Brew Harley Knox Warehouse Project

Noise and Vibration Impact Analysis Report

May 2023

CEQA Lead Agency:

City of Perris
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List of Acronyms, Abbreviations, and Symbols	
Acronym / Abbreviation	**Full Phrase or Description**
APN	Assessor's Parcel Number
BMP	Best management Practice
CalEEMod	California Emission Estimator Model
CALGreen	California Green Building Standards Code
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
D	Distance
dB	Decibel (unweighted)
dBA	Decibels, A-Weighted
e.g.,	For example (exempli gratia)
DNL / L_{dn}	Day-Night Noise Level
FHWA	Federal Highway Works Administration
FTA	Federal Transit Administration
HUD	U.S. Department of Housing and Urban Development
HVAC	Heating, Ventilation, and Air Conditioning
Hz	Hertz
I	Interstate
i.e.,	That is (id est)
In/sec	Inches per Second
kH	Kilohertz
L_{eq}	Average / Equivalent Noise Level
L_{max}	Maximum Noise Level
L_{min}	Minimum Noise Level
LT	Long-term
MPH	Miles per Hour
OITC	Outside-Indoor Transmission Class
Pa	Pascals
PCE	Passenger Car Equivalents
PRC	Public Resources Code
PPV	Peak Particle Velocity (inches/second)
R	Receptor/Receiver

List of Acronyms, Abbreviations, and Symbols	
Acronym / Abbreviation	**Full Phrase or Description**
RCNM	Roadway Construction Noise Model
ROW	Right-of-Way
Report	Noise and Vibration Impact Analysis Report (this document)
SR	State Route
ST	Short-term
STC	Sound Transmission Class
UF	Usage Factor
VdB	Velocity Decibels
VMT	Vehicle Miles Travelled
§	Section
%	Percent

EXECUTIVE SUMMARY

This Noise and Vibration Impact Analysis Report (Report) evaluates and documents noise levels associated with the construction and operation of the proposed Brew Enterprises II, LLC Industrial Warehouse Project (proposed Project) located along Harley Knox Boulevard, between Perris boulevard and Indian Avenue, in the northern part of the City of Perris, in Riverside County.

This Report is intended to assist the California Environmental Quality Act (CEQA) Lead Agency (City of Perris) with its review of the proposed Project's potential noise and vibration impacts in compliance with the State CEQA Statutes and Guidelines, particularly in respect to the noise and vibration issues identified in Appendix G of the State CEQA Guidelines.

S.1 PROPOSED PROJECT DESCRIPTION

Brew Enterprises is proposing to construct a single new industrial warehouse building. The building would have approximately 58,974 square feet of warehousing use, which includes approximately 8,000 square feet of office space, on approximately 4.01 acres in the City of Perris. The proposed building would be located on a rectangularly shaped property on Harley Knox Boulevard, between Perris Boulevard and Indian Avenue, approximately 1.4 miles east of Interstate 215 (I-215) and 0.8 miles southeast of March Air Reserve Base.

The proposed warehouse building would feature six truck docks on its eastern façade. Truck access would be provided along a driveway on Harley Knox Boulevard on the eastern side of the Project site. Parking spaces for commuter vehicles (e.g., cars and pick-up trucks) would be present on the western and southern sides of the proposed warehouse.

The proposed Project would involve construction and operational activities that would generate noise from construction equipment, on- and off-site vehicle and truck trips, truck dock loading and unloading activities (including cargo handling equipment use), and heating, ventilation, and air conditioning (HVAC) equipment. Construction activities are anticipated to last approximately 12 months and begin in early 2024. The building could operate 24 hours per day, 7 days per week.

S.2 POTENTIAL CONSTRUCTION NOISE AND VIBRATION IMPACTS

The proposed Project's construction noise and vibration levels were estimated based on the typical construction activities associated with an industrial development project. Potential construction noise levels were estimated for worst-case equipment operations occurring adjacent to property lines (50 feet away from adjacent land uses) and average equipment operations in the center of the site (115 feet and 340 feet away from adjacent land uses); potential vibration levels were estimated for similar operations (185 feet and 280 feet from adjacent buildings under worst-case and typical conditions, respectively).

Section 7.34.060 of the City's Municipal Code sets forth that construction noise levels are exempt from City noise standards provided the activities take place between 7 AM and 7 PM, Monday to Saturday, and do not create noise levels that exceed 80 dBA in residential zones. Project construction activities could generate worst-case noise levels at adjacent vacant, commercial- and industrial-zoned properties of up to 85 dBA L_{eq} for short periods of time (several hours per day for approximately one week); however, the closest noise-sensitive receptor is a residence located more than 1,100 feet east of the Project site, across Perris Boulevard. Predicted construction noise levels would be less than 60 dBA L_{eq} at this receptor under worst-case conditions. Construction activities, therefore, would not exceed the City's 80 dBA L_{eq} noise

standard and would not result in a significant temporary noise impact. In addition, the Applicant has incorporated the following construction noise control best management practices (BMPs) into the Project:

> **Construction Noise Control Best Management Practices.** To reduce potential noise levels associated with construction of the proposed Project, the Applicant and/or its designated contractor, contractor's representatives, or other appropriate personnel shall:
>
> - *Restrict work hours/equipment noise.* All work shall be subject to the requirements in City Municipal Code Section 7.34.060. Construction activities, including deliveries, shall only occur from 7 AM to 7 PM Monday through Saturday (and not on holidays). The Applicant and/or its contractor shall post a sign at all entrances to the construction site informing contractors, subcontractors, construction workers, etc. of this requirement. The sign shall also provide a name (or title) and phone number for an appropriate on-site and City representative to contact to submit a noise complaint.
> - *Construction equipment care, siting, and design measures*. The following construction equipment care, siting, and design measures shall apply during construction activities:
>   - Heavy equipment engines shall be covered and exhaust pipes shall include a muffler in good working condition. Pneumatic tools shall include a noise suppression device on the compressed air exhaust.
>   - All stationary noise-generating equipment such as pumps, compressors, and welding machines shall be located as far from neighboring property lines as practical.
>   - The Applicant and/or his contractor shall connect to existing electrical service at the site to avoid the use of stationary, diesel- or other alternatively-fueled power generators, unless electric service is not available or the electric utility provider otherwise indicates service cannot be provided.

The BMP's listed above restrict work hours in accordance with the Municipal Code and require staging and stationary noise sources to be located as far from neighboring land uses as possible. These BMPs would further ensure the proposed Project's construction noise levels would be consistent with Chapter 7.34.060 and constitute a less than significant impact. The proposed Project's site preparation, grading, and other construction activities that could result in ground-borne vibration would occur at least 185 feet from the nearest structure. At this distance, potential construction-related groundborne vibration levels could likely be slightly perceptible but would not be excessive because any equipment operation near property lines would be short in duration, intermittent (lasting only a few hours or days in work areas near adjacent structures) and would not result in structural damage. Project construction, therefore, would not result in significant vibration impact.

S.3 POTENTIAL OPERATIONAL NOISE AND VIBRATION IMPACTS

Once constructed, the proposed Project would generate noise from on-site and off-site activities. On-site activities would include vehicle travel and parking, truck travel, maneuvering, and idling, HVAC equipment operations, and other miscellaneous activities such as refuse collection, small, non-diesel-powered pallet jacks and lifts, and landscaping equipment. Off-site noise activities would include vehicle travel on Harley Knox Boulevard, which is used to access the site.

The proposed Project's design and estimated noise levels would be consistent with City's General Plan Noise Element policies pertaining to noise. The proposed Project's truck dock bays would be inset along the eastern façade of the warehouse building 225 feet. This feature would visually screen and shield

noise from the loading docks from impacting nearby industrial and commercial property lines to the north and east of the Project site. For this reason, the proposed Project could generate worst-case combined hourly noise levels of approximately 57.5 dBA L_{eq} at the eastern property line; noise levels at all other property lines would be less than 57.5 dBA L_{eq}. Project noise levels at adjacent property lines would not exceed the City's exterior noise standard for industrial land uses (70 dBA CNEL) or commercial land uses (60 CNEL). The closest residential receptor is located more than 1,100 feet east of the Project site. At this distance, estimated Project noise levels would be approximately 37 dBA L_{eq}, which is below the City's 60 CNEL standard for residential land uses. The Project also would not result in interior noise levels at any residential building that exceed City standards (45 CNEL). The Project's operational noise levels, therefore, would be less than significant.

The proposed Project would not result in a doubling of traffic levels or a substantial increase in traffic-related noise levels (considered to be 3 dBA or more) on Harley Knox Boulevard or Perris Boulevard. The proposed Project also would not result in excessive operational vibration levels because it does not involve the use of large or vibration-inducing equipment near off-site structures during operations.

For the reasons described above, the proposed Project, therefore, would not result in significant operational noise or vibration impacts.

S.4 AIRPORT NOISE-RELATED IMPACTS

The closest air travel facility to the Project site is the March Air Reserve Base/Inland Port, located approximately 0.8 miles to the northwest. The proposed Project is located within the airport overlay zone (AOZ) Zone D, and the City's Airport Land Use Plan indicates that land uses within Zone D are not subjected to excessive aircraft-related noise levels. The proposed Project, therefore, would not expose people working at the Project site to excessive aircraft- or airport-related noise levels.

S.5 OTHER NOISE AND VIBRATION EFFECTS

The California Supreme Court in *California Building Industry Association v. Bay Area Air Quality Management District*, 62 Cal.4th 369 (2015) ruled that CEQA review is focused on a project's impact on the environment "and not the environment's impact on the project." Per this ruling, a Lead Agency is not required to analyze how existing conditions might impact a project's future users or residents; however, a Lead Agency may elect to disclose information relevant to a project even if it not is considered an impact under CEQA. Furthermore, the City's General Plan Noise Element set noise standards for receiving land uses which require evaluation for consistency and compliance even if such evaluation is not required by CEQA.

The proposed building's frontage on Harley Knox Boulevard is estimated to be exposed to exterior noise levels between 61 and 67 CNEL. This noise exposure range does not exceed the City's normally acceptable noise limit for industrial uses set forth in General Plan Exhibit N-1 (70 CNEL). The proposed Project would not be exposed to unacceptable exterior noise levels.

Standard construction techniques and materials for new commercial/industrial buildings are commonly accepted to provide a minimum exterior to interior noise attenuation (i.e., reduction) of 30 to 32 dBA with all windows and doors closed, which would result in interior noise levels of approximately 40 dBA L_{eq} for any occupied rooms fronting Harley Knox Boulevard. Thus, with standard construction techniques, the proposed Project would satisfy interior building code noise requirements (50 dBA L_{eq}).

S.6 MITIGATION MEASURES – NONE REQUIRED

The proposed Project would not result in any substantial temporary or permanent increases in noise levels that exceed City of Perris standards, would not generate excessive groundborne vibration levels, and would not expose people working at the Project site to excessive aircraft- or airport-related noise levels. In addition, there are no noise and land use compatibility issues associated with the Project site or its design. The proposed Project would not result in a significant noise or vibration impact and, therefore, mitigation measures are not required for the Project.

1 INTRODUCTION

Brew Enterprises II, (the Applicant) has applied to the City of Perris for a Specific Plan Amendment and a Development Plan Review for its proposed Brew Harley Knox Warehouse Project (proposed Project). The proposed Project would be located south of Harley Knox Boulevard, in the northern part of the city, and include the development of a new industrial building consisting of approximately 58,974 gross square feet of building space with six (6) truck docks.

MIG, Inc. (MIG) has prepared this Noise and Vibration Impact Analysis Report (Report) to evaluate the potential construction and operations-related noise impacts of the proposed Project. MIG has prepared this Report using project-specific information contained in the applicant's submittal to the City for the approvals listed above. Where necessary, MIG has supplemented available information with standardized sources of information, such as model assumptions pertaining to construction equipment activity levels. In general, this Report evaluates the potential "worst-case" conditions associated with the proposed Project's construction and operational noise levels to ensure a conservative (i.e., likely to overestimate) assessment of potential noise and vibration impacts is presented.

This Report is intended for use by the City to assess the potential noise and vibration impacts of the proposed Project in compliance with the California Environmental Quality Act (CEQA; PRC §21000 et seq.) and the State CEQA Guidelines (14 CCR §15000 et seq.), particularly in respect to the noise and vibration issues identified in Appendix G of the State CEQA Guidelines.

1.1 REPORT ORGANIZATION

This Report is organized as follows:

- **Chapter 1, Introduction,** explains the contents of this Report and its intended use.
- **Chapter 2, Project Description**, provides an overview of construction and operational activities associated with the proposed Project.
- **Chapter 3, Noise Fundamentals**, provides pertinent background information on the measurement, propagation, and characterization of noise levels.
- **Chapter 4, Environmental and Regulatory Setting,** describes the existing noise and setting of the proposed Project and provides information on the federal, state, and local regulations that govern the Project setting and potential noise impacts.
- **Chapter 5, CEQA Noise and Vibration Impact Analysis,** identifies the potential operational noise impacts of the proposed Project and evaluates these effects in accordance with Appendix G of the State CEQA Guidelines.
- **Chapter 6, Other Noise and Vibration Effects,** discloses other potential noise and vibration issues, such as incompatible or otherwise adverse existing environmental conditions that may affect the proposed Project and/or the proposed Project's ability to comply with applicable noise or vibration standards.
- **Chapter 7, Report Preparers and References,** list the individuals involved, and the references used, in the preparation of this Report.

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2 PROJECT DESCRIPTION

Brew Enterprises II, (the Applicant) is proposing to develop the Brew Harley Knox Warehouse Project (proposed Project). The proposed Project would consist of constructing a new industrial building with approximately 58,974 square feet of gross building space.

2.1 PROJECT LOCATION

The proposed Project would be located along Harley Knox Boulevard, between Perris boulevard and Indian Avenue, in the northern part of the City of Perris, in Riverside County. The Project site is an undeveloped, approximately 4.01-acre (gross), rectangularly shaped parcel of land (Assessor's Parcel Number (APN) 302-090-021). The site is bound by undeveloped land to the east and west, Harley Knox Boulevard to the north, and a flood channel and industrial uses to the south (see Figure 2-1: Aerial View of Project Site).

The Project site is, at closest, approximately 1.4 miles east of Interstate 215 (I-215) and 0.8 miles southeast of March Air Reserve Base.[1]

2.1.1 SITE LAND USE AND ZONING

The site is currently designated by the City's General Plan and zoned by the City's zoning codes as Commercial (City of Perris 2013). The Project site is within the City's Perris Valley Commerce Center Specific Plan and is designated as Commercial in this Specific Plan (City of Perris 2022). The proposed Project includes a request to rezone the Project site to Light Industrial.

2.1.2 SURROUNDING LAND USES

The proposed Project site is surrounded by Harley Knox Boulevard and industrial and commercial land uses to the north, a flood channel and industrial uses to the south, a vacant (commercial zoned) land use to the east, and a vacant (industrial zoned) land use to the west. The nearest sensitive receptor is an existing, non-conforming single-family residential area located approximately 1,100 feet east-southeast of the Project site.

[1] Unless otherwise indicated, reported distances are measured between the edge of the listed feature (e.g., road or rail right-of-way, land use property boundary, etc.) and the Project's closest property line.

Figure 2-1: Aerial View of Project Site

Source: MIG 2023

2.2 EXISTING SITE DESCRIPTION AND OPERATIONS

The Project site consists of an undeveloped field with ruderal vegetation. There are no active operations at the site, except for mowing/weed control.

2.3 PROPOSED SITE DEVELOPMENT AND OPERATIONS

The proposed Project would involve the development of a new, approximately 58,974 square foot industrial building. Approximately 8,000 square feet of the building's total area would consist of office space. The entire approximately 4.01-acre site would be graded; the portions of the site not developed with the warehouse would either be hardscaped (e.g., parking or sidewalks) or landscaped. The proposed Project site plan is shown in Figure 2-2: Site Plan.

2.3.1 SITE LAYOUT AND BUILDING DESCRIPTION

The proposed rectangular building would reach a height of 45 feet above ground level on the northwestern portion of the building and would have a predominant building height of 43 feet above ground level. The long axis of the building, like the site, would be oriented east to west, with the front of the building facing Harley Knox Boulevard. The building's office space would be located at the northwestern corner of

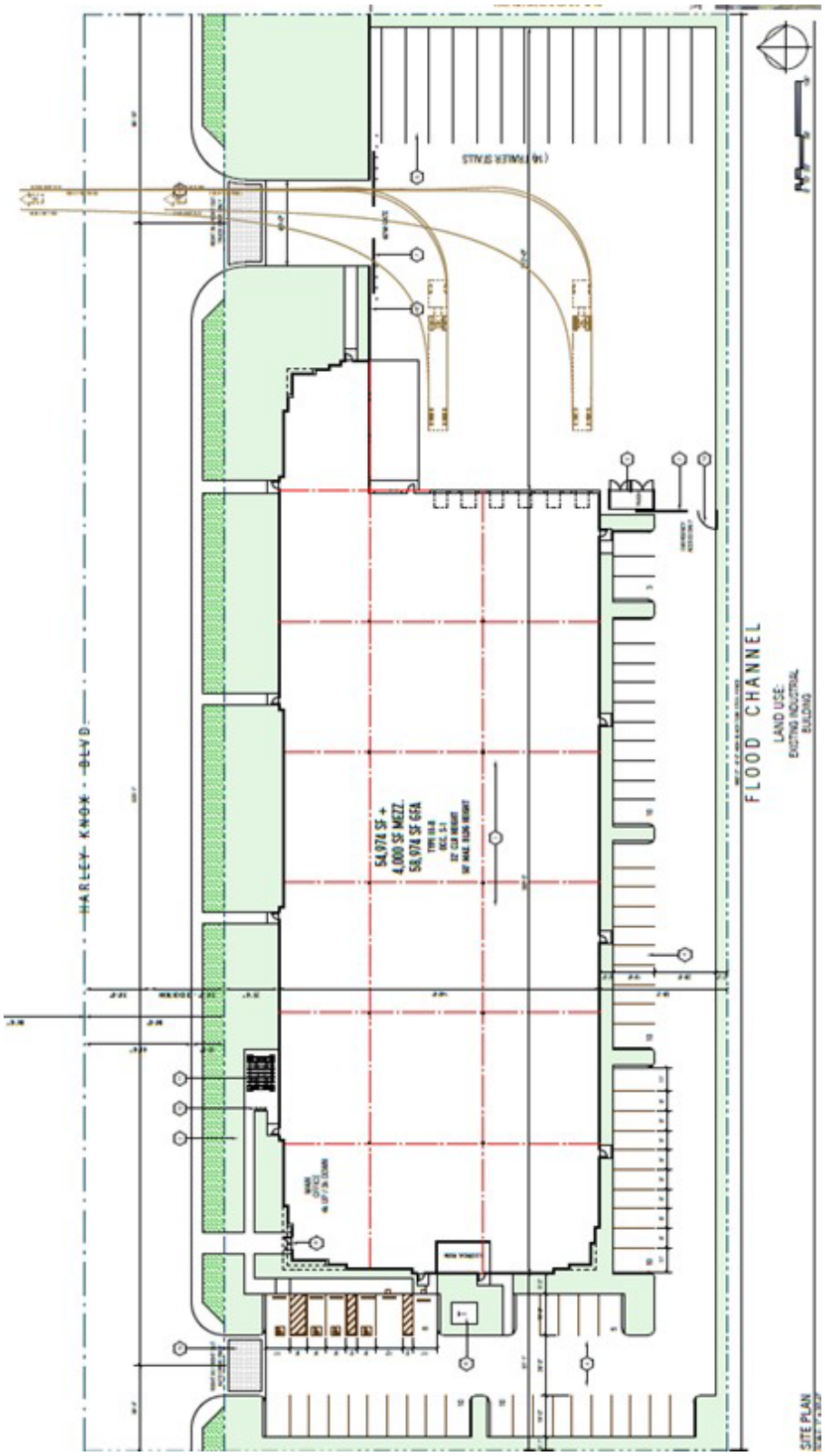
the building. Employee parking areas would generally be located along the site's western and southern perimeter.

The building's eastern façade would include six truck docks that would be set back from the site's eastern property line approximately 218 feet. The building's facades would be set back approximately 58 feet from the site's southern property line, 81 feet from the western property line, and 25 feet from the northern property line. The site's southern property line and eastern property line surrounding the trailer stalls area would feature an 8-foot-tall steel tube fence.

2.3.2 SITE ACCESS AND PARKING

Access to the site would be provided via two driveways on Harley Knox Boulevard. The western driveway would provide access to the building's office area, as well as employee and visitor parking along the western and southern portion of the site (64 stalls in total). The western drive aisle would provide right in/right out auto only access to the western and southern parking areas of the site. The eastern driveway would provide right in/right out truck-only access to the site's docks and trailer stalls area via a drive aisle along the eastern portion of the site. The building's six truck docks would be located on the eastern side of the building, secured by a gated access point on the drive-aisle. The site would include a trailer parking area with 14 trailer stalls on the eastern portion of the site. On-site circulation would be provided via 28-foot-wide drive aisles on the west and south sides of the building, and a 40-foot-wide drive aisle on the east side of the building. A median in Harley Knox Boulevard would prevent trucks from turning left into either the site's eastern or western driveways from westbound Harley Knox Boulevard.

Figure 2-2: Site Plan



Source: RGA, Office of Architectural Design, 2023

2.3.3 PROJECT OPERATIONS

The proposed Project is considered a speculative industrial building because tenants/end users have not been identified. Although Project-specific details are not known, in general, industrial warehouse buildings generate noise from sources such as on- and off-site vehicle trips, on-site truck maneuvering, loading, and unloading activities, on-site parking, and other on-site operations. With regards to potential Project operations that could generate noise, this Report assumes:

- **Hours of Operation:** The Project could operate up to 24 hours per day, 7 days per week. Employee shift changes would occur in the morning (approximately 7 to 8 AM), afternoon (approximately 3 PM to 4 PM), and nighttime (approximately 11 PM to 12 AM), with most employees working a daytime shift.
- **Vehicle Trip Generation:** The proposed Project's trip generation potential, as estimated in the vehicle miles travelled (VMT) screening analysis prepared for the Project, is summarized in Table 2-1: Project Trip Generation Rates (Ganddini Group, 2023). As shown in Table 2-1, the proposed Project would result in 103 total vehicle trips per day, including 67 passenger vehicle trips and 36 truck trips. The closest highway / freeway to the Project site is the I-215, which can be accessed via Harley Knox Boulevard on- and off-ramps located approximately 1.7 miles and 1.8 miles from the site. It was assumed 100% of the Project's truck traffic would travel to and from the site via Harley Knox Boulevard (Ganddini 2023). All trucks are assumed to enter and exit the site via the eastern driveway.
- **Yard Equipment:** The Project could include the use and operation of up to 7 electric-powered forklifts, pallet jacks, and other material handling equipment. This estimate is based on the average equipment usage at high cube warehouses, based on a survey conducted by the South Coast Air Quality Management District (SCAQMD, 2014). This equipment would primarily operate inside the proposed industrial warehouse building.

Table 2-1: Project Trip Generation Rates				
Vehicle Type	AM Peak Hour	PM Peak Hour	Average Daily Trips	
			Number	Percent
Proposed Project				
Passenger Cars	9	9	67	65%
Truck Trips				
2-axle	0	0	6	6%
3-axle	0	0	7	7%
4-axle	1	1	23	22%
Subtotal(A)	1	1	36	35%
Total Project Trips	***10***	***10***	***103***	***100%***

Source: Ganddini, 2023, Table 1
(A) Totals may not equal due to rounding.

2.3.4 PROJECT DESIGN FEATURES THAT REDUCE NOISE IMPACTS

In 2022, the City of Perris adopted the Good Neighbor Guidelines for new and/or modified for industrial facilities. The Good Neighbor Guidelines include goals and policies intended to assist Planning Departments, developers, property owners, elected officials, community organizations, and the general public, mitigate the potential impacts associated with the rapid growth of the logistics industry near sensitive receptors in the City of Perris. The goals of the Good Neighbor Guidelines include (City of Perris, 2022):

- Ensure air quality and health risks, and noise impacts are evaluated;
- Protect public health, safety, and welfare by regulating the design, location, and operation of warehouse/distribution facilities; and
- Protect sensitive receptors, including neighborhood character of residential communities in the City of Perris.

The Good Neighbor Guidelines state that the City has the discretion and authority to approve projects that deviate from the guidance provided in these guidelines, provided adequate justifications provided by the applicant. Several goals and policies contained within these Good Neighbor Guidelines address minimizing noise impacts on sensitive receptors. As discussed in Section 2.1.2, the nearest noise sensitive receptor to the proposed Project is located approximately 1,100 feet east-southeast of the Project site. Accordingly, since there are no sensitive receptors in proximity to the proposed Project site, most of the Good Neighbor Guidelines policies would not apply to the Project. Nonetheless, the proposed Project would include design features that would reduce operational noise impacts on nearby receptors and promote consistency with the City of Perris' Good Neighbor Guidelines. These design features are part of the proposed Project and reflected in the noise impact analyses contained in this report; they are not mitigation measures. The proposed Project's noise reduction design features are summarized in Table 2-2.

Table 2-2: Summary of Project Design Features that Reduce Operational Noise Impacts		
Project Design Feature	**Guideline Section**	**Design Feature Description**
Warehouse Building Façade and Docks Layout	Goal #1 Protect the neighborhood characteristics of the urban, rural, and suburban communities. Policy 4. Truck loading bays and drive aisles shall be designed to minimize truck noise.	There are no residential receptors adjacent to the Project site. The site plan and layout of the drive aisle and docks would minimize noise due to the docks area being recessed on the eastern side of the site. The trailer stalls area and setbacks of the building from the eastern and southern property lines would also limit noise transmission originating from the docks.
On-Site Parking and Truck Travel	Goal 1, Policy 12: Warehouse/ distribution facilities shall be designed to provide adequate on-site parking for commercial trucks and passenger vehicles and on site queuing for trucks away from sensitive receptors. Commercial trucks shall not be parked in the public right of way or nearby residential areas, in accordance with the Perris Municipal Code and Specific Plans. Policy 15, 17-19 Signs shall be installed that indicate off-site parking is prohibited, that provide contact information for the SCAQMD for complaints, that truck parking and maintenance should occur in designated areas, and that identify on-site circulation patterns. Goal #2 Policy 13. Post signs requiring to turn off truck engines when not in use.	On-site circulation, parking, and signs would help reduce traffic congestion entering into and exiting from the site via Harley Knox Boulevard. These features would also reduce truck idling, and therefore would reduce noise generation.

Table 2-2: Summary of Project Design Features that Reduce Operational Noise Impacts		
Project Design Feature	**Guideline Section**	**Design Feature Description**
Truck Routes	Goal #3: Eliminate diesel trucks from unnecessary traversing through residential neighborhoods. Policy 1. The facility operator shall abide by the truck routing plans, consistent with the City of Perris Truck Route Plan. Policy 2. Adequate turning movements at entrance and exit driveways shall be provided, subject to City approval. Policy 3. Truck traffic shall be routed to impact the least number of sensitive receptors. Policy 4. To the extent possible, establish separate entry and exit points within a warehouse/distribution facility for trucks and vehicles to minimize vehicle/truck conflicts.	Minimizing truck routing through residential areas would limit noise exposure to sensitive receptors due to truck traffic associated with the proposed Project.
On-Site Equipment	Goal #2: Minimize exposure of diesel emissions to neighbors that are situated in close proximity to the warehouse/ distribution center. Policy 6. On site motorized operational equipment shall be ZE (Zero Emissions).	The Applicant will require the use of electric forklifts. Electric motorized operational equipment would generally limit noise generation, especially in and around the docks area.

Table 2-2: Summary of Project Design Features that Reduce Operational Noise Impacts		
Project Design Feature	**Guideline Section**	**Design Feature Description**
Buffer	Goal #4: Provide Buffers between Warehouses and Sensitive Receptors. Policy 1. A separation of at least 300 feet shall be provided, as measured from the dock doors to the nearest property line of the sensitive receptor. Policy 2. A minimum 30-foot landscape setback shall be provided along property lines when adjacent to sensitive receptors. Policy 4. Loading areas shall be screened with a 14-foot-high decorative block wall, architecturally consistent with the building, and an 8-foot high berming in front of the wall to soften the view of the wall from the public right of way. Policy 6. Sites shall be densely screened with landscaping along all bordering streets and adjacent/across the street from sensitive receptors. Policy 8. An additional wing wall shall be installed perpendicular to the loading dock areas, where feasible, to further attenuate noise related to truck activities and address aesthetics related to loading area when adjacent to sensitive receptors. Vines or other appropriate plant material should be planted in front of the screen walls to soften views from the street. Policy 9. Dock doors shall be located where they are not readily visible from sensitive receptors or major roads. If it is necessary to site dock doors where they may be visible, a method to screen the dock doors shall be implemented. A combination of landscaping, berms, walls, and similar features shall be considered	Landscaping setbacks would limit noise transmission to surrounding adjacent land uses and receptors.

Table 2-2: Summary of Project Design Features that Reduce Operational Noise Impacts		
Project Design Feature	**Guideline Section**	**Design Feature Description**
Construction Off-Road Equipment Selection	Goal 6. Implement Construction Practice Requirements in Accordance with State Requirements to Limit Emissions and Noise Impacts from Building Demolition, Renovation, and New Construction Policy 3. Construction contractor shall utilize construction equipment with properly operating and maintained mufflers, consistent with manufacturer's standards. Policy 4. Construction contractors shall locate or park all stationary construction equipment away from sensitive receptors nearest the project site, to the extent practicable. Policy 8. Prepare a construction traffic control plan prior to grading, detailing the locations of equipment staging areas material stockpiles, proposed road closures, and hours of construction operations to minimize impacts to sensitive receptors. Policy 9. Minimize noise from construction activities.	Properly operating and maintained mufflers would limit noise generation from construction equipment.

2.4 PROJECT CONSTRUCTION

Construction of the proposed Project is anticipated to begin as early as the 1st quarter of 2024 and take approximately 12 months to complete. The development of the approximately 4.01- acre site and the construction of the approximately 58,974 square feet industrial warehouse building would require site preparation, grading, building construction, paving, and architectural coating phases/activities. Soil would be balanced on site. The proposed Project is anticipated to require varying types of equipment throughout the different construction phases including, but not limited to, bulldozers, backhoes, loaders, graders, cranes and forklifts. Table 2-3 summarizes the proposed Project's construction phasing and the typical pieces of heavy-duty, off-road construction equipment that would be required during each phase.

Table 2-3: Project Construction Activity, Duration, and Typical Equipment		
Construction Activity	**Duration (Days)(A)**	**Typical Equipment Used(B)**
Site Preparation	8	Tractor/Loader/Backhoe
Grading	8	Scraper, Tractor/Loader/Backhoe, Grader
Building Construction (Foundation)	15	Tractor/Loader/Backhoe
Building Construction (Vertical)(C)	180	Tractor/Loader/Backhoe, Forklift, Crane
Trenching	20	Excavator, Backhoe
Building Construction (MEP/Other)	30	Forklift
Paving	18	Paver, Paving Equipment, Roller
Architectural Coating	18	Air Compressor

Source: MIG, 2023

(A) Days refers to total active workdays in the construction phase, not calendar days.

(B) The typical equipment list does not reflect all equipment that would be used during the construction phase. Not all equipment would operate eight hours per day each workday.

(C) The Building Construction (Vertical) phrase overlaps with the Trenching Phase and with the Building Construction (MEP/Other) Phase.

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3 NOISE AND VIBRATION FUNDAMENTALS

3.1 DEFINING NOISE

"Sound" is a vibratory disturbance created by a moving or vibrating source and is capable of being detected. For example, airborne sound is the rapid fluctuation of air pressure above and below atmospheric pressure. "Noise" may be defined as unwanted sound that is typically construed as loud, unpleasant, unexpected, or undesired by a specific person or for a specific area.

3.1.1 SOUND PRODUCTION

Sound has three properties: frequency (or pitch), amplitude (or intensity or loudness), and duration. Pitch is the height or depth of a tone or sound and depends on the frequency of the vibrations by which it is produced. Sound frequency is expressed in terms of cycles per second, or Hertz (Hz). Humans generally hear sounds with frequencies between 20 and 20,000 Hz and perceive higher frequency sounds, or high pitch noise, as louder than low-frequency sound or sounds low in pitch. Sound intensity or loudness is a function of the amplitude of the pressure wave generated by a noise source combined with the reception characteristics of the human ear. Atmospheric factors and obstructions between the noise source and receptor also affect the loudness perceived by the receptor.

The frequency, amplitude, and duration of a sound all contribute to the effect on a listener, or receptor, and whether or not the receptor perceives the sound as "noisy" or annoying. Despite the ability to measure sound, human perceptibility is subjective, and the physical response to sound complicates the analysis of its impact on people. People judge the relative magnitude of sound sensation in subjective terms such as "noisiness" or "loudness."

3.1.2 MEASURING SOUND

Sound pressure levels are typically expressed on a logarithmic scale in terms of decibels (dB). A dB is a unit of measurement that indicates the relative amplitude (i.e., intensity or loudness) of a sound, with 0 dB corresponding roughly to the threshold of hearing for the healthy, unimpaired human ear. Since decibels are logarithmic units, an increase of 10 dBs represents a ten-fold increase in acoustic energy, while 20 dBs is 100 times more intense, 30 dBs is 1,000 times more intense, etc. In general, there is a relationship between the subjective noisiness or loudness of a sound and its intensity, with each 10 dB increase in sound level perceived as approximately a doubling of loudness. Due to the logarithmic basis, decibels cannot be directly added or subtracted together using common arithmetic operations:

$$50\ decibels + 50\ decibels\ \neq 100\ decibels$$

Instead, the combined sound level from two or more sources must be combined logarithmically. For example, if one noise source produces a sound power level of 50 dBA, two of the same sources would combine to produce 53 dB as shown below.

$$10 * \ 10\ log\left(10^{\left(\frac{50}{10}\right)} + \ 10^{\left(\frac{50}{10}\right)}\right) = 53\ decibels$$

In general, when one source is 10 dB higher than another source, the quieter source does not add to the sound levels produced by the louder source because the louder source contains ten times more sound energy than the quieter source.

3.1.3 CHARACTERIZING SOUND

Although humans generally can hear sounds with frequencies between 20 and 20,000 Hz most of the sound humans are normally exposed to do not consist of a single frequency, but rather a broad range of frequencies perceived differently by the human ear. In general, humans are most sensitive to the frequency range of 1,000–8,000 Hz and perceive sounds within that range better than sounds of the same amplitude in higher or lower frequencies. Instruments used to measure sound, therefore, include an electrical filter that enables the instrument's detectors to replicate human hearing. This filter known as the "A-weighting" or "A-weighted sound level" filters low and very high frequencies, giving greater weight to the frequencies of sound to which the human ear is typically most sensitive. Most environmental measurements are reported in dBA, meaning decibels on the A-scale. Most environmental measurements are reported in dBA, meaning decibels on the A-scale. A list of common noise sources and their associated A-weighted noise level is provided in Table 3-1. Other weightings include the B-, C-, and D-weighting, but these scales are not commonly used for environmental noise because human annoyance correlates well with the A-weighting and these weighting scales are not incorporated in typical environmental noise descriptors

Sound levels are usually not steady and vary over time. Therefore, a method for describing either the average character of the sound or the statistical behavior of the variations over a period of time is necessary. The continuous equivalent noise level (L_{eq}) descriptor is used to represent the average character of the sound over a period of time. The L_{eq} represents the level of steady-state noise that would have the same acoustical energy as the sum of the time-varying noise measured over a given time period. L_{eq} is useful for evaluating shorter time periods over the course of a day. The most common L_{eq} averaging period is hourly, but L_{eq} can describe any series of noise events over a given time period.

Variable noise levels are the values that are exceeded for a portion of the measured time period. Thus, the L_{01}, L_{05}, L_{25}, L_{50}, and L_{90} descriptors represent the sound levels exceeded 1%, 5%, 25%, 50%, and 90% of the time the measurement was performed. The L_{90} value usually corresponds to the background sound level at the measurement location.

When considering environmental noise, it is important to account for the different responses people have to daytime and nighttime noise. In general, during the nighttime, background noise levels are generally quieter than during the daytime but also more noticeable because household noise decreases as people begin to retire and sleep. Accordingly, a variety of methods for measuring noise have been developed. The California General Plan Guidelines for Noise Elements identifies the following common metrics for measuring noise (OPR, 2017):

- **L_{dn} or DNL (Day-Night Average Level):** The average equivalent A-weighted sound level during a 24-hour day, divided into a 15-hour daytime period (7:00 AM to 10:00 PM) and a 9-hour nighttime period (10:00 PM to 7:00 AM). A 10 dB "penalty" is added to measure nighttime noise levels when calculating the 24-hour average noise level. For example, a 45-dBA nighttime sound level (e.g., at 2:00 AM) would contribute as much to the overall day-night average as a 55-dBA daytime sound level (e.g., at 7:00 AM).
- **CNEL (Community Noise Equivalent Level):** The CNEL descriptor is similar to DNL, except that it includes an additional 5 dBA penalty for noise events that occur during the evening time period (7:00 PM to 10:00 PM). For example, a 45-dBA evening sound level (e.g., at 8:00 PM) would contribute as much to the overall day-night average as a 50-dBA daytime sound level (e.g. at 8:00 AM).

Table 3-1: Typical Noise Levels		
Common Outdoor Activities	**Noise Level (dBA)**	**Common Indoor Activities**
	110	Rock Band
Jet flyover at 1,000 feet	105	
	100	
Gas lawn mower at 3 feet	95	
	90	
Diesel truck at 50 feet at 50 mph	85	Food blender at 3 feet
	80	Garbage disposal at 3 feet
Noise urban area, daytime	75	
Gas lawnmower, 100 feet	70	Vacuum cleaner at 10 feet
Commercial area	65	Normal speech at 3 feet
Heavy traffic at 300 feet	60	
	55	Large business office
Quiet urban daytime	50	Dishwasher next room
	45	
Quiet urban nighttime	40	Theater, large conference room
Quiet suburban nighttime	35	
	30	Library
Quite rural nighttime	25	Bedroom at night
	20	
	15	Broadcast/recording studio
	10	
	5	
Typical threshold of human hearing	0	Typical threshold of human hearing
Source: Caltrans, 2013		

The artificial penalties imposed during DNL and CNEL calculations are intended to account for a receptor's increased sensitivity to noise levels during quieter nighttime periods. As such, the DNL and CNEL metrics are usually applied when describing longer-term ambient noise levels because they account for all noise sources over an extended period of time and account for the heightened sensitivity of people to noise during the night. In contrast, the L_{eq} metric is usually applied to shorter reference periods where sensitivity is presumed to remain generally the same.

Federal and State agencies have established noise and land use compatibility guidelines that use averaging approaches to noise measurement. The State Department of Aeronautics and the California Commission on Housing and Community Development have adopted the CNEL for evaluating community noise exposure levels.

3.1.4 SOUND PROPAGATION

The energy contained in a sound pressure wave dissipates and is absorbed by the surrounding environment as the sound wave spreads out and travels away from the noise generating source. The strength of the source is often characterized by its "sound power level." Sound power level is independent of the distance a receiver is from the source and is a property of the source alone. Knowing the sound power level of an idealized source and its distance from a receiver, sound pressure level at the receiver point can be calculated based on geometrical spreading and attenuation (noise reduction) as a result of distance and environmental factors, such as ground cover (asphalt vs. grass or trees), atmospheric absorption, and shielding by terrain or barriers.

For an ideal "point" source of sound, such as mechanical equipment, the energy contained in a sound pressure wave dissipates and is absorbed by the surrounding environment as the sound wave spreads out in a spherical pattern and travels away from the point source. Theoretically, the sound level attenuates, or decreases, by 6 dB with each doubling of distance from the point source. In contrast, a "line" source of sound, such as roadway traffic or a rail line, spreads out in a cylindrical pattern and theoretically attenuates by 3 dB with each doubling of distance from the line source; however, the sound level at a receptor location can be modified further by additional factors. The first is the presence of a reflecting plane such as the ground. For hard ground, a reflecting plane typically increases A-weighted sound pressure levels by 3 dB. If some of the reflected sound is absorbed by the surface, this increase will be less than 3 dB. Other factors affecting the predicted sound pressure level are often lumped together into a term called "excess attenuation." Excess attenuation is the amount of additional attenuation that occurs beyond simple spherical or cylindrical spreading. For sound propagation outdoors, there is almost always excess attenuation, producing lower levels than what would be predicted by spherical or cylindrical spreading. Some examples include attenuation by sound absorption in air; attenuation by barriers; attenuation by rain, sleet, snow, or fog; attenuation by grass, shrubbery, and trees; and attenuation from shadow zones created by wind and temperature gradients. Under certain meteorological conditions, like fog and low-level clouds, some of these excess attenuation mechanisms are reduced or eliminated due to noise reflection.

3.1.5 NOISE EFFECTS ON HUMANS

Noise effects on human beings are generally categorized as:

- Subjective effects of annoyance, nuisance, and/or dissatisfaction
- Interference with activities such as speech, sleep, learning, or relaxing
- Physiological effects such as startling and hearing loss

Most environmental noise levels produce subjective or interference effects; physiological effects are usually limited to high noise environments such as industrial manufacturing facilities or airports.

Predicting the subjective and interference effects of noise is difficult due to the wide variation in individual thresholds of annoyance and past experiences with noise; however, an accepted method to determine a person's subjective reaction to a new noise source is to compare it the existing environment without the noise source, or the "ambient" noise environment. In general, the more a new noise source exceeds the ambient noise level, the more likely it is to be considered annoying and to disturb normal activities.

Under controlled conditions in an acoustical laboratory, the trained, healthy human ear is able to discern 1-dB changes in sound levels when exposed to steady, single-frequency ("pure-tone") signals in the mid-frequency (1,000–8,000 Hz) range. In typical noisy environments, changes in noise of 1 to 2 dB are

generally not perceptible. However, it is widely accepted that people can begin to detect sound level increases of 3 dB in typical noisy environments. Further, a 5-dB increase is generally perceived as a distinctly noticeable increase, and a 10-dB increase is generally perceived as a doubling of loudness that would almost certainly cause an adverse response from community noise receptors.

When exposed to high noise levels, humans may suffer hearing damage. Sustained exposure to high noise levels (e.g., 90 dBs for hours at a time) can cause gradual hearing loss, which is usually temporary, whereas sudden exposure to a very high noise level (e.g., 130 to 140 dBs) can cause sudden and permanent hearing loss. In addition to hearing loss, noise can cause stress in humans and may contribute to stress-related diseases, such as hypertension, anxiety, and heart disease (Caltrans, 2013).

3.1.6 GROUND-BORNE VIBRATION AND NOISE

Vibration is the movement of particles within a medium or object such as the ground or a building. Vibration may be caused by natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or humans (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources are usually characterized as 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; however, unlike airborne sound, there is no standard way of measuring and reporting amplitude. Vibration amplitudes can be expressed in terms of velocity (inches per second) or discussed in dB units to compress the range of numbers required to describe vibration. Vibration impacts to buildings are usually discussed in terms of peak particle velocity (PPV) in inches per second (in/sec). PPV represents the maximum instantaneous positive or negative peak of a vibration signal and is most appropriate for evaluating the potential for building damage. Vibration can impact people, structures, and sensitive equipment. The primary concern related to vibration and people is the potential to annoy those working and residing in the area. Vibration with high enough amplitudes can damage structures (such as crack plaster or destroy windows). Ground-borne vibration can also disrupt the use of sensitive medical and scientific instruments, such as electron microscopes. Potential human annoyance associated with ground-borne velocity is typically assessed using velocity decibel (VdB) notation.

Ground-borne noise is noise generated by vibrating building surfaces such as floors, walls, and ceilings that radiate noise inside buildings subjected to an external source of vibration. The vibration level, the acoustic radiation of the vibrating element, and the acoustical absorption of the room are all factors that affect potential ground-borne noise generation.

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4 ENVIRONMENTAL AND REGULATORY SETTING

This chapter provides information on the environmental and regulatory noise setting of the proposed Project.

4.1 PROJECT LOCATION AND SITE DESCRIPTION

The proposed Project would be located on undeveloped land in the northern part of the City of Perris. Refer to Section 2.1 for a description of the Project site and its surroundings.

4.2 EXISTING NOISE ENVIRONMENT

The proposed Project is located along Harley Knox Boulevard between Perris Boulevard and Indian Avenue, in an area of mixed light industrial, general industrial, and commercial land uses. The City's General Plan Circulation Element considers North Perris Boulevard and East Rider Street to be primary and secondary arterial roadways, respectively (City of Perris, 2013). According to the General Plan Noise Element, measured ambient noise levels on Webster Avenue (approximately 0.8 miles southwest of the Project site) were 53.5 dBA L_{eq} in 2003 (City of Perris, 2016, Exhibit N-2 and Table N-2). Traffic noise modeling conducted for the General Plan Noise Element indicates that 2003 average daily traffic (ADT) volumes on the segment of North Perris Boulevard close to the Project site were 17,464, these traffic volumes were estimated to generate noise levels of 74.6 CNEL at a distance of 50 feet from the center of North Perris Boulevard. Under 2030 conditions, the traffic noise modeling conducted for the General Plan Noise Element showed ADT volumes on North Perris Boulevard would increase to 27,000. These future traffic volumes would generate noise levels of 76.5 CNEL at a distance of 50 feet from the center of North Perris Boulevard.[2] The City's Perris Valley Commerce Center Specific Plan, in which the proposed Project would be located, indicates that land uses are mainly designated for light industrial and commercial land uses but also includes general industrial, business/professional office, public land uses, and residential areas to recognize existing communities (City of Perris 2022).[3] The closest air travel facilities to the Project site are the March Air Reserve Base/Inland Port Airport located approximately 0.8 miles northwest of the Project site, and Perris Valley Airport located approximately 5.9 miles south of the Project site.

4.2.1 AMBIENT NOISE LEVELS AT PROJECT SITE

MIG conducted ambient noise level monitoring at and near the proposed Project site from approximately 1:00 PM on Wednesday, April 5, 2023, to 1:00 PM on Thursday, April 6, 2023 (see Appendix A). The ambient noise levels were digitally measured and stored using one Larson Davis SoundTrack LxT sound level meter that meets American National Standards Institute requirements for a Type 1 integrating sound level meter. The sound meter was calibrated immediately before and after the monitoring period using a reference one kilohertz (1kH) check frequency and 114 dB sound pressure level and found to be operating within normal parameters for sensitivity. Ambient noise measurements were also made using one Piccolo-II

[2] 2003 traffic noise modeling data are reported for Perris Boulevard, north of Nance Street (City of Perris, 2016, Table N-6). 2030 traffic noise modeling data are reported for Perris Boulevard north of Nance Street (City of Perris, 2016, Table N-8). These roadway segments are the closest modeled segments to the Project site and are considered representative of traffic levels on North Perris Boulevard directly adjacent to the Project site due to similar ADT and roadway geometry conditions.

[3] The nearest residential area to the proposed project site within the Perris Valley Commerce Center is located at the southwestern intersection of Markham Street and Brennan Avenue, approximately 3,200 feet southwest of the project site.

Integrating Averaging Sound Level Meter that meets the ANSI S1.43 Type 2 requirements for an integrated sound level meter. The sound meter was calibrated immediately before and after the monitoring period using a reference 1kH check frequency and 94 dB sound pressure level and found to be operating within normal parameters for sensitivity. Measurements were continuously collected over the sample period in 1-minute intervals. This interval was selected to capture short-term noise events and increases in noise levels above typical background conditions. Weather conditions during the monitoring were generally clear and sunny during the daytime and clear and cool during the nighttime. Temperatures ranged from the low 50's (overnight) to the mid to upper 70's (in the later afternoon). Winds were generally light and variable and ranged from calm conditions during the early morning to up to 12 miles per hour (mph) during the daytime and evening.

The ambient noise monitoring conducted for this Report included one (1) long-term (LT) and two (2) short-term (ST) measurement at locations selected to:

- Provide direct observations of existing noise sources at and in the vicinity of the proposed Project;
- Measure typical ambient noise levels at and in the vicinity of the proposed Project; and
- Evaluate potential Project noise levels at nearby sensitive receptors (see Section 4.2.1.1).

The ambient noise monitoring locations are described below and shown on Figure 4-1: Ambient Noise Monitoring Locations.

- **LT-1** was adjacent to the Riverside County Flood Control Channel (located south of the Project area and north of the Home Depot Warehouse at 350 West Markham Street, Perris), along proposed Project's southern property line. Ambient noise levels at this location were measured from approximately 1:00 PM on Wednesday, April 5, 2023, to 1:00 PM on Thursday, April 6, 2023. The ambient noise levels measured at LT-1 are representative of the typical noise levels on the interior of the Project site, away from Harley Knox Boulevard.
- **ST-1** was along the site's northern property boundary, approximately 3 feet south of the curb of Harley Knox Boulevard. Ambient noise levels at this location were measured from 1:17 PM to 1:27 PM on Wednesday, April 5, 2023. The ambient noise levels measured at ST-1 are representative of the typical daytime noise levels associated with vehicle travel on Harley Knox Boulevard.
- **ST-2** was adjacent to the northwestern property line of the residential land use located at 75 East Nance Street, approximately 75 feet south of the telephone pole along East Nance Street. Ambient noise levels at this location were measured from 1:45 PM to 1:55 PM on Wednesday, April 5, 2023. The ambient noise levels measured at ST-2 are representative of the typical daytime noise levels at this residential receptor.

Figure 4-1: Ambient Noise Monitoring Locations

Based on observations during the monitoring, vehicle traffic on Harley Knox Boulevard and North Perris Boulevard was the predominant noise source near the Project site. The results of the LT and ST ambient noise monitoring conducted for this Report are summarized in Table 4-1 and Table 4-2, respectively. Refer to Appendix A for detailed ambient noise monitoring results.

Table 4-1: Summary of Measured Long-Term Ambient Noise Levels Near Project Site (dBA)

Day / Site	Total Hours Monitored	L_{min}	L_{max}	Measured Noise Level[A]			
				Daytime (7 AM to 7 PM)	Evening (7 PM to 10 PM)	Nighttime (10 PM to 7 AM)	24-Hour CNEL[B]
Wednesday, April 5, 2023, to Thursday, April 6, 2023							
LT-1	24 hours	46.0	87.6	51.5 – 62.4	55.1 – 56.1	51.3 – 57.8	61.2

Source: MIG (See Appendix A)

(A) Values are the lowest and highest measured hourly L_{eq} values during the listed time period.

(B) CNEL data is presented for a full 24-hour monitoring period (1:00 PM on 4/5/23 to 1:00 PM on 4/6/23).

Table 4-2: Summary of Measured Short-Term Ambient Noise Levels at and near Project Site				
Day / Site	**Duration**	**Measured Noise Level (dBA)**		
		L_{min}	**L_{max}**	**L_{eq}**
Wednesday, April 4, 2023 (1:17 PM to 1:27 PM)				
ST-1	10 minutes	42.2	83.1	68.7
LT-1	10 minutes	47.1	68.4	51.9
Wednesday, April 4, 2023 (1:45 PM to 1:55 PM)				
ST-2	10 minutes	43.6	68.4	57.5
LT-1	10 minutes	47.3	63.0	51.6
Source: MIG (see Appendix A)				

As shown in Table 4-1and Table 4-2, the measured ambient noise levels at and near the Project site range between 51 to 69 dBA L_{eq} during the daytime and between 51 to 58 dBA during the evening and nighttime. Evening and nighttime hours are assumed to be quieter due to decreased vehicle traffic on Harley Knox Boulevard and North Perris Boulevard. Measured noise levels were higher closer to Harley Knox Boulevard (ST-1) than those on the southern portion of the Project site (LT-1) and the residence on East Nance Street (ST-2) due to the proximity to Harley Knox Boulevard. The 24-hour noise exposure level at LT-1 was 61.2 dBA CNEL.

4.2.1.1 Discussion of Ambient Noise Levels at an Existing Warehouse/Business Park Use

In addition to collecting ambient noise data at the Project site, MIG has conducted ambient noise level monitoring at an existing, approximately 80,000 square-foot warehouse/business park use to inform potential project noise levels. The existing warehouse was located at 1900 East Alessandro Boulevard in the City of Riverside. The noise monitoring was conducted from approximately 8:30 AM to 3:00 PM on Tuesday, July 28, 2020, following the same procedures described in Section 4.2.1. Measurements were continuously collected over the sample period in 1-minute intervals. This interval was selected to capture short-term noise events and increases in noise levels above typical background conditions. Weather conditions during the monitoring were generally clear and sunny, with temperatures ranging from the low 80's (in the morning) to the high 90's (in the later afternoon). Winds were generally calm. The ambient noise monitoring included two (2) ST measurements at locations selected to:

- Provide direct observations and measurements of existing noise sources at and in the vicinity of the existing 80,000 square foot warehouse; and
- Determine typical ambient noise levels at and in the vicinity of the proposed Project; and

The existing warehouse ambient noise monitoring locations were generally located approximately 90 feet and 385 feet from the site's entrance, approximately 50 feet from drive aisles/maneuvering areas, and approximately 115 feet from building façade/truck dock doors. Based on observations made during the ambient noise monitoring, the noise environment at a warehouse is a function of intermittent site usage, with noise levels increasing during truck unloading and loading activities and returning to background levels when truck docks are not in use. Table 4-3 summarizes the results of the existing warehouse ambient noise monitoring conducted previously by MIG. Refer to Appendix A for detailed ambient noise monitoring results.

Table 4-3: Measured Short-Term Ambient Noise Levels At Typical Warehouse (dBA)									
Day / Site	Duration	L_{min}	L_{max}	Measured Noise Level (dBA)					
				L_{eq}	$L_{1.6}$	$L_{8.3}$	L_{25}	L_{50}	L_{90}
Tuesday, July 28, 2020(A)									
WH-1	5.5 Hours	42.9	88.5	62.8	71.0	66.2	62.7	60.2	58.1
WH-2	5.5 Hours	41.9	89.6	59.9	69.4	64.9	58.9	55.1	51.9
Specific Site/Truck Activity Noise Levels at 50 Feet									
Main Engine Idling		60.8	63.2	61.6	63.1	62.9	61.6	61.3	61.1
Main Engine Acceleration		52.7	77.5	67.1	77.1	72.1	66.7	56.9	54.4
Truck Passby (5 to 10 mph)		62.8	72.9	66.7	72.2	70.5	67.5	64.6	63.4
Air Brake Release		63.4	73.8	64.8	70.9	65.1	64.6	63.9	63.6
Two Trucks Maneuvering and Idling (8 minutes)		56.4	79.5	68.2	74.9	71.6	68.7	66.6	63.3

Source: MIG (See Appendix A)

(A) Measurements occurred from 8:30 AM to 3:00 PM. WH-1 was located approximately 385 feet from the gated warehouse entrance and WH-2 was located 90 feet from the gated warehouse entrance. Both sites were situated approximately 50 feet from the main drive aisle providing access to truck loading/unloading docks and approximately 100 feet from the building façade/truck dock doors.

4.2.2 NOISE SENSITIVE RECEPTORS

Noise sensitive land uses and receptors are buildings or areas where unwanted sound or increases in sound may have an adverse effect on people or land uses. The City's General Plan defines sensitive noise receptors as land uses that are adversely affected by various noise sources; such land uses are defined in Section 16.22.020 of the City's Municipal Code (see section 4.3.4 Local Noise Regulations) which identifies residences, schools, libraries, hospitals, churches, offices, hotels, motels, and outdoor recreational areas as sensitive noise receptors (City of Perris, 2016, p. 6).

Based on the City's General Plan and Municipal Code, the nearest noise sensitive receptor(s) to the proposed Project site would be located approximately 1,100 feet east-southeast of the site along East Nance Street.

4.2.3 FEDERAL NOISE AND VIBRATION REGULATIONS

There are no federal noise and vibration regulations that directly apply to the proposed Project.

4.2.4 STATE NOISE AND VIBRATION REGULATIONS

4.2.4.1 California Building Standards Code

The California Building Standards Code is contained in Title 24 of the California Code of Regulations and consists of 11 different parts that set various construction and building requirements. Part 2, California Building Code, Section 1207, Sound Transmission, establishes sound transmission standards for interior walls, partitions, and floor/ceiling assemblies. Specifically, Section 1207.4 establishes that interior noise levels attributable to exterior noise sources shall not exceed 45 dBA DNL or CNEL (as set by the local General Plan) in any habitable room.

The California Green Building Standards (CALGreen) Code is Part 11 to the California Building Standards Code. Chapter 5, Nonresidential Mandatory Standards, Section, establishes additional standards for interior noise levels:

1. Section 5.507.4.1.1 sets forth that buildings exposed to a noise level of 65 dB L_{eq} (1-hour) during any hour of operation shall have exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composting sound transmission class (STC) rating of at least 45 (or an outdoor indoor transmission class (OITC) of 35, with exterior windows of a minimum STC of 40.
2. Section 5.507.4.2 sets forth that wall and roof assemblies for buildings exposed to a 65 dBA L_{eq} pursuant to Section 5.507.4.1.1, shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed 50 dBA L_{eq} in occupied areas during any hour of operation. This requirement shall be documented by preparing an acoustical analysis documenting interior sound levels prepared by personnel approved by the architect or engineer of record.

4.2.5 CALIFORNIA DEPARTMENT OF TRANSPORTATION

Caltrans' Transportation and Construction Vibration Guidance Manual provides a summary of vibration human responses and structural damage criteria that have been reported by researchers, organizations, and governmental agencies (Caltrans, 2020). These thresholds are summarized in Table 4-4 and Table 4-5.

Table 4-4: Vibration Threshold Criteria for Building Damage

Structural Integrity	Maximum PPV (in/sec)	
	Transient	Continuous
Historic and some older buildings	0.50	0.12 to 0.2
Older residential structures	0.50	0.30
New residential structures	1.00	0.50
Modern industrial and commercial structures	2.00	0.50

Source: Caltrans, 2020

Table 4-5: Vibration Threshold Criteria for Human Response

Human Response	Maximum PPV (in/sec)	
	Transient	Continuous
Slightly perceptible	0.035	0.012
Distinctly perceptible	0.24	0.035
Strongly perceptible	0.90	0.10
Severe/Disturbing	2.0	0.7 (at 2 Hz) to 0.17 (at 20 Hz)
Very disturbing	--	3.6 (at 2 Hz) to 0.4 (at 20 Hz)

Source: Caltrans, 2020

4.2.6 LOCAL NOISE REGULATIONS

4.2.6.1 Riverside County Airport Land Use Commission

The Riverside County Airport Land Use Commission (ALUC) protects public health, safety and welfare by ensuring the orderly expansion of airports and the adoption of land use measures that minimize the public's exposure to extensive noise and safety hazards within areas around airports. The Riverside County ALUC reviews land use compatibility issues for development surrounding airports in the County, including safety, noise, overflight and airspace protection. These compatibility issues are identified and analyzed in the ALUCP for each airport, and the implementation of these plans promotes compatible development around the airports.

March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan

The March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan (ARB/IP ALUCP) establishes the individual land use compatibility policies for March ARB/IP. Tables MA-1 and MA-2 from the March ARB/IP ALUCP establish basic compatibility factors and criteria for the March ARB/IP influence areas, including Zone B1 in which the proposed Project site is located. Section 2.3 of the March ARB/IP ALUCP establishes supplemental compatibility criteria related to noise for projects near March ARB/IP. These supplemental criteria generally lower the maximum, aircraft-related, interior noise level that shall be considered acceptable from 45 CNEL to 40 CNEL for all new residences, schools, libraries, museums, hotels and motels, hospitals and nursing homes, places of worship, and other noise-sensitive uses. For office uses, the March ARB/IP ALUCP retains the countywide interior standard of 45 CNEL.

4.2.6.2 City of Perris Municipal Code

Title 7 of the Perris Municipal Code, Health and Welfare, Chapter 7.34, Noise Control, sets forth that unnecessary, excessive, or annoying noise levels are a nuisance and may be detrimental to the health and safety of individuals and establishes the following standards for regulating noise:

- **Section 7.34.040, Sound Amplification,** sets forth no person shall amplify sound using sound amplifying equipment unless such equipment is used only to amplify music and/or the human voice and the volume of the amplified sound does not exceed 80 dBA during the daytime (7:01 AM to 10:00 PM) and 60 dBA during the nighttime (10:01 PM to 7:00 AM) when measured outdoors at or beyond the property line of the property from which the sound emanates.
- **Section 7.34.050, General Prohibition**, sets forth that it is unlawful for any person to willfully make, cause or suffer, or permit to be made or caused, and loud excessive or offensive noises or sounds which unreasonably disturb the peace and quiet of any residential neighborhood or which are physically annoying to persons of ordinary sensitivity, or which cause physical discomfort to the inhabitants of the city. This section also sets forth that the standards for dBA noise levels identified in Section 7.34.040, Sound Amplification, apply to this Section 7.34.050, and that to the extent that the noise created causes the noise level at the property line to exceed the ambient noise level by more than 1.0 decibel it shall be presumed to violate Section 7.34.050 of the Municipal Code, although the following characteristics and conditions should be considered in determining whether a violation exists: the level of the noise, whether the noise is usual or unusual, the level of the ambient noise, the proximity of the noise to sleeping facilities, zoning (both at the source and the receiving land uses), the time of day or night the noise occurs, the duration of the noise, and whether the noise is recurrent, intermittent, or constant.

- **Section 7.34.060, Construction Noise,** sets forth that it is unlawful for any person to erect, construct, demolish, excavate, alter, or repair any building or structure in such a manner as to create disturbing, excessive, or offensive noise between the hours of 7 PM of any day and 7 AM of the following day, or on Sundays, or on a legal holiday excepting Columbus Day and Washington's birthday. This section also sets forth that construction activity shall not exceed 80 dBA in residential zones in the City.
- **Section 7.34.070, Refuse Vehicles and Parking Lot Sweepers,** sets forth no person shall operate or permit to be operated a refuse compacting, processing, or collection vehicle or parking lot sweeper between the hours of 7 PM to 7 AM in any residential area unless a permit has been granted by the City.
- **Section 7.34.080, Disturbing, Excessive, Offensive, Noises,** declares certain activities cause loud, disturbing, excessive or offensive noises, including, but not limited to:
    - Unnecessary use or operation of horns, signaling devices, or other similar devices on automobiles, motorcycles, or any other vehicle (Section 7.34.080(1))
    - Leaf blowers that exceed a sound level of 80 decibels as measured at a distance of 50 feet or greater from the point of noise origin (Section 7.34.080 (7)(c)).
- **Section 7.34.090, Burglar Alarms,** prohibits audible burglar alarms for structures or motor vehicles unless the alarm can be terminated within 20 minutes of being activated.

Title 16 of the Perris Municipal Code, Buildings and Construction, Chapter 16.22.010, Construction Located Near Arterials, Railroads, and Airports, sets forth standards for insulation against noise for residential development and other noise impacted areas in the vicinity of arterials, railroads, and airports where the exterior CNEL exceeds 60 dBA. Relevant standards include:

- **Section 16.22.020, Definitions,** defines noise sensitive land uses to include, but not be limited to, residences, schools, libraries, hospitals, churches, offices, hotels, motels, and outdoor recreational areas. This definition also notes that noise-sensitivity factors include interference with speech communication, subjective judgement of noise acceptability and relative noisiness, price for freedom from noise intrusion, and sleep interference criteria.

4.2.6.3 City of Perris General Plan

The City's General Plan Noise Element describes the City's existing and future noise environment and sets forth the steps the City will take to assure that land use decisions include consideration of noise impacts and are consistent with the objectives of the Noise Element. The Noise Element contains the following goals, policies, and implementation measures that are relevant to the proposed Project (City of Perris, 2016).

- Goal 1: Land Use Siting. Future land uses compatible with project noise environments.
  - Policy 1.A: The State of California Noise/land Use Compatibility Criteria shall be used in determining land use compatibility for new development.
    - Implementation Measure 1.A.1: All new development proposals will be evaluated with respect to the State Noise/Land Use Compatibility Criteria. Placement of noise sensitive uses will be discouraged within any area exposed to exterior noise levels that fall into the "Normally Unacceptable" range and prohibited within areas exposed to "Clearly Unacceptable" noise ranges.
- Goal IV Air Traffic Noise. Future land uses compatible with noise from air traffic.
  - Policy IV.A: Reduce or avoid the existing and potential future impacts from air traffic on new sensitive land uses in areas where air traffic noise is 60 dBA CNEL or higher.
    - Implementation Measure IV.A.1: As part of any approvals for new sensitive land uses within the 60 dBA CNEL or higher noise contours associated with March Inland Port, and for such new uses within the flight paths associated with the Perris Valley Skydiving Center, the City will require the developer to issue disclosure statements identifying exposure to regular aircraft noise. This disclosure shall be issued at the time of initial and all subsequent sales of the affected properties.
    - Implementation Measure IV.A.2: All new development proposals in the noise contour areas of 60 dBA and above will be evaluated with respect to the State Noise/Land Use Compatibility Criteria.

For single family residential land uses, the City's General Plan sets forth that 60 CNEL is the normally acceptable noise limit, 65 CNEL is the conditionally acceptable noise limit, and 75 CNEL is the normally unacceptable noise limit. Noise levels above 75 CNEL are considered clearly unacceptable for single family residential land uses. For office buildings, business, commercial, professional, and mixed-use developments, the City's General Plan sets forth that 65 CNEL is the normally acceptable noise limit and 75 CNEL is the conditionally acceptable noise limit. Noise levels above 75 CNEL are considered normally unacceptable for these land uses types. For industrial, manufacturing, utilities, and agriculture land uses, the City's General Plan sets forth that 70 CNEL is the normally acceptable noise limit and 80 CNEL is the conditionally acceptable limit. Noise levels above 80 CNEL are considered normally unacceptable for these land uses (City of Perris, 2016, Exhibit N-1).

4.2.6.4 Perris Valley Commerce Center Standards and Guidelines

The City's Perris Valley Commerce Center Specific Plan describes land uses and development standards and guidelines (City of Perris, 2022). The Specific Plan includes the following designation relevant to the Project:

- **Commercial (C):** This zoning designation provides for retail, professional office, and service-oriented business activities which serve the entire City, as well as the surrounding

neighborhoods. This zone combines the General Plan Land Use designation of Community Commercial and Commercial Neighborhood.

- **Light Industrial (LI):** This zone provides for light industrial uses and related activities including manufacturing, research, warehouse and distribution, assembly of non-hazardous products/materials, and retail related to manufacturing. This zone correlates with the 'Light Industrial' General Plan Land Use designation.

As described in section 2.1, the proposed Project site is currently designated by the Specific Plan as Commercial, however the Project would include a request to change the Specific Plan land use designation to Light Industrial.

In addition to land use designations, the Specific Plan has the following airport overlay zones (AOZ) relevant to the Project:

- **Zone D (Flight Corridor Buffer):** This zone is intended to encompass other places where aircraft may fly at or below 3,000 feet above the airport elevation either on arrival or departure. Additionally, it includes locations near the primary flight paths where aircraft noise may be loud enough to be disruptive. Direct overflights of these areas may occur occasionally. Accident potential risk levels in this zone are low.

According to the Compatibility Criteria Table (Table 12.0-1) in the Specific Plan Perris Valley Commerce Center Airport Overlay Zone section 12.6, there are no limits or restrictions for residential or other land uses or development in AOZ Zone D (City of Perris, 2022).

The Specific Plan includes specific standards and design guidelines for industrial land uses. The following Specific Plan standards and guidelines are relevant to the evaluation of the proposed Project's potential noise levels:

- **8.2 Industrial Development Standards and Guidelines**
  - **8.2.1 Industrial Site Layout**
    - **8.2.1.1 Orientation/Placement:** Industrial operations should be screened from the public view and oriented away from residential uses, according to required setbacks.
    - **8.2.1.2 Vehicular/Truck Access and On-Site Circulation:** Truck driveways should be separated from passenger traffic to the greatest extent possible and provide for 50-foot turning radii. Truck drive aisles shall be a minimum of 40-feet wide.
    - **8.2.1.3 Parking and Loading:** Refer to City of Perris Zoning Ordinance, Chapter 19.69. Automobile parking is restricted in truck courts.
    - **8.2.1.5 Screening:** Industrial operations and truck courts shall be screened from public view and adjacent residential uses.

5 NOISE AND VIBRATION IMPACT ANALYSIS

This chapter evaluates the potential for the proposed Project to result in direct and indirect changes to the existing noise and vibration environment in the vicinity of the Project area. Refer to Chapter 6 for information and disclosures about the existing noise and vibration environment's effect and overall compatibility on the proposed Project.

5.1 THRESHOLDS OF SIGNIFICANCE

In accordance with Appendix G of the State CEQA Guidelines, the proposed Project could result in potentially significant impacts related to noise and vibration if it would:

- Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of the standards established in:
    - The City of Perris Municipal Code Section 7.34.040 (Sound Amplification), 7.34.050 (General Prohibition), 7.34.060 (Construction Noise), and/or Chapter 16.22 (Construction Located Near Arterials, Railroads, and Airports); or
    - The City of Perris Noise Element Exhibit N-1 (Land Use/Noise Compatibility Guidelines); or
- Generate excessive ground-borne vibration or ground-borne noise;
- Expose people residing or working in the Project area to excessive airport-related noise levels.

5.2 NOISE IMPACT ANALYSIS METHODOLOGY

The construction and operation of the proposed Project would generate noise and vibration. This section describes the Project's noise sources and the methodologies used to estimate potential Project noise and vibration levels.

5.2.1 CONSTRUCTION NOISE

As described in Section 2.3.4 and shown in Table 2-3, the proposed Project would generate construction noise from the following sources:

- Heavy equipment operations throughout the Project area. Some heavy equipment would consist of mobile equipment such as a loader, excavator, etc. that would move around work areas; other equipment would consist of stationary equipment (e.g., air compressors) that would generally operate in a fixed location until work activities are complete. Heavy equipment generates noise from engine operation, mechanical systems and components (e.g., fans, gears, propulsion of wheels or tracks), and other sources such as back-up alarms. Mobile equipment generally operates at different loads, or power outputs, and produces higher or lower noise levels depending on the operating load. Stationary equipment generally operates at a steady power output that produces a constant noise level.
- Vehicle trips, including worker, vendor, and haul truck trips. These trips would occur on the roads that provide access to the Project site, primarily Harley Knox Boulevard.

Since Project-specific construction equipment information is not available at this time, potential construction-related noise impacts can only be evaluated based on the typical construction activities associated with a typical industrial warehousing development project. Table 5-1 presents the estimated,

worst-case noise levels that could occur from the operation of typical construction equipment used to develop an industrial land use project. The equipment assumptions used in this Report are based on, and consistent with, the California Emissions Estimator Model (CalEEMod) construction phasing, equipment usage, and operating schedules used to evaluate the proposed Project's potential construction air quality impacts (MIG, Inc 2023).

Table 5-1: Typical Construction Equipment Noise Levels (dBA)

Equipment	Reference Noise Level at 50 Feet (L_{max})(A)	Percent Usage Factor(B)	Predicted Hourly Noise Levels (L_{eq}) at Distance(C)			
			50 Feet	100 Feet	500 Feet	1100 Feet
Backhoe	80	40	76	70	56	49
Compact roller	80	20	73	67	53	46
Compressor (air)	80	40	76	70	56	49
Concrete Mixer	85	40	81	75	61	54
Crane	85	16	77	71	57	50
Excavator	85	40	81	75	61	54
Front End Loader	80	40	76	70	56	49
Grader	85	40	81	75	61	54
Paver	85	50	82	76	62	55
Tractor	84	40	80	74	60	53
Scraper	85	40	81	75	61	54
Welder	73	40	49	43	29	22

Sources: Caltrans, 2013; FHWA, 2010; MIG (see Appendix B).

(A) L_{max} noise levels based on manufacturer's specifications.

(B) Usage factor refers to the amount of time the equipment produces noise over the time period.

(C) Estimate does not account for any atmospheric or ground attenuation factors. Calculated noise levels based on Caltrans, 2013: L_{eq} (hourly) = L_{max} at 50 feet – 20log (D/50) + 10log (UF), where: L_{max} = reference L_{max} from manufacturer or other source; D = distance of interest; UF = usage fraction or fraction of time period of interest equipment is in use.

5.2.2 OPERATIONAL NOISE

Once constructed, the proposed Project would generate noise from the following activities:

- Off-site vehicle travel on Harley Knox Boulevard. The proposed Project would generate 67 total daily passenger car trips and 36 total daily truck trips (equal to 103 total vehicle trips and 159 total passenger car equivalent (PCE) trips (Ganddini Group, 2023).[4] For passenger vehicles and trucks, all access to the site was assumed to occur via Harley Knox Boulevard.
- On-site passenger car travel along the site driveway and perimeter road/fire lane, automobile parking, and other miscellaneous automobile noise sources such as doors closing and engine start-up and revving. For passenger vehicles, site access was assumed to occur 100% via the Harley Knox Boulevard west driveway. On-site automobile travel is assumed to occur at low speeds (15 mph).
- On-site truck travel along the site drive aisle to loading dock areas, truck maneuvering into and out of loading docks, and other miscellaneous sources such as engine start-up and revving, cab door closing, and release of compressed air from truck brake systems. For trucks, site access was assumed to occur 100% via the Harley Knox Boulevard east driveway. Similar to automobiles, on-site truck travel is assumed to occur at low speeds (no more than 15 mph). According to the trip generation assessment prepared for the Project, truck trips are assumed to consist of 2-axle trips (16.7% of all truck trips), 3-axle trips (20.7% of all trips) large, heavy-duty 4-axle or more truck trips (62.6% of all truck trips). On-site idling was assumed to occur for up to 15 minutes per loading/unloading operation.
- Cargo management (i.e., forklifts) operations at truck docks. The proposed Project would incorporate up to 7 electric-powered forklifts, pallet jacks and other material handling equipment during operation as described in Section 2.3.3. Forklift operation and backup alarm was assumed to occur at each truck dock for approximately 30 minutes per loading/unloading operation.
- Rooftop mounted HVAC unit, assumed to be rated at 3 tons and generally located in the center of the office portion of the proposed building. The unit would be fully concealed behind a parapet or enclosure that would reduce potential HVAC unit noise levels.
- Other miscellaneous noise sources, such as landscaping equipment, garbage collection services, and other miscellaneous site operations (e.g., occasional electric power jack or pallet lift). These noise sources would be intermittent and would not substantially change overall Project noise levels. Therefore, these noise sources are not discussed further in this Report.

5.2.2.1 Operational Noise Level Estimates

The proposed Project's operational noise levels were estimated using standard theoretical equations for predicting environmental noise levels (Caltrans, 2013). For an ideal point source of sound, the energy contained in a sound pressure wave dissipates and is absorbed by the surrounding environment as the sound wave spreads out in a spherical pattern and travels away from the point source. Theoretically,

[4] Passenger Car Equivalent (PCE) trips calculated to account for the additional capacity used by larger vehicles such as trucks. Truck trips were converted to PCE trips based on the following equivalency factors: 1.5 for 2-axle trucks, 2.0 for 3-axle trucks, and 3.0 for trucks with four or more axles. (Ganddini Group, 2023).

the sound level attenuates, or decreases, by 6 dB with each doubling of distance from the point source. The change in noise levels between two distances can be calculated according to Equation 1 as follows:

Equation 1

$$dBA2 = dBA1 + 20\log (D1/D2)$$

Where:

dBA1 = Known noise level, such as a reference noise level
D1 = Distance associated with dBA1
dBA2 = Noise level at distance 2
D2 = Distance associated with dBA2

For an ideal line source of sound, the energy contained in a sound pressure wave dissipates and is absorbed by the surrounding environment as the sound wave spreads out in a cylindrical pattern from the source. Theoretically, the sound level attenuates, or decreases, by 3 dB with each doubling of distance from the line source. The change in noise levels between two distances can be calculated according to Equation 2 as follows:

Equation 2

$$dBA2 = dBA1 + 10\log (D1/D2)$$

Where:

dBA1 = Known noise level, such as a reference noise level
D1 = Distance associated with dBA1
dBA2 = Noise level at distance 2
D2 = Distance associated with dBA2

For noise sources that do not operate continuously (e.g., vehicles and trucks that travel on-site, park, and then cease to generate noise),the average, hourly noise level associated with variable (i.e., non-steady) noise source can be calculated using Equation 3 as follows:

Equation 3

$$\text{Hourly } L_{eq} = 10 * \text{Log } (P_h) * 10^{(Lp/10)}$$

Where:

P_h = Percentage or fraction of hour the noise is generated
L_p = The noise level generated during the partial hour (P_h)

Finally, the total combined sound pressure level from multiple, identical sources of noise at a receiver location can be calculated using Equation 4 as follows:

Equation 4

$$SPL_{Total} = SPL_1 + 10 * \text{Log } (N)$$

Where:

SPL_1 = Sound pressure level of one source
N = Number of identical sources to be added

Reference and potential hourly average noise levels associated with the proposed Project's noise sources are summarized in Table 5-2. All reference noise levels are presented at a distance of three (3) feet from the source.

Table 5-2: Project Noise Source – Reference and Hourly L_{eq} Noise Levels			
Noise Source	**Reference dBA(A)**	**Duration(B)**	**Hourly L_{eq}(C)**
Automobile Travel			
Low speed travel (15 mph)/parking	*55*	*30 seconds*	*34.2*
Door closing	*90*	*1 second*	*54.4*
Engine start and revving	*90*	*10 seconds*	*64.4*
Total Combined Noise Level			*64.9*
Truck Travel / Dock Activity			
Low speed travel (15 mph)	*96*	*30 seconds*	*75.2*
Maneuvering (w/ back-up alarm)	*100*	*150 seconds*	*86.2*
Air brake release	*98*	*3 seconds*	*67.2*
Main engine idling	*86*	*900 seconds*	*80.0*
Door closing	*90*	*2 seconds*	*57.4*
Engine start and revving	*100*	*10 seconds*	*74.4*
Forklift Operation	*70*	*1800 seconds*	*67.0*
Forklift Backup Alarm	*100*	*90 seconds*	*84.0*
Total Combined Noise Level			*89.4*
Truck Entrance Way			
Warehouse Noise Measurement	*71.4*	*3,600 seconds*	*71.4*
HVAC Unit			
Operation (3-ton)	76	*1,200 seconds*	*71.2*

Source: MIG (see Appendix C)

(A) Reference dBA is based on a distance of 3 feet.

(B) Duration is used to estimate the percentage of time the noise is generated per Equation 3 (out of 3,600 seconds in an hour).

(C) Hourly L_{eq} estimated using Equation 3.

5.2.3 GROUND-BORNE VIBRATION

Project construction activities would involve the use of large equipment capable of generating ground-borne vibrations. Since Project-specific construction equipment information is not available at this time, potential construction-related vibration impacts can only be evaluated based on the typical construction activities associated with an industrial development project. Table 5-3 presents the estimated, worst-case vibration levels that could occur from the operation of the typical large and/or vibration-inducing construction equipment used to develop an industrial land use project. The equipment assumptions used in this Report are based on, and consistent with, the CalEEMod construction phasing, equipment usage, and operating schedules used to evaluate the proposed Project's potential construction air quality impacts (MIG, 2023).

Table 5-3: Potential Groundborne Vibration Levels			
Equipment	PPV(A) (Inches/Second) at Distance		
	50 Feet	100 Feet	500 Feet
Vibratory Roller	0.098	0.046	0.008
Large Bulldozer	0.042	0.019	0.003
Small Bulldozer	0.014	0.007	0.001
Loaded Truck	0.035	0.017	0.003
Jackhammer	0.016	0.008	0.001

Source: Caltrans 2020 MIG (See Appendix B)

(A) Estimated PPV calculated as: PPV(D)=PPV(ref*(25/D^1.3 where PPV(D)= Estimated PPV at distance; PPVref= Reference PPV at 25 ft; D= Distance from equipment to receiver; and n= ground attenuation rate (1.3 for competent sands, sandy clays, silty clays, and silts).

5.3 TEMPORARY CONSTRUCTION NOISE AND VIBRATION IMPACTS

During site preparation, grading, and paving activities construction equipment would operate throughout the site, moving closer to one property line and farther away from another; building construction and architectural coating activities would be concentrated in the center of the site where the proposed building and fueling canopy would be located. For these reasons, potential construction noise and vibration levels were estimated for worst-case equipment operations (50 feet from any property line), average equipment operations based on the distance from the center of the site to adjacent property lines (approximately 340 feet to the east and west property lines and 115 feet to the north and south property lines).

5.3.1 TEMPORARY CONSTRUCTION NOISE LEVELS

A summary of predicted construction noise levels is presented in Table 5-4.

Table 5-4: Summary of Predicted Construction Noise Levels					
Scenario	**Estimated Duration(A)**	**Single Equipment Use(B)**		**Multiple Equipment Use(C)**	
		$L_{eq(h)}$	**L_{max}**	**$L_{eq(h)}$**	**L_{max}**
Worst-Case Construction (50 feet from property line)(D)	1 week	82	85	85	88
Typical Construction (115 feet from north and south property lines)	7 weeks	75	78	78	81
Typical Construction (340 feet from east and west property lines)	7 weeks	65	68	68	71

Source: MIG (see Appendix A, Sheet 1).

(A) Estimated duration represents the period of time site preparation, grading, and paving activities would occur (see footnote 5). For the worst-case construction scenario, the duration assumes equipment would not operate within 50 feet of the same property line location for more than 1 week.

(B) Values represent highest estimated noise level for one piece of construction equipment (see Table 5-1).

(C) Values represent highest estimated noise level for two pieces of construction equipment (see footnote 5).

(D) Construction activities may occur closer than 50 feet from a property line for short periods of time (hours) that are not representative of overall construction activities. The worst-case construction scenario reflects the duration that heavy equipment may operate in the same general area near a property line location.

As shown in Table 5-4, the worst-case L_{eq} and L_{max} noise levels associated with the operation of an excavator, scraper, paver, etc. are predicted to be approximately 82 and 85 dBA, respectively, at a distance of 50 feet from the equipment operating area. At an active construction site, it is not uncommon for two or more pieces of construction equipment to operate in the same area at the same time. The concurrent operation of two or more pieces of construction equipment would result in noise levels of approximately 85 dBA L_{eq} and 88 dBA L_{max} at a distance of 50 feet from equipment operating areas.[5] These maximum noise levels would occur for a short period of time (approximately one (1) week). As site preparation (8 days) and grading (8 days) is completed and building construction begins, work activities would occur further from property lines, require less large heavy-duty equipment (i.e., grader), and generate lower construction noise levels. Typical construction activities would generate noise levels ranging from 65 to 78 dBA L_{eq} at the Project site property lines.

Section 7.34.060 of the City's Municipal Code sets forth that construction noise levels are exempt from City noise standards provided the activities take place between 7 AM and 7 PM, Monday to Saturday, and do not create noise levels that exceed 80 dBA in residential zones. As shown in Table 5-4, predicted construction noise levels would generate noise levels up to 85 dBA L_{eq} at 50 feet. This would occur at adjacent commercial- and industrial-zoned properties. At the closest residential receptor to the Project, which is located more than 1,100 feet to the east, construction noise levels would theoretically attenuate to approximately 58 dBA L_{eq}. Construction noise levels, therefore, would not exceed the 80 dBA noise standard for residential zones contained in the City's Municipal Code; therefore, this impact would be less

[5] As shown in Table 5-1 a single excavator provides a sound level of 81 dBA L_{eq} at a distance of 50 feet; when two identical sound levels are combined, the noise level increases to 84 dBA L_{eq} and when three identical sound levels are combined, the noise level increases to 86 dBA L_{eq} (see Equation 4). These estimates assume no shielding or other noise control measures are in place at or near the work areas.

than significant. However, the Applicant has designed the Project to minimize potential construction noise and vibration levels. Substantial site preparation and grading would not be required since the Project site is flat. The use of tilt-up concrete and wood panels for building walls and other components partially eliminates on-site fabrication of exterior walls and reduces the amount of equipment needed to erect the building. Finally, the Applicant has incorporated the following construction noise control measures/BMPs into the Project to reduce construction noise levels at the Project's property lines:

Construction Noise Control Best Management Practices. To reduce potential noise levels associated with construction of the proposed Project, the Applicant and/or its designated contractor, contractor's representatives, or other appropriate personnel shall:

- *Restrict work hours/equipment noise.* All work shall be subject to the requirements in City Municipal Code Section 7.34.060. Construction activities, including deliveries, shall only occur from 7 AM to 7 PM Monday through Saturday (and not on holidays). The Applicant and/or its contractor shall post a sign at all entrances to the construction site informing contractors, subcontractors, construction workers, etc. of this requirement. The sign shall also provide a name (or title) and phone number for an appropriate on-site and City representative to contact to submit a noise complaint.
- *Construction equipment care, siting, and design measures*. The following construction equipment care, siting, and design measures shall apply during construction activities:
  - Heavy equipment engines shall be covered and exhaust pipes shall include a muffler in good working condition. Pneumatic tools shall include a noise suppression device on the compressed air exhaust.
  - All stationary noise-generating equipment such as pumps, compressors, and welding machines shall be located as far from neighboring property lines as practical.
  - If feasible, the Applicant and/or his contractor shall connect to existing electrical service at the site to avoid the use of stationary, diesel- or other alternatively-fueled power generators.

The construction noise control BMP's listed above require the use of construction management and equipment controls to reduce potential noise from construction activities. These BMPs restrict work hours in accordance with the Municipal Code and require staging and stationary noise sources to be located as far from neighboring land uses as possible. These BMPs would further ensure the proposed Project's construction noise levels would be consistent with Chapter 7.34.060 and constitute a less than significant impact.

5.3.2 TEMPORARY CONSTRUCTION VIBRATION LEVELS

The potential for ground-borne vibration and noise is typically greatest when vibratory or large equipment such as rollers, impact drivers, or bulldozers are in operation. For the proposed Project, these types of equipment would primarily operate during site preparation, grading, and paving work. This equipment would, at worst-case and for very limited period of times, operate adjacent to the site's property lines and within approximately 185 feet of the industrial building façade to the north of the site (across Harley Knox Boulevard). All other buildings would be more than 185 feet from potential construction activities. Accordingly, similar to the construction noise analysis presented in section 5.3.1, potential construction vibration levels were estimated for worst-case equipment operations (185 feet from the nearest building) and average equipment operations based on the distance from the center of the site to

the nearest building (approximately 280 feet). A summary of predicted construction vibration levels is presented in Table 5-5.

Table 5-5: Summary of Predicted Construction Vibration Levels

Scenario	Estimated Duration[A]	Maximum PPV (inches/second)[B]
Worst-Case Construction (185 feet from nearest building)[C]	1 week	0.023
Typical Construction (280 feet from nearest building)	7 weeks	0.015

Source: MIG (see Appendix A, Sheet 2).

(A) Estimated duration represents the period of time site preparation, grading, and paving activities would occur (see Table 2-3). For the worst-case construction scenario, the duration assumes equipment would not operate within 185 feet of the same property line location for more than 1 week.

(B) Values represent highest estimated groundborne vibration level for typical construction equipment (see Appendix B).

(C) Construction activities may occur closer than 185 feet from a property line for short periods of time (hours) that are not representative of overall construction activities. The worst-case construction scenario reflects the duration that heavy equipment may operate in the same general area near a property line location.

The City does not maintain numeric significance thresholds for groundborne vibration or groundborne noise; however, as shown in Table 5-5, construction equipment vibration levels at the nearest building location could exceed commonly accepted "slightly perceptible" vibration detection thresholds (0.012 inches/second; see Table 4-5) when operating in close proximity to the nearest building and could, therefore, likely be perceptible at this building location. This, however, is not considered to be excessive, because any worst-case equipment operations in proximity to the nearest building would be short in duration and intermittent (lasting only a few hours each day and no more than a few days or week in total near specific building locations). Additionally, potential construction vibration levels would not result in structural damage because the estimated vibration levels are substantially below commonly accepted thresholds for potential damage to modern industrial and commercial buildings (0.5 inches/second; see Table 4-4). Construction vibration levels would also be substantially below human perception and structural damage thresholds at the nearest residential receptor located approximately 1,100 feet east-southeast of the Project site. For these reasons, the proposed Project would not result in a significant groundborne vibration or groundborne noise impact from construction activities.

5.4 OPERATIONAL NOISE IMPACTS

Once constructed, the proposed Project would generate noise from on-site and off-site activities. On-site activities would include vehicle and truck travel, HVAC operations, and other miscellaneous site maintenance and operations activities. Off-site noise activities would include vehicle and truck travel on Harley Knox Boulevard. These noise sources are described in Section 5.2.2.

5.4.1 ON-SITE NOISE GENERATION ANALYSIS

The proposed Project's potential noise levels were estimated using the reference and calculated hourly L_{eq} noise levels identified in Table 5-2 above, adjusted for distance (between the noise source and property line) and activity levels (e.g., number of automobile trips, trucks idling, etc.). In general, the estimated noise levels are theoretical predictions; they do not account for potential reflection or partial shielding, atmospheric or ground absorption, or other excess attenuation factors. For multiple sources such

as HVAC units, cars parking, etc., noise levels were modeled from a single location to conservatively aggregate noise sources and overestimate noise levels from an area. Although the noise generated from parking areas, drive aisles, and truck dock bays is primarily generated by cars and trucks (mobile sources) and not stationary sources, this analysis conservatively treats noise from these sources as stationary sources because noise from these areas would generally come from a fixed location (e.g., an idling truck, a parked car, etc.). In addition, it is assumed that all on-site travel would occur at slow speed (15 mph or less) and would be similar to a stationary source (as compared to a truck travelling 45 mph on Harley Knox Boulevard).

The land on the western side of the Project is currently vacant and zoned for industrial land uses. Operational noise levels were not modeled at this location due to the lack of noise sensitive uses to the west of the Project site. Similarly, the land use to the north of the Project site (across Harley Knox Boulevard) and south of the Project site (across the Riverside County Flood Control Channel) are industrial and also not noise sensitive receptors that require impact evaluation. Since the proposed Project has the truck docks positioned along the eastern side of the building, operational noise levels would be expected to be greatest along the eastern property line. Accordingly, Project noise levels were estimated at the approximate center of the eastern property line. The distance between the easter property line receiver location and the Project's noise sources is summarized in Table 5-6.

Table 5-6: Summary of Distance Between Project Noise Source and Property Line Receivers

Project Noise Source	Distance in Feet Between Noise Source and East Property Line Receiver(A)
Truck Entrance	165 feet
Drive Aisle	115 feet
Docks	225 feet[6]
HVAC	560 feet

(A) The listed distance reflects the closest distance between the listed noise source and the property line receiver.

The following discusses the key assumptions made to estimate potential Project noise levels at noise receiver locations:

- *Truck entrances:* Truck entrances would be located on Harley Knox Boulevard. Truck entrances include truck turns into and out of the facility and are assumed to produce an average hourly noise level of approximately 71.4 dBA at a distance of 3 feet (see Table 5-2).
- *On-site truck travel:* Each on-site truck trip was assumed to travel at low speed (no more than 15 mph) and produce an average hourly noise level of 75.2 dBA at a distance of 3 feet (see Table 5-2). The amount of peak on-site truck travel activity (one total trip in the peak hour periods) was determined from the Project's Transportation Study Screening Analysis (Ganddini Group, 2023).
- *On-site truck maneuvering and idling:* Loading dock areas were assumed to require truck travel and maneuvering, back-up alarms, air brake release, and other related activities that would produce an average hourly noise level of approximately 89.4 dBA at a distance of 3 feet (see

[6] The docks noise source was modeled from a point approximately 50 feet from the docks area building façade in order to represent typical noise levels associated with truck turning and reversing into the dock bays as well as forklift operations.

Table 5-2). Dock areas would be located at least 225 feet from adjacent property lines to the east.

- *HVAC unit:* An HVAC unit was assumed to operate for 40 minutes of each hour and produce an average hourly noise level of 74.2 dBA at a distance of 3 feet. The HVAC unit would be located in the center of office space areas.

5.4.1.1 Compliance with City Exterior Noise Standards

The Project's energy-averaged hourly noise levels at modeled receiver locations are summarized in Table 5-7.

Table 5-7: Comparison of Project Noise Levels to County Exterior Stationary Noise Standards

Project Noise Source	Estimated Noise Level at East Property Line Receiver (dBA L_{eq})
Truck Entrance	39.6
Drive Aisle	46.5
Docks	57.1
HVAC	28.8
Combined Noise Level	**57.5**

Source: MIG (See Appendix C)

As shown in Table 5-7, the proposed Project would generate a combined noise level of approximately 58 dBA L_{eq} at the east property line. Since the nearest residential receptor is approximately 1,100 feet away from the Project site, this noise level would attenuate to approximately 37 dBA L_{eq} which is well below the City's General Plan normally acceptable noise limit of 60 dB CNEL for residential land uses. This impact would be less than significant.

5.4.1.2 Compliance with City Interior Noise Standards

As shown in Table 5-7, the proposed Project would not generate noise levels that exceed the City's exterior noise standards for residential land uses. The maximum estimated exterior hourly L_{eq} values at any residential receptor would be 37 dBA L_{eq}. This noise level is already below the City's General Plan interior 45 dBA standard, but typical residential-type construction would further reduce noise levels by a minimum of 12 dB with windows open (City of Perris, 2016). This impact would be less than significant.

5.4.1.3 Compliance with City of Perris General Plan and Specific Plan

The Project's consistency with the applicable policies of the City's General Plan Noise Element is summarized in Table 5-8. In addition, the proposed Project's building design would orient the truck docks and industrial operations area away from public view and include a 40-foot-wide truck drive aisle on the eastern side of the site, which would be separated from passenger traffic on the western side of the site. Therefore, the proposed Project would be consistent with the industrial development standards and guidelines contained in the Perris Valley Commerce Center Specific Plan (see Section 4.2.6.4).

Table 5-8: Project Consistency with Applicable General Plan Noise Policies	
General Plan Noise Element Goals, Policies, Implementation Measures	**Consistency Analysis**
Goal I**:** *Land Use Siting.* Future land uses compatible with projected noise environments.	
Policy I.A: The State of California Noise/Land Use Compatibility Criteria shall be used in determining land use compatibility for new development. Implementation Measure I.A.1: All new development proposals will be evaluated with respect to the State Noise/Land Use Compatibility Criteria. Placement of noise sensitive uses will be discouraged within any area exposed to exterior noise levels that fall into the "Normally Unacceptable" range and prohibited within areas exposed to "Clearly Unacceptable" noise ranges.	Consistent. As discussed in Section 5.4.1.1 and Section 5.4.1.2, the proposed Project would not generate noise levels that exceed the City's exterior or interior noise standards set forth in General Plan Exhibit N-1.
Goal V: *Stationary Source Noise.* Future non-residential land uses compatible with noise sensitive land uses.	
Policy V.A: New large scale commercial or industrial facilities located within 160 feet of sensitive land uses shall mitigate noise impacts to attain an acceptable level as required by the State of California Noise/Land Use Compatibility Criteria.	Consistent. As discussed in Section 5.3.2, the nearest noise sensitive receptor to the proposed Project site is approximately 1,100 feet away. Noise generation associated with the proposed Project would have a less than significant impact on sensitive receptors.

5.4.2 OFF-SITE OPERATIONAL NOISE LEVELS

The proposed Project would generate vehicle trips that would be distributed onto the local roadway system and potentially increase noise levels along travel routes. Caltrans considers a doubling of total traffic volume to result in a three (3) dBA increase in traffic-related noise levels (Caltrans, 2013). If the proposed Project would not result in a doubling of traffic volumes on the local roadway system, it would not result in a substantial permanent increase in traffic-related noise levels. According to the transportation study screening assessment, the proposed Project would generate 103 daily trips, or 159 passenger car equivalent trips (Ganddini Group, 2023). The City's General Plan Noise Element indicates that the existing average daily trip (ADT) volumes for Perris Boulevard and Indian Avenue were 1,800 and 17,464, respectively.[7] The proposed Project's daily trip generation would be less than 9% of the ADT volumes along Indian Avenue and less than 1% of the ADT volumes along Perris Boulevard. The proposed Project, therefore, would not double traffic volumes along local roadways used to access the site and would not

[7] Existing ADT volumes for Perris Boulevard based on road segment north of Nance Street. Existing ADT volumes for Indian Avenue based on road segment between Dawes Street and Ramona Expressway.

result in a substantial increase in off-site traffic-related noise levels. This impact would be less than significant.

5.5 AIRPORT-RELATED NOISE

As described in Section 2.1 and Section 4.2, the proposed Project is located approximately 0.8 miles southeast of March ARB/IP and is within March ARB/IP ALUCP Zone D. There are no restrictions or limits for land uses in Zone D, and this zone is associated with noise levels less than 55 CNEL. Therefore, the proposed Project would not expose people to excess continuous or single-event airport-related noise levels.

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6 OTHER NOISE AND VIBRATION EFFECTS

The California Supreme Court in *California Building Industry Association v. Bay Area Air Quality Management District*, 62 Cal.4th 369 (2015) ruled that CEQA review is focused on a project's impact on the environment "and not the environment's impact on the project." Per this ruling, a Lead Agency is not required to analyze how existing conditions might impact a project's future users or residents; however, a Lead Agency may elect to disclose information relevant to a project even if it not is considered an impact under CEQA. Furthermore, the City's General Plan Noise Element set noise standards for receiving land uses which require evaluation for consistency and compliance even if such evaluation is not required by CEQA.

This chapter discusses the existing noise environment and the degree to which the existing environment is compatible and consistent with City goals, policies, and standards for the proposed Project's noise environment.

6.1 REVIEW STANDARDS

The existing noise environment described in Section 4.2 is reviewed against the following goals, policies and standards set by the General Plan Noise Element and California Building Code. Would the Project:

- Expose people living or working in the project area to existing noise levels that exceed standards established in:
    - General Plan Exhibit N-1 (Land Use/Noise Compatibility Guidelines); or
    - The California Building Code.

6.2 LAND USE COMPATIBILITY – EXTERIOR NOISE EXPOSURE

The City's General Plan Noise Element establishes 70 dB CNEL as the normally acceptable noise limit and 80 CNEL is the conditionally acceptable limit for industrial land use. Noise levels above 80 CNEL are considered normally unacceptable for industrial land uses (see section 4.2.6.3). As described in Section 4.2.1, the 24-hour CNEL value at LT-1 was determined to be 61.2 dBA CNEL, with short-term ambient noise levels along Harley Knox Boulevard (ST-1) in the vicinity of the site also generally at or above 68.7 dBA L_{eq} (see Table 4-2).[8] Based on the ambient noise monitoring conducted for the Project, the potential noise exposure level along Harley Knox Boulevard is estimated to be up to approximately 66 CNEL. This noise exposure range (61 to 66 CNEL) does not exceed the City's normally acceptable environmental noise level for industrial land uses (70 CNEL). As a warehousing land use, elevated exterior noise levels are not likely to interfere with speech or other communications. Workers and customers are unlikely to expect or require quiet conditions, though the site plan does include an outdoor lunch patio space on the northwestern portion of the site near the office area. For these reasons, the proposed Project would not be exposed to unacceptable exterior noise levels that exceed City General Plan noise and land use compatibility standards.

[8] Based on the City's General Plan 2003 Citywide Noise Level Measurements Table N-2, typical noise levels near the Project site (NR-1) were approximately 53.5 dBA L_{eq} and noise levels along Perris Boulevard (NR-6) were approximately 68.4 dBA L_{eq}.

6.3 INTERIOR NOISE LEVEL COMPATIBILITY

Part 2, California Building Code, Section 1207.4 establishes that interior noise levels attributable to exterior noise sources shall not exceed 45 dBA DNL or CNEL (as set by the local General Plan) in any habitable room. In addition, Chapter 5 of the California Green Building Standards Code sets forth that buildings exposed to a noise level of 65 CNEL (where noise contours are available) or 65 dBA L_{eq} (1-hour where noise levels are not available) shall: 1) have exterior wall and roof-ceiling assemblies exposed to the noise source that meeting a composite STC rating of at least 50 (or a composite OITC) rating no less than 40, with exterior windows of a minimum STC of 40 or OITC 30 (Section 5.507.4.1); or 2) provide an interior noise environment attributable to exterior sources that does not exceed 50 dBA Leq in occupied areas during any hour of operation. As described above, the proposed building's northern façade would be subjected to noise levels of approximately 69 dBA L_{eq} and 61 to 66 CNEL. Standard construction techniques and materials for new commercial/industrial buildings are commonly accepted to provide a minimum exterior to interior noise attenuation (i.e., reduction) of 30 to 32 dBA with all windows and doors closed, which would result in interior noise levels of approximately 40 dBA L_{eq} for occupied rooms fronting Harley Knox Boulevard.[9] Thus, with standard construction techniques, the proposed Project would satisfy interior building code noise requirements.

9 The U.S. Department of Housing and Urban Development (HUD) Noise Guidebook and supplement (2009a, 2009b) includes information on noise attenuation provided by building materials and different construction techniques. As a reference, an exterior wall consisting solely of 4 x 8 x 16, 3-cell lightweight concrete masonry units with a density of 17 pounds per block has an STC rating of 40. This reduction may be slightly lower (2-3 dBs) for traffic noise due to the specific frequencies associated with traffic noise.

7 REPORT PREPARERS AND REFERENCES

This Report was prepared by MIG under contract to the Brew Enterprises II, LLC. This report reflects the independent, objective, professional opinion of MIG. The following individuals were involved in the preparation and review of this Report:

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APPENDIX A: Ambient Noise Monitoring Data

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Brew Harley Knox Warehouse Project
Perris, CA
Appendix: Ambient Noise Monitoring Data
Prepared by MIG, May 2023

TABLE 1: SUMMARY OF SITE LT1 NOISE MONITORING DATA												
Date	**Time**	**Duration**	**Leq**	**CNEL**	**Lmin**	**Lmax**	**L(01)**	**L(08)**	**L(16)**	**L(25)**	**L(50)**	**L(90)**
4/5/2023	1:00 PM	1 hour	51.5	51.5	47.1	71.4	57.6	53.7	52.6	51.8	50.3	48.7
4/5/2023	2:00 PM	1 hour	62.4	62.4	46.8	87.6	69.4	67.6	65.6	64.2	58.6	51.1
4/5/2023	3:00 PM	1 hour	52.9	52.9	46.3	70.8	58.3	56.4	55.1	54.1	51.0	48.7
4/5/2023	4:00 PM	1 hour	52.2	52.2	46.2	72.6	58.6	55.0	53.3	52.4	50.6	48.8
4/5/2023	5:00 PM	1 hour	53.8	53.8	46.8	69.2	59.4	56.8	55.5	54.5	52.6	50.1
4/5/2023	6:00 PM	1 hour	54.1	54.1	47.0	67.4	58.9	57.0	55.7	55.0	53.2	50.6
4/5/2023	7:00 PM	1 hour	55.6	60.6	49.8	66.4	59.6	58.2	57.2	56.5	55.0	52.7
4/5/2023	8:00 PM	1 hour	56.1	61.1	48.8	69.3	60.8	59.2	58.2	57.3	55.1	52.1
4/5/2023	9:00 PM	1 hour	55.1	60.1	48.6	69.9	60.0	58.2	57.1	56.2	53.7	51.4
4/5/2023	10:00 PM	1 hour	53.4	63.4	47.5	75.7	59.9	57.9	54.5	53.5	51.5	49.8
4/5/2023	11:00 PM	1 hour	51.9	61.9	46.7	67.0	56.5	54.9	53.7	52.7	50.9	48.9
4/6/2023	12:00 AM	1 hour	51.3	61.3	46.3	69.2	56.5	54.4	52.6	51.8	50.3	48.3
4/6/2023	1:00 AM	1 hour	52.4	62.4	46.6	68.7	57.7	55.8	54.2	53.0	51.1	48.6
4/6/2023	2:00 AM	1 hour	52.2	62.2	47.0	72.1	58.3	54.9	53.5	52.6	50.9	49.0
4/6/2023	3:00 AM	1 hour	52.1	62.1	46.0	72.9	58.2	54.9	53.5	52.5	50.9	48.8
4/6/2023	4:00 AM	1 hour	55.4	65.4	46.7	77.2	63.2	59.5	56.1	55.3	53.0	50.0
4/6/2023	5:00 AM	1 hour	56.3	66.3	48.3	66.2	60.4	59.1	58.1	57.3	55.5	52.7
4/6/2023	6:00 AM	1 hour	57.8	67.8	50.0	76.3	63.5	61.4	59.1	58.2	56.4	53.9
4/6/2023	7:00 AM	1 hour	57.1	57.1	49.8	65.5	60.9	59.8	58.8	58.0	56.4	53.7
4/6/2023	8:00 AM	1 hour	57.0	57.0	48.5	77.2	62.6	60.5	59.1	57.8	55.7	52.3
4/6/2023	9:00 AM	1 hour	55.5	55.5	48.3	71.8	60.9	59.1	57.3	56.0	54.1	51.8
4/6/2023	10:00 AM	1 hour	53.1	53.1	46.8	69.7	58.1	55.7	54.5	53.7	52.2	50.2
4/6/2023	11:00 AM	1 hour	54.0	54.0	47.1	74.1	60.2	58.5	56.2	54.2	51.6	49.9
4/6/2023	12:00 PM	1 hour	52.8	52.8	46.8	68.5	57.5	55.5	54.2	53.4	51.9	49.9
Daytime (7 AM to 7 PM)			*55.6*	--	*46.2*	*87.6*	*61.5*	*59.9*	*58.7*	*57.9*	*56.1*	*53.9*
Evening (7 PM to 10 PM)			*55.6*	--	*47.0*	*69.3*	*60.3*	*59.2*	*58.4*	*57.7*	*55.8*	*53.6*
Nightime (10 PM to 7 AM)			*54.2*	--	*46.0*	*77.2*	*59.0*	*58.0*	*57.2*	*56.7*	*54.9*	*52.7*
	24-hour CNEL		--	***61.2***	***24-hour DNL***		***67.7***	-	-	-	-	-

TABLE 2: SUMMARY OF SHORT-TERM NOISE MONITORING DATA												
Site	**Date**	**Time**	**Duration**	**Leq**	**Lmin**	**Lmax**	**L(01)**	**L(08)**	**L(10)**	**L(25)**	**L(50)**	**L(90)**
ST-1	4/5/2023	1:17 PM	10 minutes	68.7	42.2	83.1	78.6	74.0	72.9	69.2	63.2	50.2
ST-2	4/5/2023	1:45 PM	10 minutes	57.5	43.6	68.4	65.3	61.6	60.9	58.6	55.3	49.7

TABLE 3: SUMMARY OF LONG-TERM NOISE MONITORING DATA (for Comparison to ST sites)												
Site	**Date**	**Time**	**Duration**	**Leq**	**Lmin**	**Lmax**	**L(01)**	**L(08)**	**L(16)**	**L(25)**	**L(50)**	**L(90)**
LT-1	4/5/2023	1:17 PM	10 minutes	51.9	47.1	68.4	59.5	53.7	52.8	51.8	50.6	49.0
LT-1	4/5/2023	1:45 PM	10 minutes	51.6	47.3	63.0	56.9	54.1	53.1	52.0	50.5	48.8

Summary

File Name on Meter	GBR_Apr4.001.s
File Name on PC	LxT_0005064-20230405 130000-GBR_Apr4.001.ldbin
Serial Number	0005064
Model	SoundTrack LxT®
Firmware Version	2.404
User	
Location	
Job Description	
Note	

Measurement

Description		
Start	2023-04-05 13:00:00	
Stop	2023-04-06 13:00:44	
Duration	24:00:44.797	
Run Time	24:00:44.797	
Pause	00:00:00.0	
Pre-Calibration	2023-04-05 12:44:59	
Post-Calibration	2023-04-06 13:01:59	
Calibration Deviation	0.00	dB

Overall Settings

RMS Weight	A Weighting	
Peak Weight	A Weighting	
Detector	Slow	
Preamplifier	PRMLxT1L	
Microphone Correction	Off	
Integration Method	Exponential	
OBA Range	Normal	
OBA Bandwidth	1/1 and 1/3	
OBA Frequency Weighting	A Weighting	
OBA Max Spectrum	Bin Max	
Overload	122.8	dB

	A	**C**	**Z**	
Under Range Peak	**79.4**	76.4	81.4	dB
Under Range Limit	**24.4**	25.5	31.7	dB
Noise Floor	15.2	16.4	22.6	dB

Results

LA_{Seq}	55.3			
LASE	104.7			
EAS	3.288	mPa^2h		
EAS8	1.095	mPa^2h		
EAS40	5.477	mPa^2h		
$LA_{Speak\ (max)}$	2023-04-05 13:00:11		103.3	dB
LA_{Smax}	2023-04-05 14:29:13		87.6	dB
LA_{Smin}	2023-04-06 03:35:07		46.0	dB
SEA	-99.9	dB		

LAS > 70.0 dB (Exceedance Counts / Duration)	22	130.0 s
LAS > 80.0 dB (Exceedance Counts / Duration)	1	25.0 s
LASpeak > 115.0 dB (Exceedance Counts / Duration)	0	0.0 s
LASpeak > 135.0 dB (Exceedance Counts / Duration)	0	0.0 s
LASpeak > 140.0 dB (Exceedance Counts / Duration)	0	0.0 s

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**
	60.9	55.9	54.2
	Lden	**LDay 07:00-19:00**	**LEve 19:00-22:00**
	61.3	56.0	55.6
		LNight 22:00-07:00	
		54.2	

LCSeq	68.6	dB
LASeq	55.3	dB
LCSeq - LASeq	13.3	dB
LAIeq	57.5	dB
LAeq	55.3	dB
LAIeq - LAeq	2.2	dB

	A	
	dB	**Time Stamp**
Leq	55.3	
LS(max)	87.6	2023/04/05 14:29:13
LS(min)	46.0	2023/04/06 3:35:07
LPeak(max)	103.3	2023/04/05 13:00:11

Overload Count	0	
Overload Duration	0.0	s
OBA Overload Count	0	
OBA Overload Duration	0.0	s

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APPENDIX B: Construction Noise and Vibration Estimates

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Brew Enterprises II, LLC Industrial Warehouse Project
Appendix B
Construction Noise Calculations
Prepared by MIG, Inc. - May 2023

Calculated Construction Noise levels

Equipment	Distance from source											
	RNL	UF	5	25	50	75	100	115	340	250	500	1100
Backhoe	80	0.4	96	82	76	72	70	69	59	62	56	49
Compact roller	80	0.2	93	79	73	69	67	66	56	59	53	46
Compressor (air)	80	0.4	96	82	76	72	70	69	59	62	56	49
Concrete Mixer	85	0.4	101	87	81	77	75	74	64	67	61	54
Crane	85	0.16	97	83	77	74	71	70	60	63	57	50
Excavator	85	0.4	101	87	81	77	75	74	64	67	61	54
Front End Loader	80	0.4	96	82	76	72	70	69	59	62	56	49
Grader	85	0.4	101	87	81	77	75	74	64	67	61	54
Paver	85	0.5	102	88	82	78	76	75	65	68	62	55
Tractor	84	0.4	100	86	80	76	74	73	63	66	60	53
Scraper	85	0.4	101	87	81	77	75	74	64	67	61	54
Welder	73	0.4	69	55	49	45	43	42	32	35	29	22

RNL - Reference Noise Level (50 ft)
UF - Usage Factor

Brew Enterprises II, LLC Industrial Warehouse Project
Appendix B
Groundborne Vibration Calculations
Prepared by MIG, Inc.

Distance 1	50
Distance 2	115
Distance 3	185
Distance 4	280
Distance 5	340

Distance 1

Equipment	Reference PPV @ 25 ft	Reference Lv at 25 ft	Estimated PPV at 50ft	Estimated Lv at 50 ft
Roller	0.21	94	0.098	85.0
Large Bulldozer	0.089	87	0.042	78.0
Small Bulldozer	0.03	58	0.014	49.0
Loaded Truck	0.076	86	0.035	77.0
Jackhammer	0.035	79	0.016	70.0
Auger Drill	0.089	87	0.042	78.0

Distance 2

Equipment	Reference PPV @ 25 ft	Reference Lv at 25 ft	Estimated PPV at 115ft	Estimated Lv at 115 ft
Roller	0.21	94	0.039	74.1
Large Bulldozer	0.089	87	0.017	67.1
Small Bulldozer	0.03	58	0.006	38.1
Loaded Truck	0.076	86	0.014	66.1
Jackhammer	0.035	79	0.007	59.1
Auger Drill	0.089	87	0.017	67.1

Distance 3

Equipment	Reference PPV @ 25 ft	Reference Lv at 25 ft	Estimated PPV at 185ft	Estimated Lv at 185 ft
Roller	0.21	94	0.023	67.9
Large Bulldozer	0.089	87	0.010	60.9
Small Bulldozer	0.03	58	0.003	31.9
Loaded Truck	0.076	86	0.008	59.9
Jackhammer	0.035	79	0.004	52.9
Auger Drill	0.089	87	0.010	60.9

Distance 4

Equipment	Reference PPV @ 25 ft	Reference Lv at 25 ft	Estimated PPV at 280ft	Estimated Lv at 280 ft
Roller	0.21	94	0.023	67.9
Large Bulldozer	0.089	87	0.010	60.9
Small Bulldozer	0.03	58	0.003	31.9
Loaded Truck	0.076	86	0.008	59.9
Jackhammer	0.035	79	0.004	52.9
Auger Drill	0.089	87	0.010	60.9

Distance 5

Equipment	Reference PPV @ 25 ft	Reference Lv at 25 ft	Estimated PPV at 340ft	Estimated Lv at 340 ft
Roller	0.21	94	0.023	67.9
Large Bulldozer	0.089	87	0.010	60.9
Small Bulldozer	0.03	58	0.003	31.9
Loaded Truck	0.076	86	0.008	59.9
Jackhammer	0.035	79	0.004	52.9
Auger Drill	0.089	87	0.010	60.9

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APPENDIX C: Operational Noise Level Estimates

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Brew Harley Knox Warehouse Project
Perris, CA

Appendix: On-Site Operational Noise Level Estimates
Prepared by: MIG, Inc.
May 2023

Contents:

Brew Harley Knox Warehouse Project
Perris, CA
Appendix: On-Site Operational Noise Level Estimates

Sheet 1: Reference Noise Level Information

Noise Source	Reference dBA @ 3 Feet	Duration (Seconds)	Estimated Hourly Leq @ 3 Feet
Automobile Travel			
Low speed travel (15 mph)/parking	*55*	*30*	*34.2*
Door closing	*90*	*1*	*54.4*
Engine start/rev	*90*	*10*	*64.4*
Total Combined Noise Level			*64.9*
Truck Travel / Dock Activity			
Low speed travel (15 mph)	*96*	*30*	*75.2*
Maneuvering (with backup alarm)	*100*	*150*	*86.2*
Air brake release	*98*	*3*	*67.2*
Main engine idling	*86*	*900*	*80.0*
Door closing	*90*	*2*	*57.4*
Engine start/rev	*100*	*20*	*77.4*
Forklift Operation	*70*	*1800*	*67.0*
Forklift Backup Alarm	*100*	*90*	*84.0*
Total Combined Noise Level			*89.4*
Truck Entrance Way			
Warehouse Noise Measurement	*71.4*	*3600*	*71.4*
HVAC Unit			
Operation (3 Ton)	*76*	*2,400*	*74.2*

Brew Harley Knox Warehouse Project
Perris, CA
Appendix: On-Site Operational Noise Level Estimates

Sheet 2: Project Noise Level Estimates (dBA Leq)

Table 1: Estimated Noise Levels at Property Line East R1						
On-Site Noise Source	Reference Noise Data		Property Line (Single Source)		Property Line (Multiple Sources)	
	Distance	Hourly Leq dBA	Distance	Hourly Leq dBA	No. Sources	Hourly Leq dBA
Truck Entrance	3	71.4	165	36.6	2	39.6
Drive Aisle	3	75.2	115	43.5	2	46.5
Docks	3	89.4	175	54.1	2	57.1
HVAC	3	74.2	560	28.8	1	28.8
					Combined Noise Level	**57.5**

Brew Harley Knox Warehouse Project
Perris, CA
Appendix: On-Site Operational Noise Level Estimates

Sheet 3: Project Noise Level Estimates (CNEL)

TABLE 1: ESTIMATED CHANGE IN CNEL AT MODELED RECEPTOR - East Property Line		
Time	**Hourly dBA Leq**	**CNEL**
7:00 AM	57.5	57.5
8:00 AM	57.5	57.5
9:00 AM	57.5	57.5
10:00 AM	57.5	57.5
11:00 AM	57.5	57.5
12:00 PM	57.5	57.5
1:00 PM	57.5	57.5
2:00 PM	57.5	57.5
3:00 PM	57.5	57.5
4:00 PM	57.5	57.5
5:00 PM	57.5	57.5
6:00 PM	57.5	57.5
7:00 PM	57.5	62.5
8:00 PM	57.5	62.5
9:00 PM	57.5	62.5
10:00 PM	57.5	67.5
11:00 PM	57.5	67.5
12:00 AM	57.5	67.5
1:00 AM	57.5	67.5
2:00 AM	57.5	67.5
3:00 AM	57.5	67.5
4:00 AM	57.5	67.5
5:00 AM	57.5	67.5
6:00 AM	57.5	67.5
24-hour Project CNEL	**--**	***64.2***
Existing Ambient Noise (CNEL)	**--**	***61.2***
Noise Level with Project (CNEL)	**--**	**66.0**

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