

NOISE AND VIBRATION IMPACT ANALYSIS

**NATIONAL TUBE SUPPLY PROJECT
HEMET, CALIFORNIA**

LSA

August 2023

NOISE AND VIBRATION IMPACT ANALYSIS

NATIONAL TUBE SUPPLY PROJECT HEMET, CALIFORNIA

Submitted to:

EPD Solutions, Inc.
3333 Michelson Drive, Suite 500
Irvine, California 92612

Prepared by:

LSA
3210 El Camino Real, Suite 100
Irvine, California 92602
(949) 553-0666

Project No. ESL2201.66



August 2023

TABLE OF CONTENTS

FIGURES AND TABLES	ii
LIST OF ABBREVIATIONS AND ACRONYMS.....	iii
INTRODUCTION	1
Project Location and Description	1
Existing Land Uses in the Project Area	4
City of Hemet General Plan EIR MMRP	4
NOISE AND VIBRATION FUNDAMENTALS	6
Characteristics of Sound.....	6
Measurement of Sound.....	6
Physiological Effects of Noise	7
Fundamentals of Vibration.....	9
REGULATORY SETTING	11
Applicable Noise Standards.....	11
City of Hemet.....	11
State of California Green Building Standards Code	12
Federal Transit Administration.....	13
Applicable Vibration Standards	13
Federal Transit Administration.....	13
OVERVIEW OF THE EXISTING NOISE ENVIRONMENT	15
Ambient Noise Measurements	15
Long-Term Noise Measurements	15
Existing Aircraft Noise	15
Existing Rail Activity Noise.....	17
PROJECT IMPACTS	18
Short-Term Construction Noise Impacts.....	18
Short-Term Construction Vibration Impacts	21
Long-Term Off-Site Traffic Noise Impacts	23
Long-Term Traffic-Related Vibration Impacts	23
Long-Term Off-Site Stationary Noise Impacts.....	23
Heating, Ventilation, and Air Conditioning Equipment	24
Trash Bin Emptying Activities	24
Truck Deliveries and Truck Loading and Unloading Activities	24
Cumulative Operations Noise Assessment.....	24
REFERENCES	27
 APPENDICES	
A: NOISE MONITORING DATA	
B: CONSTRUCTION NOISE LEVEL CALCULATIONS	
C: SOUNDPLAN NOISE MODEL PRINTOUTS	

FIGURES AND TABLES

FIGURES

Figure 1: Project Location.....	2
Figure 2: Site Plan	3
Figure 3: Noise Monitoring Locations	16

TABLES

Table A: Definitions of Acoustical Terms.....	8
Table B: Common Sound Levels and Their Noise Sources.....	9
Table C: Land Use Compatibility Standards for Exterior and Interior Noise	12
Table D: Noise Level Performance Standards for Nontransportation Noise Sources	12
Table E: Detailed Assessment Daytime Construction Noise Criteria.....	13
Table F: Interpretation of Vibration Criteria for Detailed Analysis	13
Table G: Construction Vibration Damage Criteria.....	14
Table H: Long-Term 24-Hour Ambient Noise Monitoring Results.....	15
Table I: Typical Construction Equipment Noise Levels.....	19
Table J: Potential Construction Noise Impacts at Nearest Receptor	20
Table K: Vibration Source Amplitudes for Construction Equipment.....	21
Table L: Potential Construction Vibration Annoyance Impacts at Nearest Receptor	22
Table M: Potential Construction Vibration Damage Impacts at Nearest Receptor	22
Table N: Daytime Exterior Noise Level Impacts— L_{eq}	25
Table O: Nighttime Exterior Noise Level Impacts— L_{eq}	25
Table P: Daytime Exterior Noise Level Impacts— L_{max}	25
Table Q: Nighttime Exterior Noise Level Impacts— L_{max}	26

LIST OF ABBREVIATIONS AND ACRONYMS

ADA	Americans with Disabilities Act
APN	Assessor's Parcel Number
CalEEMod	California Emission Estimator Model
CALGreen Code	California Green Building Standards Code
City	City of Hemet
CNEL	Community Noise Equivalent Level
County	County of Riverside
CY	cubic yards
dB	decibel(s)
dBA	A-weighted decibel(s)
EPA	United States Environmental Protection Agency
EIR	Environmental Impact Report
EV	electric vehicle
FAR	floor-to-area ratio
FHWA	Federal Highway Administration
ft	foot/feet
FTA	Federal Transit Administration
FTA Manual	<i>Transit Noise and Vibration Impact Assessment Manual (FTA 2018)</i>
General Plan EIR	City of Hemet General Plan 2030
HMC	City of Hemet Municipal Code
HMT	Hemet-Ryan Airport
HVAC	heating, ventilation, and air conditioning
in/sec	inches per second
L _{dn}	day-night average noise level

L _{eq}	equivalent continuous sound level
L _{max}	maximum instantaneous sound level
MMRP	Mitigation Monitoring and Reporting Program
PPV	peak particle velocity
project	National Tube Supply Project
Public Safety Element	City of Hemet General Plan Public Safety Element
RMS	root-mean-square
SPL	sound power level
sq ft	square foot/feet
VdB	vibration velocity decibels

INTRODUCTION

This noise and vibration impact analysis has been prepared to evaluate the potential noise and vibration impacts and reduction measures associated with the National Tube Supply Project (project) in Hemet, California. This report is intended to satisfy the City of Hemet's (City) requirement for a project-specific noise impact analysis by examining the impacts of the project site and evaluating noise reduction measures that the project may require. In addition, the mitigation measures in the City of Hemet General Plan 2030 (General Plan EIR) Mitigation Monitoring and Reporting Program (MMRP) would apply to the proposed project; therefore, applicable mitigation measures from the General Plan EIR MMRP are identified within.

PROJECT LOCATION AND DESCRIPTION

The 5.76-acre project site is located southwest of the intersection at Wentworth Drive and South Sanderson Avenue in Hemet, Riverside County, California (Assessor's Parcel Number [APN] 456-040-028 and -029). Regional access to the project site is provided by State Route 74. Local access is provided via Wentworth Drive, which is accessible from South Sanderson to the east and Cawston Avenue to the west. See Figure 1, Project Location, and Figure 2, Site Plan, below.

The project proposes to merge the two existing parcels to develop a new 90,030 square foot (sq ft) industrial warehouse facility on the 5.76-acre site. The building would support warehousing, manufacturing, and office uses and include a truck terminal. Additional improvements to the site would include landscaping, utility connections, stormwater facilities, and pavement of parking areas and drive aisles. No off-site improvements are proposed as part of the project.

The proposed building would be two stories tall and have a total building area of 90,030 sq ft. The first floor would include 75,430 sq ft of warehouse space, 5,000 sq ft of manufacturing space, and 4,800 sq ft of potential office space. An additional 4,800 sq ft of office space is proposed and would be included as the second floor of the office area. The building would have a height of 43 feet and 6 inches and a floor-to-area ratio (FAR) of 0.36. The building would be set back a minimum of 52 feet and 10 inches from the northern property line, 178 feet from the western property line, 95 feet from the eastern property line, and 83 feet from the southern property line. The proposed project would also include an option for future expansion of the facility by 17,280 sq ft of warehousing area, which would be expanded from the east of the building area. This would increase the proposed project's total building area to 107,310 sq ft and the FAR to 0.43.

The project would provide a total of 125 stalls for auto parking including 89 standard parking stalls, four Americans with Disabilities Act (ADA) standard stalls, one ADA van stall, 25 electric vehicle stalls, and six electric vehicle charging station stalls. Standard parking stalls would be located adjacent to the east and west project boundary. Clean air and electric vehicle (EV) stalls would be located on the east and west length of the warehouse building. ADA vehicle stalls would be located at the front of the warehouse building facing Wentworth Drive. Additionally, the project would include four overhead grade level doors located along the north and south sides of the building.



 Project Location

FIGURE 1

LSA



0 1000 2000
FEET

SOURCE: Esri Imagery August 2023

J:\ESL2201.66\GIS\Pro\National Tube Supply Project\National Tube Supply Project.aprx (8/16/2023)

National Tube Supply Project
Project Location

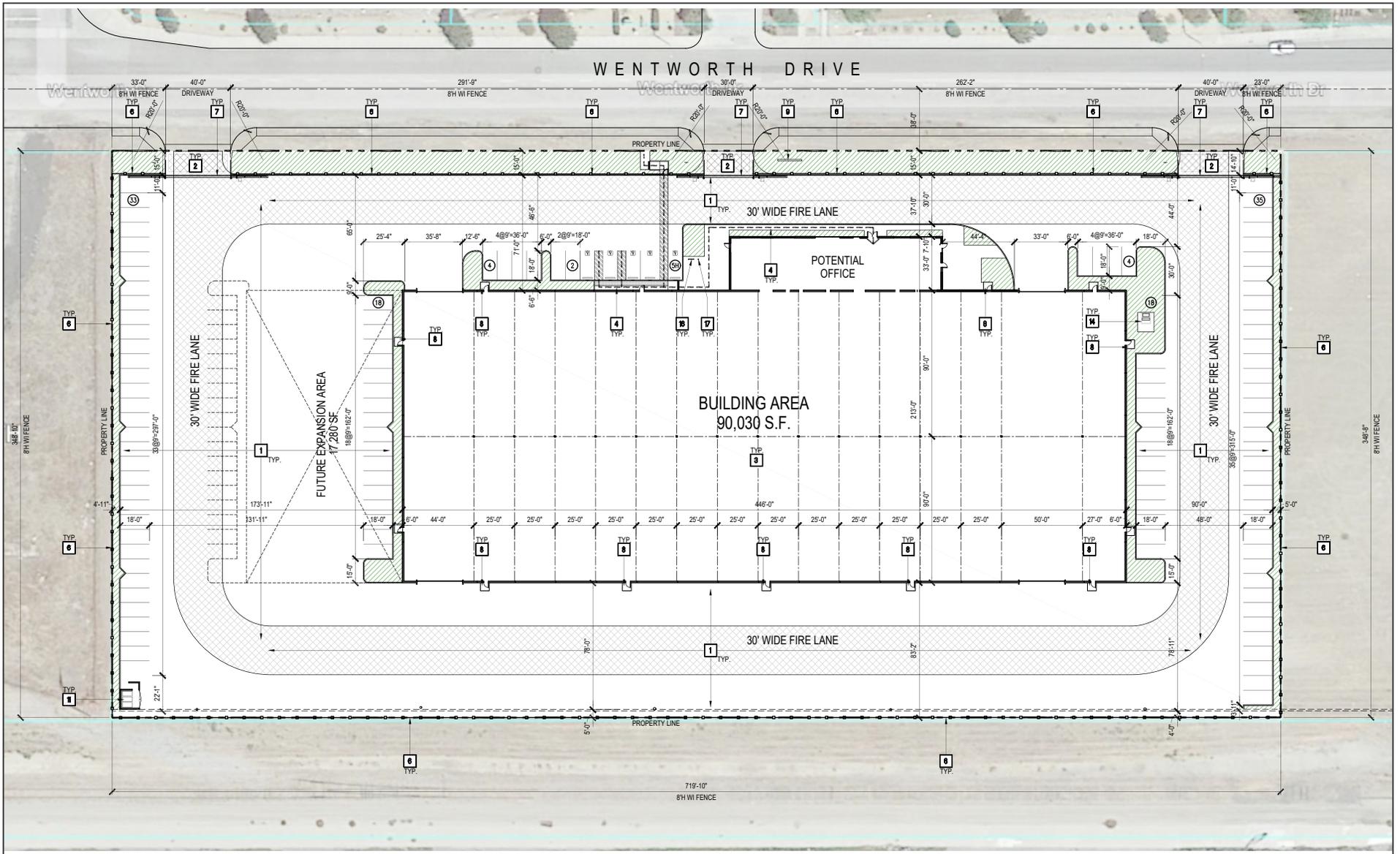
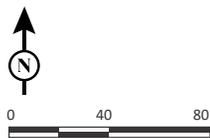


FIGURE 2

LSA



SOURCE: SKH Architect

National Tube Supply
Site Plan

Typical operational characteristics include employees traveling to and from the site, delivery of materials and supplies to the site, truck loading and unloading, and distribution. Operation of the proposed project is assumed to be 24 hours a day, 7 days a week. The future expansion area of the proposed project would not have an effect on the operational characteristics of the project as the additional warehousing area would be utilized for added storage within the facility.

Construction activities would not be phased and would start at the beginning of quarter one of 2024. Expected length of construction for the project would be approximately 10–11 months and would include site preparation, grading, building construction, paving, and architectural coatings. Grading work of soils is expected to result in approximately 9,300 cubic yards (CY) of cut and 7,050 CY of fill soils for a net export of 2,250 CY of soil. Additionally, future construction may occur due to the expansion of the eastern portion of the warehousing area. Construction activities would occur within the hours allowable by the Hemet Municipal Code Section 14.46, which states that construction shall occur only between the hours of 6:00 a.m. and 6:00 p.m. during the months of June through September and between the hours of 7:00 a.m. and 6:00 p.m. during the months of October through May. Construction on Saturdays is permitted between the hours of 7:00 a.m. and 6:00 p.m. No construction shall occur on Sundays.

EXISTING LAND USES IN THE PROJECT AREA

The project site is surrounded primarily by industrial, commercial, and residential uses. The areas adjacent to the project site include the following uses:

- **North:** Existing commercial uses and a storage facility opposite Wentworth Drive.
- **East:** Existing vacant land, storage facility, and residential neighborhood opposite South Sanderson Avenue.
- **South:** Existing rail tracks followed by miscellaneous manufacturing businesses.
- **West:** Existing vacant land followed by industrial uses with trailer parking.

The nearest sensitive receptors are:

- **East:** Single-family residences opposite South Sanderson Avenue approximately 600 feet (ft) from the project boundary line.

CITY OF HEMET GENERAL PLAN EIR MMRP

The General Plan EIR MMRP identified the following mitigation measures that would apply to the proposed project and that would help reduce and avoid potential impacts related to noise and vibration.

- **Mitigation Measure 4.11-5—Construction-Induced Vibration:** Where necessary to reduce potentially significant impacts, the City shall implement or require implementation of the following construction measures through contract provisions and/or conditions of approval as appropriate:

- Utilize alternative installation methods where possible (e.g., pile cushioning, jetting, pre-drilling, cast-in-place systems, resonance-free vibratory pile drivers) for pile driving required within a 50-foot radius of historic structures. Specifically, geo-pier style cast-in-place systems or equivalent shall be used where feasible as an alternative to pile driving to reduce the number and amplitude of impacts required for seating the pile.
- Record, in the form of a preconstruction survey, the preexisting condition of all buildings within a 50-foot radius and of historic buildings within the immediate vicinity of proposed construction activities. The preconstruction survey shall determine conditions that exist before construction begins for use in evaluating damage caused by construction activities. Fixtures and finishes within a 50-foot radius of construction activities susceptible to damage shall be documented (photographically and in writing) prior to construction. All damage shall be repaired back to its preexisting condition.
- Conduct vibration monitoring prior to and during pile driving operations occurring within 100 feet of the historic structures. Every attempt shall be made to limit construction-generated vibration levels in accordance with Caltrans recommendations during pile driving and impact activities in the vicinity of the historic structures.
- Provide protective coverings or temporary shoring of on-site or adjacent historic features as necessary, in consultation with the City Building Department.

NOISE AND VIBRATION FUNDAMENTALS

CHARACTERISTICS OF SOUND

Noise is usually defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, and sleep.

To the human ear, sound has two significant characteristics: pitch and loudness. Pitch is generally an annoyance, while loudness can affect the ability to hear. Pitch is the number of complete vibrations, or cycles per second, of a sound wave, which results in the tone's range from high to low. Loudness is the strength of a sound, and it describes a noisy or quiet environment; it is measured by the amplitude of the sound wave. Loudness is determined by the intensity of the sound waves combined with the reception characteristics of the human ear. Sound intensity is the average rate of sound energy transmitted through a unit of area perpendicular to the direction in which the sound waves are traveling. This characteristic of sound can be precisely measured with instruments. The analysis of a project defines the noise environment of the project area in terms of sound intensity and its effect on adjacent sensitive land uses.

MEASUREMENT OF SOUND

Sound intensity is measured with the A-weighted decibel (dBA) scale to correct for the relative frequency response of the human ear. That is, an A-weighted noise level de-emphasizes low and very high frequencies of sound, similar to the human ear's de-emphasis of these frequencies. Decibels (dB), unlike the linear scale (e.g., inches or pounds), are measured on a logarithmic scale representing points on a sharply rising curve.

For example, 10 dB is 10 times more intense than 0 dB, 20 dB is 100 times more intense than 0 dB, and 30 dB is 1,000 times more intense than 0 dB. Thirty decibels (30 dB) represents 1,000 times as much acoustic energy as 0 dB. The decibel scale increases as the square of the change, representing the sound pressure energy. A sound as soft as human breathing is about 10 times greater than 0 dB. The decibel system of measuring sound gives a rough connection between the physical intensity of sound and its perceived loudness to the human ear. A 10 dB increase in sound level is perceived by the human ear as only a doubling of the sound's loudness. Ambient sounds generally range from 30 dB (very quiet) to 100 dB (very loud).

Sound levels are generated from a source, and their decibel level decreases as the distance from that source increases. Sound levels dissipate exponentially with distance from their noise sources. For a single point source, sound levels decrease approximately 6 dB for each doubling of distance from the source. This drop-off rate is appropriate for noise generated by stationary equipment. If noise is produced by a line source (e.g., highway traffic or railroad operations), the sound decreases 3 dB for each doubling of distance in a hard site environment. Line source sound levels decrease 4.5 dB for each doubling of distance in a relatively flat environment with absorptive vegetation.

There are many ways to rate noise for various time periods, but an appropriate rating of ambient noise affecting humans also accounts for the annoying effects of sound. The equivalent continuous

sound level (L_{eq}) is the total sound energy of time-varying noise over a sample period. However, the predominant rating scales for human communities in the State of California are the L_{eq} and Community Noise Equivalent Level (CNEL) or the day-night average noise level (L_{dn}) based on A-weighted decibels. CNEL is the time-weighted average noise over a 24-hour period, with a 5 dBA weighting factor applied to the hourly L_{eq} for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and a 10 dBA weighting factor applied to noises occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours). L_{dn} is similar to the CNEL scale but without the adjustment for events occurring during the relaxation hours. CNEL and L_{dn} are within 1 dBA of each other and are normally interchangeable. The County of Riverside (County) uses the CNEL noise scale for long-term traffic noise impact assessment.

Other noise rating scales of importance when assessing the annoyance factor include the maximum instantaneous noise level (L_{max}), which is the highest sound level that occurs during a stated time period. The noise environments discussed in this analysis for short-term noise impacts are specified in terms of maximum levels denoted by L_{max} , which reflects peak operating conditions and addresses the annoying aspects of intermittent noise. It is often used together with another noise scale, or noise standards in terms of percentile noise levels, in noise ordinances for enforcement purposes. For example, the L_{10} noise level represents the noise level exceeded 10 percent of the time during a stated period. The L_{50} noise level represents the median noise level. Half the time the noise level exceeds this level, and half the time it is less than this level. The L_{90} noise level represents the noise level exceeded 90 percent of the time and is considered the background noise level during a monitoring period. For a relatively constant noise source, the L_{eq} and L_{50} are approximately the same.

Noise impacts can be described in three categories. The first category includes audible impacts, which are increases in noise levels noticeable to humans. Audible increases in noise levels generally refer to a change of 3 dB or greater because this level has been found to be barely perceptible in exterior environments. The second category, potentially audible, refers to a change in the noise level between 1 dB and 3 dB. This range of noise levels has been found to be noticeable only in laboratory environments. The last category includes changes in noise levels of less than 1 dB, which are inaudible to the human ear. Only audible changes in existing ambient or background noise levels are considered potentially significant.

Physiological Effects of Noise

Physical damage to human hearing begins at prolonged exposure to sound levels higher than 85 dBA. Exposure to high sound levels affects the entire system, with prolonged sound exposure in excess of 75 dBA increasing body tensions, thereby affecting blood pressure and functions of the heart and the nervous system. In comparison, extended periods of sound exposure above 90 dBA would result in permanent cell damage. When the sound level reaches 120 dBA, a tickling sensation occurs in the human ear, even with short-term exposure. This level of sound is called the threshold of feeling. As the sound reaches 140 dBA, the tickling sensation is replaced by a feeling of pain in the ear (i.e., the threshold of pain). A sound level of 160–165 dBA will result in dizziness or a loss of equilibrium. The ambient or background noise problem is widespread and generally more concentrated in urban areas than in outlying, less developed areas.

Table A lists full definitions of acoustical terms as defined in the Caltrans Technical Noise Supplement to the Traffic Noise Analysis Protocol (Caltrans 2013) and Federal Transit Administration’s (FTA) Transit Noise and Vibration Impact Assessment Manual (2018) (FTA Manual), and Table B shows common sound levels and their sources.

Table A: Definitions of Acoustical Terms

Term	Definitions
Decibel, dB	A unit of level that denotes the ratio between two quantities proportional to power, the number of decibels is 10 times the logarithm (to the base 10) of this ratio.
Frequency, Hz	Of a function periodic in time, the number of times that the quantity repeats itself in one second (i.e., number of cycles per second).
A-Weighted Sound Level, dBA	The sound level obtained by use of A-weighting. The A-weighting filter deemphasizes the very low and very high frequency components of the sound in a manner similar to the frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this assessment are A-weighted, unless reported otherwise.
L ₀₁ , L ₁₀ , L ₅₀ , L ₉₀	The fast A-weighted noise levels equaled or exceeded by a fluctuating sound level for 1 percent, 10 percent, 50 percent, and 90 percent of a stated time period.
Equivalent Continuous Noise Level, L _{eq}	The level of a steady sound that, in a stated time period and at a stated location, has the same A-weighted sound energy as the time varying sound.
Community Noise Equivalent Level, CNEL	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 5 dB to sound levels occurring in the evening from 7:00 p.m. to 10:00 p.m. and after the addition of 10 dB to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
Day/Night Noise Level, L _{dn}	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 10 dB to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
L _{max} , L _{min}	The maximum and minimum A-weighted sound levels measured on a sound level meter, during a designated time interval, using fast time averaging.
Ambient Noise Level	The all-encompassing noise associated with a given environment at a specified time, usually a composite of sound from many sources at many directions, near and far; no particular sound is dominant.
Intrusive	The noise that 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 and tonal or informational content, as well as the prevailing ambient noise level.

Source: *Caltrans Technical Noise Supplement to the Traffic Noise Analysis Protocol* (Caltrans 2013), *Federal Transit Administration’s (FTA) Transit Noise and Vibration Impact Assessment Manual* (2018).

Table B: Common Sound Levels and Their Noise Sources

Noise Source	A-Weighted Sound Level in Decibels	Noise Environments	Subjective Evaluations
Near Jet Engine	140	Deafening	128 times as loud
Civil Defense Siren	130	Threshold of Pain	64 times as loud
Hard Rock Band	120	Threshold of Feeling	32 times as loud
Accelerating Motorcycle at a Few Feet Away	110	Very Loud	16 times as loud
Pile Driver; Noisy Urban Street/ Heavy City Traffic	100	Very Loud	8 times as loud
Ambulance Siren; Food Blender	95	Very Loud	—
Garbage Disposal	90	Very Loud	4 times as loud
Freight Cars; Living Room Music	85	Loud	—
Pneumatic Drill; Vacuum Cleaner	80	Loud	2 times as loud
Busy Restaurant	75	Moderately Loud	—
Near Freeway Auto Traffic	70	Moderately Loud	Reference level
Average Office	60	Quiet	One-half as loud
Suburban Street	55	Quiet	—
Light Traffic; Soft Radio Music in Apartment	50	Quiet	One-quarter as loud
Large Transformer	45	Quiet	—
Average Residence without Stereo Playing	40	Faint	One-eighth as loud
Soft Whisper	30	Faint	—
Rustling Leaves	20	Very Faint	—
Human Breathing	10	Very Faint	Threshold of Hearing
—	0	Very Faint	—

Source: Compiled by LSA (2022).

FUNDAMENTALS OF VIBRATION

Vibration refers to ground-borne noise and perceptible motion. Ground-borne vibration is almost exclusively a concern inside buildings and is rarely perceived as a problem outdoors, where the motion may not be discernible, but without the effects associated with the shaking of a building there is less adverse reaction. Vibration energy propagates from a source through intervening soil and rock layers to the foundations of nearby buildings. The vibration then propagates from the foundation throughout the remainder of the structure. Building vibration may be perceived by occupants as the motion of building surfaces, the rattling of items sitting on shelves or hanging on walls, or a low-frequency rumbling noise. The rumbling noise is caused by the vibration of walls, floors, and ceilings that radiate sound waves. Annoyance from vibration often occurs when the vibration exceeds the threshold of perception by 10 dB or less. This is an order of magnitude below the damage threshold for normal buildings.

Typical sources of ground-borne vibration are construction activities (e.g., blasting, pile-driving, and operating heavy-duty earthmoving equipment), steel-wheeled trains, and occasional traffic on rough roads. Problems with both ground-borne vibration and noise from these sources are usually localized to areas within approximately 100 ft from the vibration source, although there are examples of ground-borne vibration causing interference out to distances greater than 200 ft (FTA 2018). When roadways are smooth, vibration from traffic, even heavy trucks, is rarely perceptible. It is assumed for most projects that the roadway surface will be smooth enough that ground-borne

vibration from street traffic will not exceed the impact criteria; however, construction of the project could result in ground-borne vibration that may be perceptible and annoying.

Ground-borne noise is not likely to be a problem because noise arriving via the normal airborne path will usually be greater than ground-borne noise.

Ground-borne vibration has the potential to disturb people and damage buildings. Although it is very rare for train-induced ground-borne vibration to cause even cosmetic building damage, it is not uncommon for construction processes such as blasting and pile-driving to cause vibration of sufficient amplitudes to damage nearby buildings (FTA 2018). Ground-borne vibration is usually measured in terms of vibration velocity, either the root-mean-square (RMS) velocity or peak particle velocity (PPV). The RMS is best for characterizing human response to building vibration, and PPV is used to characterize the potential for damage. Decibel notation acts to compress the range of numbers required to describe vibration. Vibration velocity level in decibels is defined as:

$$L_v = 20 \log_{10} [V/V_{ref}]$$

where “ L_v ” is the vibration velocity in decibels (VdB), “ V ” is the RMS velocity amplitude, and “ V_{ref} ” is the reference velocity amplitude, or 1×10^{-6} inches/second (in/sec) used in the United States.

REGULATORY SETTING

APPLICABLE NOISE STANDARDS

The applicable noise standards governing the project site include the criteria in the City's Public Safety Element of the General Plan (Public Safety Element) and the City of Hemet Municipal Code (HMC).

City of Hemet

Public Safety Element of the General Plan

The Public Safety Element provides the City's goals and strategies related to noise, including the land use compatibility guidelines for community exterior noise environments. Tables 6.4 and 6.5 from the City's General Plan (Tables C and D of this document) outline the noise standards for land use compatibility and the acceptable daytime and nighttime noise performance standards for nontransportation noise sources, respectively. The City has identified the following goals and strategies in the Public Safety Element:

- **Goal PS-11:** Manage noise levels through land use planning and development review.
 - **PS-11.1 Noise Standards:** Enforce noise standards to maintain acceptable noise limits and protect existing areas with acceptable noise environments.
 - **PS-11.2 Design to Minimize Noise:** Encourage the use of siting and building design techniques as a means to minimize noise.
 - **PS-11.3 Evaluate Noise:** Evaluate potential noise conflicts for individual sites and projects and require mitigation of all significant noise impacts (including construction and short-term noise impacts) as a condition of project approval.
 - **PS-11.4 Protect Noise-Sensitive Uses:** Protect noise-sensitive uses from new noise sources.
- **Goal PS-12:** Minimize noise conflicts from transportation sources and airports.
 - **PS-12.1 Traffic Noise:** Minimize noise conflicts between current and proposed land uses and the circulation network by encouraging compatible land uses around critical roadway segments with higher noise potential.
 - **PS-12.3 Airport Noise:** Ensure that future development in the vicinity of Hemet-Ryan Airport is compatible with current and projected airport noise levels in accordance with the noise standards presented in Table 6.4 (Table C of this document).
- **Goal PS-13:** Minimize noise conflicts with stationary noise generators.
 - **PS-13.1 Protect Valuable Noise Sources:** Protect the continued viability of economically valuable noise sources such as commercial and industrial facilities and the Hemet-Ryan Airport.
 - **PS-13.2 New Sensitive Uses:** Restrict the location of sensitive land uses near major noise sources to achieve the standards present in Table 6.4 (Table C of this document).
 - **PS-13.3 Prevent Encroachment:** Prevent the encroachment of noise sensitive land uses into areas designated for use by existing or future noise generators.

Table C: Land Use Compatibility Standards for Exterior and Interior Noise

Land Uses (Receiving Noise)	Maximum Exterior CNEL (dBA)	Maximum Interior CNEL (dBA)
Rural, Single-Family, Multiple-Family Residential	65	45
Schools:		
Classrooms	65	45
Playgrounds	70	-
Libraries	-	50
Hospitals/Convalescent Facilities:		
Living Areas	-	50
Sleeping Areas	-	40
Recreation:		
Quiet, Passive Areas	65	-
Noisy, Active Areas	70	-
Commercial and Industrial	70	-
Office Areas	-	50

Source: City of Hemet General Plan (2012).
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibels

Table D: Noise Level Performance Standards for Nontransportation Noise Sources

Noise Level Descriptor	Daytime (7:00 a.m.–10:00 p.m.)	Nighttime (10:00 p.m.–7:00 a.m.)
Equivalent continuous sound level (L_{eq})	60 dBA	45 dBA
Maximum instantaneous sound level (L_{max})	75 dBA	65 dBA

Source: City of Hemet General Plan (2012).
dBA = A-weighted decibels

City of Hemet Municipal Code

Construction Noise. Chapter 30, Article II, Section 14.46 of the HMC permits construction activities between the hours of 6:00 a.m. and 6:00 p.m. during the months of June through September and between the hours of 7:00 a.m. and 6:00 p.m. during the months of October through May. Construction on Saturdays is permitted between the hours of 7:00 a.m. and 6:00 p.m. No construction shall occur on Sundays. Exceptions to these standards may be granted only by the City building official and/or the City Council. Construction occurring consistent with these provisions is exempt from regulation.

State of California Green Building Standards Code

The State of California’s Green Building Standards Code (CALGreen Code) contains mandatory measures for nonresidential building construction in Section 5.507 on Environmental Comfort. These noise standards are applied to new construction in California for controlling interior noise levels resulting from exterior noise sources. The regulations specify that acoustical studies must be prepared when nonresidential structures are developed in areas where the exterior noise levels exceed 65 dBA CNEL, such as within a noise contour of an airport, freeway, railroad, or other noise

source. If the development falls within an airport or freeway 65 dBA CNEL noise contour, buildings shall be constructed to provide an interior noise level environment attributable to exterior sources that does not exceed an hourly equivalent level of 50 dBA L_{eq} in occupied areas during any hour of operation.

Federal Transit Administration

Though the City does not have daytime construction noise level limits for activities that occur within the specified hours of the HMC to determine potential California Environmental Quality Act noise impacts, construction noise was assessed using criteria from the FTA Manual. Table E shows the FTA’s Detailed Assessment Construction Noise Criteria based on the composite noise levels per construction phase.

Table E: Detailed Assessment Daytime Construction Noise Criteria

Land Use	Daytime 1-hour L_{eq} (dBA)
Residential	80
Commercial	85
Industrial	90

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).
dBA = A-weighted decibels
 L_{eq} = equivalent continuous sound level

APPLICABLE VIBRATION STANDARDS

Federal Transit Administration

Vibration standards included in the FTA Manual are used in this analysis for ground-borne vibration impacts on human annoyance. The criteria for environmental impact from ground-borne vibration and noise are based on the maximum levels for a single event. Table F provides the criteria for assessing the potential for interference or annoyance from vibration levels in a building.

Table F: Interpretation of Vibration Criteria for Detailed Analysis

Land Use	Max L_v (VdB) ¹	Description of Use
Workshop	90	Vibration that is distinctly felt. Appropriate for workshops and similar areas not as sensitive to vibration.
Office	84	Vibration that can be felt. Appropriate for offices and similar areas not as sensitive to vibration.
Residential Day	78	Vibration that is barely felt. Adequate for computer equipment and low-power optical microscopes (up to 20×).
Residential Night and Operating Rooms	72	Vibration is not felt, but ground-borne noise may be audible inside quiet rooms. Suitable for medium-power microscopes (100×) and other equipment of low sensitivity.

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).

¹ As measured in 1/3-Octave bands of frequency over the frequency range 8 to 80 Hertz.

FTA = Federal Transit Administration Max = maximum

L_v = velocity in decibels

VdB = vibration velocity decibels

Table G lists the potential vibration building damage criteria associated with construction activities, as suggested in the FTA Manual. FTA guidelines show that a vibration level of up to 0.5 in/sec in PPV is considered safe for buildings consisting of reinforced concrete, steel, or timber (no plaster), and would not result in any construction vibration damage. For non-engineered timber and masonry buildings, the construction building vibration damage criterion is 0.2 in/sec in PPV.

Table G: Construction Vibration Damage Criteria

Building Category	PPV (in/sec)
Reinforced concrete, steel, or timber (no plaster)	0.50
Engineered concrete and masonry (no plaster)	0.30
Non-engineered timber and masonry buildings	0.20
Buildings extremely susceptible to vibration damage	0.12

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).

FTA = Federal Transit Administration

PPV = peak particle velocity

in/sec = inch/inches per second

OVERVIEW OF THE EXISTING NOISE ENVIRONMENT

The primary existing noise sources in the project area are traffic on South Sanderson Avenue and Wentworth Drive, parking lot activities, and infrequent rail activity to the south.

AMBIENT NOISE MEASUREMENTS

Long-Term Noise Measurements

To assess existing noise levels, LSA conducted two long-term noise measurements in the vicinity of the project site. The long-term (24-hour) noise level measurements were conducted on July 27 through July 28, 2023, using two Larson Davis Spark 706RC Dosimeters. Table H provides a summary of the measured hourly and maximum noise levels from the long-term noise level measurements. As shown in Table H, the calculated hourly noise levels range from 48.1 dBA L_{eq} to 69.3 dBA L_{eq} . Maximum noise levels at surrounding sensitive uses are as low as 63.4 dBA L_{max} during nighttime hours and 61.8 dBA L_{max} during daytime hours. Noise measurement sheets are provided in Appendix A. Figure 3 shows the long-term monitoring locations.

Table H: Long-Term 24-Hour Ambient Noise Monitoring Results

Location		Daytime Noise Levels ¹ (dBA L_{eq})	Daytime Noise Levels ¹ (dBA L_{max})	Nighttime Noise Levels ² (dBA L_{eq})	Nighttime Noise Levels ² (dBA L_{max})
LT-1	On a utility pole west of the main entrance of self-storage facility at 3450 Wentworth Drive, approximately 30 ft from the Wentworth Drive centerline.	65.5-69.3	81.3-89.5	57.0-67.0	78.6-87.6
LT-2	On a utility pole along the northeast border of the Environmental Health Department at 800 South Sanderson Avenue, approximately 340 ft from the South Sanderson Avenue centerline.	51.8-59.6	61.8-81.2	48.1-53.6	63.4-76.7

Source: Compiled by LSA (2023).

Note: Noise measurements were conducted from July 27 to July 28, 2023, starting at 11:00 a.m.

¹ Daytime Noise Levels = noise levels during the hours from 7:00 a.m. to 10:00 p.m.

² Nighttime Noise Levels = noise levels during the hours from 10:00 p.m. to 7:00 a.m.

dBA = A-weighted decibels

L_{max} = maximum sound level

ft = foot/feet

L_{eq} = equivalent continuous sound level

EXISTING AIRCRAFT NOISE

Aircraft flyovers may be audible on the project site due to aircraft activity in the vicinity. The nearest airport to the project site is Hemet-Ryan Airport (HMT), an airport approximately 0.4 mile to the west. The project site is outside the 65 dBA CNEL airport noise impact zone, consistent with Figure 6.8 of the City’s Public Safety Element. Because the project site is outside the 65 dBA CNEL noise contour, no further analysis associated with aircraft noise impacts is necessary.

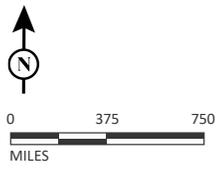


FIGURE 3

LSA

LEGEND

- Project Site Boundary
- LT-1** Long-term Noise Monitoring Location



SOURCE: Google Earth (2023)
 I:\ESL2201.66\G\Noise_Locs.ai (8/15/2023)

EXISTING RAIL ACTIVITY NOISE

The exterior noise level at the LT-2 location, representing the southern section of the project site, was recorded at 60.1 dBA CNEL. Because the office use portion of the proposed buildings would be farther to the north, noise impacts from the adjacent rail line would decrease and remain below 65 dBA CNEL. Because the areas of the project site containing office uses would remain below 65 dBA CNEL, the project would comply with the applicable CALGreen Code standards and no further analysis associated with on-site rail noise impacts is necessary.

PROJECT IMPACTS

SHORT-TERM CONSTRUCTION NOISE IMPACTS

Two types of short-term noise impacts could occur during the construction of the proposed project. First, construction crew commutes and the transport of construction equipment and materials to the site for the proposed project would incrementally increase noise levels on access roads leading to the site. Although there would be a relatively high single-event noise-exposure potential causing intermittent noise nuisance (passing trucks at 50 ft would generate up to 84 dBA L_{max}), the effect on longer-term ambient noise levels would be small when compared to existing daily traffic volumes on Wentworth Drive. The results of the California Emissions Estimator Model (CalEEMod) for the proposed project indicate that during the building construction phase, an additional 98 vehicles, consisting of worker and hauling trips, would be added to the roadway adjacent to the project site. Because the existing traffic volume on Wentworth Drive is considerably more than 98, construction-related vehicle trips would not approach existing daily traffic volumes and traffic noise would not increase by 3 dBA CNEL. A noise level increase of less than 3 dBA would not be perceptible to the human ear in an outdoor environment. Therefore, short-term, construction-related impacts associated with worker commute and equipment transport to the project site would be less than significant.

The second type of short-term noise impact is related to noise generated during construction, which includes site preparation, grading, building construction, paving, and architectural coating on the project site. Construction is completed in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated on the site and, therefore, the noise levels surrounding the site as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. Table I lists typical construction equipment noise levels recommended for noise impact assessments, based on a distance of 50 ft between the equipment and a noise receptor, taken from the FHWA *Roadway Construction Noise Model* (FHWA 2006).

In addition to the reference maximum noise level, the usage factor provided in Table I is used to calculate the hourly noise level impact for each piece of equipment based on the following equation:

$$L_{eq}(equip) = E.L. + 10 \log(U.F.) - 20 \log\left(\frac{D}{50}\right)$$

where: $L_{eq}(equip)$ = L_{eq} at a receiver resulting from the operation of a single piece of equipment over a specified time period.

E.L. = noise emission level of the particular piece of equipment at a reference distance of 50 ft.

U.F. = usage factor that accounts for the fraction of time that the equipment is in use over the specified period of time.

D = distance from the receiver to the piece of equipment.

Table I: Typical Construction Equipment Noise Levels

Equipment Description	Acoustical Usage Factor (%) ¹	Maximum Noise Level (L _{max}) at 50 Feet ²
Auger Drill Rig	20	84
Backhoes	40	80
Compactor (ground)	20	80
Compressor	40	80
Cranes	16	85
Dozers	40	85
Dump Trucks	40	84
Excavators	40	85
Flat Bed Trucks	40	84
Forklift	20	85
Front-end Loaders	40	80
Graders	40	85
Impact Pile Drivers	20	95
Jackhammers	20	85
Paver	50	77
Pickup Truck	40	55
Pneumatic Tools	50	85
Pumps	50	77
Rock Drills	20	85
Rollers	20	85
Scrapers	40	85
Tractors	40	84
Trencher	50	80
Welder	40	73

Source: FHWA Roadway Construction Noise Model User’s Guide, Table 1 (FHWA 2006).

Note: Noise levels reported in this table are rounded to the nearest whole number.

¹ Usage factor is the percentage of time during a construction noise operation that a piece of construction equipment is operating at full power.

² Maximum noise levels were developed based on Specification 721.560 from the Central Artery/Tunnel program to be consistent with the City of Boston’s Noise Code for the “Big Dig” project.

FHWA = Federal Highway Administration

L_{max} = maximum instantaneous sound level

Each piece of construction equipment operates as an individual point source. Using the following equation, a composite noise level can be calculated when multiple sources of noise operate simultaneously:

$$Leq (composite) = 10 * \log_{10} \left(\sum_1^n 10^{\frac{Ln}{10}} \right)$$

Using the equations from the methodology above, the reference information in Table I, and the construction equipment list provided, the composite noise level of each construction phase was calculated. The project construction composite noise levels at a distance of 50 ft would range from 74 dBA L_{eq} to 88 dBA L_{eq}, with the highest noise levels occurring during the site preparation phase.

Once composite noise levels are calculated, reference noise levels can then be adjusted for distance using the following equation:

$$Leq \text{ (at distance } X) = Leq \text{ (at 50 feet)} - 20 * \log_{10} \left(\frac{X}{50} \right)$$

In general, this equation shows that doubling the distance would decrease noise levels by 6 dBA while halving the distance would increase noise levels by 6 dBA.

Table J shows the nearest sensitive uses to the project site, their distance from the center of construction activities, and composite noise levels expected during construction. These noise level projections do not consider intervening topography or barriers. Construction equipment calculations are provided in Appendix B.

Table J: Potential Construction Noise Impacts at Nearest Receptor

Receptor (Location)	Composite Noise Level at 50 feet ¹ (dBA L _{eq})	Distance from Center of Construction Activities (feet)	Composite Noise Level (dBA L _{eq})
Commercial (North)	88	270	73
Industrial (South)		615	66
Commercial (East)		680	65
Industrial (West)		840	63
Residential (East)		1,000	62

Source: Compiled by LSA (2023).

¹ The composite construction noise level represents the site preparation phase which is expected to result in the greatest noise level as compared to other phases.

dBA L_{eq} = average A-weighted hourly noise level

While construction noise will vary, it is expected that composite noise levels during construction at the nearest commercial uses to the north would reach 73 dBA L_{eq}, while noise levels at the nearest sensitive residential uses to the east would reach 62 dBA L_{eq} during daytime hours. These predicted noise levels would only occur when all construction equipment is operating simultaneously and, therefore, are assumed to be rather conservative in nature. While construction-related short-term noise levels have the potential to be higher than existing ambient noise levels in the project area under existing conditions, the noise impacts would no longer occur once project construction is completed.

As stated above, the City’s Noise Ordinance regulates noise impacts associated with construction activities. The proposed project would comply with the construction hours specified in the City’s Noise Ordinance, which states that construction activities are allowed between the hours of 6:00 a.m. and 6:00 p.m. during the months of June through September and between the hours of 7:00 a.m. and 6:00 p.m. during the months of October through May.

As it relates to off-site uses, construction-related noise impacts would remain below the 80, 85, and 90 dBA L_{eq} 1-hour construction noise level criteria for daytime construction noise level criteria as established by the FTA for residential, commercial, and industrial uses, respectively; therefore, the impact would be considered less than significant.

SHORT-TERM CONSTRUCTION VIBRATION IMPACTS

This construction vibration impact analysis discusses the level of human annoyance using vibration levels in RMS (VdB) and assesses the potential for building damages using vibration levels in PPV (in/sec). This is because vibration levels calculated in RMS are best for characterizing human response to building vibration, while vibration levels calculated in PPV are best for characterizing potential for damage.

Table K shows the PPV and VdB values at 25 ft from the construction vibration source. As shown in Table K, bulldozers and other heavy-tracked construction equipment (expected to be used for this project) generate approximately 0.089 PPV in/sec or 87 VdB of ground-borne vibration when measured at 25 ft, based on the FTA Manual. The distance to the nearest buildings for vibration impact analysis is measured between the nearest off-site buildings and the project construction boundary (assuming the construction equipment would be used at or near the project setback line).

Table K: Vibration Source Amplitudes for Construction Equipment

Equipment	Reference PPV/L _v at 25 ft	
	PPV (in/sec)	L _v (VdB) ¹
Pile Driver (Impact), Typical	0.644	104
Pile Driver (Sonic), Typical	0.170	93
Vibratory Roller	0.210	94
Hoe Ram	0.089	87
Large Bulldozer²	0.089	87
Caisson Drilling	0.089	87
Loaded Trucks²	0.076	86
Jackhammer	0.035	79
Small Bulldozer	0.003	58

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).

¹ RMS vibration velocity in decibels (VdB) is 1 μin/sec.

² Equipment shown in **bold** is expected to be used on site.

μin/sec = microinches per second

ft = foot/feet

FTA = Federal Transit Administration

in/sec = inch/inches per second

L_v = velocity in decibels

PPV = peak particle velocity

RMS = root-mean-square

VdB = vibration velocity decibels

The formulae for vibration transmission are provided below, and Tables L and M, below, provide a summary of off-site construction vibration levels.

$$L_{v\text{dB}}(D) = L_{v\text{dB}}(25 \text{ ft}) - 30 \text{ Log}(D/25)$$

$$\text{PPV}_{\text{equip}} = \text{PPV}_{\text{ref}} \times (25/D)^{1.5}$$

As shown in Table F, above, the threshold at which vibration levels would result in annoyance would be 84 VdB for office type uses and 78 VdB for daytime residential uses. As shown in Table G, the FTA guidelines indicate that for a non-engineered timber and masonry building, the construction vibration damage criterion is 0.2 in/sec in PPV.

Table L: Potential Construction Vibration Annoyance Impacts at Nearest Receptor

Receptor (Location)	Reference Vibration Level (VdB) at 25 ft ¹	Distance (ft) ²	Vibration Level (VdB)
Commercial (North)	87	270	56
Industrial (South)		615	45
Commercial (East)		680	44
Industrial (West)		840	41
Residential (East)		1,000	39

Source: Compiled by LSA (2023).

¹ The reference vibration level is associated with a large bulldozer, which is expected to be representative of the heavy equipment used during construction.

² The reference distance is associated with the average condition, identified by the distance from the center of construction activities to surrounding uses.

ft = foot/feet

VdB = vibration velocity decibels

Table M: Potential Construction Vibration Damage Impacts at Nearest Receptor

Receptor (Location)	Reference Vibration Level (PPV) at 25 ft ¹	Distance (ft) ²	Vibration Level (PPV)
Commercial (North)	0.089	95	0.012
Industrial (South)		270	0.003
Commercial (East)		310	0.002
Industrial (West)		470	0.001
Residential (East)		600	0.001

Source: Compiled by LSA (2023).

¹ The reference vibration level is associated with a large bulldozer, which is expected to be representative of the heavy equipment used during construction.

² The reference distance is associated with the peak condition, identified by the distance from the perimeter of construction activities to surrounding structures.

ft = foot/feet

PPV = peak particle velocity

Based on the information provided in Table L, vibration levels are expected to approach 56 VdB and 39 VdB at the closest commercial uses to the north and the closest residence to the east, respectively, and would not exceed the annoyance thresholds.

Based on the information provided in Table M, vibration levels are expected to approach 0.012 PPV in/sec at the nearest surrounding structures and would be below the 0.2 PPV in/sec damage threshold. Other building structures surrounding the project site are farther away and would experience further reduced vibration. The impact would be considered less than significant, and no construction vibration impacts would occur. No vibration reduction measures are required. Therefore, the incorporation of Mitigation Measure 4.11-5, presented in the MMRP EIR, would not be necessary for this project.

Because construction activities are regulated by the City’s Municipal Code, which states that construction activities are allowed between the hours of 6:00 a.m. and 6:00 p.m. during the months of June through September and between the hours of 7:00 a.m. and 6:00 p.m. during the months of October through May, vibration impacts would not occur during the more sensitive nighttime hours.

LONG-TERM OFF-SITE TRAFFIC NOISE IMPACTS

As a result of the implementation of the proposed project, off-site traffic volumes on surrounding roadways have the potential to increase. The proposed project trips generated were obtained from the *Trip Generation and Vehicle Miles Traveled (VMT) Screening Analysis* (EPD Solutions, Inc. 2023). The proposed project with future expansion is forecasted to generate 262 Passenger Car Equivalent daily trips. The existing (2005) average daily trips on South Sanderson Avenue is 24,814 (City of Hemet Traffic Engineering Department 2007). While the current traffic volumes on the adjacent street segment are likely higher, using the 2005 volumes would be considered conservative. The following equation was used to determine the potential impacts of the project:

$$\text{Change in CNEL} = 10 \log_{10} [V_{e+p} / V_{existing}]$$

where: $V_{existing}$ = existing daily volumes
 V_{e+p} = existing daily volumes plus project
 Change in CNEL = increase in noise level due to the project

The results of the calculations show that an increase of approximately 0.05 dBA CNEL is expected along South Sanderson Avenue. A noise level increase of less than 3 dBA would not be perceptible to the human ear in an outdoor environment; therefore, the traffic noise increase in the vicinity of the project site resulting from the proposed project would be less than significant. No mitigation is required.

LONG-TERM TRAFFIC-RELATED VIBRATION IMPACTS

The proposed project would not generate vibration levels related to on-site operations. In addition, vibration levels generated from project-related traffic on the adjacent roadways are unusual for on-road vehicles because the rubber tires and suspension systems of on-road vehicles provide vibration isolation. Based on a reference vibration level of 0.076 in/sec PPV, structures greater than 20 ft from the roadways that contain project trips would experience vibration levels below the most conservative standard of 0.12 in/sec PPV; therefore, vibration levels generated from project-related traffic on the adjacent roadways would be less than significant, and no mitigation measures are required.

LONG-TERM OFF-SITE STATIONARY NOISE IMPACTS

Adjacent off-site land uses would be potentially exposed to stationary-source noise impacts from the proposed on-site heating, ventilation, and air conditioning (HVAC) equipment, and truck deliveries and loading and unloading activities. The potential noise impacts to off-site sensitive land uses from the proposed operational activities are discussed below. To provide a conservative analysis, it is assumed that operations would occur equally during all daytime hours of the day and that all 4 loading docks would be active at all times. Additionally, it is assumed that within any given

hour, 2 heavy trucks would maneuver to park near or back into one of the proposed loading docks. To determine the future noise impacts from project operations to the noise sensitive uses, a 3-D noise model, SoundPLAN, was used to incorporate the site topography as well as the shielding from the proposed building on site. A graphic representation of the operational noise impacts is presented in Appendix C.

Heating, Ventilation, and Air Conditioning Equipment

The project would have various rooftop mechanical equipment, including HVAC units, on the proposed building. Based on the project site plan, the project is assumed to have 3 rooftop HVAC units and assumed to operate 24 hours per day. The HVAC equipment could operate 24 hours per day and would generate sound power levels (SPL) of up to 87 dBA SPL or 72 dBA L_{eq} at 5 ft, based on manufacturer data (Trane n.d.).

Trash Bin Emptying Activities

The project is anticipated to have a trash dumpster near the southwest corner of the project site. The trash emptying activities would take place for a period less than 1 minute and would generate SPLs of up to 118.6 dBA SPL or 84 dBA L_{eq} at 50 ft, based on reference information within SoundPLAN. Trash bin emptying activities would only occur during daytime hours.

Truck Deliveries and Truck Loading and Unloading Activities

Noise levels generated by delivery trucks would be similar to noise readings from truck loading and unloading activities, which generate a noise level of 75 dBA L_{eq} at 20 ft based on measurements taken by LSA (*Operational Noise Impact Analysis for Richmond Wholesale Meat Distribution Center* [LSA 2016]). Shorter term noise levels that occur during the docking process taken by LSA were measured to be 76.3 dBA L_8 at 20 ft. Delivery trucks would arrive on site and maneuver their trailers so that trailers would be parked within the loading docks. During this process, noise levels are associated with the truck engine noise, air brakes, and back-up alarms while the truck is backing into the dock. These noise levels would occur for a shorter period of time (less than 5 minutes). After a truck enters the loading dock, the doors would be closed, and the remainder of the truck loading activities would be enclosed and therefore much less perceptible. To present a conservative assessment, it is assumed that truck arrivals and departure activities could occur at 2 spaces for a period of less than 5 minutes each and unloading activities could occur at the 4 docks simultaneously for a period of more than 30 minutes in a given hour.

Cumulative Operations Noise Assessment

Tables N through Q, below, show the combined hourly noise levels and maximum noise levels generated by HVAC equipment, trash bin emptying activities, and truck delivery activities at the closest off-site land uses.

The results in Tables N through Q show that project-generated noise levels will not exceed the residential use daytime and nighttime noise standards at the receptors to the east. Therefore, the impact would be less than significant, and no noise reduction measures are required.

Table N: Daytime Exterior Noise Level Impacts— L_{eq}

Receptor	Direction	Existing Quietest Daytime Noise Level (dBA L_{eq})	Project Generated Noise Levels (dBA L_{eq})	Potential Operational Noise Impact? ¹
Residence (3159 Wimbledon Way)	East	51.8	42.5	No

Source: Compiled by LSA (2023).

¹ A potential operational noise impact would occur if (1) the quietest daytime ambient hour is less than 60 dBA L_{eq} and project noise impacts are greater than 60 dBA L_{eq} , OR (2) the quietest daytime ambient hour is greater than 60 dBA L_{eq} and project noise impacts are 3 dBA greater than the quietest daytime ambient hour.

dBA = A-weighted decibels

L_{eq} = equivalent continuous noise level

Table O: Nighttime Exterior Noise Level Impacts— L_{eq}

Receptor	Direction	Existing Quietest Nighttime Noise Level (dBA L_{eq})	Project Generated Noise Levels (dBA L_{eq})	Potential Operational Noise Impact? ¹
Residence (3159 Wimbledon Way)	East	48.1	42.5	No

Source: Compiled by LSA (2023).

¹ A potential operational noise impact would occur if (1) the quietest nighttime ambient hour is less than 45 dBA L_{eq} and project noise impacts are greater than 45 dBA L_{eq} , OR (2) the quietest nighttime ambient hour is greater than 45 dBA L_{eq} and project noise impacts are 3 dBA greater than the quietest nighttime ambient hour.

dBA = A-weighted decibels

L_{eq} = equivalent continuous noise level

Table P: Daytime Exterior Noise Level Impacts— L_{max}

Receptor	Direction	Existing Quietest Daytime Noise Level (dBA L_{max})	Project Generated Noise Levels (dBA L_{max})	Potential Operational Noise Impact? ¹
Residence (3159 Wimbledon Way)	East	61.8	55.1	No

Source: Compiled by LSA (2023).

¹ A potential operational noise impact would occur if (1) the quietest daytime ambient maximum level is less than 75 dBA L_{max} and project noise impacts are greater than 75 dBA L_{max} , OR (2) the quietest daytime ambient maximum level is greater than 75 dBA L_{max} and project noise impacts are 3 dBA greater than the quietest daytime ambient maximum level.

dBA = A-weighted decibels

L_{max} = maximum instantaneous sound level

Table Q: Nighttime Exterior Noise Level Impacts— L_{max}

Receptor	Direction	Existing Quietest Nighttime Noise Level (dBA L_{max})	Project Generated Noise Levels (dBA L_{max})	Potential Operational Noise Impact? ¹
Residence (3159 Wimbledon Way)	East	63.4	55.1	No

Source: Compiled by LSA (2023).

¹ A potential operational noise impact would occur if (1) the quietest nighttime ambient maximum level is less than 65 dBA L_{max} and project noise impacts are greater than 65 dBA L_{max} , OR (2) the quietest nighttime ambient maximum level is greater than 65 dBA L_{max} and project noise impacts are 3 dBA greater than the quietest nighttime ambient maximum level.

dBA = A-weighted decibels

L_{max} = maximum instantaneous sound level

In conclusion, the noise and vibration impacts of the proposed project would be below the applicable noise and vibration thresholds, and mitigation measures presented in the City’s General Plan MMRP EIR would not be necessary for this project.

REFERENCES

- AECOM. *City of Hemet FEIR Mitigation Monitoring and Reporting Program*.
- California Department of Transportation (Caltrans). 2013. *Technical Noise Supplement to the Traffic Noise Analysis Protocol*. September.
- City of Hemet. 2012. *General Plan Public Safety Element*. January 24.
- _____. 2023. Municipal Code. April 26. Website: https://library.municode.com/ca/hemet/codes/code_of_ordinances (accessed August 2023).
- _____. *Traffic Volume Map 2007*. Website: <https://www.hemetca.gov/177/Traffic-Engineering>.
- EPD Solutions, Inc. 2023. *Trip Generation and Vehicle Miles Traveled (VMT) Screening Analysis*. June 26.
- Federal Highway Administration (FHWA). 2006. *Roadway Construction Noise Model User's Guide*. January. Washington, D.C. Website: www.fhwa.dot.gov/environment/noise/construction_noise/rcnm/rcnm.pdf (accessed August 2023).
- Federal Transit Administration (FTA). 2018. *Transit Noise and Vibration Impact Assessment Manual*. Office of Planning and Environment. Report No. 0123. September.
- Harris, Cyril M., editor. 1991. *Handbook of Acoustical Measurements and Noise Control*. Third Edition.
- LSA Associates, Inc. (LSA). 2016. *Operational Noise Impact Analysis for Richmond Wholesale Meat Distribution Center*. May.
- State of California. 2020. *2019 California Green Building Standards Code*.
- Trane. n.d. *Fan Performance - Product Specifications RT-PRC023AU-EN*.
- United States Environmental Protection Agency (EPA). 1978. *Protective Noise Levels, Condensed Version of EPA Levels Document*, EPA 550/9-79-100. November.

APPENDIX A

NOISE MONITORING DATA

Noise Measurement Survey – 24 HR

Project Number: ESL2201.66

Test Personnel: Kevin Nguyendo

Project Name: National Tube Supply

Equipment: Spark 706RC (SN:908)

Site Number: LT-1 Date: 7/27/23

Time: From 11:00 a.m. To 11:00 a.m.

Site Location: Located on a utility pole just west of the main entrance to self-storage facility
On 3450 Wentworth Dr, Hemet, CA 92545.

Primary Noise Sources: Vehicle traffic noise on Wentworth Drive.

Comments: _____

Photo:



Long-Term (24-Hour) Noise Level Measurement Results at LT-1

Start Time	Date	Noise Level (dBA)		
		L _{eq}	L _{max}	L _{min}
11:00 AM	7/27/23	67.9	85.1	42.7
12:00 PM	7/27/23	68.3	89.5	42.1
1:00 PM	7/27/23	68.1	84.9	42.1
2:00 PM	7/27/23	68.3	87.1	40.0
3:00 PM	7/27/23	68.5	85.3	43.9
4:00 PM	7/27/23	68.3	81.3	46.9
5:00 PM	7/27/23	69.3	84.5	48.2
6:00 PM	7/27/23	68.7	86.9	48.2
7:00 PM	7/27/23	67.5	83.5	48.4
8:00 PM	7/27/23	66.8	83.2	47.1
9:00 PM	7/27/23	65.5	84.0	47.7
10:00 PM	7/27/23	63.7	87.6	46.0
11:00 PM	7/27/23	62.0	81.4	46.2
12:00 AM	7/28/23	60.0	81.0	44.8
1:00 AM	7/28/23	57.0	78.6	43.2
2:00 AM	7/28/23	59.3	79.9	44.5
3:00 AM	7/28/23	61.2	81.7	45.2
4:00 AM	7/28/23	63.2	82.7	47.8
5:00 AM	7/28/23	65.3	86.3	49.6
6:00 AM	7/28/23	67.0	85.5	49.5
7:00 AM	7/28/23	68.9	89.0	43.9
8:00 AM	7/28/23	68.4	84.1	42.9
9:00 AM	7/28/23	68.5	86.4	42.6
10:00 AM	7/28/23	69.0	85.9	43.2

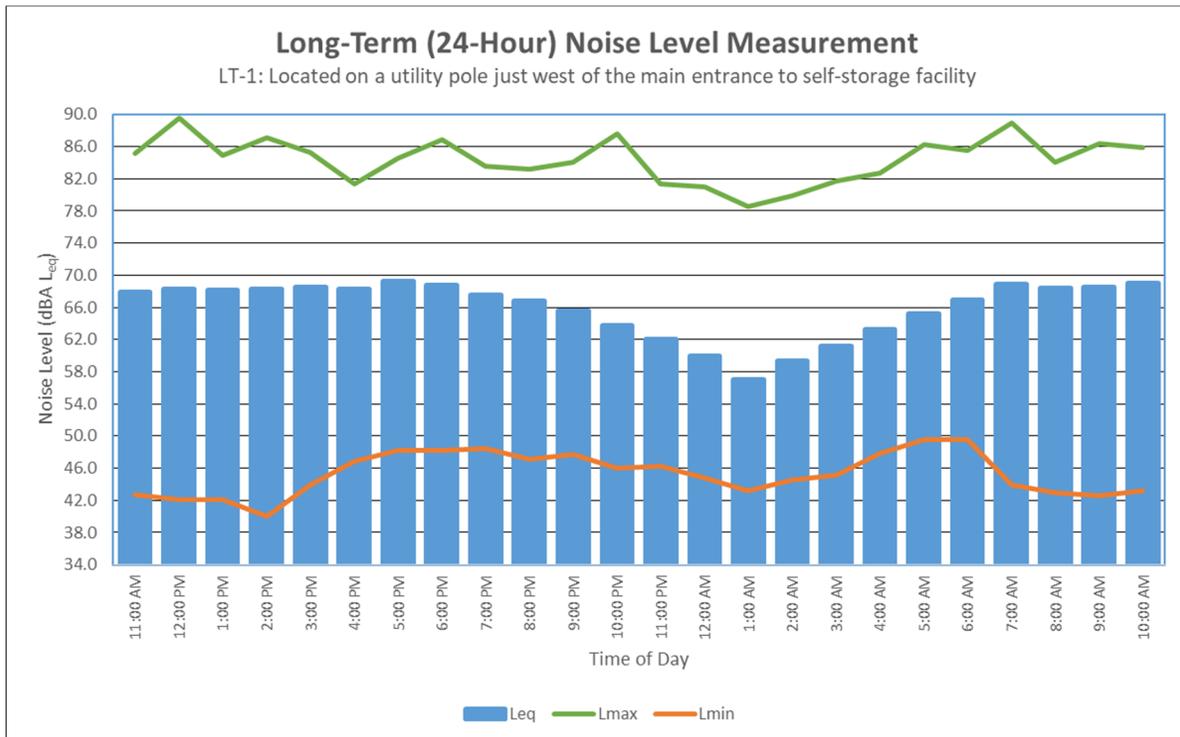
Source: Compiled by LSA Associates, Inc. (2023).

dBA = A-weighted decibel

L_{eq} = equivalent continuous sound level

L_{max} = maximum instantaneous noise level

L_{min} = minimum measured sound level



Noise Measurement Survey – 24 HR

Project Number: ESL2201.66
Project Name: National Tube Supply

Test Personnel: Kevin Nguyendo
Equipment: Spark 706RC (SN:907)

Site Number: LT-2 Date: 7/27/23

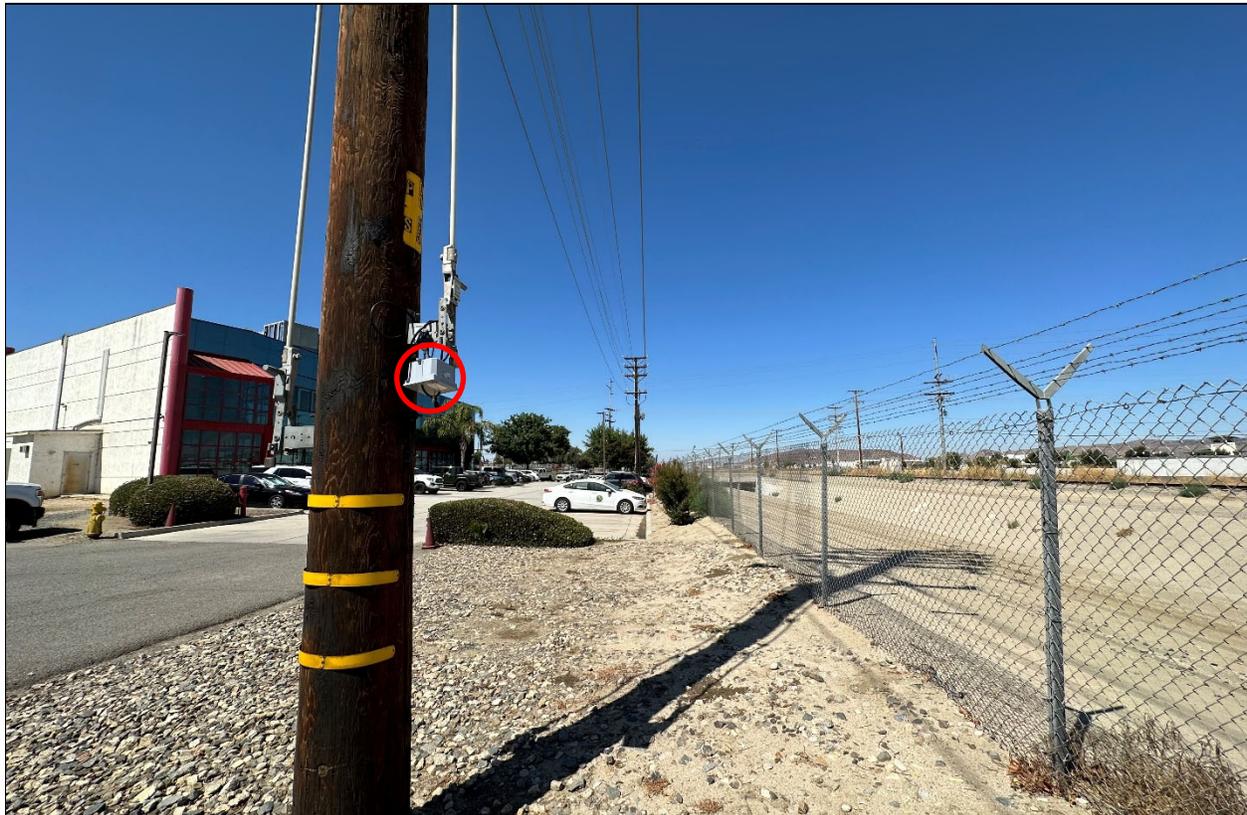
Time: From 11:00 a.m. To 11:00 a.m.

Site Location: Located on a utility pole along the northeast border of the Environmental Health Department at 800 S Sanderson Ave #200, Hemet, CA 92545.

Primary Noise Sources: Vehicle traffic noise on Sanderson Ave. Parking lot activity Noise.

Comments: _____

Photo:



Long-Term (24-Hour) Noise Level Measurement Results at LT-2

Start Time	Date	Noise Level (dBA)		
		L _{eq}	L _{max}	L _{min}
11:00 AM	7/27/23	53.4	75.6	41.0
12:00 PM	7/27/23	51.8	61.8	39.8
1:00 PM	7/27/23	57.7	77.7	41.7
2:00 PM	7/27/23	56.6	72.5	42.7
3:00 PM	7/27/23	58.8	72.5	42.5
4:00 PM	7/27/23	58.9	79.1	43.5
5:00 PM	7/27/23	59.6	78.0	44.5
6:00 PM	7/27/23	58.2	76.2	44.3
7:00 PM	7/27/23	58.6	78.9	44.2
8:00 PM	7/27/23	59.1	81.2	42.8
9:00 PM	7/27/23	54.0	77.4	43.1
10:00 PM	7/27/23	50.8	64.1	42.1
11:00 PM	7/27/23	50.6	66.3	40.1
12:00 AM	7/28/23	48.7	72.7	39.4
1:00 AM	7/28/23	48.1	68.6	38.7
2:00 AM	7/28/23	52.7	76.7	39.1
3:00 AM	7/28/23	49.3	66.6	40.0
4:00 AM	7/28/23	51.5	63.4	43.2
5:00 AM	7/28/23	53.6	69.0	44.4
6:00 AM	7/28/23	53.6	63.9	45.6
7:00 AM	7/28/23	54.2	72.2	41.8
8:00 AM	7/28/23	56.2	78.0	40.0
9:00 AM	7/28/23	55.9	74.0	41.0
10:00 AM	7/28/23	57.8	74.0	42.4

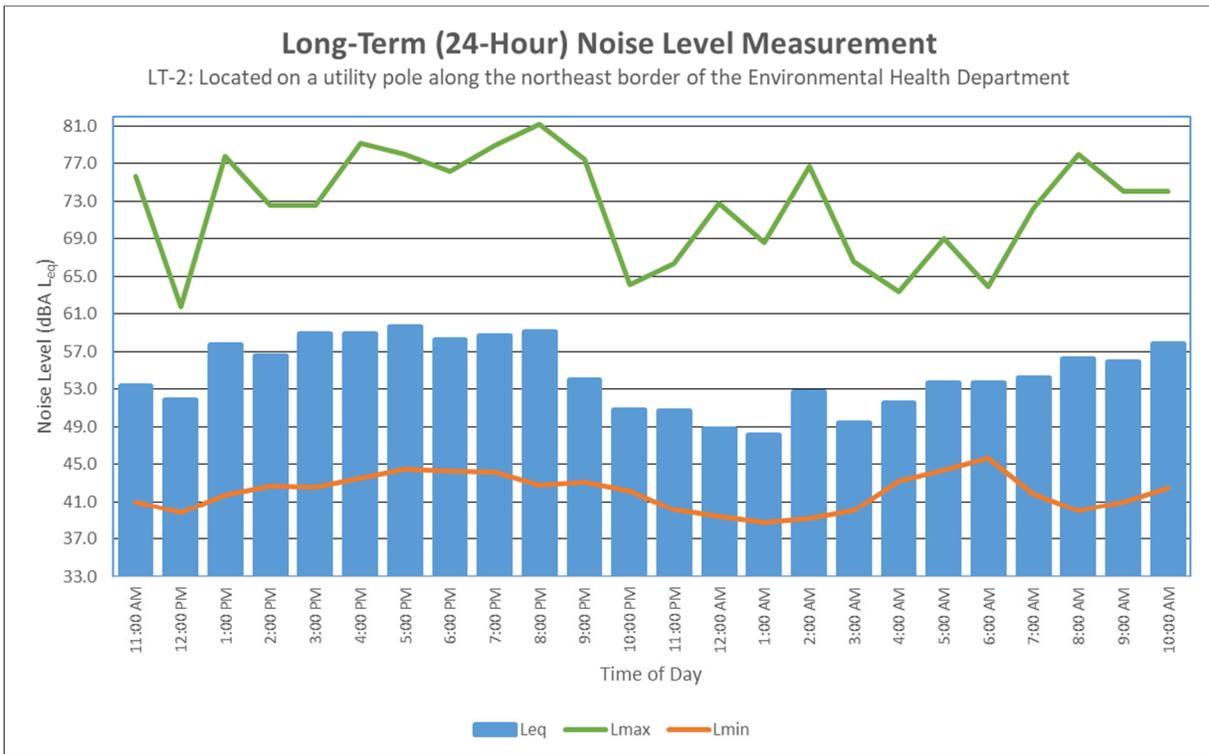
Source: Compiled by LSA Associates, Inc. (2023).

dBA = A-weighted decibel

L_{eq} = equivalent continuous sound level

L_{max} = maximum instantaneous noise level

L_{min} = minimum measured sound level



APPENDIX B

CONSTRUCTION NOISE LEVEL CALCULATIONS

Construction Calculations

Phase: Site Preparation

Equipment	Quantity	Reference (dBA) 50 ft Lmax	Usage Factor ¹	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
						Lmax	Leq
Tractor	4	84	40	50	0.5	84	86
Dozer	3	82	40	50	0.5	82	83
Combined at 50 feet						86	88
Combined at Receptor 270 feet						71	73
Combined at Receptor 615 feet						64	66
Combined at Receptor 680 feet						63	65
Combined at Receptor 840 feet						62	63
Combined at Receptor 1000 feet						60	62

Phase: Grading

Equipment	Quantity	Reference (dBA) 50 ft Lmax	Usage Factor ¹	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
						Lmax	Leq
Grader	1	85	40	50	0.5	85	81
Dozer	1	82	40	50	0.5	82	78
Tractor	3	84	40	50	0.5	84	85
Excavator	1	81	40	50	0.5	81	77
Combined at 50 feet						89	87
Combined at Receptor 270 feet						75	73

Phase: Building Construction

Equipment	Quantity	Reference (dBA) 50 ft Lmax	Usage Factor ¹	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
						Lmax	Leq
Crane	1	81	16	50	0.5	81	73
Man Lift	3	75	20	50	0.5	75	73
Generator	1	81	50	50	0.5	81	78
Tractor	3	84	40	50	0.5	84	85
Welder / Torch	1	74	40	50	0.5	74	70
Combined at 50 feet						87	86
Combined at Receptor 270 feet						73	72

Phase: Paving

Equipment	Quantity	Reference (dBA) 50 ft Lmax	Usage Factor ¹	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
						Lmax	Leq
Paver	2	77	50	50	0.5	77	77
All Other Equipment > 5 HP	2	85	50	50	0.5	85	85
Roller	2	80	20	50	0.5	80	76
Combined at 50 feet						87	86
Combined at Receptor 270 feet						72	71

Phase: Architectural Coating

Equipment	Quantity	Reference (dBA) 50 ft Lmax	Usage Factor ¹	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
						Lmax	Leq
Compressor (air)	1	78	40	50	0.5	78	74
Combined at 50 feet						78	74
Combined at Receptor 270 feet						63	59

Sources: RCNM

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

dBA – A-weighted Decibels

Lmax- Maximum Level

Leq- Equivalent Level

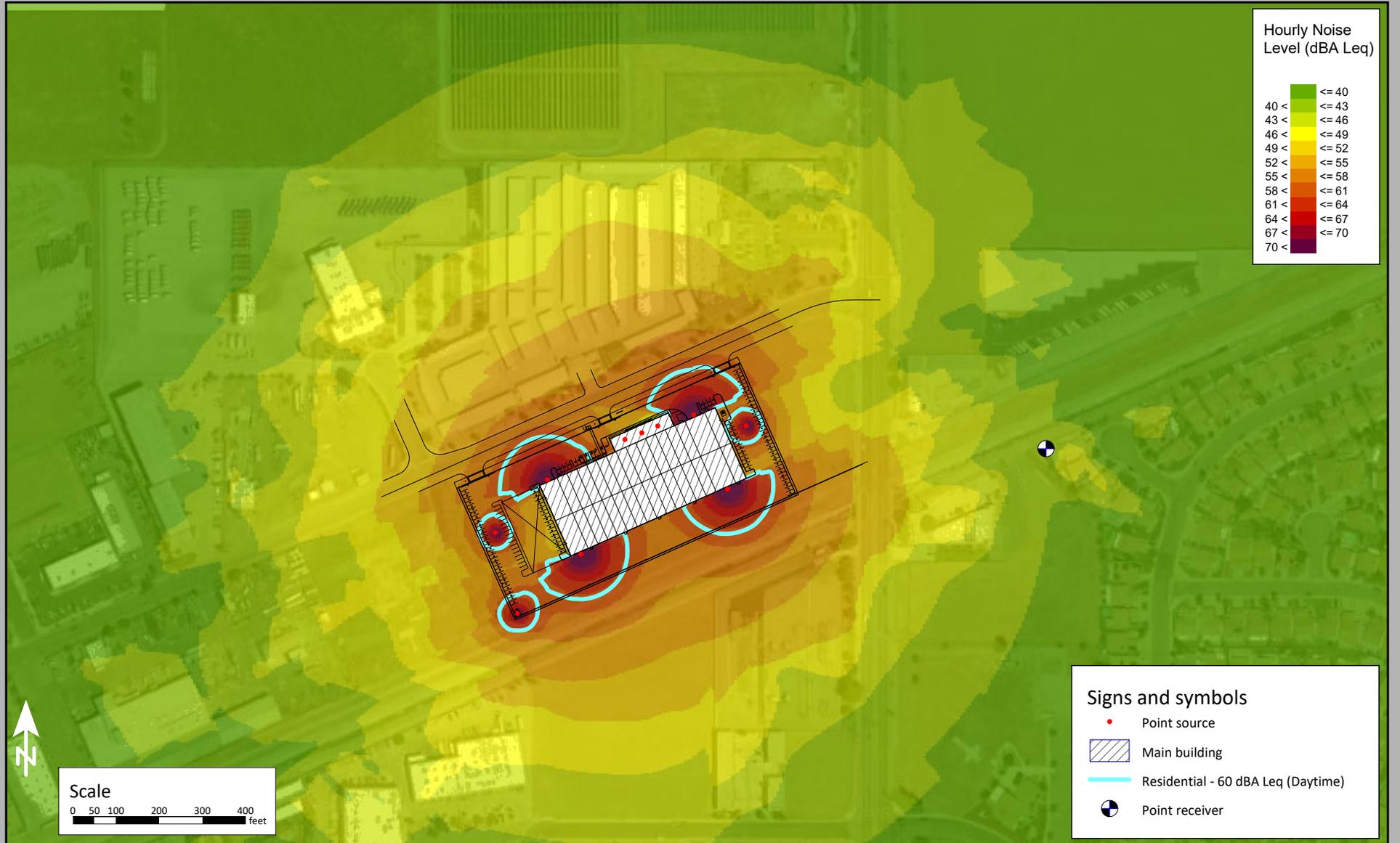
APPENDIX C

SOUNDPLAN NOISE MODEL PRINTOUTS

National Tube Supply

Project No. ESL2201.66

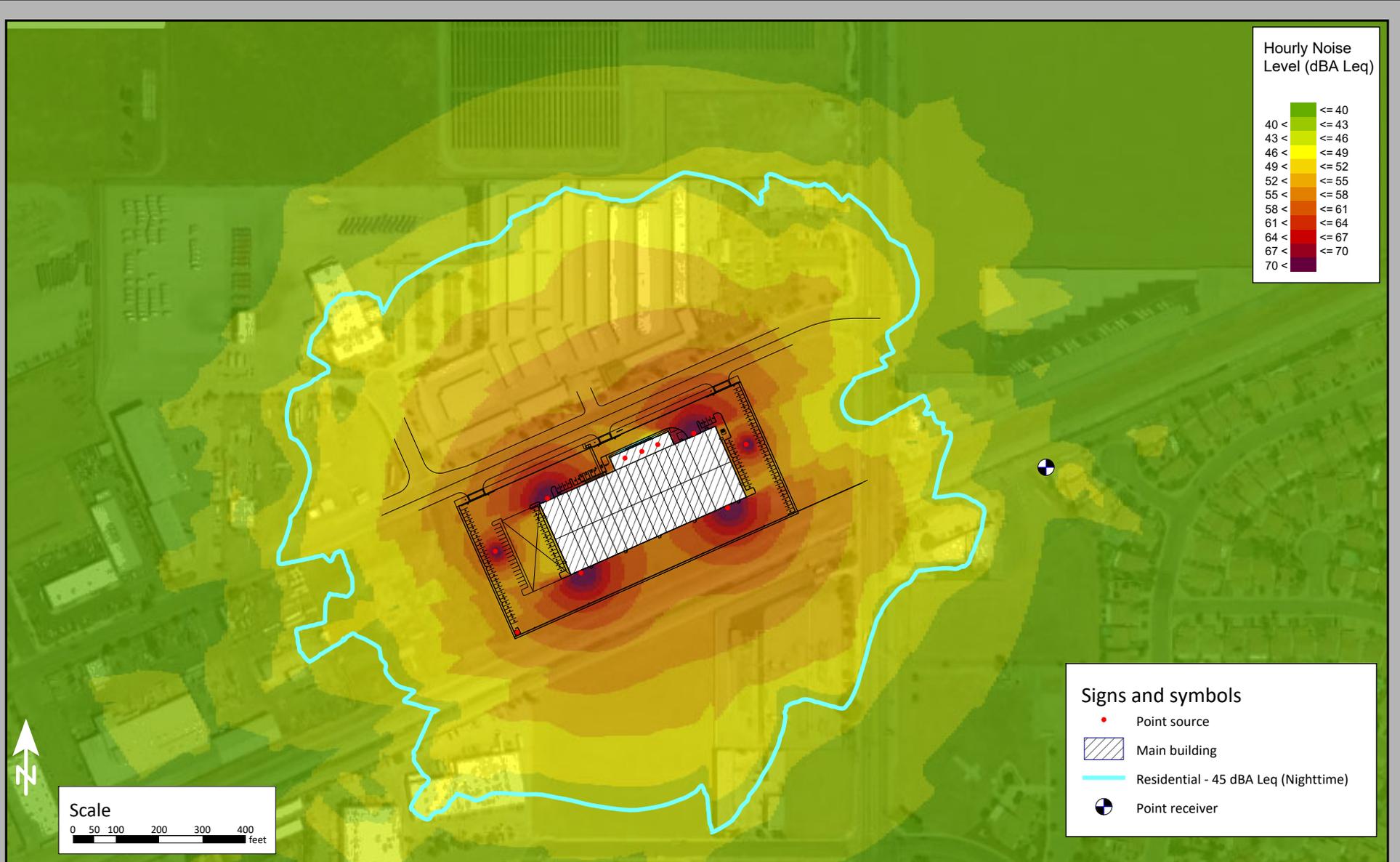
Project Operational Noise Levels - Day



National Tube Supply

Project No. ESL2201.66

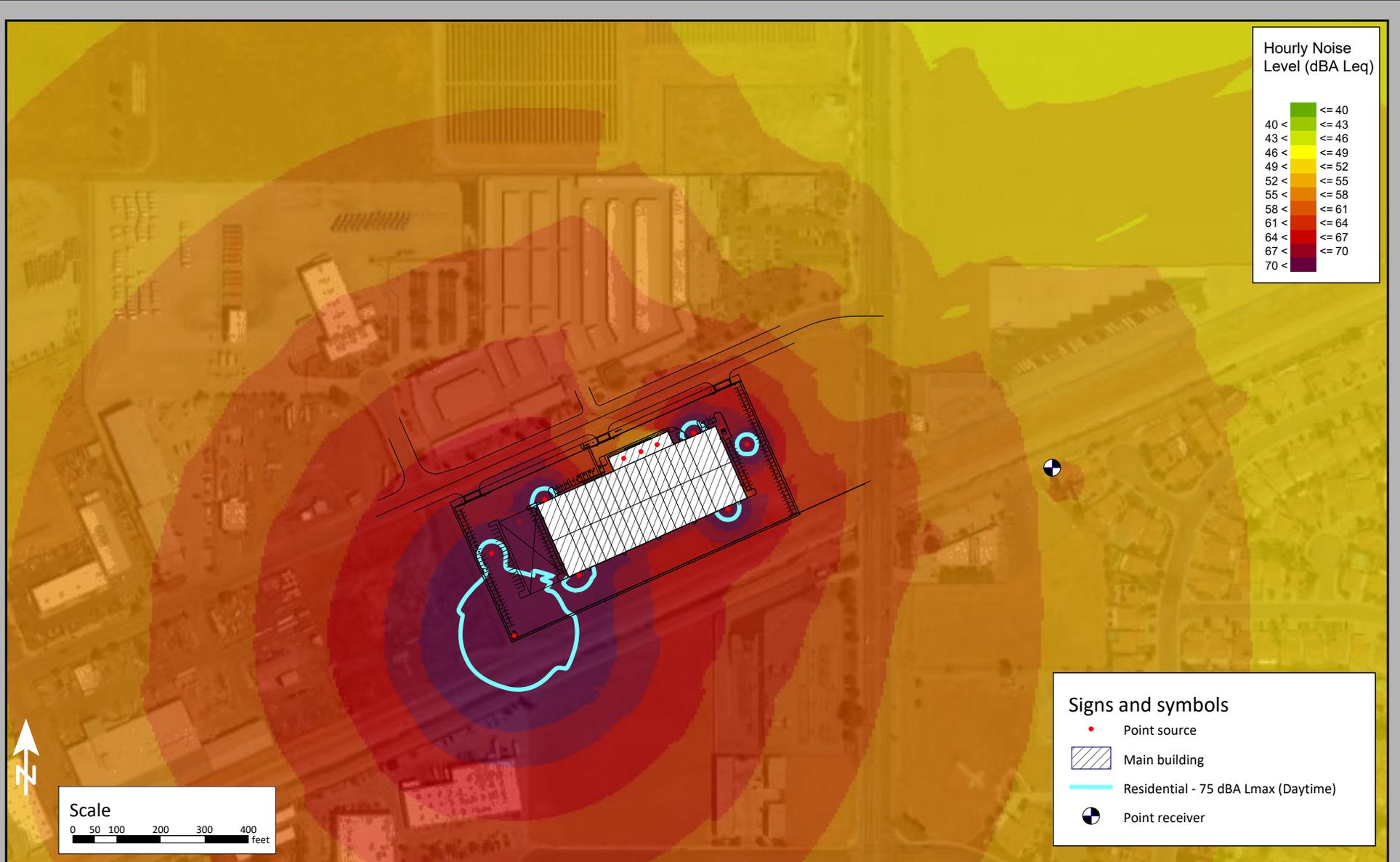
Project Operational Noise Levels - Night



National Tube Supply

Project No. ESL2201.66

Project Operational Noise Levels - Day



National Tube Supply

Project No. ESL2201.66

Project Operational Noise Levels - Night

