Michael Baker INTERNATIONAL

We Make a Difference

MEMORANDUM

To: NorthPoint Development

From: Winnie Woo, Michael Baker International

Date: January 22, 2025

Subject: SPR 24-010 – Noise and Vibration Assessment Memorandum

PURPOSE

The purpose of this technical memorandum is to evaluate potential short- and long-term noise and ground-borne vibration impacts that would result from the construction and operation of the proposed SPR 24-010 (project), located in the City of Lancaster (City), California.

PROJECT LOCATION

The City is in the Antelope Valley in northern Los Angeles County (County), approximately 70 miles north of downtown Los Angeles and consists of two noncontiguous parcels (Assessor's Parcel Numbers [APNs] 3114-010-041 and 3114-010-054); refer to Exhibit 1, *Regional Vicinity*. The project site is located within the northern portion of the City. Generally, the project site is bound by West Avenue F 8 to the north, 25th Street West to the east, and 30th Street West to the west; refer to Exhibit 2, *Site Vicinity*. Regional access to the site is available via State Route 14 (SR-14) at the Avenue G exit, approximately 0.4-mile east of the project site. Local access to the site is provided via Avenue G and 30th Street West.

EXISTING SITE CONDITIONS

The approximately 30-acre site comprises two separate parcels: one located near the intersection of West Avenue F-8 and 30th Street West (northern portion, APN 3114-010-041), and another along 25th Street West (eastern portion, APN 3114-010-054). The site is currently vacant, with no existing structures or paved roads present. To the west and south of the project site is a planned industrial development.

The project site is designated "Light Industry (LI)" with a "Specific Plan" overlay based on the *General Plan Land Use Map* in the *Lancaster General Plan 2030* (General Plan).[1] The project site is zoned "SP 95-02 Fox Field Industrial Corridor Specific Plan" based on the *City of Lancaster Zoning Map*.[2] Based on the *Fox Field Industrial Corridor Specific Plan*, the project site is located within focused area "Fox Field East" and designated "Light Industrial", "Manufacturing/Distribution (MFG)", and "Park".[3]

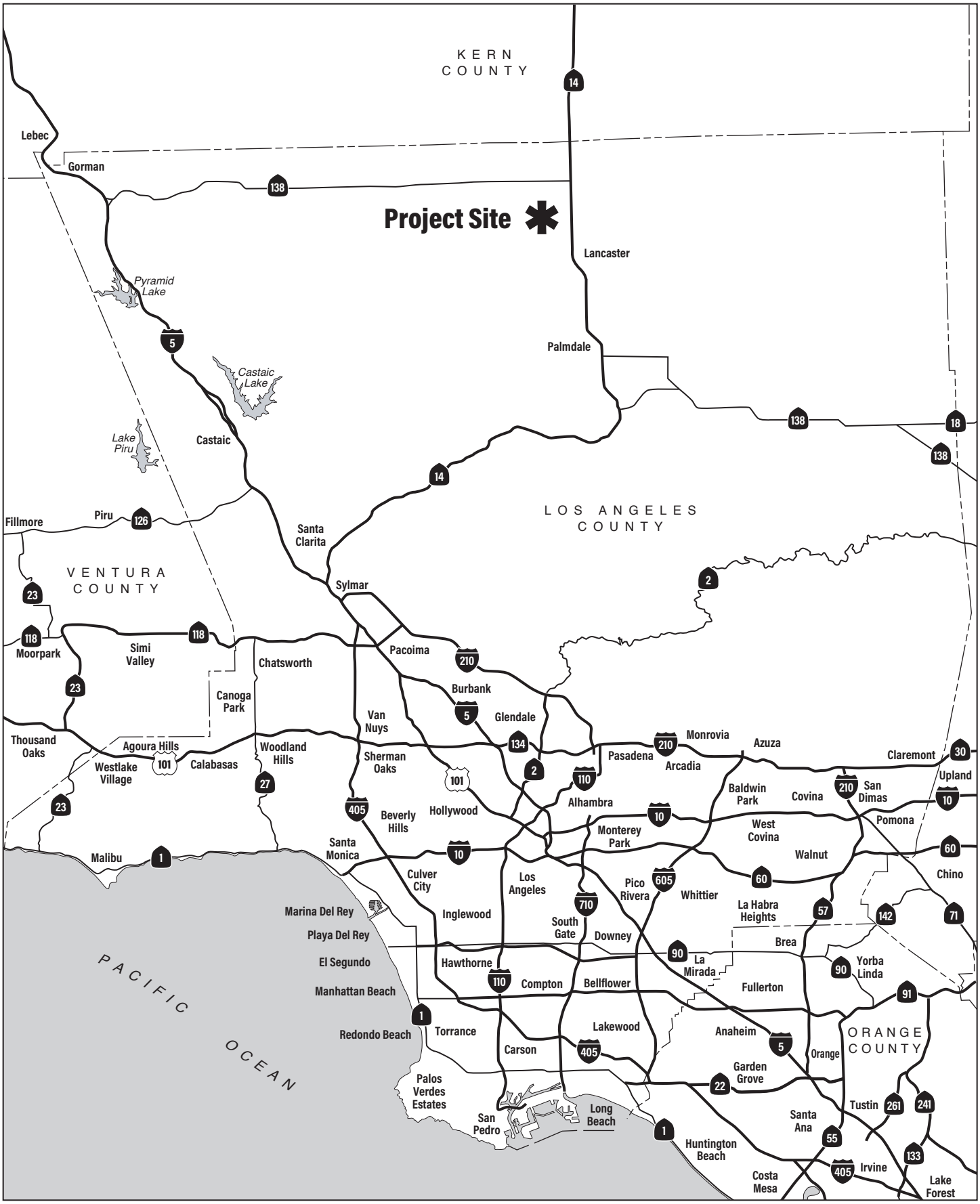
1 City of Lancaster, *Lancaster General Plan 2030, General Plan Land Use Map*, adopted July 14, 2009, updated September 1, 2015.

2 City of Lancaster, *City of Lancaster Zoning Map*, adopted July 13, 2010, revised October 26, 2022.

3 City of Lancaster, *Fox Field Industrial Corridor Specific Plan*, May 31, 1996.

5 Hutton Centre Drive, Suite 500, Santa Ana, CA 92707

Office: 949.472.3505 | Fax: 949.472.8373



Michael Baker INTERNATIONAL

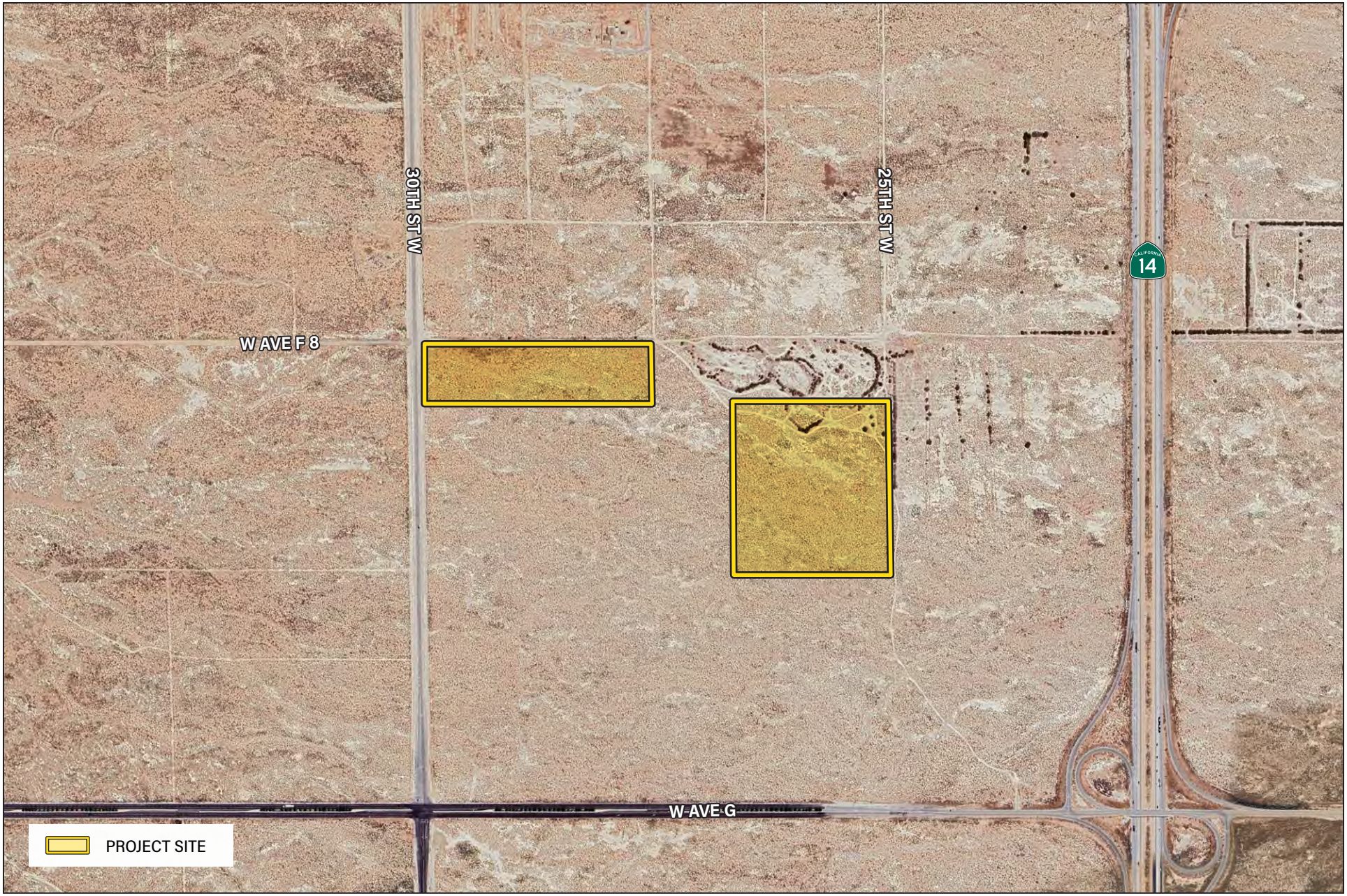
NOT TO SCALE

11/2024 • JN 195377

SPR 24-010

Regional Vicinity

Exhibit 1



Source: Google Earth Pro, December 2024

Michael Baker INTERNATIONAL

NOT TO SCALE

12/2024 • JN 195377

SPR 24-010

Site Vicinity

Exhibit 2

The project site is surrounding by vacant undeveloped land and the planned industrial development. Prominent land uses in the project vicinity include several single-family residences, temporary storage facilities, and associated unpaved roadways to the north; transportation use (SR-14) to the east; industrial/warehousing uses to the south; and the General William J. Fox Airfield and Apollo Community Regional Park west of the site.

PROJECT DESCRIPTION

The project considers two development options for the vacant site: Warehouse Option and Trailer Parking Lot Option. The Warehouse Option would include an approximately 510,000-square-foot warehouse building in the eastern portion of the site and an approximately 8.55-acre detention basin in the western portion. The Trailer Parking Lot Option would include a 8.55-acre detention basin in the northern portion and a trailer parking lot in the eastern portion of the site serving the planned industrial development to the west of the project site. The Trailer Parking Lot Option would include approximately 866 trailer parking spaces.

Under the Warehouse Option, construction of the proposed building and detention basin would occur over 14 months, beginning in January 2026 and concluding by March 2027. Construction activities would primarily include grading, building construction, paving, and architectural coating. For proposed earthwork, approximately 442,000 cubic yards of cut and 446,000 cubic yards of fill are expected, resulting in 4,000 cubic yards of materials import during the grading phase.

Under the Trailer Parking Lot Option, construction of the proposed parking lot and detention basin would occur over three months, beginning in January 2026 and concluding by April 2026. Construction activities would primarily include grading, paving, and architectural coating for the parking lot. Construction under this development option does not expect any import or export of earthwork materials.

Construction activities for both development options would occur from 7:00 a.m. to 8:00 p.m., Monday through Saturday.

FUNDAMENTALS OF SOUND AND ENVIRONMENTAL NOISE

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air and is characterized by both its amplitude and frequency (or pitch). The human ear does not hear all frequencies equally. In particular, the ear deemphasizes low and very high frequencies. To better approximate the sensitivity of human hearing, the A-weighted decibel scale (dBA) has been developed. Decibels are based on the logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner like the Richter scale used to measure earthquakes. In terms of human response to noise, a sound 10 dBA higher than another is perceived to be twice as loud and 20 dBA higher is perceived to be four times as loud, and so forth. Everyday sounds normally range from 30 dBA (very quiet) to 100 dBA (very loud). On this scale, the human range of hearing extends from approximately 3 dBA to around 140 dBA.

Noise is generally defined as unwanted or excessive sound, which can vary in intensity by over one million times within the range of human hearing; therefore, a logarithmic scale, known as the decibel scale (dB), is used to quantify sound intensity. Noise can be generated by several sources, including mobile sources such as automobiles, trucks, and airplanes, and stationary sources such as construction sites, machinery, and industrial operations. Noise generated by mobile sources typically attenuates (is reduced) at a rate

between 3 dBA and 4.5 dBA per doubling of distance. The rate depends on the ground surface and the number or type of objects between the noise source and the receiver. Hard and flat surfaces, such as concrete or asphalt, have an attenuation rate of 3 dBA per doubling of distance. Soft surfaces, such as uneven or vegetated terrain, have an attenuation rate of about 4.5 dBA per doubling of distance. Noise generated by stationary sources typically attenuates at a rate between 6 dBA and about 7.5 dBA per doubling of distance.

There are several metrics used to characterize community noise exposure, which fluctuate constantly over time. One such metric, the equivalent sound level (L_{eq}), represents a constant sound that, over the specified period, has the same sound energy as the time-varying sound. This is commonly used to describe the "average" noise levels within the environment. Noise exposure over a longer period is often evaluated based on the Day-Night Sound Level (L_{dn}). This is a measure of 24-hour noise levels that incorporates a 10-dBA penalty (or an additional 10 dBA) for sounds occurring between 10:00 PM and 7:00 AM when sounds seem to be louder. The penalty is intended to reflect the increased human sensitivity to noises occurring during nighttime hours, particularly at times when people are sleeping and there are lower ambient (background) noise conditions. Typical L_{dn} noise levels for light- and medium-density residential areas range from 55 dBA to 65 dBA. Similarly, Community Noise Equivalent Level (CNEL) is a measure of 24-hour noise levels, not an actual sound level heard at any time, that incorporates a 5-dBA penalty for sounds occurring between 7:00 PM. and 10:00 PM and a 10-dBA penalty for sounds occurring between 10:00 PM and 7:00 AM to account for noise sensitivity in the evening and nighttime, respectively.[4]

FUNDAMENTALS OF ENVIRONMENTAL GROUNDBORNE VIBRATION

Ground vibration consists of oscillatory (i.e., rapidly fluctuating) motions or waves with an average motion of zero (i.e., no net movement of the vibration element). Sources of earth-borne vibrations include natural phenomena (earthquakes, volcanic eruptions, sea waves, landslides, etc.) or man-made causes (explosions, machinery, traffic, trains, construction equipment, etc.). Vibration sources may be continuous (e.g., factory machinery) or transient (e.g., explosions). Several different methods are typically used to quantify vibration amplitude. One is the peak particle velocity (PPV); another is the root mean square (RMS) velocity. The PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. The RMS velocity is defined as the average of the squared amplitude of the signal. Vibration decibels (VdB) is commonly used to measure the RMS vibration velocity level. The PPV and RMS vibration velocity amplitudes are used to evaluate human response to vibration.[5]

Ground vibration can be a concern in instances where buildings shake, and substantial rumblings occur. However, it is unusual for vibration from typical urban sources such as buses and heavy trucks to be perceptible. Common sources for groundborne vibration are planes, trains, and construction activities such as pile driving and vibratory compacting activities which require the use of heavy-duty earth moving equipment. For the purposes of this analysis, a PPV descriptor with units of inches per second (in/sec) is used to evaluate construction-generated vibration for building damage and human complaints.

To assess the damage potential from ground vibration induced by construction equipment, a synthesis of various vibration criteria has been developed in the California Department of Transportation's (Caltrans') *Transportation and Construction Vibration Guidance Manual*; refer to Table 1, *Guideline Vibration Damage Potential Threshold Criteria*. This synthesis of criteria essentially assumes that the threshold for continuous sources is about half of the threshold for transient sources. Table 2, *Guideline Vibration*

[4] Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, September 2018.

[5] Ibid.

Annoyance Potential Criteria, displays a similar synthesis of criteria relating to human perception. Some individuals may be annoyed at barely perceptible levels of vibration, depending on the activities in which they are participating. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Low-level vibrations frequently cause irritating secondary vibration, such as a slight rattling of windows, doors, or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage.

Table 1
Guideline Vibration Damage Potential Threshold Criteria

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5
Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.		
Source: California Department of Transportation, *Transportation and Construction Vibration Guidance Manual, Table 19, Guideline Vibration Damage Potential Threshold Criteria*, April 2020.		

Table 2
Guideline Vibration Annoyance Potential Criteria

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.1
Severe	2.0	0.4
Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.		
Source: California Department of Transportation, *Transportation and Construction Vibration Guidance Manual*, *Table 19, Guideline Vibration Damage Potential Threshold Criteria*, April 2020.		

EXISITNG SETTING

Noise Sensitive Receptors

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Additional land uses such as parks, historic sites, cemeteries, and recreation areas are considered sensitive to increases in exterior noise levels. Schools, churches, hotels, libraries, and other places where low interior noise levels are essential are also considered noise-sensitive land uses.

The nearest sensitive receptor to the project site is the existing single-family residential use located approximately 1,650 feet to the north. Other sensitive receptors in the project vicinity of the project include a park (Apollo Community Regional Park), located approximately 4,030 feet west of the project site.

Stationary Sources

The project site is surrounded by vacant lands on all sides with remote residential uses further north, warehousing uses further south and west, and recreational (park) and airport uses to the west. Given the distance to these land uses, noise from stationary sources are minimal at the project site.

Nonetheless, stationary noise sources in the project vicinity include mechanical equipment, airport-related activities, and parking. The noise associated with these stationary sources may represent a single-event noise occurrence, short-term, or long-term/continuous noise.

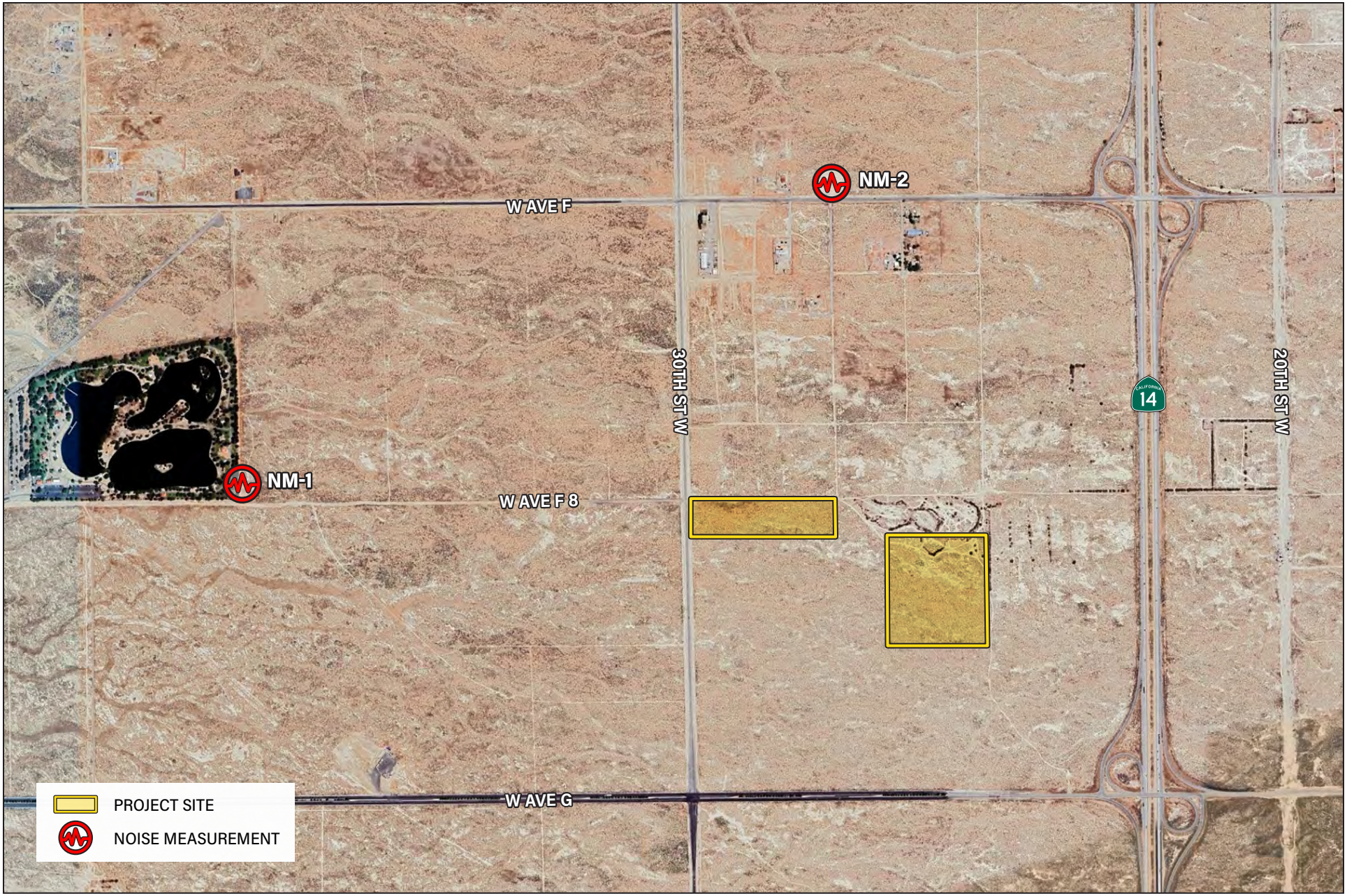
Mobile Sources

Most of the existing noise in the project area is generated from traffic along surrounding major freeways and roadways including SR-14, West Avenue G, and 30th Street West.

Existing Ambient Noise Levels

To quantify existing ambient noise levels in the project area, Michael Baker International conducted two short-term noise measurements in the project vicinity on September 28, 2023. The 10-minute measurements were taken between 11:00 AM and 12:00 PM. Refer to Exhibit 3, *Noise Measurement Locations* for measurement locations. Short-term (L_{eq}) measurements at these locations are considered representative of the noise levels in the project area throughout the day. The noise measurements were taken during "off-peak" (9:00 AM through 3:00 PM) traffic noise hours as this provides a more conservative baseline. During rush hour traffic, vehicle speeds and heavy truck volumes are often low; as such, free-flowing traffic conditions before or after rush hour often yield higher noise levels due to higher vehicle speeds.[6] The ambient noise levels measured are identified in Table 3, *Noise Measurements*.

[6] California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013.



Source: Google Earth Pro, December 2024

Michael Baker INTERNATIONAL

NOT TO SCALE

12/2024 • JN 195377

SPR 24-010

Noise Measurement Locations

Exhibit 3

Table 3
Noise Measurements

Site No.	Location	L_{eq} (dBA)	L_{min} (dBA)	L_{max} (dBA)	Start Time
NM-1	Southeast Corner of Apollo Community Regional Park- Southern Parking Lot	37.9	28.5	55.3	10:55 a.m.
NM-2	Southwest corner of West Avenue F and 27th Street West	61.9	31.7	85.5	11:16 a.m.

Refer to Appendix A, *Noise Data*, for the results of the field measurements. Refer to Exhibit 3, *Noise Measurement Locations*, for measurement locations.

Meteorological conditions were clear, warm temperatures (79 degrees Fahrenheit [°F]), and wind speeds of approximately 8 mile per hour. Measured noise levels during the daytime measurements ranged from 37.9 to 61.9 dBA L_{eq}. The sources of peak noise include traffic along the roadways and overhead airplane noise. Noise monitoring equipment used for the ambient noise survey consisted of a Brüel & Kjær Hand-held Analyzer Type 2250 equipped with a Type 4189 pre-polarized microphone. The monitoring equipment complies with applicable requirements of the American National Standards Institute (ANSI) for Type I (precision) sound level meters. Refer to Appendix A, *Noise Data*, for the results of the field measurement.

REGULATORY SETTING

Environmental noise and vibration are controlled and regulated by federal, state, and local agencies. Federal agencies like the U.S. Environmental Protection Agency (EPA) are responsible for managing major noise sources in commerce including transportation vehicles and equipment, machinery, appliances under the Noise Control Act of 1972.[7] However, the primary responsibility of addressing noise issues is with the State and local governments.[8]

State

State Office of Planning and Research

The State Office of Planning and Research's (OPR) *Noise Element Guidelines* include recommended exterior and interior noise level standards for local jurisdictions to identify and prevent the creation of incompatible land uses due to noise. The *Noise Element Guidelines* contain a land use compatibility table that describes the compatibility of various land uses with a range of environmental noise levels in terms of the CNEL. The guidelines also present adjustment factors that may be used to arrive at noise acceptability standards that reflect the noise control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution.

[7] U.S. Environmental Protection Agency, *Summary of the Noise Control Act: 42 USC Section 4901 et seq. (1972)*, https://www.epa.gov/laws-regulations/summary-noise-control-act, accessed November 7, 2024.

[8] U.S. Environmental Protection Agency, *Clean Air Act Title IV – Noise Pollution*, https://www.epa.gov/clean-air-act-overview/clean-air-act-title-iv-noise-pollution, accessed November 7, 2024.

Local

Lancaster General Plan 2030

The *Lancaster General Plan 2030* (General Plan) was adopted on July 14, 2009, and the horizon year for the adopted General Plan is 2030. The General Plan contains the vision, goals, objectives, policies, and specific actions for the City. The General Plan includes the following elements or plans: natural environment, public health and safety, active living, physical mobility, municipal services and facilities, economic development and vitality and physical development. The following objectives and policies related from the General Plan that would be applicable to the project:

Objective 4.3: Promote noise compatible land use relationships by implementing the noise standards identified in Table 3-1 (Table 4, *Noise Compatible Land Use Objectives*, below) to be utilized for design purposes in new development, and establishing a program to attenuate existing noise problem[s].

Table 4
Noise Compatible Land Use Objectives

Land Use Category	Maximum Exterior CNEL	Maximum Interior CNEL
Rural, Single-Family, Multiple-Family Residential	65 dBA	45 dBA
Schools:		
Classrooms	65 dBA	45 dBA
Playgrounds	70 dBA	-
Libraries	-	50 dBA
Hospitals/Convalescent Facilities:		
Living Areas	-	50 dBA
Sleeping Areas	-	40 dBA
Commercial and Industrial	70 dBA	-
Office Areas	-	50 dBA
Source: City of Lancaster, *Lancaster General Plan 2030*, July 14, 2009.		

Policy 4.3.1: Ensure that noise-sensitive land uses and noise generators are located and designed in such a manner that City noise objectives will be achieved.

Policy 4.3.2: Wherever feasible, manage the generation of single event noise levels (SENL) from motor vehicles, trains, aircraft, commercial, industrial, construction, and other activities such that SENL levels are no greater than 15 dBA above the noise objectives included in the Plan for Public Health and Safety.

Policy 4.3.3: Ensure that the provision of noise attenuation does not create significant negative visual impacts.

Lancaster Municipal Code

The most effective method to control community noise impacts from non-transportation noise sources (such as playgrounds, trash compactors, air-conditioning units, etc.) is through the application of a community noise ordinance. For the purpose of this analysis, the noise impacts associated with the project are controlled by General Plan 2030 Plan for Public Health and Safety, and the permitted hours of

construction activity are established in the Lancaster Municipal Code.

The City of Lancaster has set restrictions with respect to the hours during which construction activity may take place. Municipal Code Section 8.24.040, *Loud, unnecessary and unusual noises prohibited - Construction and Building,* indicates that *"…a person at any time on Sunday or any day between the hours of 8:00 p.m. and 7:00 a.m. shall not perform any construction or repair work of any kind upon any building or structure or perform any earth excavating, filling or moving where any of the foregoing entails the use of any air compressor, jack hammer, power-driven drill, riveting machine, excavator, diesel-powered truck, tractor or other earth moving equipment, hard hammers on steel or iron or any other machine tool, device or equipment which makes loud noises within 500 feet of an occupied dwelling, apartment, hotel, mobile home or other place of residence.*"

METHDOLOGY AND SIGNIFICANCE THRESHOLDS

Based on the CEQA standards, adopted regulations, community response to changes in noise levels, and other related technical data, noise-level thresholds were developed to assist in this analysis. The methodology and thresholds used in the analysis are listed in the following:

Construction Noise

Noise levels from construction equipment and activities would be modeled using the Federal Highway Administration's Roadway Construction Noise Model (RCNM).

To evaluate whether the project would generate potentially significant temporary construction noise levels at off-site sensitive receptor locations, a construction-related noise level threshold was utilized from the Occupational Noise Exposure prepared by the National Institute for Occupational Safety and Health (NIOSH). As a division of the U.S. Department of Health and Human Services, NIOSH identifies a noise level threshold based on the duration of exposure to the source. The construction-related noise level threshold starts at 85 dBA for more than eight hours per day, and for every 3-dBA increase, the exposure time is cut in half. Since this construction-related noise level threshold represents the energy average of the noise source over a given time, they are expressed as L_{eq} noise levels.

For the purposes of this analysis, the lowest, most conservative construction noise level threshold of 85 dBA L_{eq} over a period of eight hours or more is used to evaluate the potential project-related construction noise level impacts at the nearby sensitive receptor locations. As such, the project could result in a significant impact if project-related construction noise levels exceed this established noise level threshold.

Operational Noise

In accordance with the General Plan Objective 4.3 (refer to Table 4), a project would result in a significant impact if project-related operational (stationary-source) noise levels exceed the established exterior 65 dBA L_{eq} noise level standard at nearby sensitive receiver locations.

Additionally, the Federal Interagency Committee on Noise (FICON) determined that new noise sources that exceed the existing ambient noise level would result in an increase in annoyance for nearby sensitive receptors. The guidance FICON utilizes is based on aircraft noise studies. Per FICON, a project would result in a significant impact if any of the following criteria are met:

1. If the existing ambient noise levels is less than 60 dBA CNEL, a significant impact would occur if a project would increase the ambient noise levels by 5 dBA CNEL or more.

2. If the existing ambient noise levels is between 60 to 65 dBA CNEL, a significant impact would occur if a project would increase the ambient noise levels by 3 dBA CNEL or more.

3. If the existing ambient noise levels is greater than 65 dBA CNEL, a significant impact would occur if a project would increase the ambient noise levels by 1.5 dBA CNEL or more.

Construction and Operational Vibration

As described under "Fundamentals Of Environmental Groundborne Vibration" section above, Caltrans' *Transportation and Construction Vibration Manual* identifies various vibration damage criteria for different building classes. This evaluation uses the Caltrans architectural damage criterion for continuous vibrations at old residential buildings of 0.3 in/sec PPV and commercial buildings of 0.5 in/sec PPV. Caltrans architectural damage criterion for continuous vibrations at historical buildings is 0.25 in/sec PPV. The types of construction vibration impacts include human annoyance and building damage. Annoyance is assessed based on levels of perception, with a PPV of 0.01 in/sec being considered "barely perceptible," 0.04 in/sec as "distinctly perceptible," 0.1 in/sec as "strongly perceptible," and 0.4 in/sec as "severe." Human annoyance occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time. Based on physical appearance of the adjacent residential structure, this evaluation uses the Caltrans architectural damage criterion for vibrations from continuous/frequent intermittent sources at old residential buildings of 0.3 in/sec PPV.

CALIFORNIA ENVIRONMENTAL QUALITY ACT THRESHOLDS

In accordance with the *California Environmental Quality Act* (CEQA Guidelines), project impacts are evaluated to determine whether significant adverse environmental impacts would occur. This analysis will focus on the project's potential impacts and provide mitigation measures, if required, to reduce or avoid any potentially significant impacts that are identified. According to Appendix G of the CEQA Guidelines, the proposed project would have a significant impact related to noise and vibration if it would:

- Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies (refer to Impact Statement NOI-1);

- Generation of excessive groundborne vibration or groundborne noise levels (refer to Impact Statement NOI-2); and/or

- For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels (refer to Impact Statement NOI-3).

IMPACT ANALYSIS

NOI-1 WOULD THE PROJECT RESULT IN GENERATION OF A SUBSTANTIAL TEMPORARY OR PERMANENT INCREASE IN AMBIENT NOISE LEVELS IN THE VICINITY OF THE PROJECT IN EXCESS OF STANDARDS ESTABLISHED IN THE LOCAL GENERAL PLAN OR NOISE ORDINANCE, OR APPLICABLE STANDARDS OF OTHER AGENCIES?

Level of Significance: Less Than Significant Impact.

Warehouse Option

Construction Noise Impacts

Temporary increases in ambient noise levels as a result of the project would predominantly be associated with construction activities. Under the Warehouse Option, construction of the proposed building and detention basin would occur over 14 months and would primarily include the following phases: grading, building construction, paving, and architectural coating.

Construction noise is difficult to quantify because of the many variables involved, including the specific equipment types, size of equipment used, percentage of time each piece is in operation, condition of each piece of equipment, and number of pieces that would operate on the site. Construction equipment produce maximum noise levels when equipment is operating under full power conditions (i.e., the equipment engine at maximum speed). However, equipment used on construction sites typically operates under less than full power conditions, or part power. To characterize construction-period noise levels more accurately, the average (L_{eq}) noise level associated with each construction stage is calculated based on the quantity, type, and usage factors for each type of equipment that would be used during each construction stage. These noise levels are typically associated with multiple pieces of equipment simultaneously operating on part power.

Construction activities would occur across the entire project site, and therefore, the estimated noise levels were calculated from the center of the project site. According to the General Noise Assessment methodology outlined in the Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual*, for a large facility spreading out over considerable area with various noise sources with different noise levels, noise can be considered as concentrated at the center of the site. As project-related construction activities would occur throughout the entire project site, estimated noise levels were calculated from the central point. Therefore, for the purpose of this analysis, the estimated noise levels were calculated from the geographic center of project site. As such, the distance between the project site and the closest sensitive receptors (residential use to the north) considered in this analysis is approximately 2,160 feet. Additionally, the distance between the project and the nearest park (Apollo Community Regional Park) is approximately 5,690 feet.

Noise levels from construction equipment and activities were modeled using the Federal Highway Administration's RCNM; refer to Appendix A. Construction equipment list is based on the project's air emissions modeling defaults; refer to *SPR 24-010 – Air Quality Assessment Memorandum*, prepared by Michael Baker International and dated November 19, 2024. The estimated construction noise levels at the nearest noise-sensitive receptors are presented in Table 5, *Construction Noise Levels at the Nearest Sensitive Receptors*.

Table 5
Construction Noise Levels at the Nearest Sensitive Receptors

Phase	Estimated Exterior Noise Level at 2,160 feet (Single-family Residence to the North) (dBA L_{eq})[1]	Estimated Exterior Noise Level at 5,690 feet (Park to the West) (dBA L_{eq})[1]
Grading	53.6	45.2
Building Construction	50.3	41.9
Paving and Architectural Coating[2]	51.2	42.8

Notes:
1. These noise levels conservatively assume the simultaneous operation of all heavy construction equipment at the center of the site.
2. Construction would include overlapping paving and architectural coating activities. Therefore, the equipment used during these phases were assumed to be used simultaneously for a conservative analysis.

Source: Federal Highway Administration, *Roadway Construction Noise Model (RCNM)*, 2006. Refer to Appendix A, *Noise Data*, for results of modeling.

As shown in Table 5, construction-generated noise levels would range from 50.3 dBA L_{eq} to 53.6 dBA L_{eq} at the nearest sensitive receptor (single-family residence to the north). Additionally, construction-generated noise levels at the nearest park would range from 41.9 dBA L_{eq} to 45.2 dBA L_{eq}. As shown in Table 5, noise from operation of powered construction equipment would not exceed the 85 dBA L_{eq} NIOSH threshold at the nearest residence or at the nearest park. As such, construction noise impacts would be less than significant.

Furthermore, construction noise is temporary and would cease once project construction is completed, and the Warehouse Option would comply with the City's allowable construction hours specified in Municipal Code Section 8.24.040, *Loud, unnecessary and unusual noises prohibited - Construction and Building*, which permits construction activities between 7:00 a.m. to 8:00 p.m. Monday through Sunday.

Operational Noise Impacts

Off-Site Mobile Noise

Future development generated by the proposed warehouse would result in some additional traffic on adjacent roadways, thereby potentially increasing vehicular noise in the vicinity of existing and proposed land uses. The most prominent source of mobile traffic noise in the project vicinity is along Avenue F and SR-14. According to the California Department of Transportation (Caltrans), a doubling of traffic (100 percent increase) on a roadway would result in a perceptible increase in traffic noise levels (3 dBA).[9] According to the *Lancaster Fox Field Commerce Center East Project Local Traffic Analysis Scoping Assessment* (Traffic Analysis Scoping Assessment), prepared by Fehr & Peers, dated October 25, 2024, the proposed warehouse would generate approximately 714 total daily trips. The nearest sensitive receptors are located along the West Avenue F. Based on the *Lancaster Master Plan of Complete Streets*, City of Lancaster[10], the future 2035 average daily trips (ADT) along West Avenue F would be approximately 8,640. As such, the project-related increase in traffic volume (714 trips per day) under the Warehouse Option would represent approximately eight percent of the future project volumes along this roadway. As such, the project under the Warehouse Option would not result in a perceptible increase in traffic noise levels (less than 100 percent). As such, traffic noise impacts would be less than significant.

[9] California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013.
[10] City of Lancaster, Lancaster Master Plan of Complete Street, *Figure 8. 2035 ADT*, adopted October 10, 2017.

On-Site Operational Noise

The proposed warehouse building is being designed with an intended operating hours Monday through Friday, from 7 AM to 5 PM. Mechanical equipment and slow-moving trucks would generate noise during on-site operations. The operations would be typical of a warehousing facility.

Mechanical Equipment. Heating, Ventilation, and Air Conditioning (HVAC) units would be installed on the roof of the proposed 50 feet-tall warehouse building. Typically, mechanical equipment, such as HVAC units, generate noise levels of 60 dBA at 20 feet from the source.[11] Noise generated by stationary sources typically attenuates at a rate of 6 dBA per doubling of distance from the source. The nearest sensitive receptor to the project site is the existing single-family residential use, located approximately 1,650 feet to the north. At this distance, noise levels from HVAC units would be approximately 22 dBA. Additionally, at the nearest park approximately 4,030 feet west, noise levels from HVAC units would be approximately 14 dBA. Therefore, operation of the HVAC units would not exceed the City's daytime exterior (65 dBA CNEL) noise standards at this sensitive receptor. Further, as shown in Table 3, existing ambient noise levels near the residential use is approximately 61.9 dBA L_{eq}, which is much higher than projected noise levels from HVAC units at this sensitive receptor. As such, impacts would be less than significant in this regard.

Slow-Moving Trucks. The predominant noise source during on-site operations under the Warehouse Option would be from on-site truck movements and idling. Typically, slow movements from these trucks can generate a maximum noise level of approximately 79 dBA at 50 feet.[12] The nearest sensitive receptor to the project site is the existing single-family residential use, located approximately 1,650 feet to the north. At this distance, noise levels from slow-moving trucks would be approximately 49 dBA. Additionally, at the nearest park approximately 4,030 feet west, noise levels from slow-moving trucks would be approximately 41 dBA. Therefore, operation of the slow-moving trucks would not exceed the City's daytime exterior (65 dBA CNEL) noise standards at this sensitive receptor. Further, as shown in Table 3, existing ambient noise levels at the existing single-family residential use is approximately 61.9 dBA L_{eq}, which is much higher than projected noise levels from slow-moving trucks at this sensitive receptor. As such, impacts would be less than significant in this regard.

Loading Docks

The proposed warehouse may include loading docks on the southwestern side of the proposed warehouse building. Loading docks would predominantly produce noise from back-up alarms (also known as back-up beepers). These back-up beepers are required to warn on-site workers that trucks are reversing. Back-up beepers produce a typical volume of 97 dBA at one meter (3.28 feet) from the source. As discussed above, the nearest sensitive receptor to the project site is the existing single-family residential use, located approximately 1,650 feet to the north. At 1,650 feet, noise levels from back-up beepers would be approximately 43 dBA. Therefore, operation of the loading docks with back-up alarms would not exceed the City's daytime exterior (65 dBA CNEL) noise standards at this sensitive receptor. Further, as shown in Table 3, existing ambient noise levels at the existing single-family residential use is approximately 61.9 dBA L_{eq}, which is much higher than projected noise levels from the loading docks at this sensitive receptor. As such, impacts would be less than significant in this regard.

[11] Elliot H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, July 26, 2015.

[12] Ibid.

Trailer Parking Lot Option

Construction Noise Impacts

As detailed above, the Trailer Parking Lot Option would include a 16.8-acre detention basin in the northern portion and a trailer parking lot in the eastern portion of the site serving the planned industrial development to the west of the project site. Construction of the proposed parking lot and detention basin would primarily include grading, paving, and painting for the parking lot. No export or import of earthwork would be required. Under this option, less construction equipment would be utilized, and construction would only occur over three months. As the construction would be less intense, construction noise levels under the Trailer Parking Lot Option would be lower than that under the Warehouse Option. Impacts would be less than significant in this regard.

Additionally, it should be acknowledged that construction of the proposed parking lot would also comply with the City's allowable construction hours specified in Municipal Code Section 8.24.040, which permits construction activities between 7:00 a.m. to 8:00 p.m. Monday through Sunday.

Operational Noise Impacts

Operational noise under the Trailer Parking Lot Option would primarily include noise from slow-moving trucks and loading docks during on-site operations. As a parking lot serving the planned industrial development to the west of the project site, the Trailer Parking Lot Option would not introduce additional traffic, as such there is no impact from off-site traffic noise. The operation of on-site trucks under this option would be like the Warehouse Option. As discussed above, at 1,650 feet, the operational noise level would not exceed the daytime exterior (65 dBA CNEL) noise standards and ambient noise level (61.9 dBA L_{eq}) at this sensitive receptor without any mitigation measures. As such, impacts would be less than significant in this regard.

Mitigation Measures: No mitigation is required.

NOI-2 WOULD THE PROJECT RESULT IN EXPOSURE OF PERSONS TO OR GENERATION OF EXCESSIVE GROUNDBORNE VIBRATION OR GROUNDBORNE NOISE LEVELS?

Level of Significance: Less Than Significant Impact.

Warehouse Option

Construction Vibration Impacts

Project construction can generate varying degrees of groundborne vibration, depending on the construction procedure and the construction equipment used. Operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of the construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver building(s). The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, to slight damage at the highest levels. Groundborne vibrations from construction activities rarely reach levels that damage structures.

Under the Warehouse Option, construction of the proposed building and detention basin would occur over 14 months, beginning in January 2026 and concluding by March 2027. Construction activities would primarily include grading, building construction, paving, and architectural coating. The highest degree of groundborne vibration would be generated due to the operation of vibratory rollers during the paving phase. As previously mentioned, there are no sensitive receptor buildings located in the immediate vicinity of the project site; the nearest sensitive receptor is located at approximately 1,650 feet to the north. Additionally, the nearest park is located approximately 4,030 feet west. Groundborne vibration decreases rapidly with distance. Based on the distances, vibration velocities from the construction equipment would be barely precipitable at this distance. Nonetheless, vibration level anticipated at these receptors are quantified below.

Typical vibration produced by construction equipment is illustrated in Table 6, *Typical Vibration Levels for Construction Equipment*. Based on physical appearance of the adjacent residential structure, this evaluation uses the Caltrans architectural damage criterion for vibrations from continuous/frequent intermittent sources at old residential buildings of 0.3 in/sec PPV.

Table 6
Typical Vibration Levels for Construction Equipment

Equipment	Reference peak particle velocity at 25 feet (in/sec)	Approximate peak particle velocity at 1,650 feet (Single-family Residence to the North) (in/sec)[1]	Approximate peak particle velocity at 4,030 feet (Park to the West) (in/sec)[1]
Large bulldozer	0.089	0.0002	<0.0001
Loaded trucks	0.076	0.0001	<0.0001
Small bulldozer	0.003	<0.0001	<0.0001
Vibratory Rollers	0.210	0.0004	0.0001

Notes:
1. Calculated using the following formula:
$PPV_{equip} = PPV_{ref} \times (25/D)^{1.1}$
where: PPV_{equip} = the peak particle velocity in in/sec of the equipment adjusted for the distance
PPV_{ref} = the reference vibration level in in/sec from Table 7-4 of the FTA *Transit Noise and Vibration Impact Assessment Guidelines*
D = the distance from the equipment to the receiver

Source: California Department of Transportation, *Transportation and Construction Vibration Guidance Manual*, April 2020.

The nearest sensitive receptor to the project site is the existing single-family residential building located approximately 1,650 feet to the north. At this distance, vibration levels during construction under the Warehouse Option would range from less than 0.0001 in/sec PPV to 0.0004 in/sec PPV; refer to Table 6. Additionally, at the nearest park approximately 4,030 feet west, vibration levels during construction would range from less than 0.0001 in/sec PPV to 0.0001 in/sec PPV; refer to Table 6. As a result, construction groundborne vibration would not be capable of exceeding the 0.3 in/sec PPV significance threshold for vibration to the nearest structures. Less than significant impacts would occur in this regard.

Additionally, it should be acknowledged that construction of the proposed warehouse would also comply with the City's allowable construction hours specified in Municipal Code Section 8.24.040, which permits construction activities between 7:00 a.m. to 8:00 p.m. Monday through Sunday.

Operational Vibration Impacts

Operation of a warehouse building would not generate groundborne vibration that could be felt by the nearest sensitive receptors. As indicated in Table 6, vibration velocities from the operation of a loaded truck would be approximately 0.0001 in/sec PPV at 1,650 feet and are not capable of exceeding the 0.3 in/sec PPV significance threshold. The project would not involve railroads operation and therefore would not result in vibration impacts at surrounding uses. Thus, less than significant impact would occur in this regard.

Trailer Parking Lot Option

Under this option, less construction equipment would be utilized, and construction would only occur over three months. As the construction is less intense, construction vibration under the Trailer Parking Lot Option would be lower than that under the Warehouse Option. Further, it should be acknowledged that construction of the proposed parking lot would also comply with the City's allowable construction hours specified in Municipal Code Section 8.24.040, which permits construction activities between 7:00 a.m. to 8:00 p.m. Monday through Sunday. Similarly, minimal operational vibration impacts would occur under this option. Impacts would be less than significant in this regard.

Mitigation Measures: No mitigation is required.

NOI-3 FOR A PROJECT LOCATED WITHIN THE VICINITY OF A PRIVATE AIRSTRIP OR AN AIRPORT LAND USE PLAN OR, WHERE SUCH A PLAN HAS NOT BEEN ADOPTED, WITHIN TWO MILES OF A PUBLIC AIRPORT OR PUBLIC USE AIRPORT, WOULD THE PROJECT EXPOSE PEOPLE RESIDING OR WORKING IN THE PROJECT AREA TO EXCESSIVE NOISE LEVELS?

Level of Significance: Less Than Significant Impact.

Warehouse Option

The nearest airport to the project site is the General William J. Fox Airfield, located approximately 1.3 miles to the northwest of the project site. According to the Los Angeles County Airport Land Use Commission's *General William J. Fox Airfield Land Use Compatibility Plan*, the project site is located within the General William J. Fox Airfield Area of Influence Compatibility Zone D.[13] According to the *General William J. Fox Airfield Land Use Compatibility Plan*, for projects within Compatibility Zones D and E, proposed nonresidential development consist of 40,000 square feet or more would be considered a major land use action by the Los Angeles County ALUC and would be subject to mandatory or advisory Los Angeles County ALUC review depending upon the status of local general plan consistency.

The Trailer Parking Lot Option does not propose any buildings and therefore is not subject to Los Angeles County ALUC review. The Warehouse Option would develop a 510,000-square-foot warehouse. In general, warehousing is not a land use of specific safety concerns. Nevertheless, the project under the Warehouse Option would be reviewed by the Los Angeles County ALUC. As such, impacts would be less than significant in this regard.

[13] Los Angeles County Airport Land Use Commission, *General William J. Fox Airfield Land Use Compatibility Plan, Figure 2A, Compatibility Plan*, December 1, 2004.

Trailer Parking Lot Option

Refer to the Warehouse Option discussion above.

Mitigation Measures: No mitigation is required.

REFERENCES

Documents

1. California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013.

2. California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013.

3. City of Lancaster, *Lancaster Master Plan of Complete Street, Figure 8. 2035 ADT*, adopted October 10, 2017.

4. City of Lancaster, *City of Lancaster Zoning Map*, adopted July 13, 2010, revised October 26, 2022.

5. City of Lancaster, *Fox Field Industrial Corridor Specific Plan*, May 31, 1996.

6. City of Lancaster, *Lancaster General Plan 2030, General Plan Land Use Map*, adopted July 14, 2009, updated September 1, 2015.

7. Elliot H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, July 26, 2015.

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

9. Fehr & Peers, *Lancaster Fox Field Commerce Center East Project Local Traffic Analysis Scoping Assessment*, October 25, 2024.

10. Michael Baker International, *SPR 24-010 – Air Quality Assessment Memorandum*, January 21, 2025.

11. Los Angeles County Airport Land Use Commission, *General William J. Fox Airfield Land Use Compatibility Plan, Figure 2A, Compatibility Plan*, December 1, 2004.

12. U.S. Environmental Protection Agency, *Clean Air Act Title IV – Noise Pollution*, https://www.epa.gov/clean-air-act-overview/clean-air-act-title-iv-noise-pollution, accessed November 7, 2024.

13. U.S. Environmental Protection Agency, *Summary of the Noise Control Act: 42 USC Section 4901* et *seq. (1972),* https://www.epa.gov/laws-regulations/summary-noise-control-act, accessed November 7, 2024.

Websites / Programs

1. Google Earth, 2024.

2. Federal Highway Administration, *Roadway Construction Noise Model (RCNM)*, 2006.

Appendix A
Noise Data

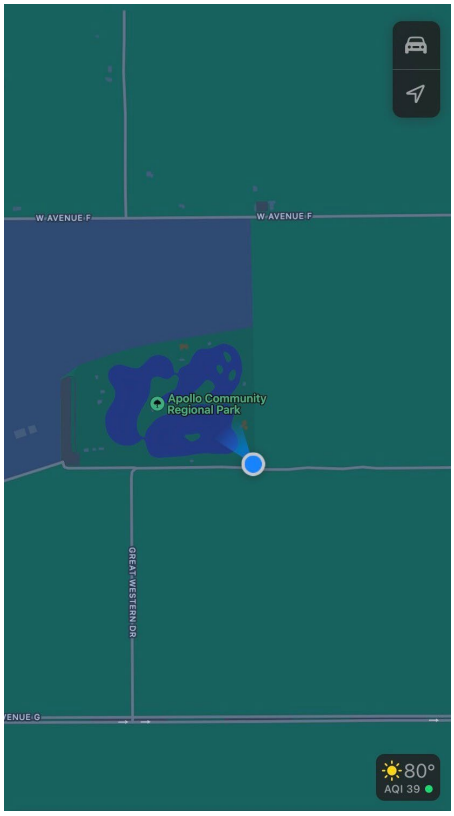
Site Number: NM-1	
Recorded By: Darshan Shivaiah, Dennis Dinh	
Job Number: 195377	
Date: 9/28/2023	
Time: 10:55 AM	
Location: Apollo Park	
Source of Ambient Noise: Overhead Plane and Wind	
Source of Peak Noise: Overhead Plane	

Noise Data		
L_{eq} (dB)	L_{max}(dB)	L_{min} (dB)
37.9	55.3	28.5

Equipment						
Category	**Type**	**Vendor**	**Model**	**Serial No.**	**Cert. Date**	**Note**
Sound	Sound Level Meter	**Brüel & Kjær**	**2250**	**3011133**	**06/04/2023**	
	Microphone	**Brüel & Kjær**	**4189**	**3086765**	**06/04/2023**	
	Preamp	**Brüel & Kjær**	**ZC 0032**	**25380**	**06/04/2023**	
	Calibrator	**Brüel & Kjær**	**4231**	**2545667**	**06/04/2023**	

Weather Data			
Est.	**Duration:** 10 minutes		**Sky:** Sunny
	Note: dBA Offset = 0.06		**Sensor Height (ft):** 5 ft
	Wind Ave Speed (mph / m/s)	**Temperature (degrees Fahrenheit)**	**Barometer Pressure (inches)**
	8 mph	79	29.81

Photo of Measurement Location



2250

Instrument:		2250
Application:		BZ7225 Version 4.7.6
Start Time:		09/28/2023 10:55:09
End Time:		09/28/2023 11:05:09
Elapsed Time:		00:10:00
Bandwidth:		1/3-octave
Max Input Level:		142.16

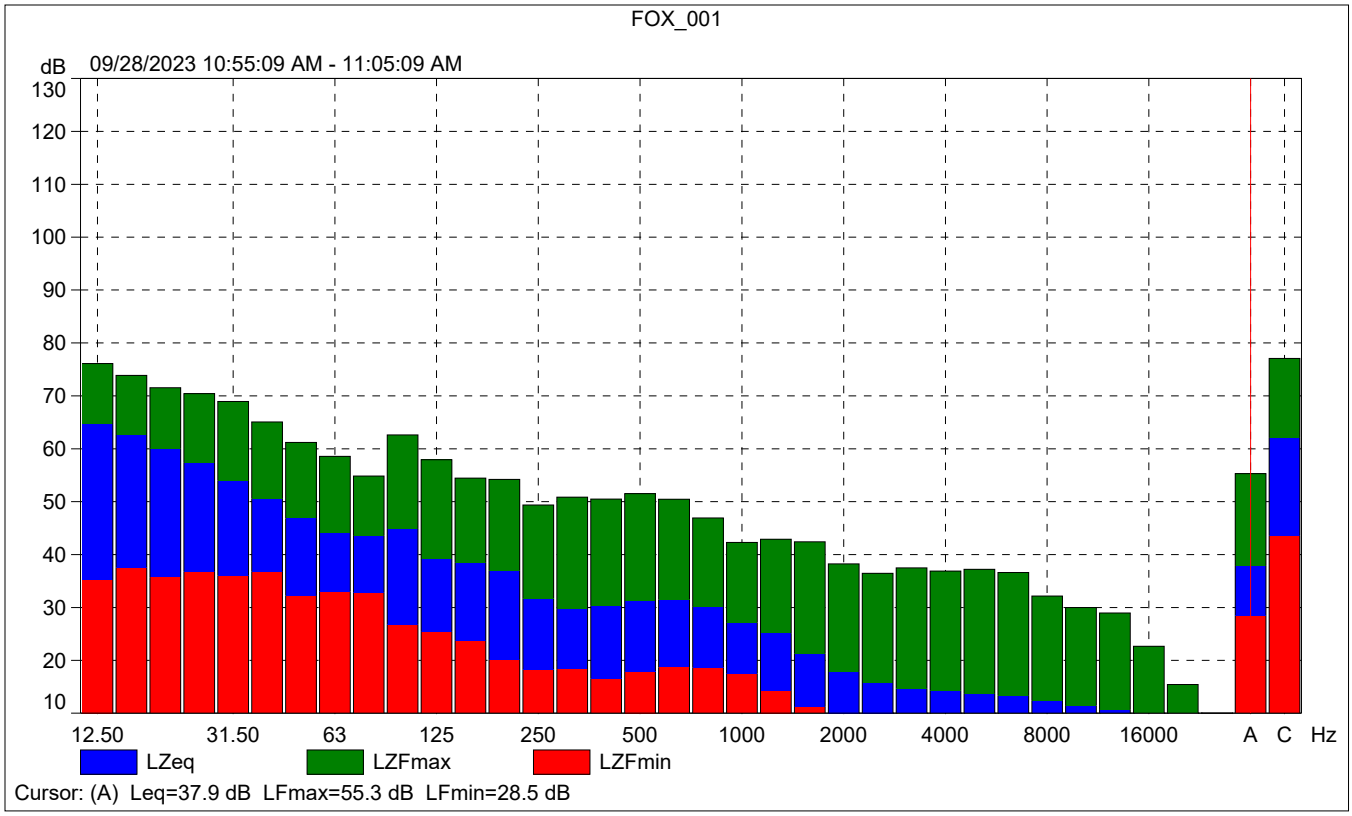
	Time	Frequency
Broadband (excl. Peak):	FSI	AC
Broadband Peak:		C
Spectrum:	FS	Z

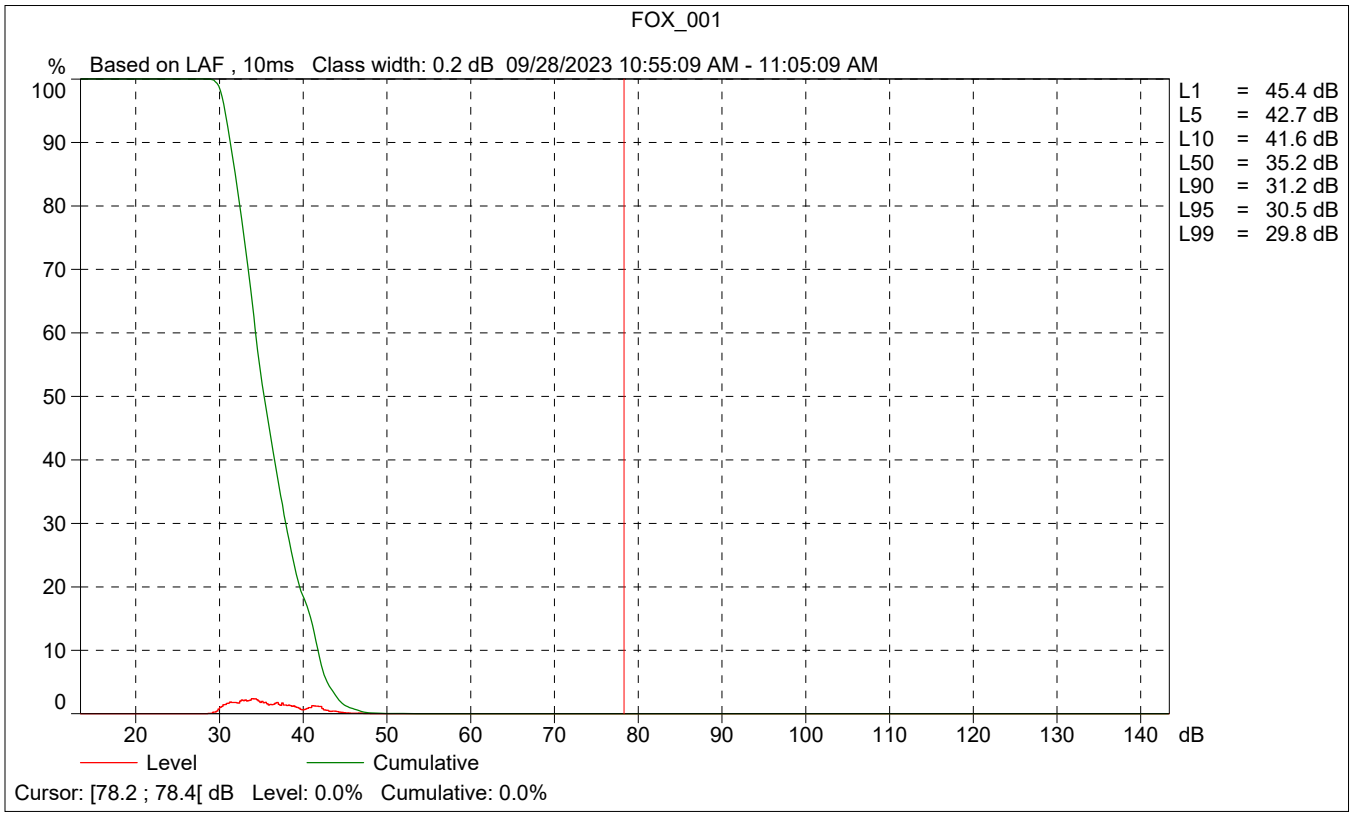
Instrument Serial Number:		3011133
Microphone Serial Number:		3086765
Input:		Top Socket
Windscreen Correction:		UA-1650
Sound Field Correction:		Free-field

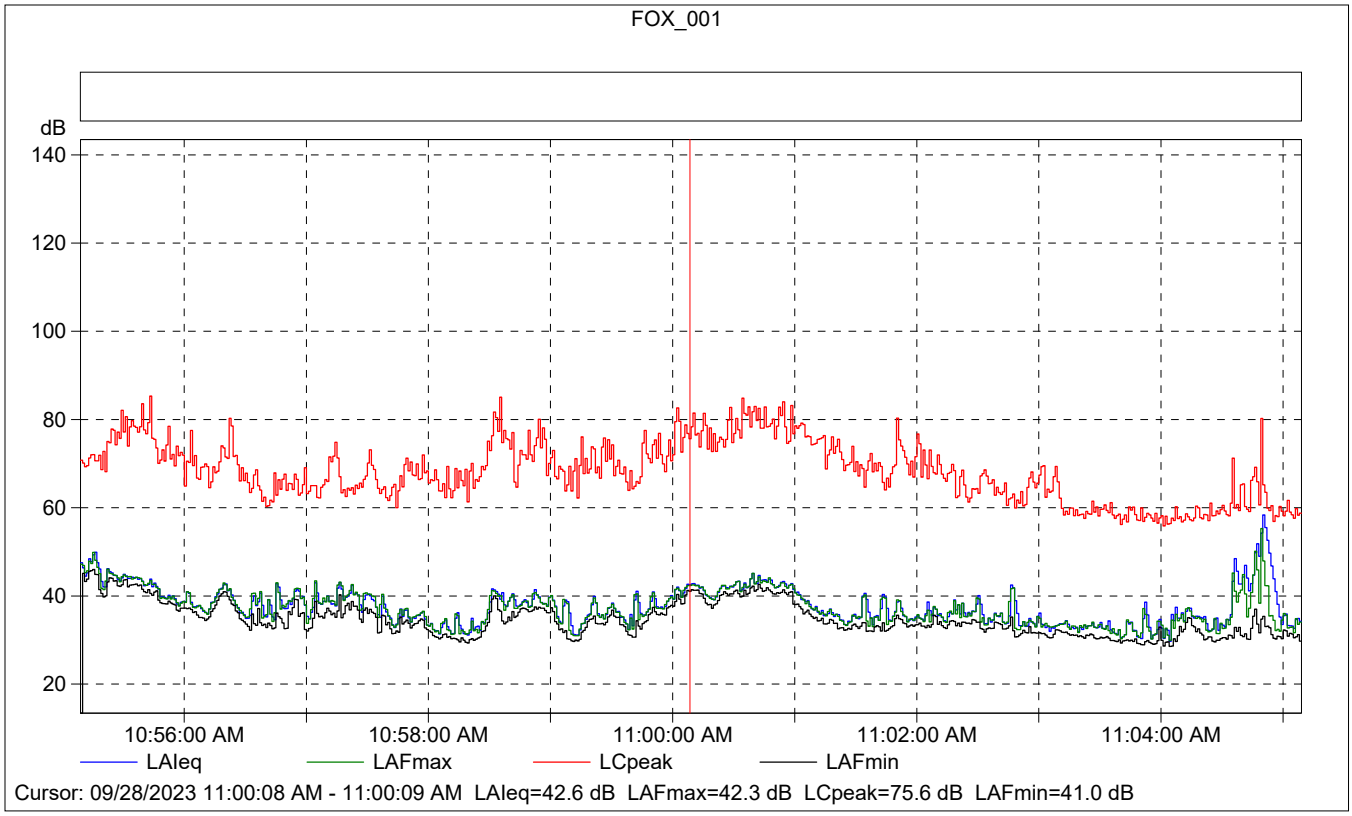
Calibration Time:		09/28/2023 10:52:20
Calibration Type:		External reference
Sensitivity:		43.4025265276432 mV/Pa

FOX_001

	Start time	End time	Elapsed time	Overload [%]	LAeq [dB]	LAFmax [dB]	LAFmin [dB]
Value				0.00	37.9	55.3	28.5
Time	10:55:09 AM	11:05:09 AM	0:10:00				
Date	09/28/2023	09/28/2023					

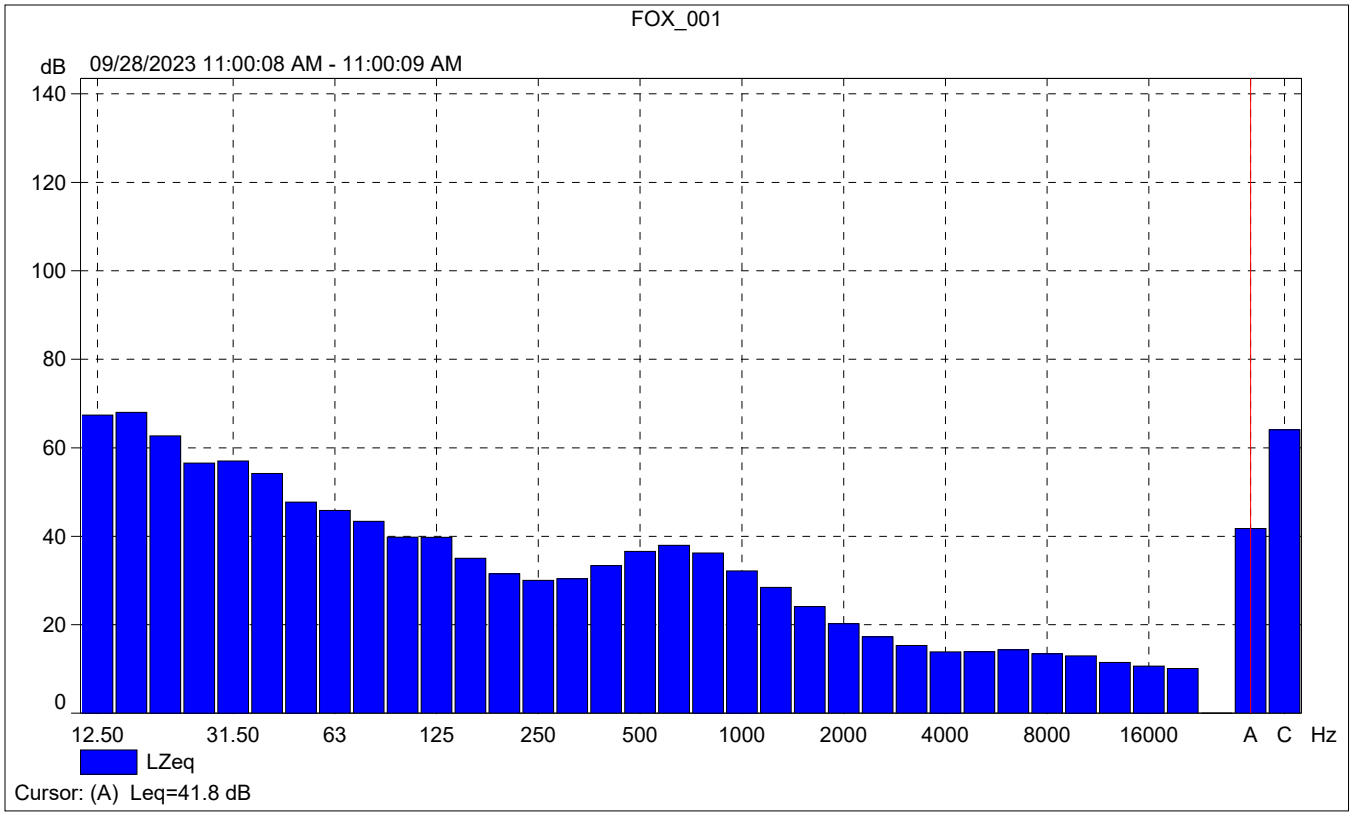

FOX_001
dB
09/28/2023 10:55:09 AM - 11:05:09 AM
130
120
110
100
90
80
70
60
50
40
30
20
10
12.50
31.50
63
125
250
500
1000
2000
4000
8000
16000
A
C
Hz
LZeq
LZFmax
LZFmin
Cursor: (A) Leq=37.9 dB LFmax=55.3 dB LFmin=28.5 dB

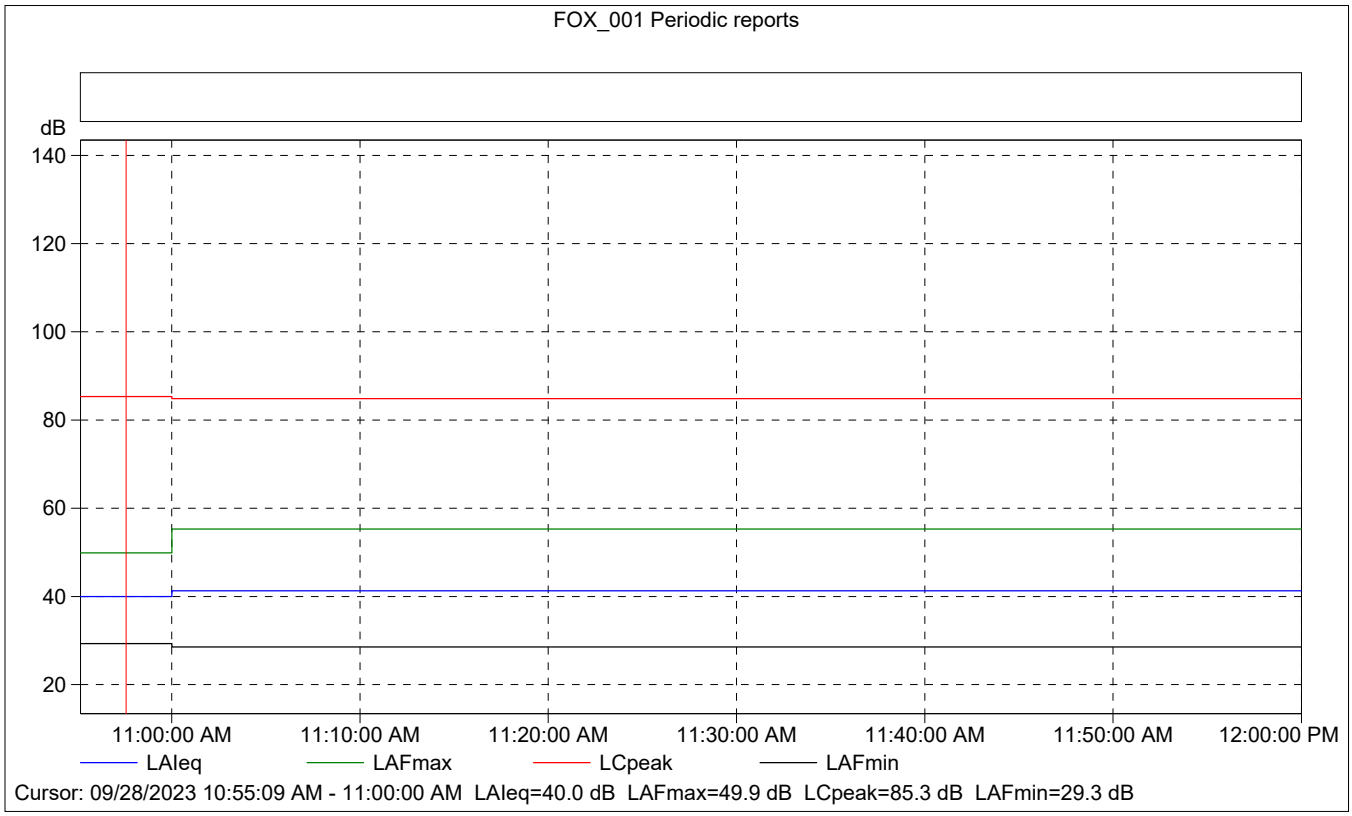

FOX_001
%
Based on LAF , 10ms Class width: 0.2 dB 09/28/2023 10:55:09 AM - 11:05:09 AM
100
90
80
70
60
50
40
30
20
10
0
20
30
40
50
60
70
80
90
100
110
120
130
140
dB
L1 = 45.4 dB
L5 = 42.7 dB
L10 = 41.6 dB
L50 = 35.2 dB
L90 = 31.2 dB
L95 = 30.5 dB
L99 = 29.8 dB
Level
Cumulative
Cursor: [78.2 ; 78.4[dB Level: 0.0% Cumulative: 0.0%



FOX_001

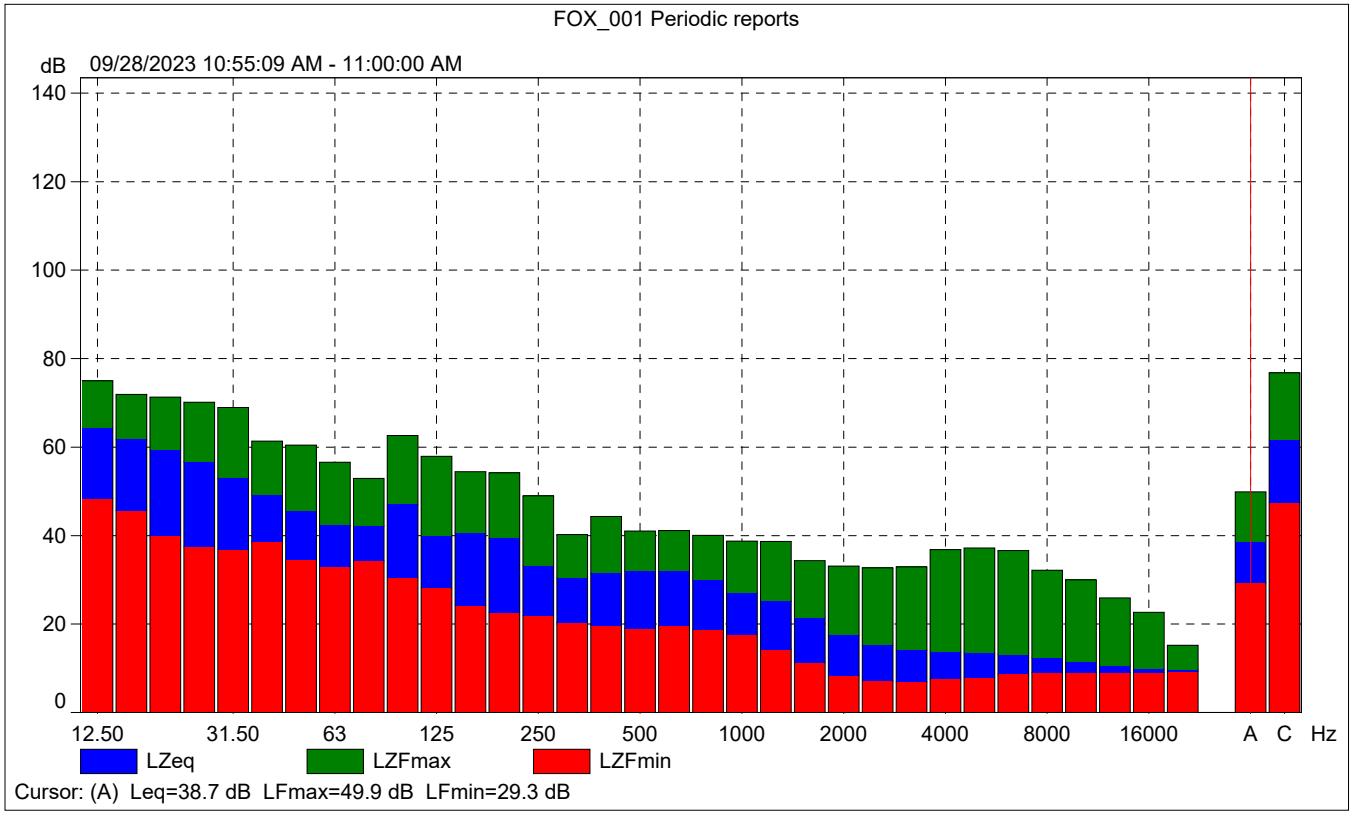
	Start time	Elapsed time	Overload [%]	LAIeq [dB]	LAFmax [dB]	LAFmin [dB]
Value			0.00	42.6	42.3	41.0
Time	11:00:08 AM	0:00:01				
Date	09/28/2023					

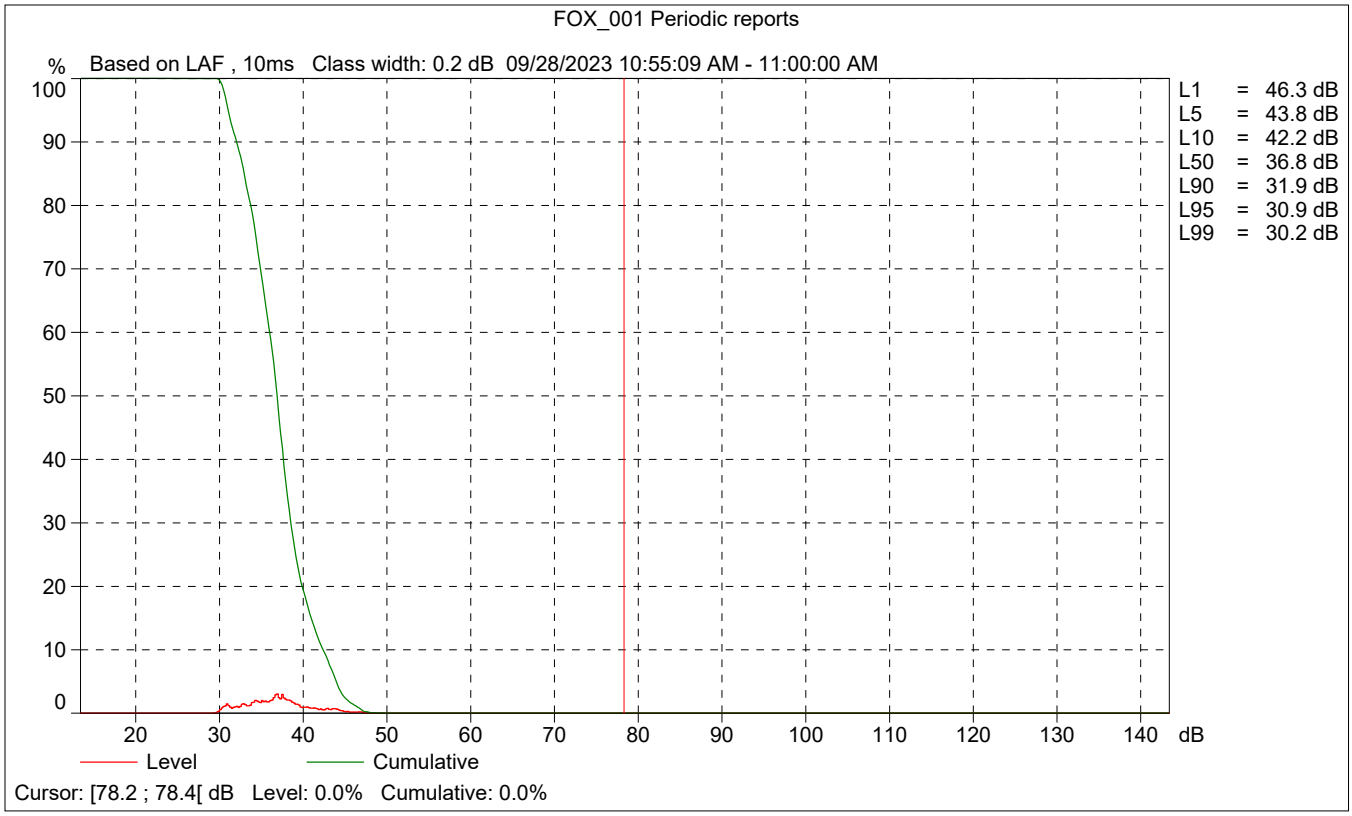

FOX_001
dB
09/28/2023 11:00:08 AM - 11:00:09 AM
140
120
100
80
60
40
20
0
12.50
31.50
63
125
250
500
1000
2000
4000
8000
16000
A
C
Hz
LZeq
Cursor: (A) Leq=41.8 dB


FOX_001 Periodic reports
dB
140
120
100
80
60
40
20
11:00:00 AM
11:10:00 AM
11:20:00 AM
11:30:00 AM
11:40:00 AM
11:50:00 AM
12:00:00 PM
LAIeq
LAFmax
LCpeak
LAFmin
Cursor: 09/28/2023 10:55:09 AM - 11:00:00 AM LAIeq=40.0 dB LAFmax=49.9 dB LCpeak=85.3 dB LAFmin=29.3 dB

FOX_001 Periodic reports

	Start time	Elapsed time	Overload [%]	LAIeq [dB]	LAFmax [dB]	LAFmin [dB]
Value			0.00	40.0	49.9	29.3
Time	10:55:09 AM	0:04:51				
Date	09/28/2023					




FOX_001 Periodic reports
% Based on LAF , 10ms Class width: 0.2 dB 09/28/2023 10:55:09 AM - 11:00:00 AM
100
90
80
70
60
50
40
30
20
10
0
20 30 40 50 60 70 80 90 100 110 120 130 140 dB
L1 = 46.3 dB
L5 = 43.8 dB
L10 = 42.2 dB
L50 = 36.8 dB
L90 = 31.9 dB
L95 = 30.9 dB
L99 = 30.2 dB
Level
Cumulative
Cursor: [78.2 ; 78.4[dB Level: 0.0% Cumulative: 0.0%

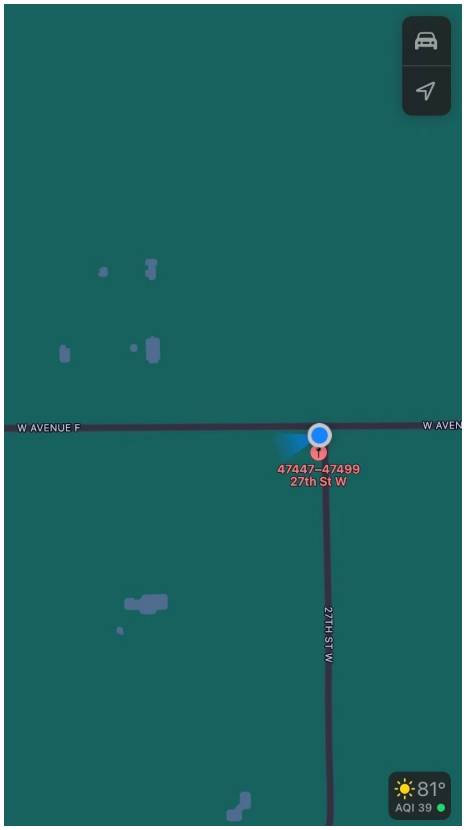
Site Number: NM-2	
Recorded By: Darshan Shivaiah, Dennis Dinh	
Job Number: 195377	
Date: 9/28/2023	
Time: 11:16 AM	
Location: Southwest Corner of 27th Street and West Avenue F	
Source of Ambient Noise: Overhead Plane and Wind	
Source of Peak Noise: Truck passing by	

Noise Data		
L_{eq} (dB)	**L_{max}(dB)**	**L_{min} (dB)**
61.9	85.5	31.7

Equipment						
Category	**Type**	**Vendor**	**Model**	**Serial No.**	**Cert. Date**	**Note**
Sound	Sound Level Meter	**Brüel & Kjær**	**2250**	**3011133**	**06/04/2023**	
	Microphone	**Brüel & Kjær**	**4189**	**3086765**	**06/04/2023**	
	Preamp	**Brüel & Kjær**	**ZC 0032**	**25380**	**06/04/2023**	
	Calibrator	**Brüel & Kjær**	**4231**	**2545667**	**06/04/2023**	

Weather Data			
Est.	**Duration:** 10 minutes		**Sky:** Sunny
	Note: dBA Offset = 0.06		**Sensor Height (ft):** 5 ft
	Wind Ave Speed (mph / m/s)	**Temperature (degrees Fahrenheit)**	**Barometer Pressure (inches)**
	8 mph	79	29.81

Photo of Measurement Location



2250

Instrument:		2250
Application:		BZ7225 Version 4.7.6
Start Time:		09/28/2023 11:16:08
End Time:		09/28/2023 11:26:08
Elapsed Time:		00:10:00
Bandwidth:		1/3-octave
Max Input Level:		142.16

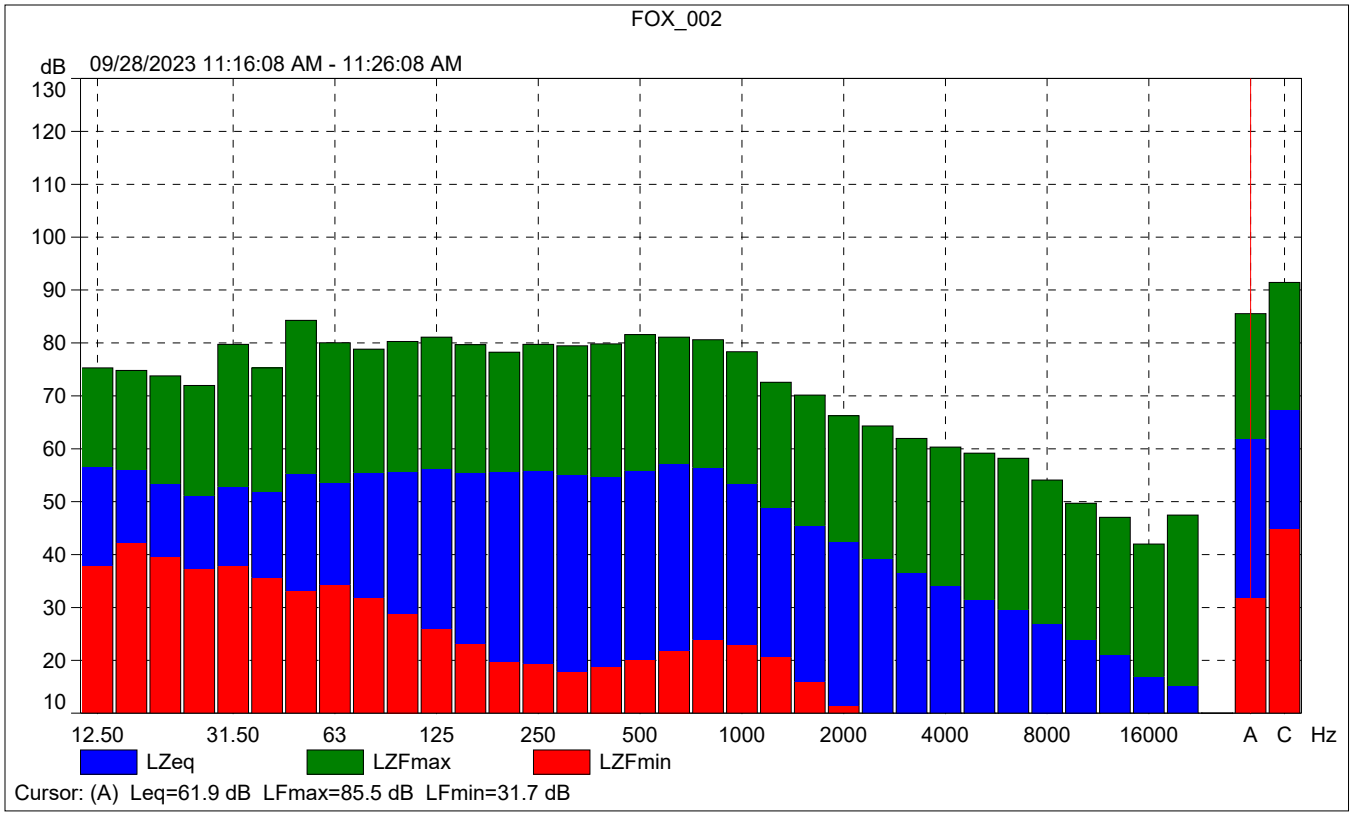
	Time	Frequency
Broadband (excl. Peak):	FSI	AC
Broadband Peak:		C
Spectrum:	FS	Z

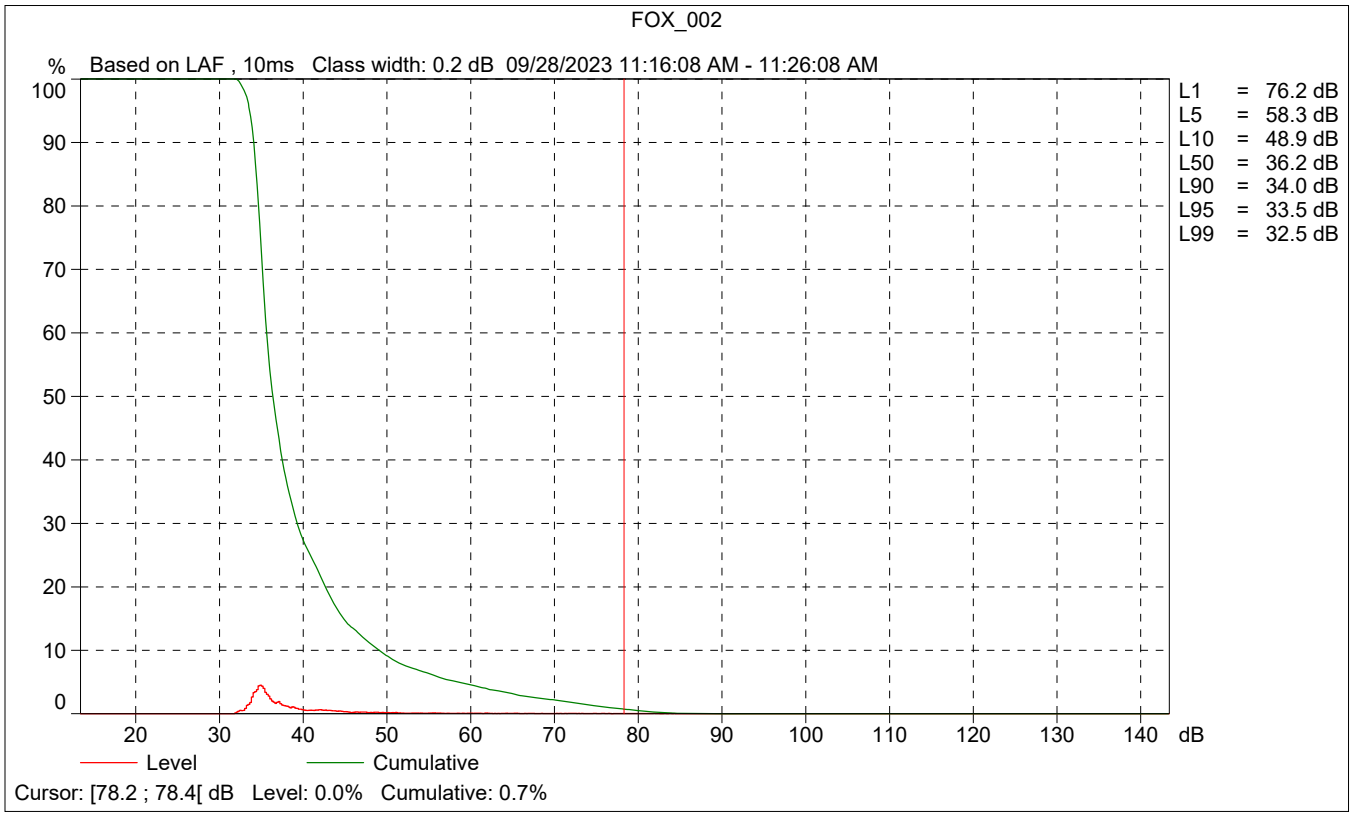
Instrument Serial Number:		3011133
Microphone Serial Number:		3086765
Input:		Top Socket
Windscreen Correction:		UA-1650
Sound Field Correction:		Free-field

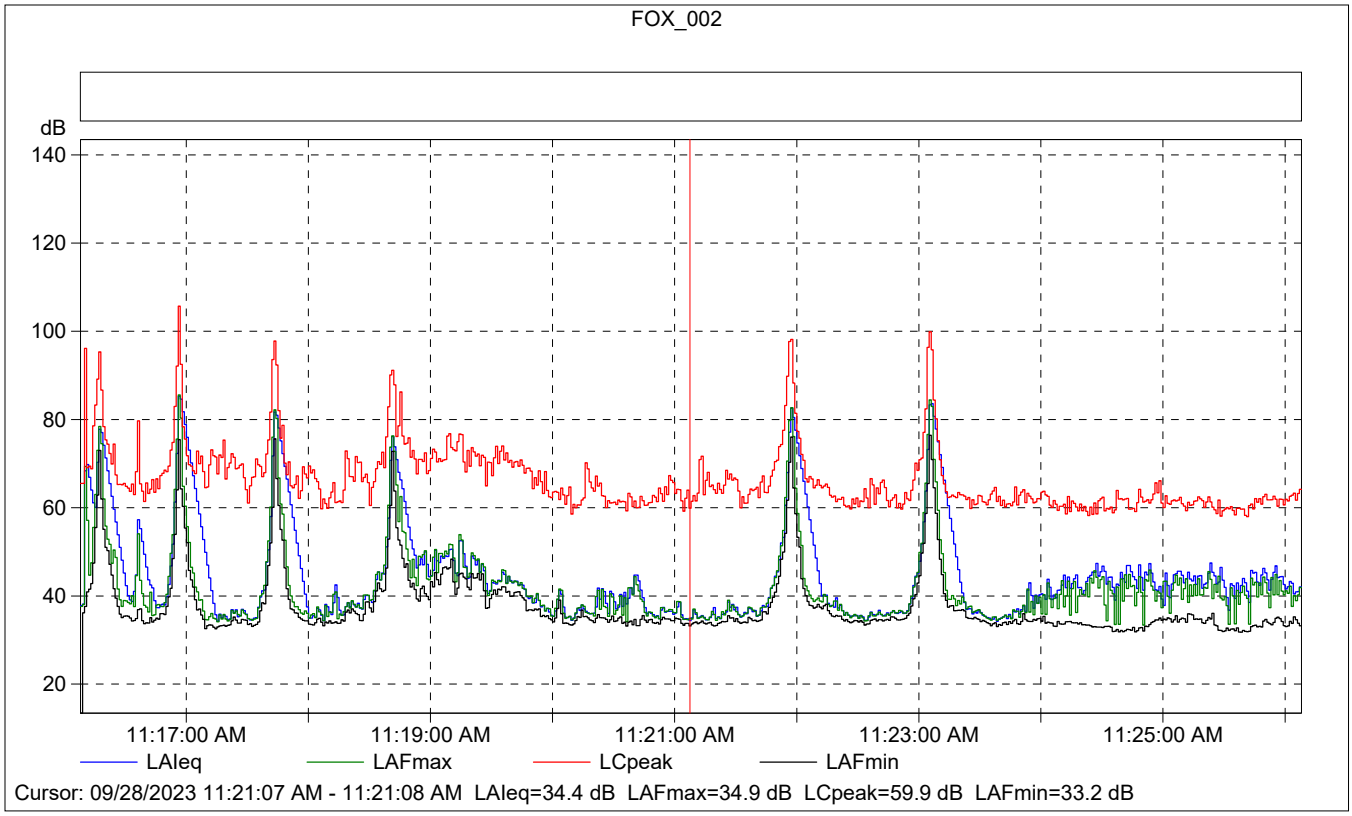
Calibration Time:		09/28/2023 10:52:20
Calibration Type:		External reference
Sensitivity:		43.4025265276432 mV/Pa

FOX_002

	Start time	End time	Elapsed time	Overload [%]	LAeq [dB]	LAFmax [dB]	LAFmin [dB]
Value				0.00	61.9	85.5	31.7
Time	11:16:08 AM	11:26:08 AM	0:10:00				
Date	09/28/2023	09/28/2023					

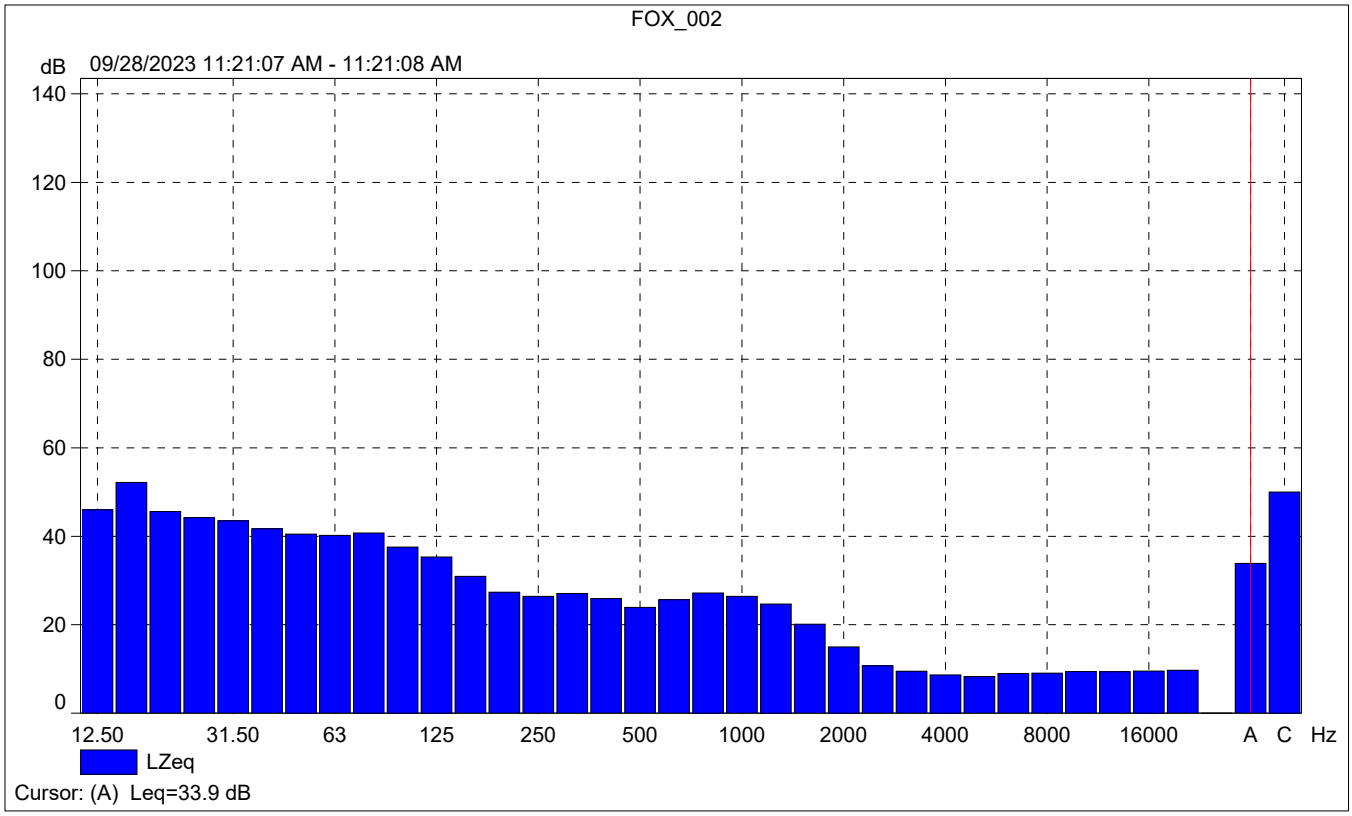

FOX_002
dB
09/28/2023 11:16:08 AM - 11:26:08 AM
130
120
110
100
90
80
70
60
50
40
30
20
10
12.50
31.50
63
125
250
500
1000
2000
4000
8000
16000
A
C
Hz
LZeq
LZFmax
LZFmin
Cursor: (A) Leq=61.9 dB LFmax=85.5 dB LFmin=31.7 dB

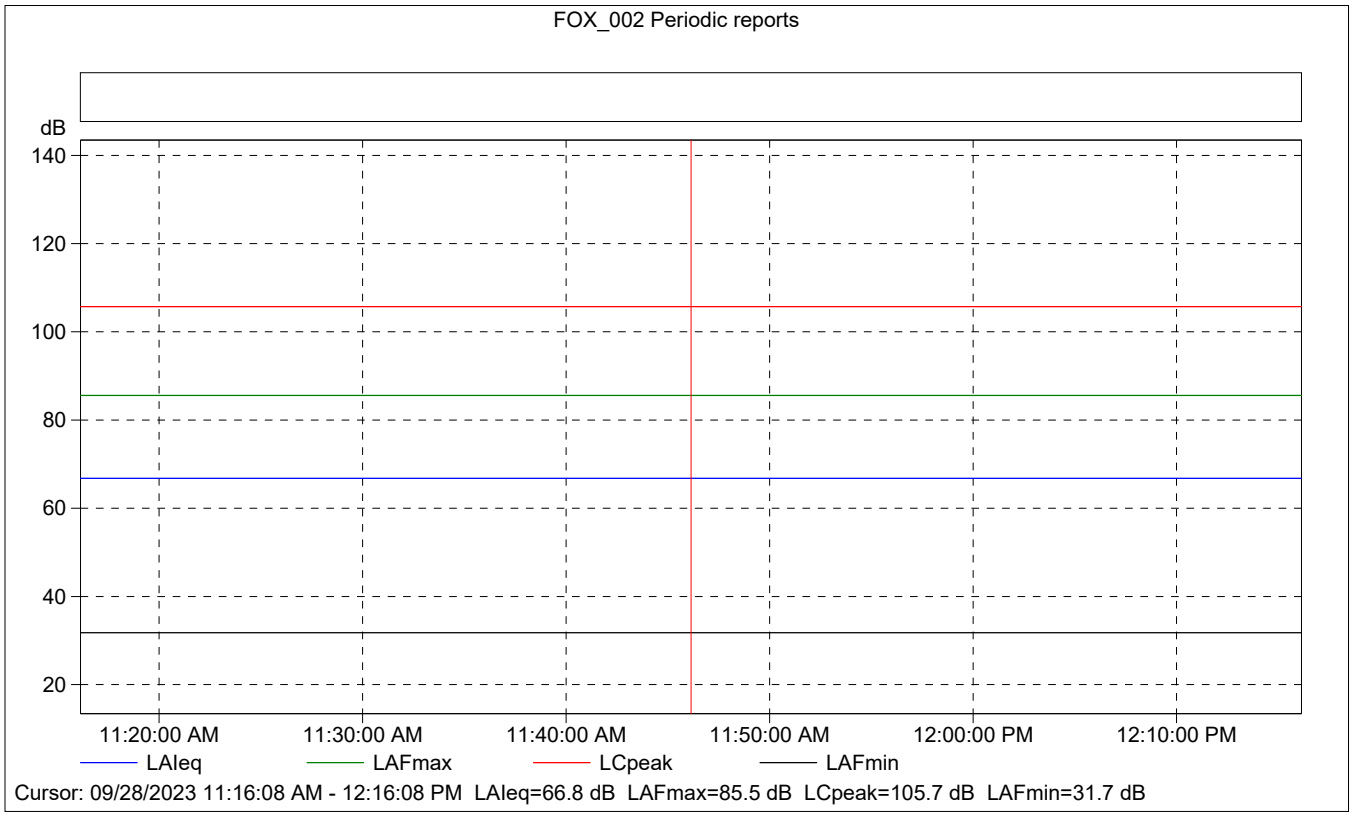

FOX_002
%
Based on LAF , 10ms Class width: 0.2 dB 09/28/2023 11:16:08 AM - 11:26:08 AM
100
90
80
70
60
50
40
30
20
10
0
20
30
40
50
60
70
80
90
100
110
120
130
140
dB
L1 = 76.2 dB
L5 = 58.3 dB
L10 = 48.9 dB
L50 = 36.2 dB
L90 = 34.0 dB
L95 = 33.5 dB
L99 = 32.5 dB
Level
Cumulative
Cursor: [78.2 ; 78.4[dB Level: 0.0% Cumulative: 0.7%



FOX_002

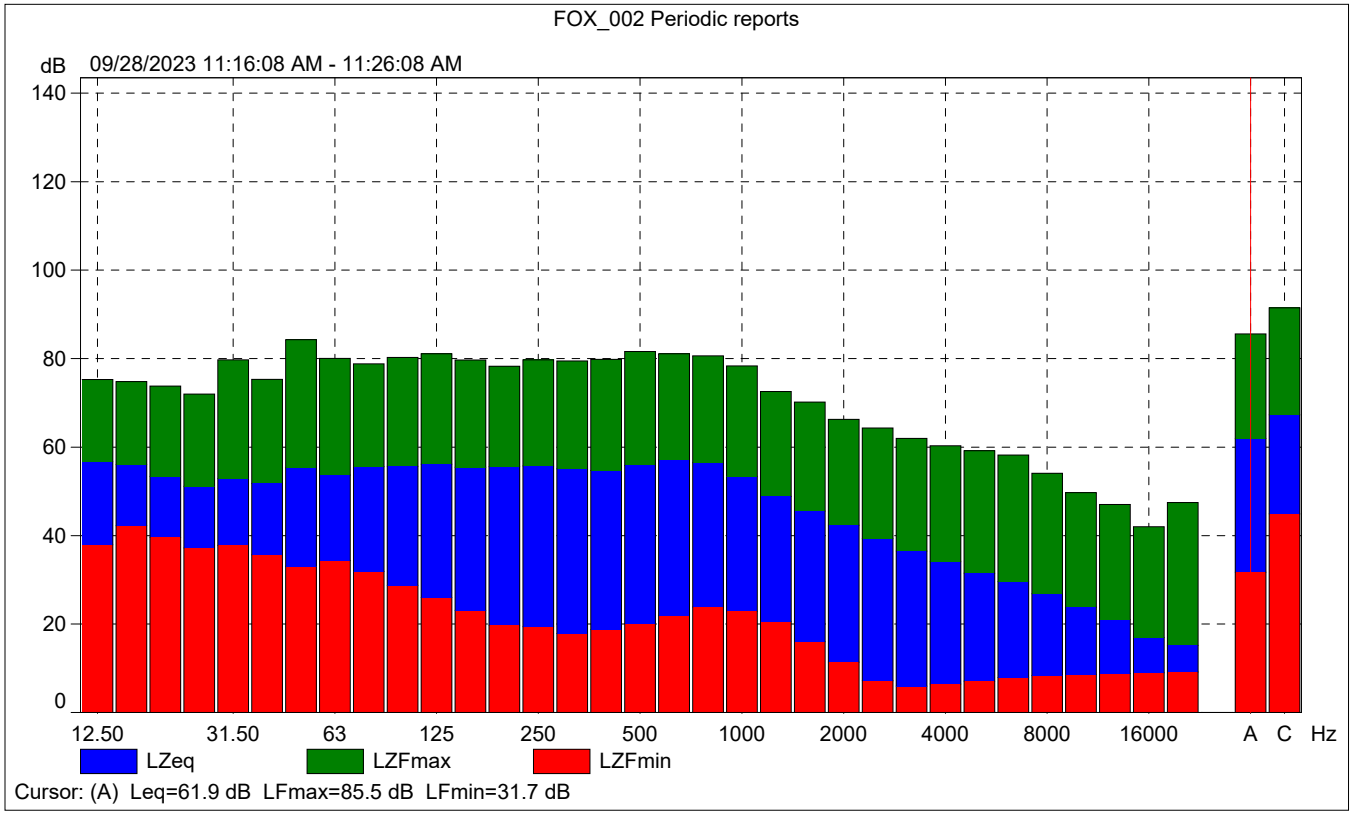
	Start time	Elapsed time	Overload [%]	LAIeq [dB]	LAFmax [dB]	LAFmin [dB]
Value			0.00	34.4	34.9	33.2
Time	11:21:07 AM	0:00:01				
Date	09/28/2023					

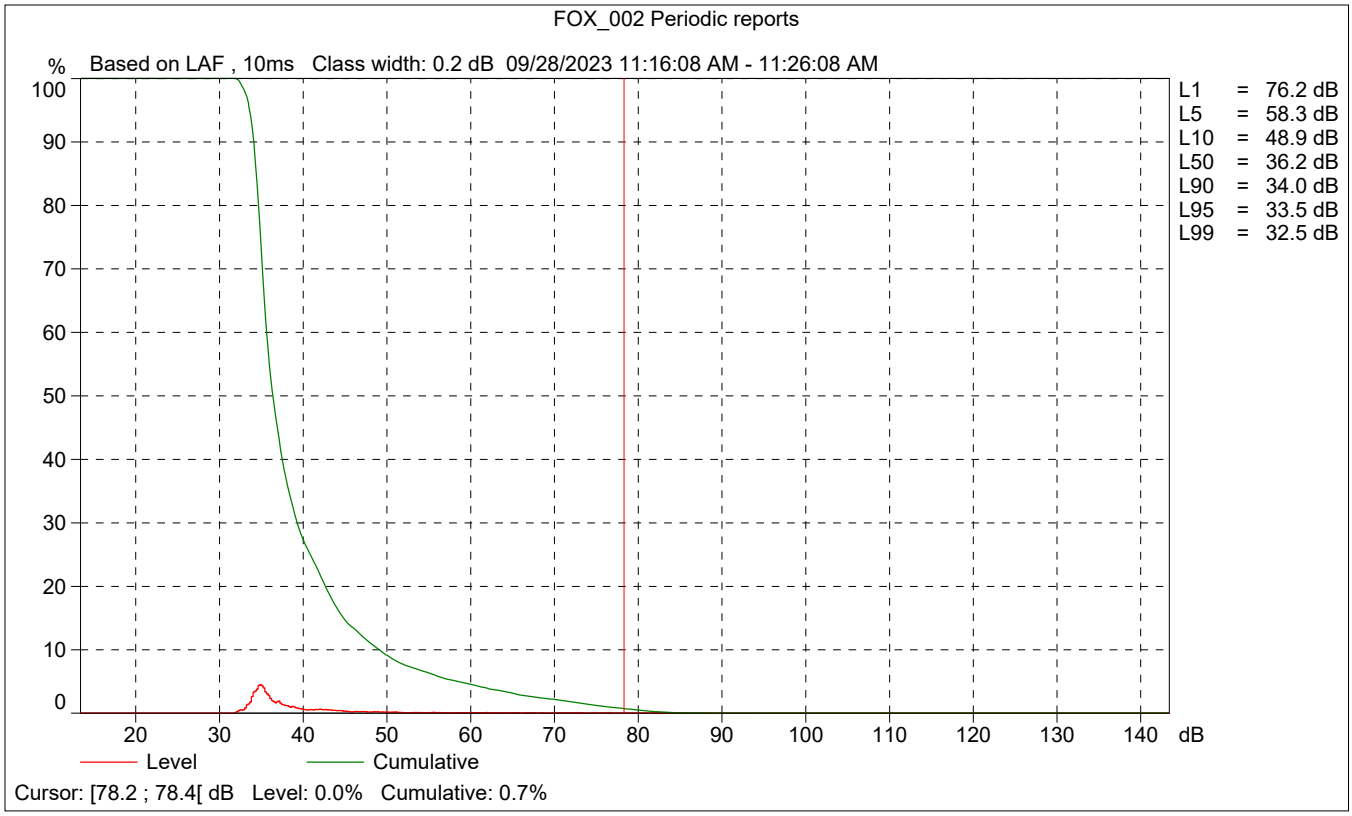

FOX_002
dB
09/28/2023 11:21:07 AM - 11:21:08 AM
140
120
100
80
60
40
20
0
12.50
31.50
63
125
250
500
1000
2000
4000
8000
16000
A
C
Hz
LZeq
Cursor: (A) Leq=33.9 dB


FOX_002 Periodic reports
dB
140
120
100
80
60
40
20
11:20:00 AM
11:30:00 AM
11:40:00 AM
11:50:00 AM
12:00:00 PM
12:10:00 PM
LAIeq
LAFmax
LCpeak
LAFmin
Cursor: 09/28/2023 11:16:08 AM - 12:16:08 PM LAIeq=66.8 dB LAFmax=85.5 dB LCpeak=105.7 dB LAFmin=31.7 dB

FOX_002 Periodic reports

	Start time	Elapsed time	Overload [%]	LAIeq [dB]	LAFmax [dB]	LAFmin [dB]
Value			0.00	66.8	85.5	31.7
Time	11:16:08 AM	0:10:00				
Date	09/28/2023					




FOX_002 Periodic reports
% Based on LAF , 10ms Class width: 0.2 dB 09/28/2023 11:16:08 AM - 11:26:08 AM
100
90
80
70
60
50
40
30
20
10
0
20 30 40 50 60 70 80 90 100 110 120 130 140 dB
L1 = 76.2 dB
L5 = 58.3 dB
L10 = 48.9 dB
L50 = 36.2 dB
L90 = 34.0 dB
L95 = 33.5 dB
L99 = 32.5 dB
Level
Cumulative
Cursor: [78.2 ; 78.4[dB Level: 0.0% Cumulative: 0.7%

Roadway Construction Noise Model (RCNM),Version 1.1

Report date 11/6/2024 Case Descri SPR 24-010_Grading

---- Receptor #1 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
Residential Residential	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	2160	0
Grader	No	40	85		2160	0
Dozer	No	40		81.7	2160	0
Scraper	No	40		83.6	2160	0
Tractor	No	40	84		2160	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	48	44	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	52.3	48.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	49	45	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	50.9	46.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	51.3	47.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	52.3	53.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date 11/6/2024 Case Descri SPR 24-010_Grading

				---- Receptor #2 ----
		Baselines (dBA)		
Descriptior	Land Use	Daytime	Evening	Night
Park	Residential	1	1	1

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Excavator	No	40		80.7	5690	0
Grader	No	40	85		5690	0
Dozer	No	40		81.7	5690	0
Scraper	No	40		83.6	5690	0
Tractor	No	40	84		5690	0

			Results											
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	39.6	35.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	43.9	39.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	40.5	36.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	42.5	38.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	42.9	38.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	43.9	45.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date 11/6/2024
Case Descri SPR 24-010_Building Construction

---- Receptor #1 ----

	Baselines (dBA)		
Descriptior Land Use	Daytime	Evening	Night
Residential Residential	1	1	1

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Crane	No	16		80.6	2160	0
Pickup Truck	No	40		75	2160	0
Generator	No	50		80.6	2160	0
Tractor	No	40	84		2160	0
Welder / Torch	No	40		74	2160	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	47.8	39.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck	42.3	38.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	47.9	44.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	51.3	47.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	41.3	37.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	51.3	50.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date 11/6/2024
Case Descri SPR 24-010_Building Construction

		---- Receptor #2 ----		
		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Park	Residential	1	1	1

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Crane	No	16		80.6	5690	0
Pickup Truck	No	40		75	5690	0
Generator	No	50		80.6	5690	0
Tractor	No	40	84		5690	0
Welder / Torch	No	40		74	5690	0

			Results											
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	39.4	31.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck	33.9	29.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	39.5	36.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	42.9	38.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	32.9	28.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	42.9	41.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date 11/6/2024
Case Descri SPR 24-010_Paving and Coating

---- Receptor #1 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Residential	Residential	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	2160	0
Pavement Scarafier	No	20		89.5	2160	0
Roller	No	20		80	2160	0
Compressor (air)	No	40		77.7	2160	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	44.5	41.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	56.8	49.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	47.3	40.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compressor (air)	45	41	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	56.8	51.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date 11/6/2024
Case Descri SPR 24-010_Paving and Coating

---- Receptor #2 ----

		Baselines (dBA)		
Descriptior	Land Use	Daytime	Evening	Night
Park	Residential	1	1	1

			Equipment			
	Impact		Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Paver	No	50		77.2	5690	0
Pavement Scarafier	No	20		89.5	5690	0
Roller	No	20		80	5690	0
Compressor (air)	No	40		77.7	5690	0

	Results													
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	36.1	33.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	48.4	41.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	38.9	31.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compressor (air)	36.5	32.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	48.4	42.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.