Technical Memorandum

To: EPC Environmental, Inc. Ernest Perea

From: Kevin P. Carr, MS., KPC EHS Consultants, LLC

Date: February 4, 2025

Re: EPC 24-01 Riverside - La Sierra & Victoria Residential Project – Noise Assessment

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1.0 Purpose

The purpose of this memorandum is to assess the environmental construction related noise impacts associated with the construction and traffic of the proposed Residential Project on approximately 10.8 acres gross acres.

2.0 Project Location & Description

2.1 Project Location:

The proposed project site is located in the City of Riverside, Riverside County, California on the southeast corner of the intersection of La Sierra Avenue and Victoria Avenue and is referred to as APN: 136-220-016.

2.2 Project Description:

The Applicant is proposing a project that includes 49 single-family residential units, 9,500 square foot water quality basin, interior roadway, driveways, utilities, and landscaping on an approximately 10.8-acre parcel.

3.0 Construction Noise Impact Assessment

3.1 Sensitive Receptors (Noise Sensitive Land Uses): Noise-sensitive land uses are locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. Sensitive receptor locations are generally identified as facilities where it is possible that an individual could remain for 24 hours. Commercial and industrial facilities are not included in the definition of sensitive receptor because employees typically are present for shorter periods of time, such as eight hours.

Residences, schools, hospitals, guest lodging, libraries, churches, nursing homes, auditoriums, concert halls, amphitheaters, playgrounds, and parks are considered noise sensitive. The nearest sensitive receptors to the Project site are residences located adjacent to the northeastern boundary of the Project site. The closest residence designated R-1 is approximately 360 feet northeast of the property center and approximately 60 feet from the northeastern boundary. The next closest residence designated R-2 is approximately 460 feet northeast of the property center and approximately 74 feet from the northeastern boundary.

Table 3-1 Sensitive Receptors Locations

Receptor	Distance from Project Site Boundary (feet)	Distance from Project Construction Center (feet)
Residencial Receptor R-1	67	360
Residencial Receptor R-2	74	460

Source: Earth Pro, February 4,2025

3.2 Construction Noise:

Construction activities that would create noise include: site preparation, grading, building construction, paving, and architectural coating. Noise levels associated with the construction will vary with the different types of construction equipment, the duration of the activity, and distance from the source. Construction noise will have a temporary or periodic increase in the ambient noise level above the existing levels within the Project vicinity. The nearest sensitive receptors to the Project site are residences located adjacent to the northeastern boundary of the Project site. To estimate the potential impact of construction noise at the nearest sensitive receptors, equipment that is expected to be used during construction was input into the Federal Highway Administration Roadway Construction Noise Model (RCNM) version 1.1 to generate anticipated noise levels. The RCNM generates the maximum noise levels (Lmax) and the equivalent continuous sound level (Leq). The Leq is a calculation of the anticipated steady sound pressure level which, over a given time period (day, evening, night) has the same total energy as the actual fluctuating noise. The RCNM also uses an acoustical use factor in the noise calculations. The acoustical use factor is the percentage of time each piece of construction equipment is assumed to be operating at the full power level and is used to estimate the Leq values from the Lmax values. For example, typical operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four minutes at lower power settings. Noise levels will be loudest during the site preparation and grading phases. Table 3-3, Worst-Case Construction Noise Levels R-1 @ Property Boundary (Site Preparation & Grading), Table 3-4, Worst-Case Construction Noise Levels R-1 @ Center of Site (Site Preparation & Grading). Table 3-5, Worst-Case Construction Noise Levels R-2 @ Property Boundary (Site Preparation & Grading), and Table 3-6, Worst-Case Construction Noise Levels R-2 @ Center of Site (Site Preparation & Grading), identifies the level of noise generated by construction equipment typically associated with the site preparation and grading phases.

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The City of Riverside has set restrictions to control noise impacts from construction activities. The Municipal Code Title 7 – Noise Control Section 7.35.020 Exemptions (G) Construction states: *Noise sources associated with construction, repair, remodeling, or grading of any real property; provided a permit has been obtained from the City as required; and provided said activities do not take place between the hours of 7:00 p.m. and 7:00 a.m. on weekdays, between the hours of 5:00 p.m. and 8:00 a.m. on Saturdays, or at any time on Sunday or a federal holiday.*

With implementation of the above standard conditions of approval, construction noise impacts would be less than significant.

While the City establishes limits to the hours during which construction activity may take place, it does not identify specific noise level limits for construction noise levels. Therefore, to evaluate whether the Project will generate a substantial increase in the short-term noise levels at the offsite sensitive receptors (residences), the construction-related noise level threshold used in this assessment is based on the Federal Transit Administration (FTA) criteria 80 dBA Leq construction noise criterion at noise sensitive receptor property line.

The Worst-Case scenario places each piece of equipment operating at the same time in the same location for a full 8-hour period was calculated with results provided in Table 3-3, Worst-Case Construction Noise Levels R-1 @ Property Boundary (Site Preparation & Grading), Table 3-4, Worst-Case Construction Noise Levels R-1 @ Center of Site (Site Preparation & Grading). Table 3-5, Worst-Case Construction Noise Levels R-2 @ Property Boundary (Site Preparation & Grading), and Table 3-6, Worst-Case Construction Noise Levels R-2 @ Center of Site (Site Preparation & Grading). The Center of the site was chosen for analysis in this assessment as it provides an assessment of heavy construction equipment noise as it moves across the site during site preparation and grading phases. The Center of Site analysis provides the most accurate assessment as equipment during an 8-hour period will be continually moving closer and further away from any receptors.

Table 3-3 Worst-Case Construction Noise Levels R-1 @ Property Boundary (Site Preparation & Grading)

Phase	Equipment Type	Leq dBA Total
Site Preparation	Tractor/Loader/Backhoe	71.0
Site Preparation	Excavator	74.5
Site Preparation	**Total Noise Level**	**76.1**
Grading	Grader	78.5
Grading	Tractor/Loader/Backhoe	71.0
Grading	**Total Noise Level**	**79.2**

Table 3-4 Worst-Case Construction Noise Levels R-1 @ Center of Site (Site Preparation & Grading)

Phase	Equipment Type	Leq dBA/Total
Site Preparation	Tractor/Loader/Backhoe	56.4
Site Preparation	Excavator	59.6
Site Preparation	**Total Noise Level**	**61.3**
Grading	Grader	63.9
Grading	Tractor/Loader/Backhoe	56.4
Grading	**Total Noise Level**	**64.6**

Table 3-5Worst-Case Construction Noise Levels R-2 @ Property Boundary (Site Preparation & Grading)

Phase	Equipment Type	Leq dBA Total
Site Preparation	Tractor/Loader/Backhoe	70.2
Site Preparation	Excavator	73.3
Site Preparation	**Total Noise Level**	**75.0**
Grading	Grader	77.6
Grading	Tractor/Loader/Backhoe	70.2
Grading	**Total Noise Level**	**78.3**

Table 3-6 Worst-Case Construction Noise Levels R-2 @ Center of Site (Site Preparation & Grading)

Phase	Equipment Type	Leq dBA/Total
Site Preparation	Tractor/Loader/Backhoe	54.3
Site Preparation	Excavator	57.5
Site Preparation	**Total Noise Level**	**59.2**
Grading	Grader	61.7
Grading	Rubber Tired Dozer	54.3
Grading	**Total Noise Level**	**62.4**

During the construction phase the noise levels will be the highest during site preparation and grading as heavy equipment pass along the Project site boundaries. During the site preparation and grading phases, which produce the highest noise levels, equipment will not be stationary, rather equipment will be moving throughout the site at varying speeds and power levels and as a result not operating at the maximum noise level for the entire workday. If multiple pieces of construction equipment were to operate simultaneously and next to each other on the property closest to the residential uses the construction noise impacts would be 76.1 Leq dBA during site preparation and 79.2 Leq dBA during grading operations. The same equipment operating from the center of the site to the nearest residential uses construction noise impacts would be 61.3 Leq dBA during site preparation and 64.6 Leq dBA during grading operations.

The levels of noise from multiple pieces of heavy equipment operating simultaneously 67-feet from the closest receptor (R-1) as indicated in Table 3-3 and 3-4 are all below the FTA of 80 dBA Leq and would be less than significant. Construction noise is of short-term duration and will not present any long-term impacts on the project site or the surrounding area.

The Project's construction noise impacts are considered less than significant, and no mitigation is required.

3.3 Operational Noise:

3.3.1 Offsite Traffic Noise Impacts.

Vehicle noise is a combination of the noises produced by the engine, exhaust, and tires. The primary source of noise generated by the Project will be from the vehicle traffic generated by the vehicle ingress and egress to the Project site. Under existing conditions, the site does not generate any traffic noise that impacts the surrounding area.

According to the Federal Highway Administration*, Highway Traffic Noise Analysis and Abatement Policy and Guidance,* the level of roadway traffic noise depends on three things: (1) the volume of the traffic, (2) the speed of the traffic, and (3) the number of trucks in the flow of the traffic. Generally, the loudness of traffic noise is increased by heavier traffic volumes, higher speeds, and greater numbers of trucks. These factors are discussed below.

- *The Volume of the Traffic*

  Upon buildout, the proposed Project is expected to generate approximately 462 average daily vehicle trips (ADT) during the weekdays. [1]

  The current average daily vehicle trips in the Project area are approximately 25,457 ADT on La Sierra Avenue and 5,857 ADT on Victoria Avenue. [2]

  According to Caltrans, the human ear can begin to detect sound level increases of 3 decibels (dB) in typical noisy environments.[3] A doubling of sound energy (e.g., doubling the volume of traffic on a highway) that would result in a 3-dBA increase in sound, would generally be barely detectable. Implementation of the Project will increase traffic volumes in the area occurring along La Sierra and Victoria Avenues but not to the extent that traffic volumes will be doubled creating a +3dBA noise increase or result in a perceivable noise increase. Therefore, operational noise impacts would be less than significant.

- *The Speed of Traffic*

  La Sierra Avenue is a 4-lane divided road and has a posted speed limit of 45-mph. Victoria Avenue is a 2-lane divided road and has a posted speed limit of 45-mph. According to the Center for Environmental Excellence by the American Association of State Highway and Transportation Officials (AASHTO) traffic moving at a speed of 60 mph will sound twice as loud as traffic at 30 mph. Lower speed limits such as the 45-mph speed limit on La Sierra and Victoria Avenues produce a lower noise level due to decreases in engine and tire generated noise.[4]

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[1] City of Riverside Traffic Analysis Scoping Form, dated March 13, 2024
[2] City of Riverside Traffic Volume Counts Sept 2003 – March 2027.
[3] Caltrans, Traffic Noise Analysis Protocol, April 2020, p.7-1.
[4] AASHTO https://environment.transportation.org/education/environmental-topics/traffic-noise/traffic-noise-overview/ accessed February 2025.

- *The Number of Trucks in the Flow of the Traffic*

  The Project is a residential development in a residential area. The residential land use will not routinely generate noise from large trucks.

Based on the preceding analysis the traffic impacts associated with the Project are less than significant.

3.3.2 Operations (Residential Activity).

Typical operational sound levels generated by single-family residential activities include normal outdoor conversations, air conditioner units, and lawn care equipment with levels as indicated below:

- Normal conversation, air conditioner - 60 dBA
- Gas-powered lawnmowers and leaf blowers – 80 to 85 dBA.[5]

Noise generated from air conditioners and lawn care equipment are not at constant and consistent levels throughout the day. Lawn care is performed during daylight hours for short durations and although air conditioners are operating both day and night they are cycling on/off with windows closed conditions. Stationary noise levels would be attenuated as with mobile noise sources with standard building construction and windows closed by approximately 25 dBA.

The USEPA identifies noise levels affecting health and welfare as exposure levels over 70 dBA over a 24-hour period. Noise levels for various levels are identified according to the use of the area. Levels of 45 dbA are associated with indoor residential areas, hospitals, and schools, whereas 55 dBA is identified for outdoor areas where typical residential human activity takes place. According to the USEPA levels of 55 dbA outdoors and 45 dbA indoors are identified as levels of noise considered to permit spoken conversation and other activities such as sleeping, working, and recreation, which are part of the daily human condition.[6] Levels exceeding 55 dbA in a residential setting are normally short in duration and not significant in affecting health and welfare of residents.

3.4 Vibration

During construction the operation and movement of heavy equipment create seismic waves that radiate along the ground-surface in all directions. These waves are felt as ground vibrations. Vibrations from construction can result in effects ranging from annoyance to people to structure damage. Vibration levels are impacted by geology, distance, and frequencies. According to the Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*,

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[5] Center for Disease Control, "*Loud Noised Can Cause Hearing Loss*". , https://www.cdc.gov/hearing-loss/about/?CDC_AAref_Val=https://www.cdc.gov/nceh/hearing_loss/default.html, accessed on February 4, 2025.

[6] USEPA "EPA Identifies Noise Levels Affecting Health and Welfare" https://archive.epa.gov/epa/aboutepa/epa-identifies-noise-levels-affecting-health-and-welfare.html accessed February 4, 2025.

September 2018[7], while ground vibrations from construction activities do not often reach the levels that can damage structures, construction vibration may result in building damage or prolonged annoyance from activities such as blasting, piledriving, vibratory compaction, demolition, and drilling or excavation near sensitive structures. The Project does not require these types of construction activities.

Vibration amplitude and impact decreases with distance and perceptible ground-borne vibration is generally limited to areas within one to two hundred feet of the construction activity.

The vibration standard used for to evaluate the Project's vibration impacts is taken from the Caltrans *Transportation and Construction Vibration Guidance Manual* (2020). Based on the Caltrans guidance construction vibration impacts would be considered significant if vibration levels exceed 0.2 in/sec. PPV, which is the limit at which vibration becomes distinctly perceptible.

Table 3-8 Vibration Source Levels for Construction Equipment at 25 feet

Equipment	PPV (in/sec) at 25 feet	RMS (in/sec) at 25 feet
Small bulldozer	0.003	0.002
Jackhammer	0.035	0.025
Loaded Trucks	0.076	0.054
Large bulldozer	0.089	0.063

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

The closest sensitive receptor to the Project property line is minimally 67 feet from the property line. The estimated construction vibration level from a large bulldozer (worst case scenario) measured at 25-feet would create a vibration level of 0.089 in/sec PPV which does not exceed the 0.2 in/sec threshold and is below the Caltrans Guideline Vibration Annoyance Potential Criteria Strongly perceptible human response of 0.10 PPV in/sec continuous/frequent intermittent sources.[8] Therefore, the vibrations at the nearest sensitive receptor will remain well below the strongly perceptible annoyance criteria and potential residential vibration damage criteria thresholds listed in the Caltrans Transportation and Construction Induced Vibration Guidance Manual at or beyond the lot line.

During operations of the Project following construction the primary source of vibration would be from vehicle traffic. Traffic vibration levels are dependent on vehicle characteristics, load, speed, and pavement conditions. Typical vibration levels from heavy truck activity at normal traffic speeds are in the order of 0.004 in/sec PPV at 25 feet based on the FTA's Transit Noise Impact and Vibration Assessment (2018). As the proposed Project is a Worship Center truck traffic which would create the largest vibration impact will be limited. Traffic once on site will be travelling at very low speeds and it is expected that traffic and any truck vibration impacts off site would not exceed the 0.2 in/sec PPV threshold.

[7] https://www.transit.dot.gov/research-innovation/transit-noise-and-vibration-impact-assessment-manual-report-0123
[8] CalTrans Transportation and Construction Vibration Guidance Manual, April 2020.

Ground-borne vibration levels from automobile traffic are generally overshadowed by vibration generated by heavy trucks that roll over the same uneven roadway surfaces. However, due to the rapid drop-off rate of ground-borne vibration and the short duration of the associated events, vehicular traffic-induced ground-borne vibration is rarely perceptible beyond the roadway right-of-way and rarely results in vibration levels that would cause annoyance to people or damage to buildings in the vicinity.

4.0 Conclusion

Based on the assessment in Section 3.0 through compliance with mandatory City requirements and ordinances, the Project's construction noise impacts will not result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project. In addition, the Project's construction and operations vibration impacts as well as operational noise for mobile and operational noise impacts to the environment are less than significant.

Appendix A. Noise Measurement Data

Veneklasen Associates
Consultants in Acoustics | Noise | Vibration | AV | IT
Veneklasen Associates, Inc.
1711 16th Street
Santa Monica, CA 90404

Noise measurements were calculated using the Federal Highway Administration Highway Noise Prediction Model (TNM Version 2.5) within SoftNoise Predictor V2023 modeling program. TNM Version 2.5 is required to be used on all Federal-aid highway projects. The California Department of Transportation (Caltrans) published the "Technical Noise Supplement (TeNS)" in October of 1998 which defines how to predict traffic noise for projects in California. The TeNS, Section N-5520 requires that any traffic noise study conducted after March 30, 2000 utilize the calculation methods used by Federal Highway Administration (FHWA) TNM. This model calculates the average noise level at specific locations based on traffic volumes, average speeds, roadway geometry, and site conditions. The off-site traffic noise is analyzed on an increase in CNEL basis to determine the project's impact.

Existing Ambient Monitored Noise Levels

Traffic on La Sierra Avenue and Victoria Avenue was the primary source of noise affecting the site. Veneklasen visited the site on Friday, February 16, 2024 and placed sound level meters at locations shown in Figure 1 to capture the hourly sound levels on the site. During the measurement, Veneklasen observed frequent propeller planes, helicopters, and commercial planes flying over the project site. Figure 1 and Table 1 show the location and summary of the noise measurements. Noise readings were measured over 1-second intervals with "A" frequency fast time weighting. The weather conditions were normal, and no anomalies were present during the survey periods.

Table 1, Existing Ambient Monitored Noise Levels, provides the noise level data associated with each monitoring period for each location. As shown, noise levels range from 54 dBA to 68 dBA, dependent on the road traffic activity and the relative distance between the noise source and the measurement positions. Figures 2 through 5 show the collected data from the noise monitoring equipment at each location.

Figure 1 – La Sierra and Victoria Site and Noise Monitoring Locations

Table 1 – Existing Ambient Monitored Noise Levels

Position	Measurement Time Length	Average Sound Level, Leq dBA	Predicted CNEL
Pos S1	4 hours	67	69
Pos S2	4 hours	68	70
Pos S3	4 hours	66	67
Pos S4	4 hours	54	54
	Notes: Noise measurements taken on February 16, 2024. Source: Veneklasen Associates, 2024.		

As mentioned before Veneklasen also utilized the 2023 version of the SoftNoise Predictor TNM 2.5 modeling software to verify and predict vehicular noise levels at locations shown Figure in 1 due to traffic conditions. The primary purpose of the computer model was to determine how the noise environment will change due to traffic and site changes. Traffic counts were obtained by the Riverside Transportation Department. The roadway parameters for the calculations are presented in Table 2 below.

Table 2 – Roadway Parameters

Rodway Segment	ADT Volume	Speed (mph)
La Sierra Avenue	25,457	45
Victoria Avenue	5,857	45

The analysis assumes that medium trucks represent two percent of the total vehicle distribution, heavy trucks represent one percent of the total vehicle distribution, and the remaining ninety-seven percent was assumed to be standard automobiles.

Figure 2- Measurement Data from Noise Monitoring Equipment (Position S1)

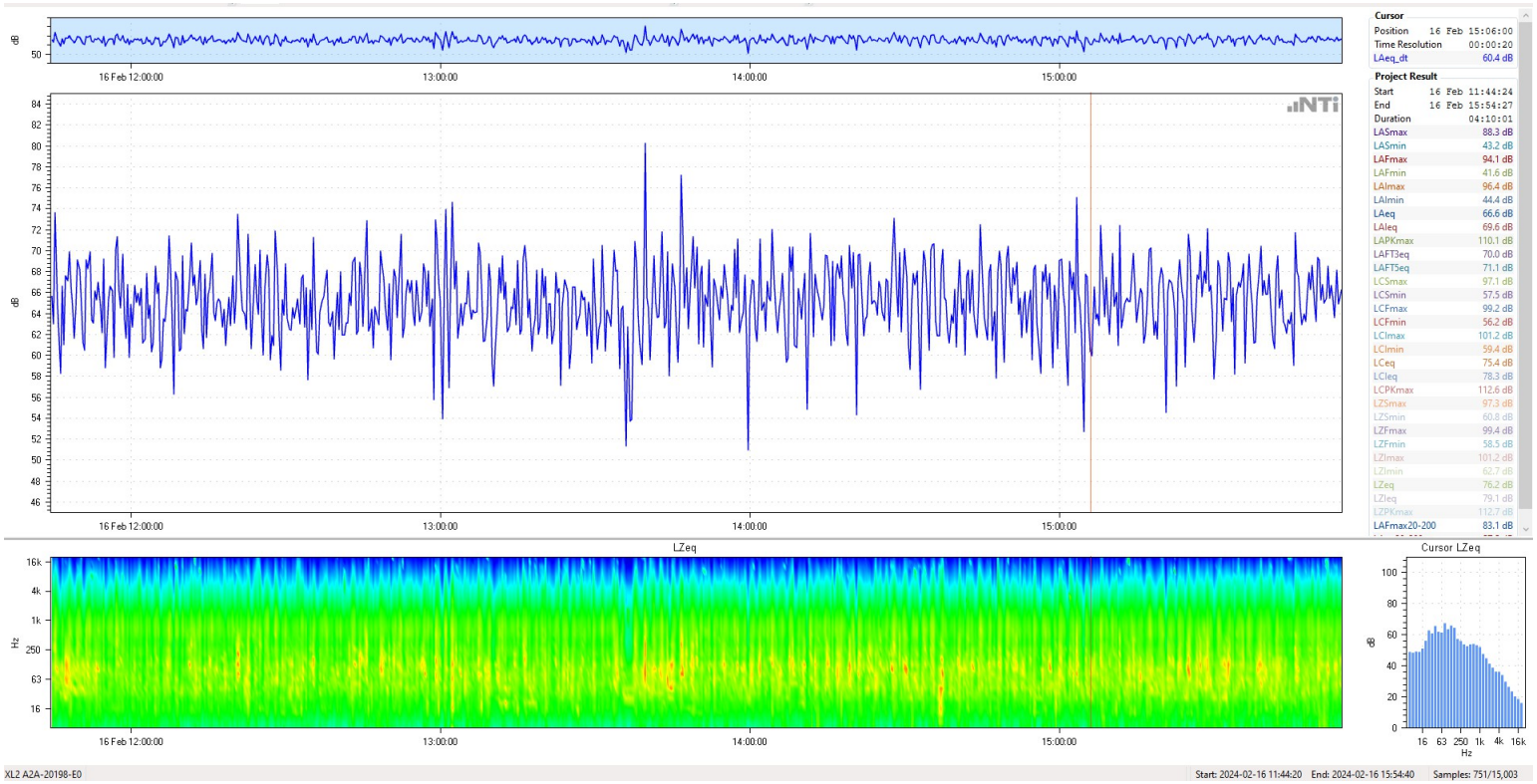


Figure 3- Measurement Data from Noise Monitoring Equipment (Position S2)

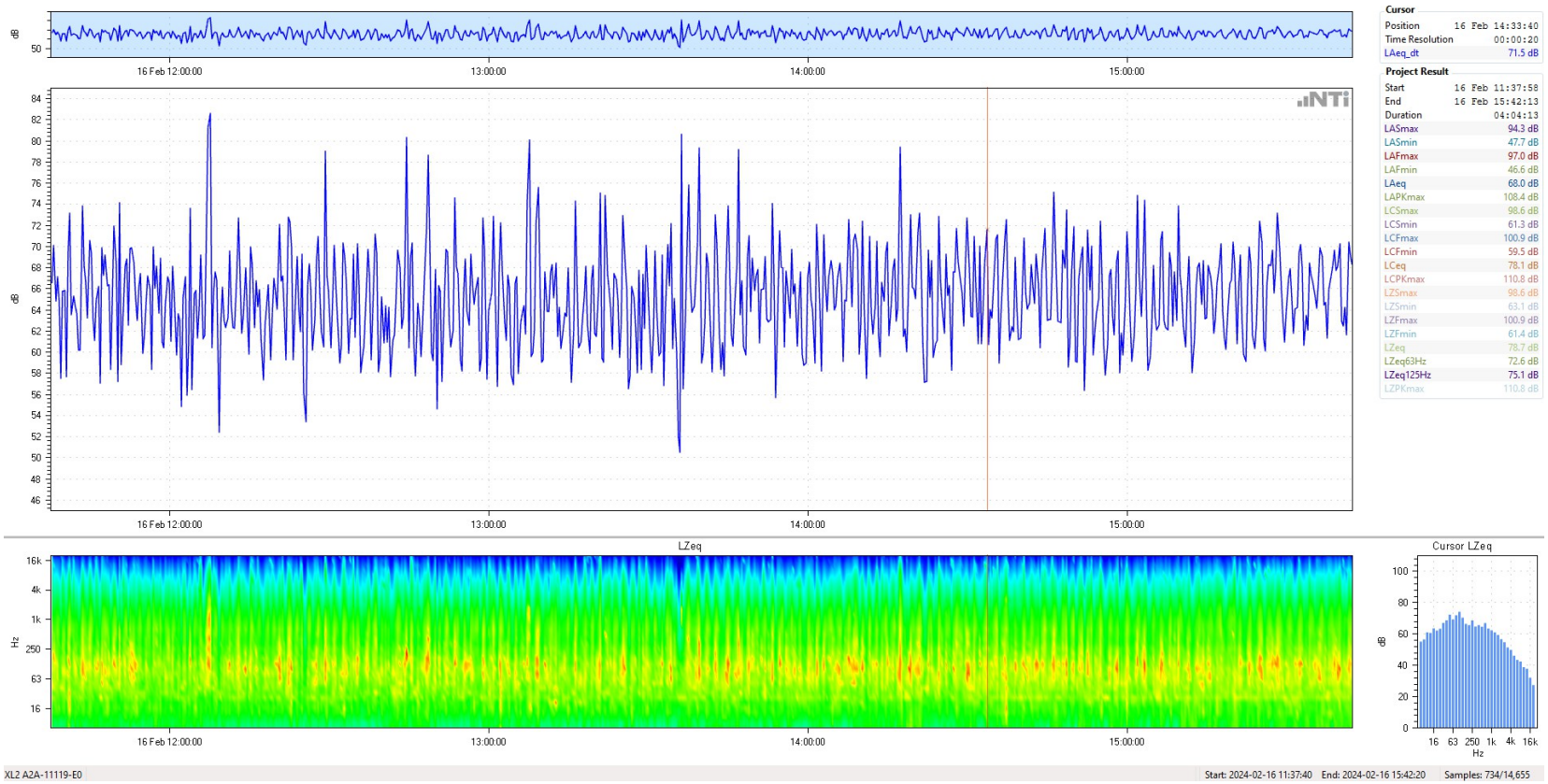


Figure 4- Measurement Data From Noise Monitoring Equipment (Position S3)

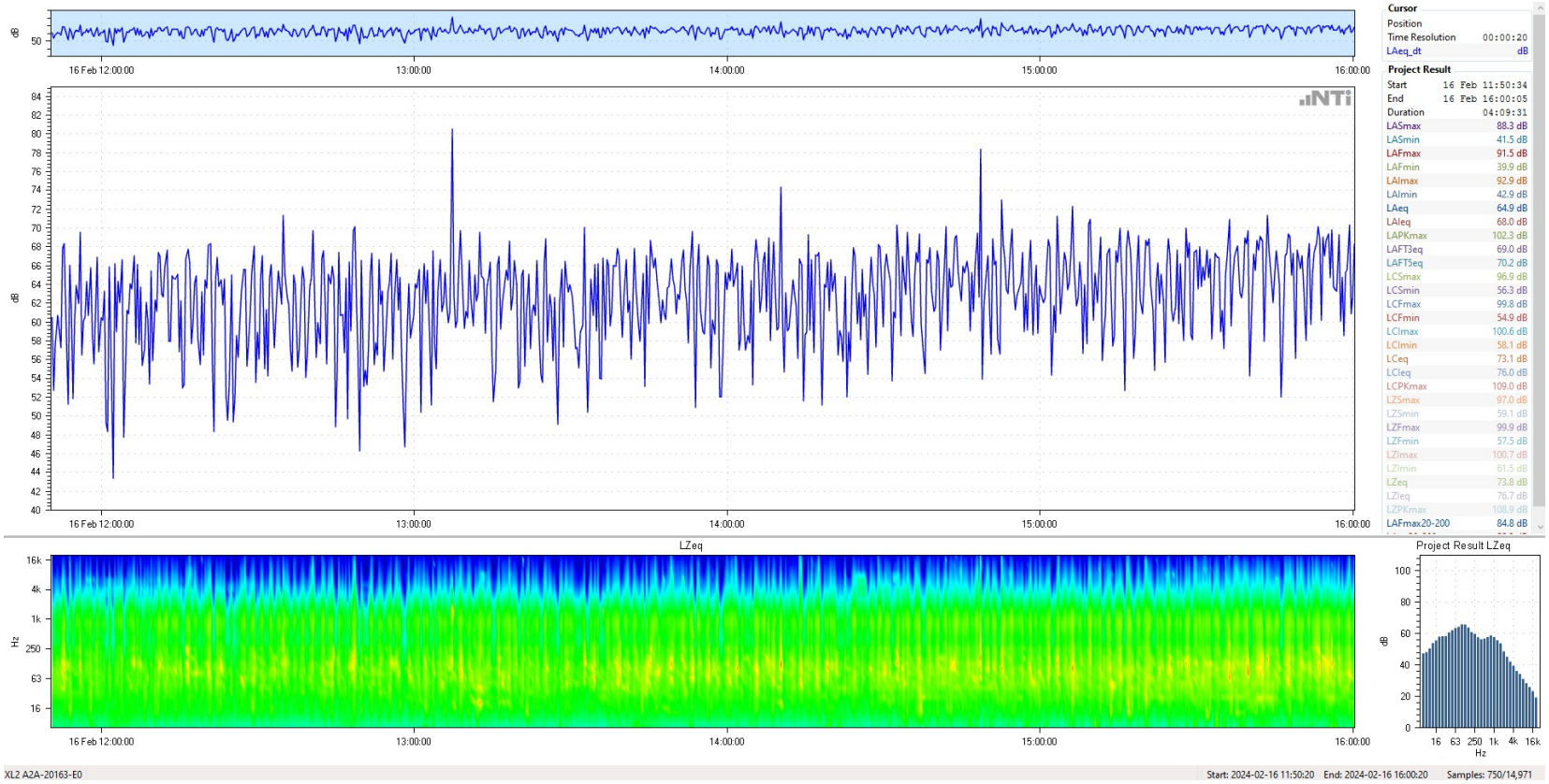
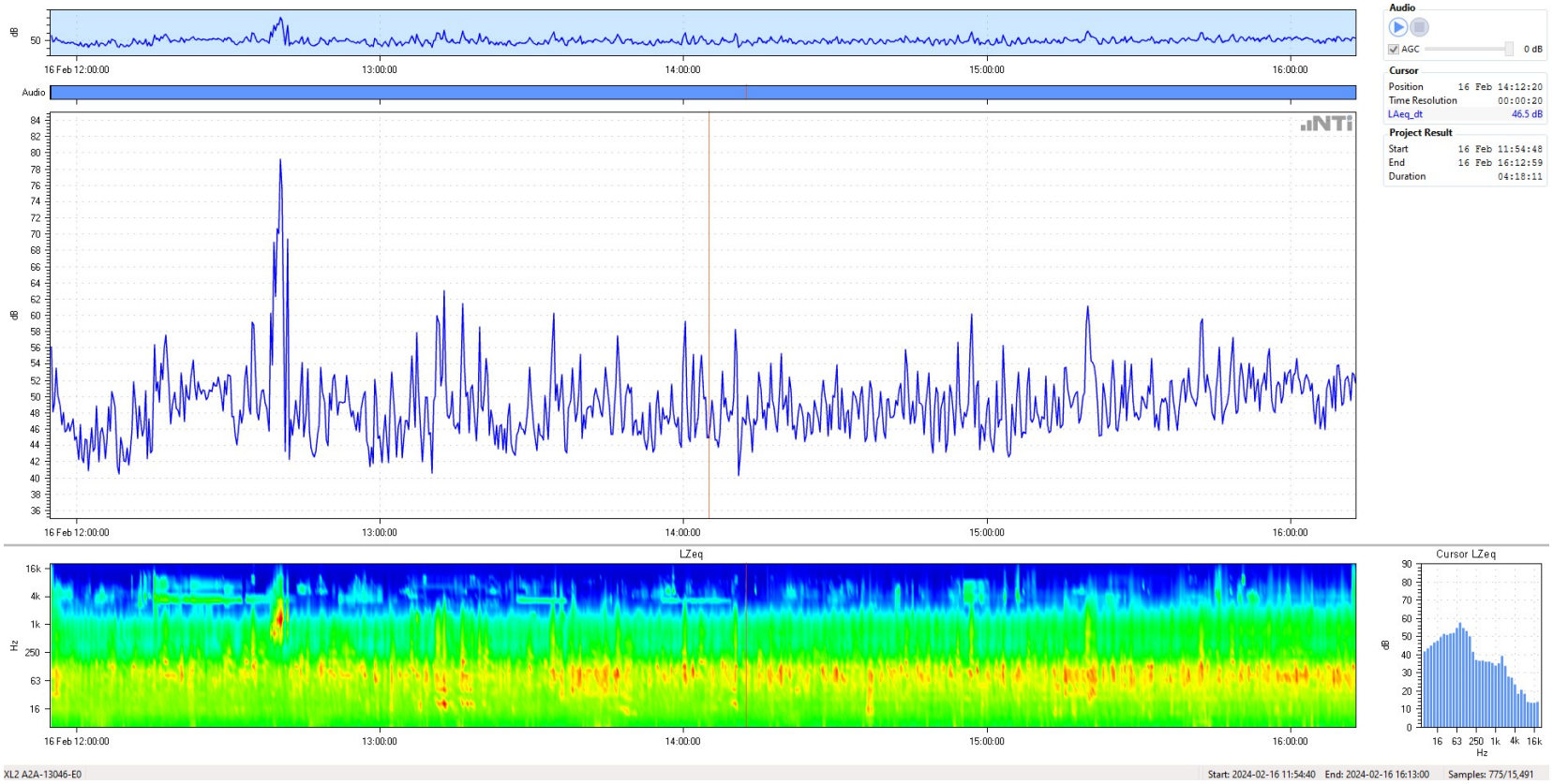
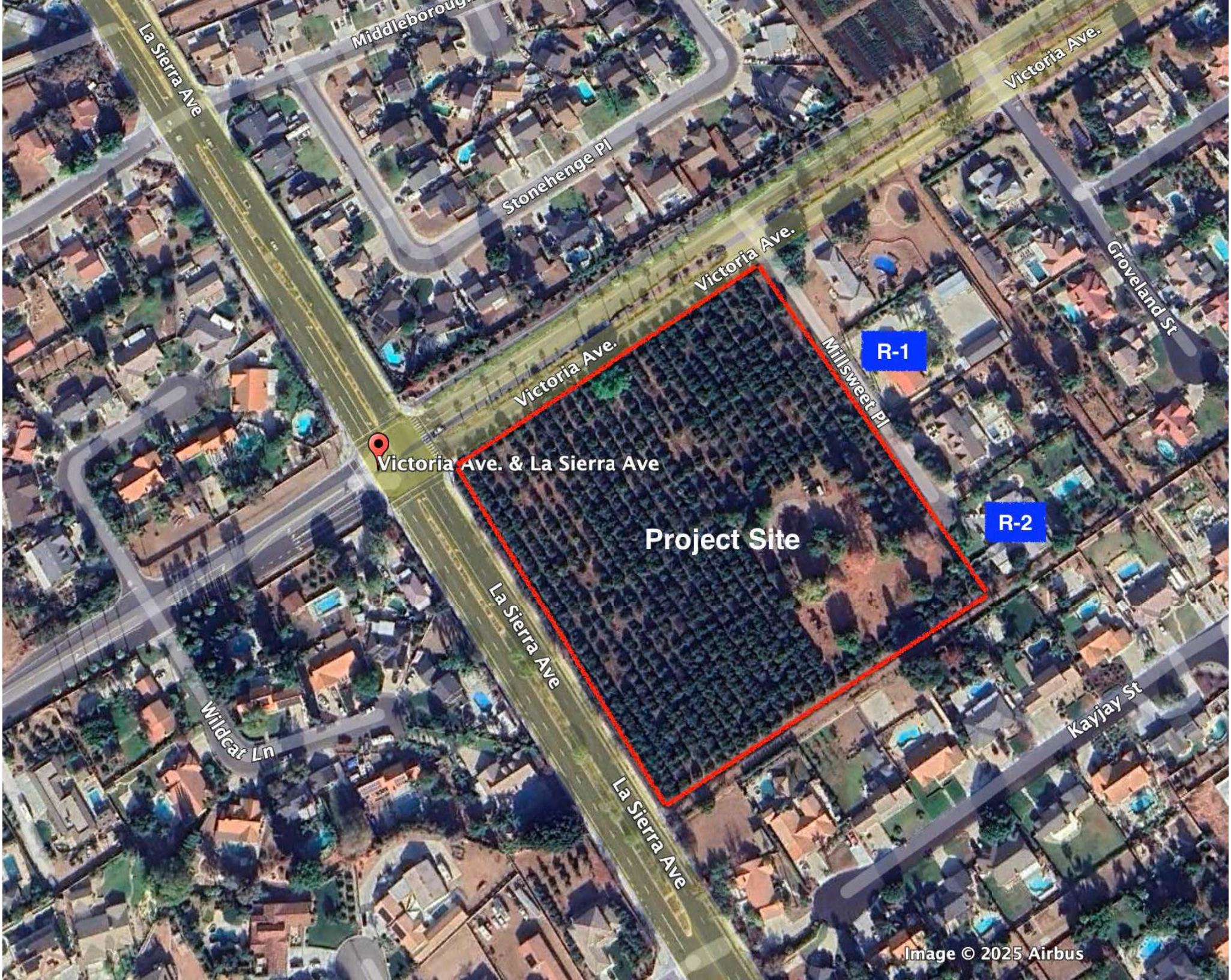


Figure 5- Measurement Data From Noise Monitoring Equipment (Position S4)



APPENDIX B
Sensitive Receptor Locations


La Sierra Ave
Middleborough
Stonehenge Pl
Victoria Ave.
Victoria Ave.
Victoria Ave.
Groveland St
Millsweet Pl
R-1
R-2
Victoria Ave. & La Sierra Ave
Project Site
La Sierra Ave
La Sierra Ave
Wildcat Ln
Kayjay St
Image © 2025 Airbus

APPENDIX B

Road Construction Noise Model (RCNM)

Datasheets

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 02/12/2025
Case Description: La Sierra & Victoria Project

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Residential receptor R1 Boundary	Residential	66.0	66.0	66.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	67.0	0.0
Concrete Mixer Truck	No	40		78.8	67.0	0.0
Compressor (air)	No	40		77.7	67.0	0.0
Concrete Pump Truck	No	20		81.4	67.0	0.0
Crane	No	16		80.6	67.0	0.0
Dozer	No	40		81.7	67.0	0.0
Dump Truck	No	40		76.5	67.0	0.0
Excavator	No	40		80.7	67.0	0.0
Flat Bed Truck	No	40		74.3	67.0	0.0
Front End Loader	No	40		79.1	67.0	0.0
Generator	No	50		80.6	67.0	0.0
Grader	No	40	85.0		67.0	0.0
Man Lift	No	20		74.7	67.0	0.0
Paver	No	50		77.2	67.0	0.0
Pickup Truck	No	40		75.0	67.0	0.0
Pneumatic Tools	No	50		85.2	67.0	0.0
Roller	No	20		80.0	67.0	0.0
Scraper	No	40		83.6	67.0	0.0
Tractor	No	40	84.0		67.0	0.0
Welder / Torch	No	40		74.0	67.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq	Noise Limits (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq	Noise Limit Exceedance (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq
Backhoe	75.0	71.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Mixer Truck	76.3	72.3	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)	75.1	71.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Pump Truck	78.9	71.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	78.0	70.0	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	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	73.9	69.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	78.2	74.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck	71.7	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	76.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	78.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	82.5	78.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	72.2	65.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	74.7	71.7	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	72.5	68.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pneumatic Tools	82.6	79.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	77.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	81.0	77.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

N/A	N/A												
Tractor	81.5	77.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
N/A	N/A												
Welder / Torch	71.5	67.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
N/A	N/A												
Total	82.6	87.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
N/A	N/A												

**** Receptor #2 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Residential receptor R2 Boundary	Residential	54.0	54.0	54.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	74.0	0.0
Concrete Mixer Truck	No	40		78.8	74.0	0.0
Compressor (air)	No	40		77.7	74.0	0.0
Concrete Pump Truck	No	20		81.4	74.0	0.0
Crane	No	16		80.6	74.0	0.0
Dozer	No	40		81.7	74.0	0.0
Dump Truck	No	40		76.5	74.0	0.0
Excavator	No	40		80.7	74.0	0.0
Flat Bed Truck	No	40		74.3	74.0	0.0
Front End Loader	No	40		79.1	74.0	0.0
Generator	No	50		80.6	74.0	0.0
Grader	No	40	85.0		74.0	0.0
Man Lift	No	20		74.7	74.0	0.0
Paver	No	50		77.2	74.0	0.0
Pickup Truck	No	40		75.0	74.0	0.0
Pneumatic Tools	No	50		85.2	74.0	0.0
Roller	No	20		80.0	74.0	0.0
Scraper	No	40		83.6	74.0	0.0
Tractor	No	40	84.0		74.0	0.0
Welder / Torch	No	40		74.0	74.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq	Noise Limits (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq	Noise Limit Exceedance (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq
Backhoe	74.2	70.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Mixer Truck	75.4	71.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compressor (air)	74.3	70.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Pump Truck	78.0	71.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	77.1	69.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	78.3	74.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	73.0	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	77.3	73.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck	70.8	66.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	75.7	71.7	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	77.2	74.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	81.6	77.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	71.3	64.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	73.8	70.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck	71.6	67.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pneumatic Tools	81.8	78.8	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	76.6	69.6	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	80.2	76.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A N/A												
Tractor	80.6	76.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A N/A												
Welder / Torch	70.6	66.6	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	81.8	86.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A N/A												

**** Receptor #3 ****

Description	Baselines (dBA) Land Use	Daytime	Evening	Night
Residential receptor R1Center	Residential	66.0	66.0	66.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	360.0	0.0
Concrete Mixer Truck	No	40		78.8	360.0	0.0
Compressor (air)	No	40		77.7	360.0	0.0
Concrete Pump Truck	No	20		81.4	360.0	0.0
Crane	No	16		80.6	360.0	0.0
Dozer	No	40		81.7	360.0	0.0
Dump Truck	No	40		76.5	360.0	0.0
Excavator	No	40		80.7	360.0	0.0
Flat Bed Truck	No	40		74.3	360.0	0.0
Front End Loader	No	40		79.1	360.0	0.0
Generator	No	50		80.6	360.0	0.0
Grader	No	40	85.0		360.0	0.0
Man Lift	No	20		74.7	360.0	0.0
Paver	No	50		77.2	360.0	0.0
Pickup Truck	No	40		75.0	360.0	0.0
Pneumatic Tools	No	50		85.2	360.0	0.0
Roller	No	20		80.0	360.0	0.0
Scraper	No	40		83.6	360.0	0.0
Tractor	No	40	84.0		360.0	0.0
Welder / Torch	No	40		74.0	360.0	0.0

Results

Exceedance (dBA)			Noise Limits (dBA)						Noise Limit			
	Calculated (dBA)		Day		Evening		Night		Day		Evening	
Night												
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Lmax Leq												
Backhoe	60.4	56.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A N/A												
Concrete Mixer Truck	61.7	57.7	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)	60.5	56.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A N/A												
Concrete Pump Truck	64.3	57.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A N/A												
Crane	63.4	55.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A N/A												
Dozer	64.5	60.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A N/A												
Dump Truck	59.3	55.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A N/A												
Excavator	63.6	59.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A N/A												
Flat Bed Truck	57.1	53.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A N/A												
Front End Loader	62.0	58.0	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	63.5	60.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A N/A												
Grader	67.9	63.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A N/A												
Man Lift	57.6	50.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A N/A												
Paver	60.1	57.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A N/A												
Pickup Truck	57.9	53.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

N/A	N/A												
Pneumatic Tools	68.0	65.0	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	62.9	55.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
N/A	N/A												
Scraper	66.4	62.5	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	66.9	62.9	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	56.9	52.9	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	68.0	72.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
N/A	N/A												

**** Receptor #4 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Residential receptor R2 Center	Residential	54.0	54.0	54.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	460.0	0.0
Concrete Mixer Truck	No	40		78.8	460.0	0.0
Compressor (air)	No	40		77.7	460.0	0.0
Concrete Pump Truck	No	20		81.4	460.0	0.0
Crane	No	16		80.6	460.0	0.0
Dozer	No	40		81.7	460.0	0.0
Dump Truck	No	40		76.5	460.0	0.0
Excavator	No	40		80.7	460.0	0.0
Flat Bed Truck	No	40		74.3	460.0	0.0
Front End Loader	No	40		79.1	460.0	0.0
Generator	No	50		80.6	460.0	0.0
Grader	No	40	85.0		460.0	0.0
Man Lift	No	20		74.7	460.0	0.0
Paver	No	50		77.2	460.0	0.0
Pickup Truck	No	40		75.0	460.0	0.0
Pneumatic Tools	No	50		85.2	460.0	0.0
Roller	No	20		80.0	460.0	0.0
Scraper	No	40		83.6	460.0	0.0
Tractor	No	40	84.0		460.0	0.0
Welder / Torch	No	40		74.0	460.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq	Noise Limits (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq	Noise Limit Exceedance (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq
Backhoe	58.3	54.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Mixer Truck	59.5	55.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compressor (air)	58.4	54.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Pump Truck	62.1	55.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	61.3	53.3	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	62.4	58.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57.2	53.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	61.4	57.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck	55.0	51.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	59.8	55.9	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	61.4	58.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	65.7	61.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	55.4	48.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Paver	57.9	54.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck	55.7	51.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pneumatic Tools	65.9	62.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	60.7	53.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	64.3	60.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	64.7	60.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	54.7	50.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	65.9	70.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A