nighttime hours of 10:00 p.m. to 7:00 a.m. The nighttime hourly noise levels at the off-site receiver locations are expected to range from 22.7 to 35.9 dBA L_{eq}.

TABLE 8-3: NIGHTTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)					
	R1	R2	R3	R4	R5	R6
Loading Dock Activity	22.0	21.2	34.2	31.9	27.8	27.3
Parking Lot Vehicle Movements	15.3	14.9	28.3	23.7	15.5	20.8
Roof-Top Air Conditioning Units	9.2	8.9	20.7	16.9	9.7	14.5
Trash Enclosure Activity	4.0	5.2	18.5	14.6	8.7	10.8
Truck Movements	10.4	10.4	25.9	22.4	15.4	15.0
Total (All Noise Sources)	**23.3**	**22.7**	**35.9**	**33.1**	**28.4**	**28.6**

[1] See Exhibit 8-A for the noise source locations. CadnaA noise model calculations are included in Appendix 8.1.

The differences between the daytime and nighttime noise levels are largely related to the estimated duration of noise activity as outlined in Table 8-1 and Appendix 8.1.

8.5 PROJECT OPERATIONAL NOISE LEVEL COMPLIANCE

To demonstrate compliance with local noise regulations, the Project-only operational noise levels are evaluated against exterior noise level thresholds based on the Town of Apple Valley exterior noise level standards at the existing nearby noise-sensitive receiver locations. Table 8-4 shows the operational noise levels associated with Apple Valley 3PL Center Project will not exceed the Town of Apple Valley daytime and nighttime exterior noise level standards at the existing nearby noise-sensitive receiver locations. Therefore, the operational noise impacts are considered *less than significant* at the nearby noise-sensitive receiver locations.

TABLE 8-4: OPERATIONAL NOISE LEVEL COMPLIANCE

Receiver Location[1]	Project Operational Noise Levels (dBA Leq)[2]		Noise Level Standards (dBA Leq)[3]		Noise Level Standards Exceeded?[4]	
	Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime
R1	23.5	23.3	50	40	No	No
R2	22.9	22.7	50	40	No	No
R3	36.1	35.9	50	40	No	No
R4	33.3	33.1	50	40	No	No
R5	28.5	28.4	50	40	No	No
R6	28.9	28.6	50	40	No	No

[1] See Exhibit 7-A for the receiver locations.
[2] Proposed Project operational noise levels as shown on Tables 8-2 and 8-3.
[3] Exterior noise level standards, as shown on Table 4-1.
[4] Do the estimated Project operational noise source activities exceed the noise level standards?
"Daytime" = 7:00 a.m. - 10:00 p.m.; "Nighttime" = 10:00 p.m. - 7:00 a.m.

8.6 PROJECT OPERATIONAL NOISE LEVEL INCREASES

To describe the Project operational noise level increases, the Project operational noise levels are combined with the GPEIR noise levels measurements for the nearby receiver locations potentially impacted by Project operational noise sources. Since the units used to measure noise, decibels (dB), are logarithmic units, the Project-operational and existing ambient noise levels cannot be combined using standard arithmetic equations. (5) Instead, they must be logarithmically added using the following base equation:

$$SPL_{Total} = 10\log_{10}[10^{SPL1/10} + 10^{SPL2/10} + \ldots 10^{SPLn/10}]$$

Where "SPL1," "SPL2," etc. are equal to the sound pressure levels being combined, or in this case, the Project-operational and existing ambient noise levels. The difference between the combined Project and ambient noise levels describes the Project noise level increases to the existing ambient noise environment. Noise levels that would be experienced at receiver locations when Project-source noise is added to the daytime and nighttime ambient conditions are presented on Tables 8-5 and 8-6, respectively. As indicated on Tables 8-5 and 8-6, the Project is not expected to generate a measurable daytime or nighttime operational noise level increase at the nearest receiver locations. Project-related operational noise level increases will not exceed the operational noise level increase significance criteria presented in Table 4-1, and, therefore, the increases at the sensitive receiver locations will be *less than significant.*

TABLE 8-5: DAYTIME PROJECT OPERATIONAL NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?
R1	23.5	L8	62.1	62.1	0.0	5.0	No
R2	22.9	L8	62.1	62.1	0.0	5.0	No
R3	36.1	L6	62.5	62.5	0.0	5.0	No
R4	33.3	L6	62.5	62.5	0.0	5.0	No
R5	28.5	L7	59.4	59.4	0.0	5.0	No
R6	28.9	L8	62.1	62.1	0.0	5.0	No

[1] See Exhibit 7-A for the receiver locations.
[2] Total Project daytime operational noise levels as shown on Table 8-2.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed daytime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance increase criteria as shown on Table 4-1.

TABLE 8-6: NIGHTTIME OPERATIONAL NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?
R1	23.3	L8	62.6	62.6	0.0	5.0	No
R2	22.7	L8	62.6	62.6	0.0	5.0	No
R3	35.9	L6	63.1	63.1	0.0	5.0	No
R4	33.1	L6	63.1	63.1	0.0	5.0	No
R5	28.4	L7	60.0	60.0	0.0	5.0	No
R6	28.6	L8	62.6	62.6	0.0	5.0	No

[1] See Exhibit 7-A for the receiver locations.
[2] Total Project nighttime operational noise levels as shown on Table 8-3.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed nighttime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance increase criteria as shown on Table 4-1.

9 CONSTRUCTION IMPACTS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 9-A shows the on-site construction noise source activity in relation to the nearest sensitive receiver locations previously described in Section 7. Section 9.73.060[F][1] of the Town of Apple Valley Municipal Code, provided in Appendix 3.2, indicates that *operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work between weekday hours of 7 p.m. and 7 a.m., or at any time on weekends or holidays, such that the sound therefrom creates a noise disturbance across a residential or commercial real property line, except for emergency work of public service utilities or by variance issued by the Town.*

In addition, Municipal Code Section 9.73.060[F][2] requires construction activities to be conducted in such a manner that the noise levels at affected residential properties will not exceed the daytime (7:00 a.m. to 7:00 p.m.) mobile exterior noise level limit of 75 dBA L_{eq} and 60 dBA L_{eq} during the nighttime hours of 7:00 p.m. to 7:00 a.m.

9.1 CONSTRUCTION NOISE LEVELS

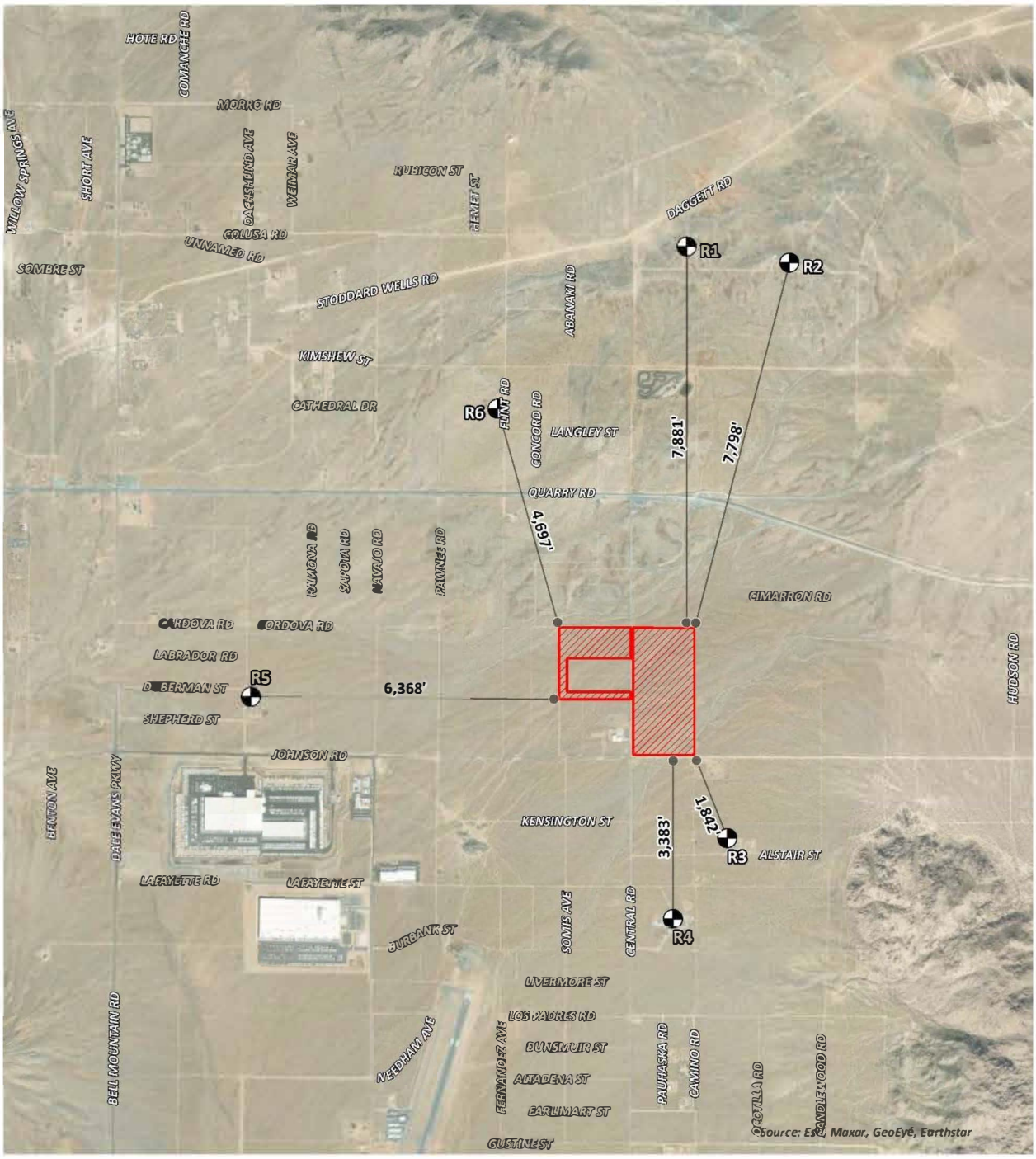
The FTA *Transit Noise and Vibration Impact Assessment Manual* recognizes that construction projects are accomplished in several different stages and outlines the procedures for assessing noise impacts during construction. Each stage has a specific equipment mix, depending on the work to be completed during that stage. As a result of the equipment mix, each stage has its own noise characteristics; some stages have higher continuous noise levels than others, and some have higher impact noise levels than others. The Project construction activities are expected to occur in the following stages:

- Site Preparation
- Grading
- Building Construction
- Paving
- Architectural Coating

9.2 CONSTRUCTION REFERENCE NOISE LEVELS

To describe construction noise activities, this construction noise analysis was prepared using reference construction equipment noise levels from the Federal Highway Administration (FHWA) published the Roadway Construction Noise Model (RCNM), which includes a national database of construction equipment reference noise emission levels. (26) The RCNM equipment database, provides a comprehensive list of the noise generating characteristics for specific types of construction equipment. In addition, the database provides an acoustical usage factor to estimate the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation.

EXHIBIT 9-A: CONSTRUCTION NOISE SOURCE LOCATIONS



LEGEND:

Construction Activity | Receiver Locations | Distance from receiver to Project site boundary (in feet)

9.3 CONSTRUCTION NOISE ANALYSIS

Using the reference construction equipment noise levels and the CadnaA noise prediction model, calculations of the Project construction noise level impacts at the nearby sensitive receiver locations were completed. Consistent with FTA guidance for general construction noise assessment, Table 9-1 presents the combined noise levels for the loudest construction equipment, assuming they operate at the same time. As shown on Table 9-2, the construction noise levels are expected to range from 26.9 to 44.0 dBA L_{eq} at the nearby receiver locations. Appendix 9.1 includes the detailed CadnaA construction noise model inputs.

TABLE 9-1: PCONSTRUCTION REFERENCE NOISE LEVELS

Construction Stage	Reference Construction Activity	Reference Noise Level @ 50 Feet (dBA L_{eq})[1]	Combined Noise Level (dBA L_{eq})[2]	Combined Sound Power Level (PWL)[3]
Site Preparation	Crawler Tractors	78	80	112
	Hauling Trucks	72		
Grading	Rubber Tired Dozers	75	83	115
	Graders	81		
	Excavators	77		
	Compactors	76		
Building Construction	Cranes	73	81	113
	Tractors	80		
	Welders	70		
Paving	Pavers	74	83	115
	Paving Equipment	82		
	Rollers	73		
Architectural Coating	Cranes	73	77	109
	Air Compressors	74		
	Generator Sets	70		

[1] FHWA Roadway Construction Noise Model (RCNM).
[2] Represents the combined noise level for all equipment assuming they operate at the same time consistent with FTA Transit Noise and Vibration Impact Assessment guidance.
[3] Sound power level represents the total amount of acoustical energy (noise level) produced by a sound source independent of distance or surroundings. Sound power levels calibrated using the CadnaA noise model at the reference distance to the noise source.

TABLE 9-2: CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})					
	Site Preparation	Grading	Building Construction	Paving	Arch. Coating	Highest Levels[2]
R1	30.2	33.2	31.2	33.2	27.2	33.2
R2	29.9	32.9	30.9	32.9	26.9	32.9
R3	41.0	44.0	42.0	44.0	38.0	44.0
R4	37.4	40.4	38.4	40.4	34.4	40.4
R5	32.2	35.2	33.2	35.2	29.2	35.2
R6	35.4	38.4	36.4	38.4	32.4	38.4

[1] Construction noise source and receiver locations are shown on Exhibit 9-A.
[2] Construction noise level calculations based on distance from the construction activity, which is measured from the Project site boundary to the nearest receiver locations. CadnaA construction noise model inputs are included in Appendix 9.1.

9.4 PROJECT SITE CONSTRUCTION NOISE LEVEL COMPLIANCE

To evaluate whether the Project will generate potentially significant short-term noise levels at nearest receiver locations, a construction-related daytime noise level threshold of 75 dBA L_{eq} is used as a reasonable threshold to assess the daytime construction noise level impacts. The construction noise analysis shows that the nearest receiver locations will satisfy the reasonable daytime 75 dBA L_{eq} significance threshold during Project construction activities as shown on Table 9-3. Therefore, the noise impacts due to Project construction noise are considered *less than significant* at all receiver locations.

TABLE 9-3: PROJECT SITE CONSTRUCTION NOISE LEVEL COMPLIANCE

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})		
	Highest Construction Noise Levels[2]	Threshold[3]	Threshold Exceeded?[4]
R1	33.2	75	No
R2	32.9	75	No
R3	44.0	75	No
R4	40.4	75	No
R5	35.2	75	No
R6	38.4	75	No

[1] Construction noise source and receiver locations are shown on Exhibit 9-A.
[2] Highest construction noise level calculations based on distance from the construction noise source activity to the nearest receiver locations as shown on Table 9-2.
[3] Construction noise level thresholds as shown on Table 4-1.
[4] Do the estimated Project construction noise levels exceed the construction noise level threshold?

9.5 NIGHTTIME CONCRETE POUR NOISE ANALYSIS

It is our understanding that nighttime concrete pouring activities will occur as a part of Project building construction activities. Nighttime concrete pouring activities are often used to support reduced concrete mixer truck transit times and lower air temperatures than during the daytime hours and are generally limited to the actual building pad area as shown on Exhibit 9-B. Since the nighttime concrete pours will take place outside the hours permitted by Section 9.73.060 of the Town of Apple Valley Municipal Code, the Project Applicant will be required to obtain authorization for nighttime work from the Town of Apple Valley. Any nighttime construction noise activities are evaluated against the exterior construction noise level threshold of 60 dBA L_{eq} for noise sensitive residential land use.

9.5.1 NIGHTTIME CONCRETE POUR REFERENCE NOISE LEVEL MEASUREMENTS

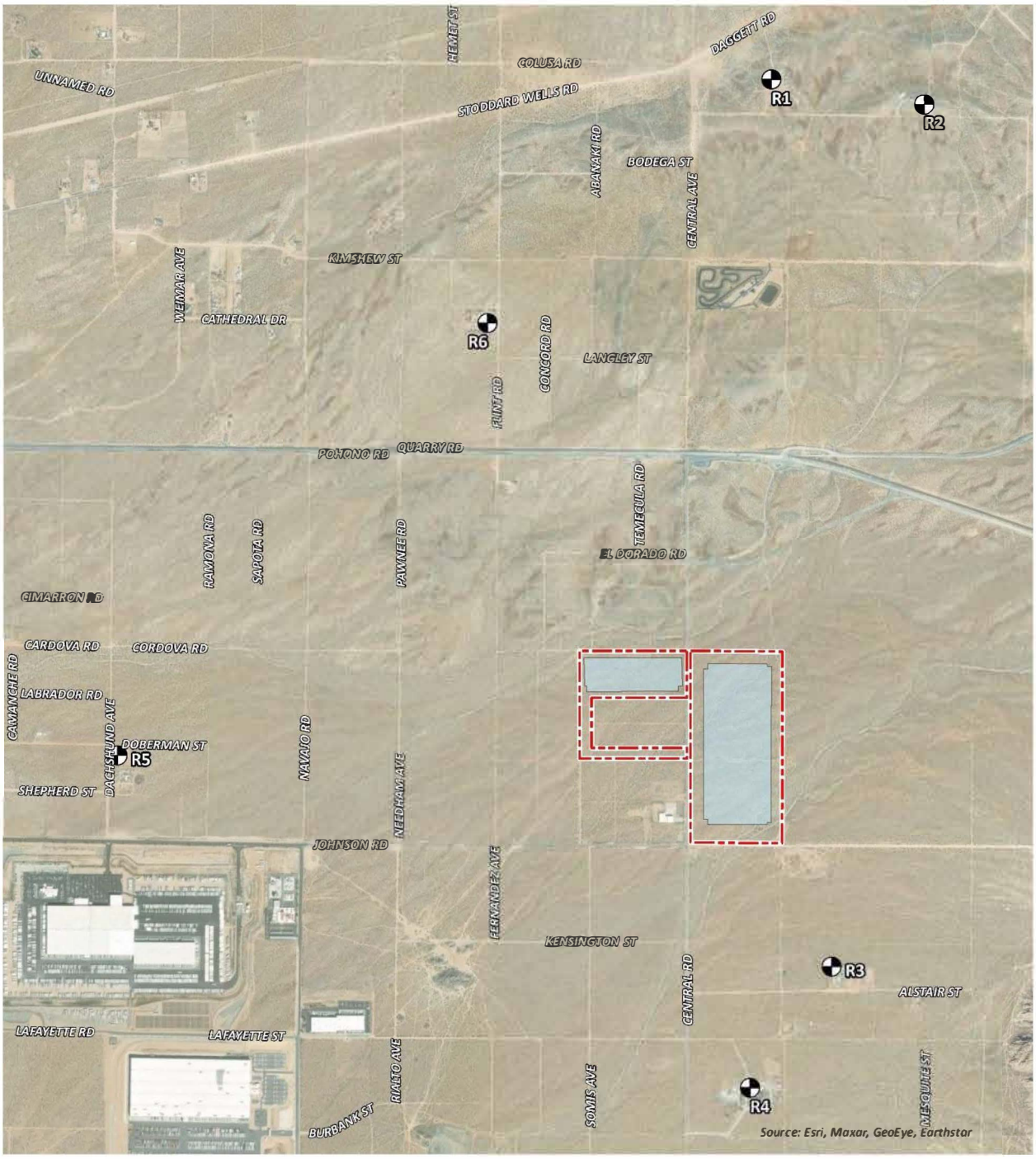
To estimate the noise levels due to nighttime concrete pour activities, sample reference noise level measurements were taken during a nighttime concrete pour at a construction site. Urban Crossroads, Inc. collected short-term nighttime concrete pour reference noise level measurements during the noise-sensitive nighttime hours between 1:00 a.m. to 2:00 a.m. at 27334 San Bernardino Avenue in the City of Redlands. The reference noise levels describe the expected concrete pour noise sources that may include concrete mixer truck movements and pouring activities, concrete paving equipment, rear mounted concrete mixer truck backup alarms, engine idling, air brakes, generators, and workers communicating/whistling.

To describe the nighttime concrete pour noise levels associated with the construction of the Apple Valley 3PL Center, this analysis relies on reference sound pressure level of 67.7 dBA L_{eq} at 50 feet representing a sound power level of 100.3 dBA L_w. While the Project noise levels will depend on the actual duration of activities and specific equipment fleet in use at the time of construction, the reference sound power level of 100.3 dBA L_w is used to describe the expected Project nighttime concrete pour noise activities.

9.5.2 NIGHTTIME CONCRETE POUR NOISE LEVEL COMPLIANCE

As shown on Table 9-4, the noise levels associated with the nighttime concrete pour activities are estimated to range from 39.1 to 55.0 dBA L_{eq}. The analysis shows that the unmitigated nighttime concrete pour activities will not exceed the 60 dBA L_{eq} nighttime residential noise level threshold at all the nearest noise sensitive receiver locations. Therefore, the noise impacts due to Project construction nighttime concrete pour noise activity are considered *less than significant* at all receiver locations with prior authorization for nighttime work from the Town of Apple Valley. Appendix 9.2 includes the CadnaA nighttime concrete pour noise model inputs.

EXHIBIT 9-B: NIGHTTIME CONCRETE POUR NOISE SOURCE AND RECEIVER LOCATIONS



LEGEND:

Site Boundary | Nighttime Concrete Pour Activity Area | Receiver Locations

TABLE 9-4: NIGHTTIME CONCRETE POUR NOISE LEVEL COMPLIANCE

Receiver Location[1]	Concrete Pour Construction Noise Levels (dBA L_{eq})		
	Exterior Noise Levels[2]	Threshold[3]	Threshold Exceeded?[4]
R1	18.7	60	No
R2	18.3	60	No
R3	28.9	60	No
R4	25.4	60	No
R5	20.4	60	No
R6	23.9	60	No

[1] Construction noise source and receiver locations are shown on Exhibit 9-A.
[2] Nighttime Concrete Pour noise model inputs are included in Appendix 9.2.
[3] Construction noise level thresholds as shown on Table 4-1.
[4] Do the estimated Project construction noise levels exceed the construction noise level threshold?

9.6 CONSTRUCTION VIBRATION ANALYSIS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods employed. The operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Ground vibration levels associated with various types of construction equipment are summarized on Table 9-5. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential for human response (annoyance) and building damage using the following vibration assessment methods defined by the FTA. To describe the vibration impacts the FTA provides the following equation: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

TABLE 9-5: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	PPV (in/sec) at 25 feet
Small bulldozer	0.003
Jackhammer	0.035
Loaded Trucks	0.076
Large bulldozer	0.089
Vibratory Roller	0.210

Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual

Table 9-6 presents the expected Project related vibration levels at the nearby receiver locations. At distances ranging from 1,872 to 7,881 feet from Project construction activities, construction vibration velocity levels are estimated at 0.000 in/sec PPV. Based on maximum acceptable continuous vibration threshold of 0.04 (in/sec), the typical Project construction vibration levels

will fall below the vibration thresholds at all the sensitive receiver locations. Therefore, the Project-related vibration impacts are considered *less than significant* during typical construction activities at the Project site.

TABLE 9-6: PROJECT CONSTRUCTION VIBRATION LEVELS

Location[1]	Distance to Const. Activity (Feet)[2]	Typical Construction Vibration Levels PPV (in/sec)[3]						Thresholds PPV (in/sec)[4]	Thresholds Exceeded?[5]
		Small bulldozer	Jackhammer	Loaded Trucks	Large bulldozer	Vibratory Roller	Highest Vibration Level		
R1	7,881'	0.000	0.000	0.000	0.000	0.000	0.000	0.04	No
R2	7,798'	0.000	0.000	0.000	0.000	0.000	0.000	0.04	No
R3	1,842'	0.000	0.000	0.000	0.000	0.000	0.000	0.04	No
R4	3,383'	0.000	0.000	0.000	0.000	0.000	0.000	0.04	No
R5	6,368'	0.000	0.000	0.000	0.000	0.000	0.000	0.04	No
R6	4,697'	0.000	0.000	0.000	0.000	0.000	0.000	0.04	No

[1] Construction noise source and receiver locations are shown on Exhibit 9-A.
[2] Distance from receiver building facade to Project construction boundary (Project site boundary).
[3] Based on the Vibration Source Levels of Construction Equipment (Table 9-5).
[4] Town of Apple Valley Municipal Code 9.73.020[34], (Appendix 3.1)
[5] Does the peak vibration exceed the acceptable vibration thresholds?
"PPV" = Peak Particle Velocity

Moreover, the vibration levels reported at the sensitive receiver locations are unlikely to be sustained during the entire construction period but will occur rather only during the times that heavy construction equipment is operating adjacent to the Project site perimeter.

10 REFERENCES

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2. **Terra Nova Planning & Research, Inc.** *Town of Apple Valley - North Apple Valley Industrial Specific Plan.* Adopted: October 24, 2006.
3. **Urban Crossroads, Inc.** *North Apple Valley Specific Plan EIR Noise Analysis.* July 21, 2006.
4. **Terra Nova Planning & Research, Inc.** *Town of Apple Valley - North Apple Valley Industrial Specific Plan Environmental Impact Report (SCH# 2006031112).* Certified: October 10, 2006.
5. **California Department of Transportation Environmental Program.** *Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol.* Sacramento, CA : s.n., September 2013.
6. **Environmental Protection Agency Office of Noise Abatement and Control.** *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety.* March 1974. EPA/ONAC 550/9/74-004.
7. **U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning, Noise and Air Quality Branch.** *Highway Traffic Noise Analysis and Abatement Policy and Guidance.* December 2011.
8. **U.S. Department of Transportation Federal Highway Administration.** *Highway Noise Barrier Design Handbook.* 2001.
9. **U.S. Department of Transportation, Federal Highway Administration.** *Highway Traffic Noise in the United States, Problem and Response.* April 2000. p. 3.
10. **U.S. Environmental Protection Agency Office of Noise Abatement and Control.** *Noise Effects Handbook-A Desk Reference to Health and Welfare Effects of Noise.* October 1979 (revised July 1981). EPA 550/9/82/106.
11. **U.S. Department of Transportation, Federal Transit Administration.** *Transit Noise and Vibration Impact Assessment Manual.* September 2018.
12. **Office of Planning and Research.** *State of California General Plan Guidelines.* 2019.
13. **Town of Apple Valley.** *General Plan Noise Element.* August 2009.
14. —. *Municipal Code.*
15. **California Court of Appeal.** *Gray v. County of Madera, F053661.* 167 Cal.App.4th 1099; - Cal.Rptr.3d, October 2008.
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17. **California Department of Transportation.** *Technical Noise Supplement.* November 2009.
18. **Urban Crossroads, Inc.** *Apple Valley 3PL Center Trip Generation Assessment.* March 2024.
19. **American National Standards Institute (ANSI).** *Specification for Sound Level Meters ANSI S1.4-2014/IEC 61672-1:2013.*
20. **U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning.** *FHWA Roadway Construction Noise Model.* January, 2006.

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11 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed Apple Valley 3PL Center Project. The information contained in this noise study report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 584-3148.

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EDUCATION

Master of Science in Civil and Environmental Engineering
California Polytechnic State University, San Luis Obispo • December, 1993

Bachelor of Science in City and Regional Planning
California Polytechnic State University, San Luis Obispo • June, 1992

PROFESSIONAL REGISTRATIONS

PE – Registered Professional Traffic Engineer – **TR 2537 • January, 2009**
AICP – American Institute of Certified Planners – **013011 • June, 1997**–January 1, 2012
PTP – **Professional Transportation Planner • May, 2007** – May, 2013
INCE – Institute of Noise Control **Engineering • March, 2004**

PROFESSIONAL AFFILIATIONS

ASA – Acoustical Society of America
ITE – Institute of Transportation Engineers

PROFESSIONAL CERTIFICATIONS

Certified Acoustical Consultant – **County of San Diego • March, 2018**
Certified Acoustical Consultant – **County of Orange • February, 2011**
FHWA-NHI-**142051 Highway Traffic Noise Certificate of Training • February, 2013**

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APPENDIX 3.1:

TOWN OF APPLE VALLEY MUNICIPAL CODE

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Chapter 9.73 Noise Control

9.73.010 Purpose

A. **Purpose.**

The purpose of this Chapter is to reduce unnecessary, excessive and annoying noise and vibration within the Town. The Town Council finds that this Chapter is necessary to prohibit such noise and vibration generated from or by all sources as specified in this Chapter. Further, the Town Council finds that this Chapter is necessary to maintain quiet in those areas which exhibit low noise levels and to implement programs aimed at reducing noise in those areas within the Town where noise levels are above acceptable values.

The Town Council also finds that certain noise levels and vibrations are detrimental to the public health, safety and welfare, and are contrary to the public interest. Therefore, the Town Council does ordain and declare that creating, maintaining, causing or allowing to be created, caused or maintained, any noise or vibration in a manner prohibited by or not in conformity with the provisions of this Chapter, shall be an infraction or misdemeanor and shall be punishable as such.

9.73.020 Definitions

A. **Definitions.** All terminology used in this ordinance, not defined below, shall be in conformance with applicable publications of the American National Standards Institute (ANSI) or its successor body.

The following words, phrases and terms as used in this Chapter shall have the meaning as indicated below:

1. **A Weighted Sound Level.** The sound level in decibels as measured on a sound level meter using the A-weighting network. The level so read is designated dBA.
2. **Agricultural Property.** A parcel of real property of not less than ten (10) contiguous acres in size, which is undeveloped for any use other than agricultural purposes.
3. **Ambient Noise Level.** The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal of existing level of environmental noise at a given location.
4. **Commercial Area.** Property which is zoned for commercial purposes, including, but not limited to, retail and wholesale businesses, personal services, and professional offices.
5. **Construction.** Any site preparation, assembly, erection, substantial repair, alteration, or similar action, for or of public or private rights-of-way, structures, utilities or similar property.
6. **Cumulative Period.** An additive period of time composed of individual time segments which may be continuous or interrupted.
7. **Decibel.** A unit for measuring the amplitude of a sound, equal to twenty (20) times the logarithm to the ratio of the sound measured to the reference pressure, which is 20 micropascals.
8. **Demolition.** Any dismantling, intentional destruction or removal of structures, utilities, public or private rights-of-way surfaces, or similar property.
9. **Emergency Work.** Any work performed for the purpose of preventing or alleviating the physical trauma or property damage threatened or caused by an emergency.

10. **Fixed Noise Source.** A stationary device which creates sounds while fixed or motionless, including, but not limited to, residential, agricultural, industrial and commercial machinery and equipment, pumps, fans, compressors, air conditioners, and refrigeration units.

11. **Gross Vehicle Weight Rating (GVWR).** The value specified by the manufacturer as the recommended maximum loaded weight of a single motor vehicle. In cases where trailers and tractors are separable the gross combination weight rating, which is the value specified by the manufacturer as the recommended maximum loaded weight of the combination vehicle, shall be used.

12. **Impulsive Sound.** Sound of short duration, usually less than one (1) second, with an abrupt onset and rapid decay. Examples of sources of impulsive sound include explosions, drop forge impacts, and the discharge of firearms.

13. **Industrial Area.** Property which is zoned for manufacturing and related uses.

14. **Intrusive Noise.** That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency and time of occurrence, tonal or informational content, as well as the prevailing ambient noise level.

15. **Licensed.** The possession of a formal license or a permit issued by the appropriate licensing or permitting agency; or, where no licenses or permits are issued, the sanctioning of the activity by such agency as noted in public record.

16. **Mobile Noise Source.** Any noise source other than a fixed source.

17. **Motor Vehicle.** Motor vehicle shall include any and all self-propelled vehicles as defined in the California Motor Vehicle Code, including all on-highway type motor vehicles subject to registration under said Code, and all off-highway type motor vehicles subject to identification under said Code.

18. **Motorboat.** Any vessel propelled by machinery, whether or not such machinery is the principal source of propulsion, but shall not include a vessel which has a valid marine document issued by the Bureau of Customs of the United States government or any Federal agency successor thereto (Section 651(d), Harbors and Navigation Code).

19. **Muffler or Sound Dissipating Device.** A device consisting of a series of chambers or baffle plates, or other mechanical design, for the purpose of receiving exhaust gas from an internal combustion engine, and effective in reducing noise.

20. **Noise Control Officer (NCO).** Person or persons designated by the Director of Community Development as responsible for the enforcement of this Chapter.

21. **Noise Disturbance.** Any sound which, as judged by the NCO, (a) endangers or injures the safety or health of human beings or animals, or (b) annoys or disturbs reasonable persons of normal sensitivities, or (c) endangers or injures personal or real property, or (d) violates the factors set forth in Section 9.73.040 of this Chapter. Compliance with the quantitative standards as listed herein shall constitute elimination of a noise disturbance.

22. **Noise Sensitive Zone.** Any area designated in accordance with Section 9.73.060 of this Chapter for the purpose of ensuring exceptional quiet.

23. **Noise Zone.** Any defined areas or regions of a generally consistent land use wherein the ambient noise levels are within a range of five (5) dBA.

24. **Person.** Any individual, association, partnership, or corporation, and includes any officer, employee, department, agency or instrumentality of a State or any political subdivision of a State.

25. **Powered Model Vehicle.** Any self-propelled, airborne, waterborne, or landborne plane, vessel, or vehicle, which is not designed to carry persons, including, but not limited to, any model airplane, boat, car, or rocket.

26. **Public Right-of-Way.** Any street, avenue, boulevard, highway, sidewalk or alley or similar place which is owned or controlled by a governmental entity.

27. **Public Space.** Any real property, or structures thereon, which are owned or controlled by a governmental entity.

28. **Pure Tone.** Any sound which can be judged as audible as a single pitch or a set of single pitches by the Noise Control Officer. For the purposes of this Chapter, a pure tone shall exist if the one-third (1/3) octave band sound pressure level in the band with the tone exceeds the arithmetic average of the sound pressure levels of the two (2) contiguous one-third (1/3) octave bands by five (5) dBA for center frequencies of 500 Hz and above, and by eight (8) dBA for center frequencies between 160 and 400 Hz, and by fifteen (15) dBA for center frequencies less than or equal to 125 Hz.

29. **Real Property Boundary.** An imaginary line along the ground surface, and its vertical extension, which separates the real property owned by one person from that owned by another person, but not including intra-building real property divisions.

30. **Residential Area.** Property which is zoned for residential uses.

31. **Sound Amplifying Equipment.** Any device for the amplification of the human voice, music, or any other sound, excluding standard automobile radios when used and heard only by the occupants of the vehicle in which the radio is installed, warning devices on authorized emergency vehicles, or horns or other warning devices on any vehicle used only for traffic safety purposes.

32. **Sound Level Meter.** An instrument, including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement of sound levels. Such instrument shall meet or exceed the pertinent requirements for type S2A meters contained in the American National Standards Institute specifications for sound level meters, S1.4-1971, or the most recent revision thereof.

33. **Sound Truck.** Any motor vehicle or any other vehicle, regardless of motive power, whether in motion or stationary, having mounted thereon, or attached thereto, any sound amplifying equipment.

34. **Vibration Perception Threshold.** The minimum ground- or structure-borne vibrational motion necessary to cause a normal person to be aware of the vibration by such direct means as, but not limited to, sensation by touch or visual observation of moving objects. The perception threshold shall be presumed to be a motion velocity of 0.01 in/sec over the range of 1 to 100 Hz.

35. **Weekday.** Any day, Monday through Friday, which is not a legal holiday.

9.73.030 Noise Control Officer

A. **Authority and Duties of the Noise Control Officer (NCO)**

1. **Lead Agency.** The Director shall designate a Noise Control Officer (NCO) who shall be responsible for administering the noise control program established by this Chapter.

2. **Powers.** In order to implement and enforce this Chapter and for the general purpose of noise abatement and control, NCO shall have, in addition to any other vested authority, the power to:

   a. Conduct, or cause to be conducted, studies, research, and monitoring related to noise, including joint cooperative investigation with public or private agencies, and the application for, and acceptance of, grants;

b. Review all public and private projects which are likely to cause noise in violation of this ordinance and which are subject to mandatory review or approval by other departments.

1) Review for compliance with the intent and provisions of this ordinance.

2) Require sound analyses which identify existing and projected noise sources and associated noise levels.

3) Require the usage of adequate mitigation measures to avoid violation of any provision of this ordinance.

c. Upon presentation of proper credentials, enter and/or inspect any private property, place, report, or records at any time when granted permission by the owner or by some other person with authority to act for the owner. When permission is refused or cannot be obtained, a search warrant may be obtained from a court of competent jurisdiction upon a showing of probable cause to believe that a violation of this ordinance may exist. Such inspection may include the administration of any necessary tests.

d. Prepare recommendations, based upon noise survey data and analytical studies, to be approved by the Town Council, for the designation of zones of similar ambient environmental noise within regions of generally consistent land use. These zones shall be identified in terms of their day and nighttime ambient noise levels and their land use classifications as given in Table 9.73.050-A.

9.73.040 General Noise Regulations

A. **General Noise Regulations.** Notwithstanding any other provision of this chapter, and in addition thereto, it shall be unlawful for any person to willfully or negligently make or continue, or cause to be made or continued, any loud, unnecessary, or unusual noise which disturbs the peace and quiet enjoyment of any neighborhood or which causes any discomfort or annoyance to any reasonable person of normal sensitivity residing in the area.

The factors which shall be considered in determining whether a violation of the provisions of this section exists shall include, but not be limited to, the following:

1. The sound level of the objectionable noise;
2. The sound level of the ambient noise;
3. The proximity of the noise to residential sleeping facilities;
4. The nature and zoning of the area within which the noise emanates;
5. The number of persons affected by the noise source;
6. The time of day or night the noise occurs;
7. The duration of the noise and its tonal, informational or musical content;
8. Whether the noise is continuous, recurrent, or intermittent;
9. Whether the noise is produced by a commercial or noncommercial activity.

B. **Noise Measurement Procedure**

1. **Receipt of Complaint.** Upon receipt of a complaint from a citizen, the NCO shall, equipped with the appropriate sound level measurement equipment, investigate the complaint. The investigation shall consist of a measurement of the offending noise and the gathering of data to adequately define the noise problem and shall include the following:

a. Type of noise source;

b. Location of noise source relative to complainant's property;

c. Time period during which noise source is considered by complainant to be intrusive;

d. Total duration of noise produced by noise source;

e. Date and time of noise measurement survey.

2. **Noise Measurement Procedure**

a. Utilizing the "A" weighting scale of the sound level meter and the "slow" meter response (use "fast" response for impulsive type sounds), the noise level shall be measured at a position or positions at any point on the receiver's property.

b. In general, the microphone shall be located four to five feet above the ground; ten feet or more from the nearest reflective surface where possible. However, in those cases where another elevation is deemed appropriate, the latter shall be utilized. If the noise complaint is related to interior noise levels, interior noise measurements shall be made within the affected residential unit. The measurements shall be made at a point at least four feet from the wall, ceiling, or floor nearest the noise source, with windows in the normal seasonal configuration. Calibration of the measurement equipment, utilizing an acoustic calibration, shall be performed immediately prior to recording any noise data.

9.73.050 External and Internal Noise Standards

A. **External Noise Standards**

1. **Maximum Permissible Sound Levels by Receiving Land Use**

a. The noise standards for the various categories of land use identified by the Noise Control Officer as presented in Table 9.73.050-A shall, unless otherwise specifically indicated, apply to all such property within a designated zone.

b. No person shall produce or cause to be produced any sound at any location within the incorporated Town or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level when measured on any other property, either incorporated or unincorporated, to exceed:

1) The noise standard for that land use as specified in Table 9.73.050-A for a cumulative period of more than thirty (30) minutes in any hour; or

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

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

4) The noise standard plus fifteen (15) dBA for a cumulative period of more than one (1) minute in any hour; or

5) The noise standard plus twenty (20) dBA or the maximum measured ambient level, for any period of time.

c. If the measured ambient level differs from that permissible within any of the first four noise limit categories above, the allowable noise exposure standard shall be adjusted in five (5) dBA increments in each category as appropriate to encompass or reflect said ambient noise level.

In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under this category shall be increased to reflect the maximum ambient noise level.

d. If the measurement location is on a boundary between two different zones, the noise level limit applicable to the lower noise zone plus five (5) dBA shall apply.

e. If possible, the ambient noise shall be measured at the same location along the property line utilized in paragraph 9.73.050.A.1.b of this Chapter with the alleged offending noise source inoperative. If, for any reason, the alleged offending noise source cannot be shut down, the ambient noise must be estimated by performing a measurement in the same general area of the source but at a sufficient distance such that the noise from the source is at least ten (10) dBA below the ambient in order that only the ambient level be measured. If the difference between the ambient and the noise source is five (5) to ten (10) dBA, then the level of the ambient itself can be reasonably determined by subtracting a one decibel correction to account for the contribution of the source.

2. **Correction for Character of Sound.** In the event the alleged offensive noise, as judged by the NCO, contains a steady, audible tone such as a whine, screech, or hum, or is a repetitive noise such as hammering or riveting, or contains music or speech conveying informational content, the standard limits set forth in Table 9.73.050-A shall be reduced by five (5) dBA.

Table 9.73.050-A Exterior Noise Limits

EXTERIOR NOISE LIMITS
(Levels Not To Be Exceeded More Than 30 Minutes In Any Hour)

Receiving Land Use Category	Time Period	Noise Level (dBA)
Single Family Residential	10 p.m. - 7 a.m.	40
	7 a.m. - 10 p.m.	50
Multiple Dwelling Residential, Public Space	10 p.m. - 7 a.m.	45
	7 a.m. - 10 p.m.	50
Limited Commercial & Office	10 p.m. - 7 a.m.	55
	7 a.m. - 10 p.m.	60
General Commercial	10 p.m. - 7 a.m.	60
	7 a.m. - 10 p.m.	65
Light Industrial	Any Time	70
Heavy Industrial	Any Time	75

B. **Interior Noise Standards**

1. **Maximum Permissible Dwelling Interior Sound Levels**

a. The interior noise standards for multi-family residential dwellings as presented in Table 9.73.050-B shall apply, unless otherwise specifically indicated, within all such dwellings with windows in their normal seasonal configuration.

Table 9.73.050-B Interior Noise Limits

INTERIOR NOISE LIMITS

Noise Zone	Type of Land Use	Time Interval	Allowable Interior Noise Level (dBA)

All	Multi-Family	10 p.m. - 7 a.m.	35
	Residential	7 a.m. - 10 p.m.	45

b. No person shall operate or cause to be operated within a dwelling unit any source of sound or allow the creation of any noise which causes the noise level, when measured inside a neighboring receiving dwelling unit, to exceed:

1) The noise standard as specified in Table 9.73.050-B for a cumulative period of more than five (5) minutes in any hour; or

2) The noise standard plus five (5) dBA for a cumulative period of more than one (1) minute in any hour; or

3) The noise standard plus ten (10) dBA or the maximum measured ambient, for any period of time.

c. If the measured ambient level differs from that permissible within any of the noise limit categories above, the allowable noise exposure standard shall be adjusted in five (5) dBA increments in each category as appropriate to reflect said ambient noise level.

2. **Correction for Character of Sound.** In the event the alleged offensive noise, as judged by the NCO, contains a steady, audible tone such as a whine, screech, or hum, or is a repetitive noise such as hammering or riveting, or contains music or speech conveying informational content, the standard limits set forth in Table 9.73.050-B shall be reduced by five (5) dBA.

9.73.060 Prohibited Noise and Vibration

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

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

1. Between the hours of 10 p.m. and 7 a.m. in such a manner as to create a noise disturbance across a residential or commercial real property line or at any time to violate the provisions of Section 9.73.050.A.1., except for cases in which an exception has been issued by the Town.

2. In such a manner as to exceed the levels set forth for public space in Table 9.73.050-A, measured at a distance of at least fifty (50) feet from such device operating on a public right-of-way or public space.

B. Using or operating for any purpose any loudspeaker, loudspeaker system, or similar device between the hours of 10 p.m. and 7 a.m., such that the sound therefrom creates a noise disturbance across a residential real property line, or at any time violates the provisions of Section 9.73.050.A.1., except for any noncommercial public speaking, public assembly or other activity for which an exception has been issued by the Town.

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

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

E. Loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials, garbage cans, or similar objects between the hours of 10 p.m. and 7 a.m. in such a manner as to cause a noise disturbance across a residential real property line or at any time to violate the provisions of 9.73.050.A.1.

F. **Construction/Demolition**

1. Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work between weekday hours of 7 p.m. and 7 a.m., or at any time on weekends or holidays, such that the sound therefrom creates a noise disturbance across a residential or commercial real property line, except for emergency work of public service utilities or by variance issued by the Town.

2. **Noise Restrictions at Affected Properties. W**here technically and economically feasible, construction activities shall be conducted in such a manner that the maximum noise levels at affected properties will not exceed those listed in the following schedule:

Table 9.73.060-A Maximum Noise Levels

AT RESIDENTIAL PROPERTIES

Mobile Equipment: Maximum noise levels for nonscheduled intermittent, short-term operation (less than 10 days) of mobile equipment:

	TYPE I AREAS SINGLE-FAMILY RESIDENTIAL	TYPE II AREAS MULTI-FAMILY RESIDENTIAL	TYPE III AREAS SEMI-RESIDENTIAL/ COMMERCIAL
Daily, except Sundays and Legal Holidays, 7 a.m. to 7 p.m.	75 dBA	80 dBA	85 dBA
Daily, 7 p.m. to 7 a.m. and all day Sunday and Legal Holidays	60 dBA	65 dBA	70 dBA

Stationary Equipment: Maximum noise levels for repetitively scheduled and relatively long-term operation (periods of 10 days or more) of stationary equipment:

	TYPE I AREAS SINGLE FAMILY RESIDENTIAL	TYPE II AREAS MULTI-FAMILY RESIDENTIAL	TYPE III AREAS SEMI-RESIDENTIAL/ COMMERCIAL
Daily, except Sundays and Legal Holidays, 7 a.m. to 7. p.m.	60 dBA	65 dBA	70 dBA
Daily, 7 p.m. to 7 a.m. and all day Sunday and Legal Holidays	50 dBA	55 dBA	60 dBA

Mobile Equipment: Maximum noise levels for nonscheduled, intermittent, short-term operation of mobile equipment:

Daily, including Sundays and legal holidays, all hours: maximum of 85 dBA.

Stationary Equipment: Maximum noise levels for repetitively scheduled and relatively long-term operation of stationary equipment:

Daily, including Sundays and legal holidays, all hours: maximum of 75 dBA.

3. All mobile or stationary internal combustion engine powered equipment or machinery shall be equipped with suitable exhaust and air intake silencers in proper working order.

G. **Vibration.** Operating or permitting the operation of any device that creates a vibration which is above the vibration perception threshold of an individual at or beyond the property boundary of the source if on private property or at one hundred fifty (150) feet (46 meters) from the source if on a public space or public right-of-way.

H. **Powered Model Vehicles.** Operating or permitting the operation of powered model vehicles:

1. Between the hours of 7 p.m. and 7 a.m. so as to create a noise disturbance across a residential or commercial real property line or at any time to violate the provisions of paragraph 9.73.050.A.1.

2. In such a manner as to exceed the levels set forth for public space land use in Table 9.73.050-A, measured at a distance not less than 100 feet from any point on the path of a vehicle operating on public space or public right-of-way.

I. **Stationary Nonemergency Signaling Devices**

1. Sounding or permitting the sounding of any electronically-amplified signal from any stationary bell, chime, siren, whistle, or similar device, intended primarily for nonemergency purposes, from any place for more than 10 seconds in any hourly period. Houses of religious worship shall be exempt from this provision.

2. Sound sources covered by this provision and not exempted under subsection 1 above may be exempted by an exception issued by the Town.

J. **Emergency Signaling Devices**

1. The intentional sounding or permitting the sounding outdoors of any fire, burglar, or civil defense alarm, siren, whistle, or similar stationary emergency signaling device, except for emergency purposes or for testing. as provided in subsection 2 below.

2. **Testing**

a. Testing of a stationary emergency signaling device shall not occur before 7 a.m. or after 7 p.m. Any such testing shall use only the minimum cycle test time. In no case shall such test time exceed 60 seconds.

b. Testing of the complete emergency signaling system, including the functioning of the signaling device and the personnel response to the signaling device, shall not occur more than once in each calendar month. Such testing shall not occur before 7 a.m. or after 10 p.m. The time limit specified in subsection b.(1) above shall not apply to such complete system testing.

3. Sounding or permitting the sounding of any exterior burglar or fire alarm or any motor vehicle burglar alarm unless such alarm is terminated within 15 minutes of activation.

K. **Noise Sensitive Zones**

1. Creating or causing the creation of any sound within any noise sensitive zone, so as to exceed the specified land use noise standards set forth in Section 9.73.050.A.1., provided that conspicuous signs are displayed indicating the zone; or

2. Creating or causing the creation of any sound within or adjacent to any noise sensitive zone containing a hospital, nursing home, school, court or other designated area, so as to interfere with the functions of such activity or annoy the occupants in the activity, provided that conspicuous signs are displayed indicating the presence of the zone.

L. **Domestic Power Tools, Machinery**

1. Operating or permitting the operation of any mechanically powered saw, sander, drill, grinder, lawn or garden tool, or similar tool between 10 p.m. and 7 a.m., so as to create a noise disturbance across a residential or commercial real property line.

2. Any motor, machinery, pump, such as swimming pool equipment, etc., shall be sufficiently enclosed or muffled and maintained so as not to create a noise disturbance in accordance with Section 9.73.050.

M. **Residential Air-Conditioning or Air-Handling Equipment.** Operating or permitting the operation of any air-conditioning or air-handling equipment in such a manner as to exceed any of the following sound levels:

Table 9.73.060-B Air Conditioning/Air Handling Equipment

Measurement Location	Units Installed Before 1-1-80	Units Installed On Or After 1-1-80
Any point on neighboring property line, 5 feet above grade level, no closer than 3 feet from any wall	60 dBA	55 dBA
Center of neighboring patio, 5 feet above grade level, no closer than 3 feet from any wall	55 dBA	50 dBA
Outside the neighboring living area window nearest the equipment location, not more than 3 feet from the window opening, but at least 3 feet from any other surface	55 dBA	50 dBA

N. **Places of Public Entertainment.** Operating or permitting the operation or playing of any loudspeaker, musical instrument, motorized racing vehicle, or other source of sound in any place of public entertainment that exceeds 95 dBA as read on the "slow" response of a sound level meter at any point normally occupied by a customer, without a conspicuous and legible sign stating: "WARNING! SOUND LEVELS WITHIN MAY CAUSE HEARING IMPAIRMENT!"

9.73.070 Motor Vehicles Operating on Public Right-Of-Way

Motor vehicle noise limits on a public rights-of-way are regulated as set forth in the California Motor Vehicle Code, Sections 23130 and 23130.5. Equipment violations which create noise problems are covered under Sections 27150 and 27151. Any peace officer of any jurisdiction in California may enforce these provisions. Therefore, it shall be the policy of the Town to enforce these sections of the California Motor Vehicle Code.

A. **Refuse Collection Vehicles**

1. No person shall collect refuse with a refuse collection vehicle between the hours of 7 p.m. and 7 a.m. within or adjacent to a residential area or noise sensitive zone.

2. No person authorized to engage in waste disposal service or garbage collection shall operate any truck-mounted waste or garbage loading and/or compacting equipment or similar device in any manner so as to create any noise which exceed4ing 80 dBA's. the following levels, measured at a distance of fifty (50) feet from the equipment in an open area.

   a. New equipment purchased or leased on or after December 24, 1994: 80 dBA.

   b. New equipment purchased or leased on or after September 24, 1994: 75 dBA.

   c. Existing equipment, on or after June 24, 1999: 80 dBA.

B. **Motor Vehicle Horns.** It is unlawful for any person to sound a vehicular horn except as a warning signal (Motor Vehicle Code, Section 27001).

C. **Motorized Recreational Vehicles Operating Off Public Rights-of-Way.** No person shall operate or cause to be operated any motorized recreational vehicle off a public right-of-way in such a manner that the sound levels emitted therefrom violate the provisions of paragraph 9.73.050.A.1 of this Chapter. This Section shall apply to all motorized recreational vehicles whether or not duly licensed and registered, including but not limited to commercial or noncommercial racing vehicles, motorcycles, go carts, amphibious craft, campers, snowmobiles and dune buggies, but not including motorboats.

D. **Motorboats.** Operating or permitting the operation of any motorboat in any lake, river, stream, or other waterway in such a manner as to cause a noise disturbance across a residential or commercial real property line or at any time to violate the provisions of paragraph 9.73.050.A.1 of this Chapter.

E. **Standing Motor Vehicles.** No person shall operate or permit the operation of any motor vehicle with a gross vehicle weight rating (GVWR) in excess of ten thousand (10,000) pounds, or any auxiliary equipment attached to such a vehicle, for a period longer than fifteen (15) minutes in any hour while the vehicle is stationary, for reasons other than traffic congestion on a public right-of-way or public space within 150 feet of a residential area or designated noise sensitive zone, between the hours of 10 p.m. and 7 a.m.

9.73.080 Exemptions

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

A. The emission of sound for the purpose of alerting persons to the existence of an emergency;

B. The emission of sound in the performance of emergency work;

C. Warning devices necessary for the protection of public safety; for example, police, fire and ambulance sirens, and train horns;

D. Regularly scheduled school bands, school athletic and school entertainment events between the hours of 8:45 a.m. and 10:00 p.m., provided a Special Events permit is obtained for band activities on Town streets;

E. Regularly scheduled activities conducted on public parks, public playgrounds, and public or private school grounds. However, the use of public address or amplified music systems is not permitted to exceed the exterior noise standard of adjacent property at the property line;

F. All mechanical devices, apparatus or equipment which are utilized for the protection or salvage of agricultural crops during periods of potential or actual frost damage or other adverse weather conditions;

G. Mobile noise sources associated with agricultural operations, provided such operations take place on Monday through Friday, excepting legal holidays, between the hours of 7:00 a.m. and 6:00 p.m., or on holidays and weekends between the hours of 9:00 a.m. and 6:00 p.m. All other operations shall comply with this chapter;

H. Any activity to the extent that regulation thereof has been preempted by State or Federal law.

9.73.090 Exceptions

A. The NCO is authorized to grant exceptions from any provision of this ordinance, subject to limitations as to area, noise levels, time limits, and other terms and conditions as the NCO determines are appropriate to protect the public health, safety, and welfare from the noise emanating therefrom. This Section shall in no way affect the duty to obtain any permit or license required by law for such activities.

B. Any person seeking an exception to this Section shall file an application with the NCO. The application shall contain information which demonstrates that bringing the source of sound or activity for which the exception is sought into compliance with this ordinance would constitute an unreasonable hardship on the applicant, on the community, or on other persons. The application shall be accompanied by a fee. A separate application shall be filed for each noise source; provided, however, that several mobile sources under common ownership, or several fixed sources on a single property, may be combined into one application. Notice of an application for an exception shall be noticed according to Town Code. Any individual who claims to be adversely affected by allowance of the exception may file a statement with the NCO containing any information to support his claim. If at any time the NCO finds that a sufficient controversy exists regarding an application, such application shall be scheduled for a public hearing by the Planning Commission.

C. In determining whether to grant or deny the application, the NCO shall balance the hardship on the applicant, the community, and other persons of not granting the variance against the adverse impact on the health, safety, and welfare of persons affected, and any other adverse impacts of granting the variance. Applicants for exceptions and persons contesting exceptions may be required to submit such information as the NCO may reasonably require. In granting or denying an application, the NCO shall keep on public file a copy of the decision and the reasons for denying or granting the exception.

D. Exceptions shall be granted by notice to the applicant containing all necessary conditions, including a time limit on the permitted activity. The exception shall not become effective until all conditions are agreed to by the applicant. Noncompliance with any condition of the exception shall terminate such exception and subject the person holding it to those provisions of this ordinance for which the exception was granted.

E. An exception shall expire 365 days from the date on which it was granted. Application for extension of time limits specified in exceptions or for modification of other substantial conditions shall be treated like applications for initial exceptions under subsection B above.

APPENDIX 8.1:

OPERATIONAL NOISE MODEL INPUTS

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15428 - Apple Valley 3PL Center

CadnaA Noise Prediction Model: 15428-02.cna
Date: 25.07.23
Analyst: B. Lawson

Calculation Configuration

Configuration	
Parameter	**Value**
General	
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	3048.00
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	999.99
Min. Length of Section (#(Unit,LEN))	1.01
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	5.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr- Reflector	1.001.00
Min. Distance Source - Reflector	0.10
Industriel (ISO 9613)	
Lateral Diffraction	someObj
Obst. within Area Src do not shield	On
Screening	Incl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.020.00.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (TNM)	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use		Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	23.5	23.3	30.0	50.0	40.0	0.0			5.00	a	6811916.34	2052680.55	5.00
RECEIVERS		R2	22.9	22.6	29.3	50.0	40.0	0.0			5.00	a	6814032.68	2052382.55	5.00
RECEIVERS		R3	36.1	35.9	42.6	50.0	40.0	0.0			5.00	a	6812959.77	2040483.75	5.00
RECEIVERS		R4	33.3	33.1	39.8	50.0	40.0	0.0			5.00	a	6811865.57	2038794.86	5.00
RECEIVERS		R5	28.5	28.4	35.0	50.0	40.0	0.0			5.00	a	6803074.04	2043224.58	5.00
RECEIVERS		R6	28.9	28.6	35.3	50.0	40.0	0.0			5.00	a	6808071.33	2049266.16	5.00

Point Source(s)

Name	M.	ID	Result. PWL				Lw/Li		Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		AC01	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	5.00	g	6811936.83	2042514.76	50.00
POINTSOURCE		AC02	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	5.00	g	6811992.43	2042461.03	50.00
POINTSOURCE		AC03	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	5.00	g	6811299.08	2042503.87	50.00
POINTSOURCE		AC04	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	5.00	g	6811250.64	2042443.15	50.00
POINTSOURCE		AC05	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	5.00	g	6811925.57	2044545.56	50.00
POINTSOURCE		AC06	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	5.00	g	6811968.89	2044600.98	50.00
POINTSOURCE		AC07	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	5.00	g	6811251.25	2044541.85	50.00
POINTSOURCE		AC08	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	5.00	g	6811213.96	2044590.69	50.00
POINTSOURCE		AC09	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	5.00	g	6809513.32	2044651.30	50.00
POINTSOURCE		AC10	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	5.00	g	6810786.22	2044673.04	50.00
POINTSOURCE		CAR00	81.1	81.1	81.1	Lw	81.1					5.00	a	6811455.48	2044772.26	5.00
POINTSOURCE		CAR01	81.1	81.1	81.1	Lw	81.1					5.00	a	6811415.77	2044727.05	5.00
POINTSOURCE		CAR01	81.1	81.1	81.1	Lw	81.1					5.00	a	6811975.27	2042213.06	5.00
POINTSOURCE		CAR02	81.1	81.1	81.1	Lw	81.1					5.00	a	6811380.61	2044770.98	5.00

Name	M.	ID	Result. PWL			Lw/Li		Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		CAR02	81.1	81.1	81.1	Lw	81.1					5.00	a	6811676.19	2042207.95	5.00
POINTSOURCE		CAR03	81.1	81.1	81.1	Lw	81.1					5.00	a	6811339.88	2044725.75	5.00
POINTSOURCE		CAR03	81.1	81.1	81.1	Lw	81.1					5.00	a	6811488.80	2042204.75	5.00
POINTSOURCE		CAR04	81.1	81.1	81.1	Lw	81.1					5.00	a	6811304.72	2044769.68	5.00
POINTSOURCE		CAR04	81.1	81.1	81.1	Lw	81.1					5.00	a	6812124.47	2042215.60	5.00
POINTSOURCE		CAR05	81.1	81.1	81.1	Lw	81.1					5.00	a	6811266.02	2044724.49	5.00
POINTSOURCE		CAR05	81.1	81.1	81.1	Lw	81.1					5.00	a	6812042.49	2042214.20	5.00
POINTSOURCE		CAR06	81.1	81.1	81.1	Lw	81.1					5.00	a	6811236.94	2044767.51	5.00
POINTSOURCE		CAR06	81.1	81.1	81.1	Lw	81.1					5.00	a	6811914.09	2042211.22	5.00
POINTSOURCE		CAR07	81.1	81.1	81.1	Lw	81.1					5.00	a	6811195.17	2044724.29	5.00
POINTSOURCE		CAR07	81.1	81.1	81.1	Lw	81.1					5.00	a	6811743.42	2042209.09	5.00
POINTSOURCE		CAR08	81.1	81.1	81.1	Lw	81.1					5.00	a	6811165.07	2044768.31	5.00
POINTSOURCE		CAR08	81.1	81.1	81.1	Lw	81.1					5.00	a	6811570.78	2042206.15	5.00
POINTSOURCE		CAR09	81.1	81.1	81.1	Lw	81.1					5.00	a	6811142.61	2044720.35	5.00
POINTSOURCE		CAR09	81.1	81.1	81.1	Lw	81.1					5.00	a	6811825.39	2042210.50	5.00
POINTSOURCE		CAR10	81.1	81.1	81.1	Lw	81.1					5.00	a	6811117.53	2044766.48	5.00
POINTSOURCE		CAR10	81.1	81.1	81.1	Lw	81.1					5.00	a	6811785.12	2042251.57	5.00
POINTSOURCE		CAR11	81.1	81.1	81.1	Lw	81.1					5.00	a	6811088.93	2044722.47	5.00
POINTSOURCE		CAR11	81.1	81.1	81.1	Lw	81.1					5.00	a	6811779.06	2042320.93	5.00
POINTSOURCE		CAR12	81.1	81.1	81.1	Lw	81.1					5.00	a	6811068.93	2044767.68	5.00
POINTSOURCE		CAR12	81.1	81.1	81.1	Lw	81.1					5.00	a	6811820.04	2042346.75	5.00
POINTSOURCE		CAR13	81.1	81.1	81.1	Lw	81.1					5.00	a	6811038.34	2044721.61	5.00
POINTSOURCE		CAR13	81.1	81.1	81.1	Lw	81.1					5.00	a	6811998.62	2042323.46	5.00
POINTSOURCE		CAR14	81.1	81.1	81.1	Lw	81.1					5.00	a	6811020.36	2044766.85	5.00
POINTSOURCE		CAR14	81.1	81.1	81.1	Lw	81.1					5.00	a	6812042.73	2042350.00	5.00
POINTSOURCE		CAR15	81.1	81.1	81.1	Lw	81.1					5.00	a	6810983.28	2044744.96	5.00
POINTSOURCE		CAR15	81.1	81.1	81.1	Lw	81.1					5.00	a	6811965.38	2042349.04	5.00
POINTSOURCE		CAR16	81.1	81.1	81.1	Lw	81.1					5.00	a	6810982.98	2044703.46	5.00
POINTSOURCE		CAR16	81.1	81.1	81.1	Lw	81.1					5.00	a	6811935.00	2042254.13	5.00
POINTSOURCE		CAR17	81.1	81.1	81.1	Lw	81.1					5.00	a	6810809.48	2044761.64	5.00
POINTSOURCE		CAR17	81.1	81.1	81.1	Lw	81.1					5.00	a	6812002.23	2042255.28	5.00
POINTSOURCE		CAR18	81.1	81.1	81.1	Lw	81.1					5.00	a	6810797.74	2044722.12	5.00
POINTSOURCE		CAR18	81.1	81.1	81.1	Lw	81.1					5.00	a	6811663.84	2042345.11	5.00
POINTSOURCE		CAR19	81.1	81.1	81.1	Lw	81.1					5.00	a	6810745.01	2044720.19	5.00
POINTSOURCE		CAR19	81.1	81.1	81.1	Lw	81.1					5.00	a	6811629.86	2042318.38	5.00
POINTSOURCE		CAR20	81.1	81.1	81.1	Lw	81.1					5.00	a	6810718.41	2044763.19	5.00
POINTSOURCE		CAR20	81.1	81.1	81.1	Lw	81.1					5.00	a	6811747.25	2042276.71	5.00
POINTSOURCE		CAR21	81.1	81.1	81.1	Lw	81.1					5.00	a	6810681.92	2044719.11	5.00
POINTSOURCE		CAR21	81.1	81.1	81.1	Lw	81.1					5.00	a	6812121.57	2042350.68	5.00
POINTSOURCE		CAR22	81.1	81.1	81.1	Lw	81.1					5.00	a	6810653.29	2044760.00	5.00
POINTSOURCE		CAR22	81.1	81.1	81.1	Lw	81.1					5.00	a	6811873.82	2042252.29	5.00
POINTSOURCE		CAR23	81.1	81.1	81.1	Lw	81.1					5.00	a	6810614.69	2044717.96	5.00
POINTSOURCE		CAR23	81.1	81.1	81.1	Lw	81.1					5.00	a	6812080.60	2042324.86	5.00
POINTSOURCE		CAR24	81.1	81.1	81.1	Lw	81.1					5.00	a	6810549.51	2044717.88	5.00
POINTSOURCE		CAR24	81.1	81.1	81.1	Lw	81.1					5.00	a	6811889.29	2042348.89	5.00
POINTSOURCE		CAR25	81.1	81.1	81.1	Lw	81.1					5.00	a	6810518.81	2044758.74	5.00
POINTSOURCE		CAR25	81.1	81.1	81.1	Lw	81.1					5.00	a	6812084.20	2042256.68	5.00
POINTSOURCE		CAR26	81.1	81.1	81.1	Lw	81.1					5.00	a	6810482.32	2044714.67	5.00
POINTSOURCE		CAR26	81.1	81.1	81.1	Lw	81.1					5.00	a	6811931.40	2042322.31	5.00
POINTSOURCE		CAR27	81.1	81.1	81.1	Lw	81.1					5.00	a	6810452.62	2044757.61	5.00
POINTSOURCE		CAR27	81.1	81.1	81.1	Lw	81.1					5.00	a	6812125.17	2042282.50	5.00
POINTSOURCE		CAR28	81.1	81.1	81.1	Lw	81.1					5.00	a	6810411.99	2044713.46	5.00
POINTSOURCE		CAR28	81.1	81.1	81.1	Lw	81.1					5.00	a	6811741.19	2042346.07	5.00
POINTSOURCE		CAR29	81.1	81.1	81.1	Lw	81.1					5.00	a	6810387.48	2044755.46	5.00
POINTSOURCE		CAR29	81.1	81.1	81.1	Lw	81.1					5.00	a	6811865.41	2042320.45	5.00
POINTSOURCE		CAR30	81.1	81.1	81.1	Lw	81.1					5.00	a	6810349.93	2044712.40	5.00
POINTSOURCE		CAR30	81.1	81.1	81.1	Lw	81.1					5.00	a	6811968.98	2042280.86	5.00
POINTSOURCE		CAR31	81.1	81.1	81.1	Lw	81.1					5.00	a	6810318.20	2044753.25	5.00
POINTSOURCE		CAR31	81.1	81.1	81.1	Lw	81.1					5.00	a	6811697.09	2042319.53	5.00
POINTSOURCE		CAR32	81.1	81.1	81.1	Lw	81.1					5.00	a	6810272.35	2044712.11	5.00
POINTSOURCE		CAR32	81.1	81.1	81.1	Lw	81.1					5.00	a	6811669.90	2042275.76	5.00
POINTSOURCE		CAR33	81.1	81.1	81.1	Lw	81.1					5.00	a	6810232.35	2044751.78	5.00
POINTSOURCE		CAR33	81.1	81.1	81.1	Lw	81.1					5.00	a	6811635.92	2042249.02	5.00
POINTSOURCE		CAR34	81.1	81.1	81.1	Lw	81.1					5.00	a	6810195.83	2044709.77	5.00
POINTSOURCE		CAR34	81.1	81.1	81.1	Lw	81.1					5.00	a	6811703.15	2042250.17	5.00
POINTSOURCE		CAR35	81.1	81.1	81.1	Lw	81.1					5.00	a	6810155.78	2044752.54	5.00
POINTSOURCE		CAR35	81.1	81.1	81.1	Lw	81.1					5.00	a	6812046.33	2042281.82	5.00
POINTSOURCE		CAR36	81.1	81.1	81.1	Lw	81.1					5.00	a	6810135.84	2044708.75	5.00
POINTSOURCE		CAR36	81.1	81.1	81.1	Lw	81.1					5.00	a	6811826.09	2042277.39	5.00
POINTSOURCE		CAR37	81.1	81.1	81.1	Lw	81.1					5.00	a	6810079.25	2044751.23	5.00
POINTSOURCE		CAR37	81.1	81.1	81.1	Lw	81.1					5.00	a	6811311.71	2042310.99	5.00
POINTSOURCE		CAR38	81.1	81.1	81.1	Lw	81.1					5.00	a	6810069.66	2044706.58	5.00
POINTSOURCE		CAR38	81.1	81.1	81.1	Lw	81.1					5.00	a	6811335.60	2042339.43	5.00
POINTSOURCE		CAR39	81.1	81.1	81.1	Lw	81.1					5.00	a	6810003.45	2044706.49	5.00
POINTSOURCE		CAR39	81.1	81.1	81.1	Lw	81.1					5.00	a	6811489.03	2042340.54	5.00
POINTSOURCE		CAR40	81.1	81.1	81.1	Lw	81.1					5.00	a	6809992.42	2044746.65	5.00
POINTSOURCE		CAR40	81.1	81.1	81.1	Lw	81.1					5.00	a	6811411.69	2042339.59	5.00

Name	M.	ID	Result. PWL				Lw/Li		Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		CAR41	81.1	81.1	81.1	Lw	81.1					5.00	a	6809914.50	2044704.97	5.00
POINTSOURCE		CAR41	81.1	81.1	81.1	Lw	81.1					5.00	a	6811526.90	2042315.40	5.00
POINTSOURCE		CAR42	81.1	81.1	81.1	Lw	81.1					5.00	a	6809926.23	2044745.52	5.00
POINTSOURCE		CAR42	81.1	81.1	81.1	Lw	81.1					5.00	a	6811567.88	2042341.22	5.00
POINTSOURCE		CAR43	81.1	81.1	81.1	Lw	81.1					5.00	a	6809859.00	2044744.37	5.00
POINTSOURCE		CAR43	81.1	81.1	81.1	Lw	81.1					5.00	a	6811377.70	2042312.85	5.00
POINTSOURCE		CAR44	81.1	81.1	81.1	Lw	81.1					5.00	a	6809850.36	2044704.91	5.00
POINTSOURCE		CAR44	81.1	81.1	81.1	Lw	81.1					5.00	a	6811444.93	2042314.00	5.00
POINTSOURCE		CAR45	81.1	81.1	81.1	Lw	81.1					5.00	a	6809783.13	2044703.76	5.00
POINTSOURCE		CAR45	81.1	81.1	81.1	Lw	81.1					5.00	a	6811187.50	2042336.61	5.00
POINTSOURCE		CAR46	81.1	81.1	81.1	Lw	81.1					5.00	a	6809683.84	2044702.06	5.00
POINTSOURCE		CAR46	81.1	81.1	81.1	Lw	81.1					5.00	a	6811076.17	2042308.92	5.00
POINTSOURCE		CAR47	81.1	81.1	81.1	Lw	81.1					5.00	a	6809717.32	2044740.91	5.00
POINTSOURCE		CAR47	81.1	81.1	81.1	Lw	81.1					5.00	a	6811143.39	2042310.07	5.00
POINTSOURCE		CAR48	81.1	81.1	81.1	Lw	81.1					5.00	a	6809651.15	2044738.75	5.00
POINTSOURCE		CAR48	81.1	81.1	81.1	Lw	81.1					5.00	a	6811266.34	2042337.29	5.00
POINTSOURCE		CAR49	81.1	81.1	81.1	Lw	81.1					5.00	a	6809591.14	2044738.76	5.00
POINTSOURCE		CAR49	81.1	81.1	81.1	Lw	81.1					5.00	a	6811225.37	2042311.47	5.00
POINTSOURCE		CAR50	81.1	81.1	81.1	Lw	81.1					5.00	a	6809593.88	2044699.49	5.00
POINTSOURCE		CAR50	81.1	81.1	81.1	Lw	81.1					5.00	a	6811110.15	2042335.65	5.00
POINTSOURCE		CAR51	81.1	81.1	81.1	Lw	81.1					5.00	a	6809528.74	2044697.34	5.00
POINTSOURCE		CAR51	81.1	81.1	81.1	Lw	81.1					5.00	a	6811492.64	2042272.36	5.00
POINTSOURCE		CAR52	81.1	81.1	81.1	Lw	81.1					5.00	a	6809523.90	2044738.64	5.00
POINTSOURCE		CAR52	81.1	81.1	81.1	Lw	81.1					5.00	a	6811571.48	2042273.04	5.00
POINTSOURCE		CAR53	81.1	81.1	81.1	Lw	81.1					5.00	a	6809465.40	2044286.57	5.00
POINTSOURCE		CAR53	81.1	81.1	81.1	Lw	81.1					5.00	a	6811448.53	2042245.82	5.00
POINTSOURCE		CAR54	81.1	81.1	81.1	Lw	81.1					5.00	a	6809462.28	2044348.59	5.00
POINTSOURCE		CAR54	81.1	81.1	81.1	Lw	81.1					5.00	a	6811530.51	2042247.22	5.00
POINTSOURCE		CAR55	81.1	81.1	81.1	Lw	81.1					5.00	a	6809462.81	2044438.61	5.00
POINTSOURCE		CAR55	81.1	81.1	81.1	Lw	81.1					5.00	a	6811415.29	2042271.41	5.00
POINTSOURCE		CAR56	81.1	81.1	81.1	Lw	81.1					5.00	a	6809461.84	2044495.49	5.00
POINTSOURCE		CAR56	81.1	81.1	81.1	Lw	81.1					5.00	a	6811381.30	2042244.67	5.00
POINTSOURCE		CAR57	81.1	81.1	81.1	Lw	81.1					5.00	a	6809457.93	2044603.02	5.00
POINTSOURCE		CAR57	81.1	81.1	81.1	Lw	81.1					5.00	a	6811320.13	2042242.84	5.00
POINTSOURCE		CAR58	81.1	81.1	81.1	Lw	81.1					5.00	a	6809453.91	2044656.75	5.00
POINTSOURCE		CAR58	81.1	81.1	81.1	Lw	81.1					5.00	a	6811231.43	2042242.11	5.00
POINTSOURCE		CAR59	81.1	81.1	81.1	Lw	81.1					5.00	a	6811193.56	2042267.25	5.00
POINTSOURCE		CAR60	81.1	81.1	81.1	Lw	81.1					5.00	a	6811149.45	2042240.71	5.00
POINTSOURCE		CAR61	81.1	81.1	81.1	Lw	81.1					5.00	a	6811082.23	2042239.57	5.00
POINTSOURCE		CAR62	81.1	81.1	81.1	Lw	81.1					5.00	a	6811272.40	2042267.93	5.00
POINTSOURCE		CAR63	81.1	81.1	81.1	Lw	81.1					5.00	a	6811116.21	2042266.30	5.00
POINTSOURCE		CAR64	81.1	81.1	81.1	Lw	81.1					5.00	a	6811299.81	2044701.79	5.00
POINTSOURCE		CAR65	81.1	81.1	81.1	Lw	81.1					5.00	a	6811736.92	2044709.25	5.00
POINTSOURCE		CAR66	81.1	81.1	81.1	Lw	81.1					5.00	a	6811228.96	2044701.59	5.00
POINTSOURCE		CAR67	81.1	81.1	81.1	Lw	81.1					5.00	a	6811527.50	2044703.65	5.00
POINTSOURCE		CAR68	81.1	81.1	81.1	Lw	81.1					5.00	a	6811122.72	2044699.77	5.00
POINTSOURCE		CAR69	81.1	81.1	81.1	Lw	81.1					5.00	a	6811176.40	2044697.65	5.00
POINTSOURCE		CAR70	81.1	81.1	81.1	Lw	81.1					5.00	a	6811948.39	2044712.87	5.00
POINTSOURCE		CAR71	81.1	81.1	81.1	Lw	81.1					5.00	a	6812085.99	2044716.23	5.00
POINTSOURCE		CAR72	81.1	81.1	81.1	Lw	81.1					5.00	a	6812019.22	2044714.08	5.00
POINTSOURCE		CAR73	81.1	81.1	81.1	Lw	81.1					5.00	a	6811449.56	2044704.34	5.00
POINTSOURCE		CAR74	81.1	81.1	81.1	Lw	81.1					5.00	a	6811809.79	2044709.49	5.00
POINTSOURCE		CAR75	81.1	81.1	81.1	Lw	81.1					5.00	a	6811678.25	2044707.24	5.00
POINTSOURCE		CAR76	81.1	81.1	81.1	Lw	81.1					5.00	a	6811620.59	2044705.24	5.00
POINTSOURCE		CAR77	81.1	81.1	81.1	Lw	81.1					5.00	a	6811072.13	2044698.91	5.00
POINTSOURCE		CAR78	81.1	81.1	81.1	Lw	81.1					5.00	a	6811373.67	2044703.05	5.00
POINTSOURCE		CAR79	81.1	81.1	81.1	Lw	81.1					5.00	a	6811875.52	2044712.63	5.00
POINTSOURCE		CAR80	81.1	81.1	81.1	Lw	81.1					5.00	a	6812136.92	2044696.86	5.00
POINTSOURCE		CAR81	81.1	81.1	81.1	Lw	81.1					5.00	a	6812135.00	2044750.47	5.00
POINTSOURCE		CAR82	81.1	81.1	81.1	Lw	81.1					5.00	a	6812087.88	2044783.06	5.00
POINTSOURCE		CAR83	81.1	81.1	81.1	Lw	81.1					5.00	a	6812052.20	2044738.93	5.00
POINTSOURCE		CAR84	81.1	81.1	81.1	Lw	81.1					5.00	a	6812017.07	2044780.84	5.00
POINTSOURCE		CAR85	81.1	81.1	81.1	Lw	81.1					5.00	a	6811985.43	2044736.78	5.00
POINTSOURCE		CAR86	81.1	81.1	81.1	Lw	81.1					5.00	a	6811951.32	2044778.70	5.00
POINTSOURCE		CAR87	81.1	81.1	81.1	Lw	81.1					5.00	a	6811914.61	2044735.57	5.00
POINTSOURCE		CAR88	81.1	81.1	81.1	Lw	81.1					5.00	a	6811878.47	2044777.46	5.00
POINTSOURCE		CAR89	81.1	81.1	81.1	Lw	81.1					5.00	a	6811841.74	2044735.33	5.00
POINTSOURCE		CAR90	81.1	81.1	81.1	Lw	81.1					5.00	a	6811810.66	2044777.31	5.00
POINTSOURCE		CAR91	81.1	81.1	81.1	Lw	81.1					5.00	a	6811776.00	2044732.19	5.00
POINTSOURCE		CAR92	81.1	81.1	81.1	Lw	81.1					5.00	a	6811746.87	2044778.25	5.00
POINTSOURCE		CAR93	81.1	81.1	81.1	Lw	81.1					5.00	a	6811703.13	2044731.95	5.00
POINTSOURCE		CAR94	81.1	81.1	81.1	Lw	81.1					5.00	a	6811682.12	2044777.14	5.00
POINTSOURCE		CAR95	81.1	81.1	81.1	Lw	81.1					5.00	a	6811644.46	2044729.94	5.00
POINTSOURCE		CAR96	81.1	81.1	81.1	Lw	81.1					5.00	a	6811611.31	2044774.92	5.00
POINTSOURCE		CAR97	81.1	81.1	81.1	Lw	81.1					5.00	a	6811586.81	2044727.94	5.00
POINTSOURCE		CAR98	81.1	81.1	81.1	Lw	81.1					5.00	a	6811532.37	2044774.58	5.00
POINTSOURCE		CAR99	81.1	81.1	81.1	Lw	81.1					5.00	a	6811493.72	2044726.35	5.00

Name	M.	ID	Result. PWL Day (dBA)	Result. PWL Evening (dBA)	Result. PWL Night (dBA)	Lw/Li Type	Lw/Li Value	Lw/Li norm. dB(A)	Operating Time Day (min)	Operating Time Special (min)	Operating Time Night (min)	Height (ft)		Coordinates X (ft)	Coordinates Y (ft)	Coordinates Z (ft)
POINTSOURCE		TRASH01	89.0	89.0	89.0	Lw	89		900.00	0.00	270.00	5.00	a	6812201.23	2042483.26	5.00
POINTSOURCE		TRASH02	89.0	89.0	89.0	Lw	89		900.00	0.00	270.00	5.00	a	6811055.22	2042501.87	5.00
POINTSOURCE		TRASH03	89.0	89.0	89.0	Lw	89		900.00	0.00	270.00	5.00	a	6812175.20	2044589.21	5.00
POINTSOURCE		TRASH04	89.0	89.0	89.0	Lw	89		900.00	0.00	270.00	5.00	a	6811003.12	2044531.74	5.00
POINTSOURCE		TRASH05	89.0	89.0	89.0	Lw	89		900.00	0.00	270.00	5.00	a	6809466.28	2044537.99	5.00
POINTSOURCE		TRASH06	89.0	89.0	89.0	Lw	89		900.00	0.00	270.00	5.00	a	6810813.26	2044233.45	5.00
POINTSOURCE		TRASH07	89.0	89.0	89.0	Lw	89		900.00	0.00	270.00	5.00	a	6809548.22	2044132.43	5.00

Line Source(s)

Name	M.	ID	Result. PWL Day (dBA)	Result. PWL Evening (dBA)	Result. PWL Night (dBA)	Result. PWL' Day (dBA)	Result. PWL' Evening (dBA)	Result. PWL' Night (dBA)	Lw/Li Type	Lw/Li Value	Lw/Li norm. dB(A)	Operating Time Day (min)	Operating Time Special (min)	Operating Time Night (min)	Moving Pt. Src Day	Moving Pt. Src Evening	Moving Pt. Src Night	Moving Pt. Src Speed (mph)	Height (ft)	
LINESOURCE		TRUCK01	93.2	93.2	93.2	63.6	63.6	63.6	Lw	93.2									8	a
LINESOURCE		TRUCK02	93.2	93.2	93.2	67.7	67.7	67.7	Lw	93.2									8	a
LINESOURCE		TRUCK03	93.2	93.2	93.2	62.7	62.7	62.7	Lw	93.2									8	a
LINESOURCE		TRUCK04	93.2	93.2	93.2	64.7	64.7	64.7	Lw	93.2									8	a

Name	ID	Height Begin (ft)		Height End (ft)	Coordinates x (ft)	Coordinates y (ft)	Coordinates z (ft)	Ground (ft)
LINESOURCE	TRUCK01	8.00	a		6810302.38	2043410.34	8.00	0.00
					6809486.70	2043399.88	8.00	0.00
					6809471.80	2044170.36	8.00	0.00
					6810894.90	2044189.46	8.00	0.00
LINESOURCE	TRUCK02	8.00	a		6810989.16	2042355.36	8.00	0.00
					6812155.11	2042388.30	8.00	0.00
LINESOURCE	TRUCK03	8.00	a		6812163.92	2042177.54	8.00	0.00
					6812109.36	2044685.40	8.00	0.00
					6810948.84	2044664.71	8.00	0.00
LINESOURCE	TRUCK04	8.00	a		6811068.58	2044666.84	8.00	0.00
					6811116.84	2042358.97	8.00	0.00

Area Source(s)

Name	M.	ID	Result. PWL Day (dBA)	Result. PWL Evening (dBA)	Result. PWL Night (dBA)	Result. PWL" Day (dBA)	Result. PWL" Evening (dBA)	Result. PWL" Night (dBA)	Lw/Li Type	Lw/Li Value	Lw/Li norm. dB(A)	Operating Time Day (min)	Operating Time Special (min)	Operating Time Night (min)	Height (ft)	
AREASOURCE		DOCK01	103.4	103.4	103.4	67.9	67.9	67.9	Lw	103.4					8	a
AREASOURCE		DOCK02	103.4	103.4	103.4	67.4	67.4	67.4	Lw	103.4					8	a
AREASOURCE		DOCK03	103.4	103.4	103.4	63.3	63.3	63.3	Lw	103.4					8	a
AREASOURCE		DOCK04	103.4	103.4	103.4	57.9	57.9	57.9	Lw	103.4					8	a
AREASOURCE		DOCK05	103.4	103.4	103.4	57.7	57.7	57.7	Lw	103.4					8	a

Name	ID	Height Begin (ft)		Height End (ft)	Coordinates x (ft)	Coordinates y (ft)	Coordinates z (ft)	Ground (ft)
AREASOURCE	DOCK01	8.00	a		6809503.20	2044100.41	8.00	0.00
					6809565.70	2044100.18	8.00	0.00
					6809578.92	2043478.09	8.00	0.00
					6809520.42	2043473.19	8.00	0.00
AREASOURCE	DOCK02	8.00	a		6809461.02	2043353.00	8.00	0.00
					6810235.69	2043366.93	8.00	0.00
					6810238.78	2043312.74	8.00	0.00
					6809461.97	2043297.90	8.00	0.00
AREASOURCE	DOCK03	8.00	a		6809526.07	2044286.91	8.00	0.00
					6810784.69	2044305.96	8.00	0.00
					6810786.04	2044222.65	8.00	0.00
					6809523.80	2044195.87	8.00	0.00
AREASOURCE	DOCK04	8.00	a		6811180.47	2044551.87	8.00	0.00
					6811215.70	2042489.30	8.00	0.00
					6811029.37	2042486.12	8.00	0.00
					6811020.86	2042768.32	8.00	0.00
					6811085.36	2042773.11	8.00	0.00
					6811082.51	2042832.12	8.00	0.00
					6811023.41	2042834.80	8.00	0.00
					6810998.28	2044198.13	8.00	0.00
					6811055.50	2044197.26	8.00	0.00
					6811058.18	2044256.36	8.00	0.00
					6810995.39	2044258.98	8.00	0.00
					6810990.48	2044546.78	8.00	0.00
AREASOURCE	DOCK05	8.00	a		6812041.09	2042460.95	8.00	0.00
					6812002.62	2044604.67	8.00	0.00
					6812187.17	2044604.13	8.00	0.00
					6812227.42	2042464.14	8.00	0.00

Building(s)

Name	Sel.	M.	ID	RB	Residents	Absorption	Height Begin (ft)		Coordinates x (ft)	y (ft)	z (ft)	Ground (ft)
BUILDING			BUILDING00001	x	0		45.00	a	6809480.45	2044670.26	45.00	0.00
									6810826.21	2044694.55	45.00	0.00
									6810831.53	2044306.67	45.00	0.00
									6809488.31	2044286.33	45.00	0.00
BUILDING			BUILDING00002	x	0		45.00	a	6811179.54	2044623.95	45.00	0.00
									6811999.60	2044632.75	45.00	0.00
									6812034.70	2042425.30	45.00	0.00
									6811217.34	2042411.34	45.00	0.00

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APPENDIX 9.1:

CONSTRUCTION NOISE MODEL INPUTS

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15428 - Apple Valley 3PL Center

CadnaA Noise Prediction Model: 15428-02_Construction.cna
Date: 25.07.23
Analyst: B. Lawson

Calculation Configuration

Configuration	
Parameter	**Value**
General	
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	3048.00
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	999.99
Min. Length of Section (#(Unit,LEN))	1.01
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	5.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr- Reflector	1.001.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	someObj
Obst. within Area Src do not shield	On
Screening	Incl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.020.00.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (TNM)	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	33.2	33.2	39.9	50.0	40.0	0.0				5.00	a	6811916.34	2052680.55	5.00
RECEIVERS		R2	32.9	32.9	39.5	50.0	40.0	0.0				5.00	a	6814032.68	2052382.55	5.00
RECEIVERS		R3	44.0	44.0	50.7	50.0	40.0	0.0				5.00	a	6812959.77	2040483.75	5.00
RECEIVERS		R4	40.4	40.4	47.1	50.0	40.0	0.0				5.00	a	6811865.57	2038794.86	5.00
RECEIVERS		R5	35.2	35.2	41.8	50.0	40.0	0.0				5.00	a	6803074.04	2043224.58	5.00
RECEIVERS		R6	38.4	38.4	45.0	50.0	40.0	0.0				5.00	a	6808071.33	2049266.16	5.00

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL"			Lw / Li			Operating Time			Height	
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)		
SITEBOUNDARY		CONSTRUCTION01	115.0	115.0	115.0	60.1	60.1	60.1	Lw	115					8	a
SITEBOUNDARY		CONSTRUCTION02	115.0	115.0	115.0	64.3	64.3	64.3	Lw	115					8	a

Name	ID	Height		Coordinates			
		Begin	End	x	y	z	Ground
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
SITEBOUNDARY	CONSTRUCTION01	8.00 a		6810942.28	2044792.85	8.00	0.00
				6812205.06	2044801.93	8.00	0.00
				6812248.06	2042182.43	8.00	0.00
				6810988.43	2042169.14	8.00	0.00
SITEBOUNDARY	CONSTRUCTION02	8.00 a		6810890.49	2044792.48	8.00	0.00
				6810901.58	2044151.14	8.00	0.00
				6809590.88	2044129.11	8.00	0.00
				6809601.89	2043440.11	8.00	0.00

Name	ID	Height		Coordinates			
		Begin	End	x	y	z	Ground
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
				6810913.82	2043465.81	8.00	0.00
				6810916.84	2043317.01	8.00	0.00
				6809441.54	2043290.29	8.00	0.00
				6809415.22	2044765.67	8.00	0.00

APPENDIX 9.2:

NIGHTTIME CONCRETE POUR NOISE MODEL INPUTS

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15428 - Apple Valley 3PL Center

CadnaA Noise Prediction Model: 15428-02_Pour.cna
Date: 25.07.23
Analyst: B. Lawson

Calculation Configuration

Configuration	
Parameter	**Value**
General	
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	3048.00
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	999.99
Min. Length of Section (#(Unit,LEN))	1.01
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	5.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr- Reflector	1.001.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	someObj
Obst. within Area Src do not shield	On
Screening	Incl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.020.00.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (TNM)	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use		Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto Noise			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	18.7	18.7	25.4	50.0	40.0	0.0			5.00	a	6811916.34	2052680.55	5.00
RECEIVERS		R2	18.3	18.3	25.0	50.0	40.0	0.0			5.00	a	6814032.68	2052382.55	5.00
RECEIVERS		R3	28.9	28.9	35.6	50.0	40.0	0.0			5.00	a	6812959.77	2040483.75	5.00
RECEIVERS		R4	25.4	25.4	32.0	50.0	40.0	0.0			5.00	a	6811865.57	2038794.86	5.00
RECEIVERS		R5	20.4	20.4	27.0	50.0	40.0	0.0			5.00	a	6803074.04	2043224.58	5.00
RECEIVERS		R6	23.9	23.9	30.6	50.0	40.0	0.0			5.00	a	6808071.33	2049266.16	5.00

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height	
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)		
CONCRETE		POUR01	100.3	100.3	100.3	47.5	47.5	47.5	Lw	100.3					8	a
CONCRETE		POUR02	100.3	100.3	100.3	52.7	52.7	52.7	Lw	100.3					8	a

Name	ID	Height		Coordinates			
		Begin	End	x	y	z	Ground
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
CONCRETE	POUR01	8.00 a		6811180.94	2044621.40	8.00	0.00
				6811997.93	2044632.63	8.00	0.00
				6811998.49	2044599.95	8.00	0.00
				6812058.40	2044600.98	8.00	0.00
				6812089.57	2042457.77	8.00	0.00
				6812035.01	2042462.28	8.00	0.00
				6812035.52	2042432.33	8.00	0.00
				6811218.62	2042415.65	8.00	0.00

Name	ID	Height		Coordinates			
		Begin	End	x	y	z	Ground
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
				6811217.37	2042489.17	8.00	0.00
				6811154.73	2042488.10	8.00	0.00
				6811119.52	2044549.53	8.00	0.00
				6811182.15	2044550.60	8.00	0.00
CONCRETE	POUR02	8.00	a	6809477.58	2044674.02	8.00	0.00
				6810825.58	2044694.32	8.00	0.00
				6810837.54	2044313.17	8.00	0.00
				6810780.45	2044306.75	8.00	0.00
				6810781.57	2044241.40	8.00	0.00
				6809526.43	2044206.34	8.00	0.00
				6809525.03	2044288.03	8.00	0.00
				6809492.31	2044290.20	8.00	0.00