Appendix F:

Noise Supporting Information

THIS PAGE INTENTIONALLY LEFT BLANK

Environmental Noise Assessment

Russell at Truxel Residential

City of Sacramento, California

August 26, 2025

Project #220707

Prepared for:

Anton Fong Ranch Owners, LLC
1610 R St., Suite 250
Sacramento, CA 95811

Prepared by:

Saxelby Acoustics LLC

Luke Saxelby, INCE Bd. Cert.
Principal Consultant
Board Certified, Institute of Noise Control Engineering (INCE)

(916) 760-8821
www.SaxNoise.com | Luke@SaxNoise.com
915 Highland Pointe Drive, Suite 250
Roseville, CA 95678

Table of Contents

List of Figures

List of Tables

Appendices

INTRODUCTION

The Russell at Truxel Residential project consists of the construction of up to 219 residential units. This includes up to 100 single-family detached for-sale market rate units and 119 multifamily below-market rate rental units, along with associated infrastructure and amenities (the "Project") on an approximately 17.39-acre vacant, undeveloped infill site located at 3625 Fong Ranch Road, Sacramento (the "Project Site").

The Project Site is bounded by the Truxel Road/Interstate 80 interchange to the west, Interstate 80 to the northwest, a drainage canal and community park to the north, existing single-family residences to the northeast and east, Discovery High School to the southeast, and Natomas High School to the south. **Figure 1** shows the project site plan. **Figure 2** shows the noise measurement locations and an aerial view of the project site.

ENVIRONMENTAL SETTING

BACKGROUND INFORMATION ON NOISE

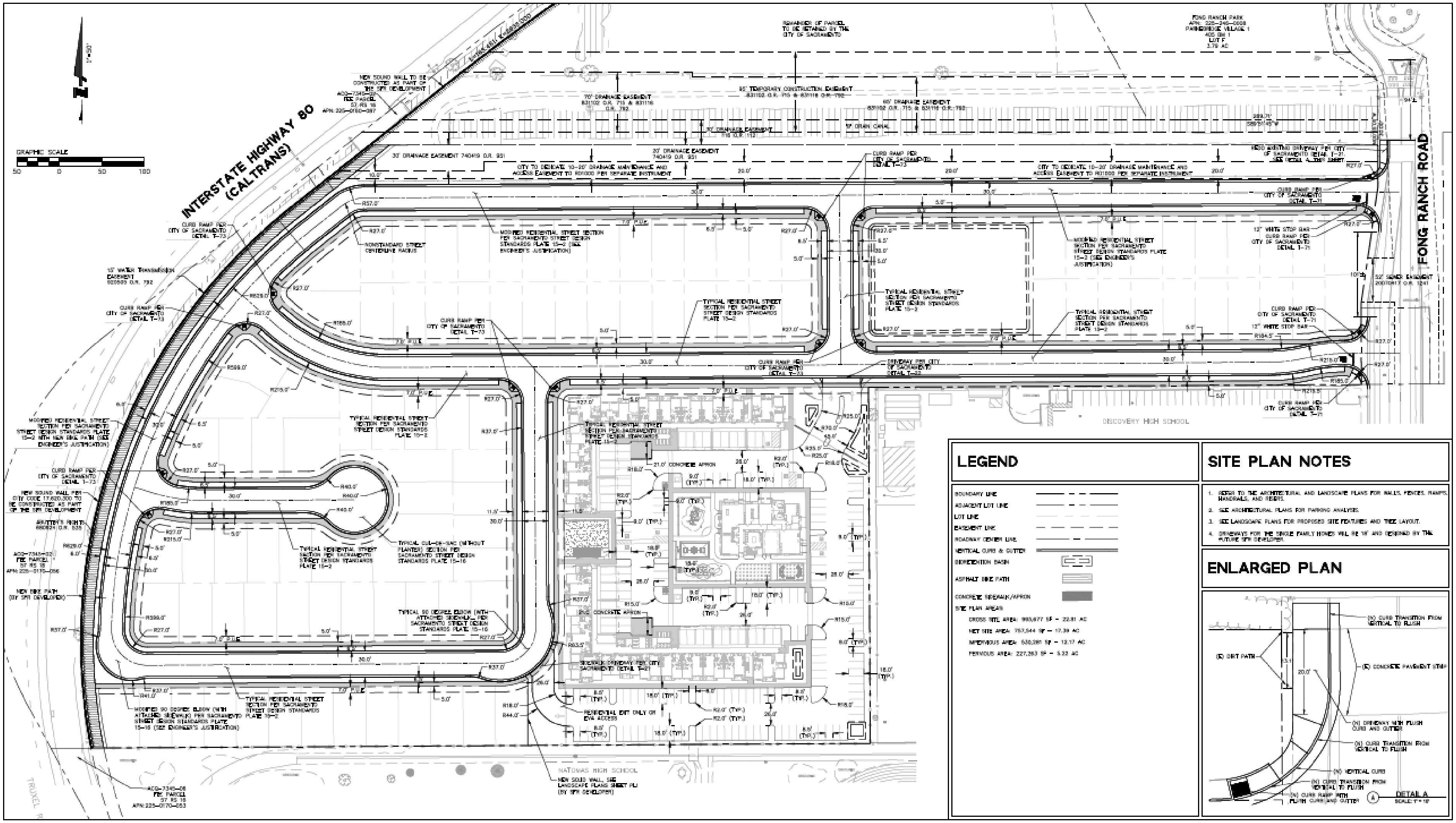
Fundamentals of Acoustics

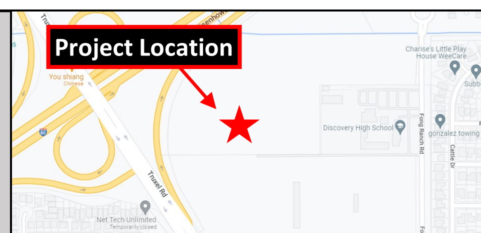
Acoustics is the science of sound. Sound may be thought of as mechanical energy of a vibrating object transmitted by pressure waves through a medium to human (or animal) ears. If the pressure variations occur frequently enough (at least 20 times per second), then they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound and is expressed as cycles per second or Hertz (Hz).

Noise is a subjective reaction to different types of sounds. Noise is typically defined as (airborne) sound that is loud, unpleasant, unexpected or undesired, and may therefore be classified as a more specific group of sounds. Perceptions of sound and noise are highly subjective from person to person.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals), as a point of reference, defined as 0 dB. Other sound pressures are then compared to this reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels (dB) correspond closely to human perception of relative loudness.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by A-weighted sound levels. There is a strong correlation between A-weighted sound levels (expressed as dBA) and the way the human ear perceives sound. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment.





Russell at Truxel Residential

City of Sacramento, California

Figure 1

Project Site Plan

SAXELBY ACOUSTICS

Acoustics · Noise · Vibration

Russell at Truxel Residential

City of Sacramento, California

Figure 2

Noise Measurement Sites

Legend

- Project Site
- Noise Measurement - Long Term
- Noise Measurement Site - Short Term

100 ft 250 ft 400 ft

Projection: UTM Zone 10 / WGS84 / meters
Rev. Date: 08/31/2022

SAXELBY ACOUSTICS
Acoustics • Noise • Vibration

The decibel scale is logarithmic, not linear. In other words, two sound levels 10-dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted, an increase of 10-dBA is generally perceived as a doubling in loudness. For example, a 70-dBA sound is half as loud as an 80-dBA sound, and twice as loud as a 60 dBA sound.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given environment. A common statistical tool is the average, or equivalent, sound level (L_{eq}), which corresponds to a steady-state A weighted sound level containing the same total energy as a time varying signal over a given time period (usually one hour). The L_{eq} is the foundation of the composite noise descriptor, L_{dn}, and shows very good correlation with community response to noise.

The day/night average level (DNL or L_{dn}) is based upon the average noise level over a 24-hour day, with a +10-decibel weighing applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because L_{dn} represents a 24-hour average, it tends to disguise short-term variations in the noise environment.

Table 1 lists several examples of the noise levels associated with common situations. **Appendix A** provides a summary of acoustical terms used in this report.

Table 1: Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	--110--	Rock Band
Jet Fly-over at 300 m (1,000 ft.)	--100--	
Gas Lawn Mower at 1 m (3 ft.)	--90--	
Diesel Truck at 15 m (50 ft.), at 80 km/hr. (50 mph)	--80--	Food Blender at 1 m (3 ft.) Garbage Disposal at 1 m (3 ft.)
Noisy Urban Area, Daytime Gas Lawn Mower, 30 m (100 ft.)	--70--	Vacuum Cleaner at 3 m (10 ft.)
Commercial Area Heavy Traffic at 90 m (300 ft.)	--60--	Normal Speech at 1 m (3 ft.)
Quiet Urban Daytime	--50--	Large Business Office Dishwasher in Next Room
Quiet Urban Nighttime	--40--	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	--30--	Library
Quiet Rural Nighttime	--20--	Bedroom at Night, Concert Hall (Background)
	--10--	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	--0--	Lowest Threshold of Human Hearing

Source: *Caltrans, Technical Noise Supplement, Traffic Noise Analysis Protocol. September 2013.*

Effects of Noise on People

The effects of noise on people can be placed in three categories:

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

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so-called ambient noise level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it.

With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1-dBA cannot be perceived;
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference;
- A change in level of at least 5-dBA is required before any noticeable change in human response would be expected; and
- A 10-dBA change is subjectively heard as approximately a doubling in loudness, and can cause an adverse response.

Stationary point sources of noise – including stationary mobile sources such as idling vehicles – attenuate (lessen) at a rate of approximately 6-dB per doubling of distance from the source, depending on environmental conditions (i.e. atmospheric conditions and either vegetative or manufactured noise barriers, etc.). Widely distributed noises, such as a large industrial facility spread over many acres, or a street with moving vehicles, would typically attenuate at a lower rate.

EXISTING NOISE AND VIBRATION ENVIRONMENTS

EXISTING NOISE RECEPTORS

Some land uses are considered more sensitive to noise than others. Land uses often associated with sensitive receptors generally include residences, schools, libraries, hospitals, and passive recreational areas. Sensitive noise receptors may also include threatened or endangered noise sensitive biological species, although many jurisdictions have not adopted noise standards for wildlife areas. Noise sensitive land uses are typically given special attention in order to achieve protection from excessive noise.

Sensitivity is a function of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities involved. In the vicinity of the project site, sensitive land uses include single family residential uses located to the northeast and east of the project site.

EXISTING GENERAL AMBIENT NOISE LEVELS

The existing noise environment on the project site is primarily defined by traffic on I-80. Secondary noise sources include activity from Natomas High School and Discovery High School to the south. To quantify the existing ambient noise environment in the project vicinity, Saxelby Acoustics conducted continuous (24-hr.) noise level measurements at three locations on the project site and a short-term noise level measurement at one location. Noise measurement locations are shown on **Figure 2**. A summary of the noise level measurement survey results is provided in **Table 2**. **Appendix B** contains the complete results of the noise monitoring.

The sound level meters were programmed to record the maximum, median, and average noise levels at each site during the survey. The maximum value, denoted L_{max}, represents the highest noise level measured. The average value, denoted L_{eq}, represents the energy average of all of the noise received by the sound level meter microphone during the monitoring period. The median value, denoted L_{50}, represents the sound level exceeded 50 percent of the time during the monitoring period.

Larson Davis Laboratories (LDL) model 820 and 831 precision integrating sound level meters were used for the ambient noise level measurement survey. The meters were calibrated before and after use with a CAL 200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4).

Table 2: Summary of Existing Background Noise Measurement Data

Location	Date	L_{dn}	Daytime L_{eq}	Daytime L_{50}	Daytime L_{max}	Nighttime L_{eq}	Nighttime L_{50}	Nighttime L_{max}
LT-1: 210 ft. to CL of I-80	8/2/22 to 8/3/22	76	72	71	86	69	66	84
LT-2: 660 ft. to CL of I-80	7/22/22 to 7/23/22	64	60	57	75	57	54	70
	7/23/22 to 7/24/22	63	59	57	76	56	54	72
	7/24/22 to 7/25/22	64	59	57	76	57	54	73
	7/25/22 to 7/26/22	64	59	57	76	57	54	70
Average		**64**	**59**	**57**	**76**	**57**	**54**	**71**
LT-3: 1,050 ft. to CL of I-80	7/22/22 to 7/23/22	59	57	53	71	52	50	64
	7/23/22 to 7/24/22	58	53	50	68	51	49	65
	7/24/22 to 7/25/22	59	54	52	70	52	51	66
	7/25/22 to 7/26/22	60	56	53	70	53	51	66
Average		**59**	**55**	**52**	**70**	**52**	**50**	**65**
ST-1: 440 ft. to CL of I-80	7/22/2022	N/A	60	59	64	N/A	N/A	N/A

Notes:

- *All values shown in dBA*
- *Daytime hours: 7:00 a.m. to 10:00 p.m.*
- *Nighttime Hours: 10:00 p.m. to 7:00 a.m.*
- *Source: Saxelby Acoustics, 2022.*
- *Noise measurements are considered valid for approximately 5 years after measurement date.*

FUTURE TRAFFIC NOISE ENVIRONMENT AT OFF-SITE RECEPTORS

Off-Site Traffic Noise Impact Assessment Methodology

To assess noise impacts due to project-related traffic increases on the local roadway network, Saxelby Acoustics utilizes peak hour turning movement volumes provided in the project traffic study. Traffic noise levels are predicted at sensitive receptors for Baseline[1] and Baseline Plus Project conditions. Existing roadway volumes were not provided in the project traffic study.

Baseline and Baseline Plus Approved Projects noise levels due to traffic are calculated using the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA RD-77-108). The model is based upon the Calveno reference noise factors for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site.

The FHWA model was developed to predict hourly L_{eq} values for free-flowing traffic conditions. To predict traffic noise levels in terms of L_{dn}, it is necessary to adjust the input volume to account for the day/night distribution of traffic.

Project trip generation volumes were provided by the project traffic engineer (Fehr & Peers), truck usage and vehicle speeds on the local area roadways were estimated from field observations. The predicted increases in traffic noise levels on the local roadway network for Baseline conditions which would result from the project are provided in terms of L_{dn}.

Traffic noise levels are predicted at the sensitive receptors located at the closest typical setback distance along each project-area roadway segment. In some locations sensitive receptors may not receive full shielding from noise barriers or may be located at distances which vary from the assumed calculation distance.

Table 3 summarizes the modeled traffic noise levels at the nearest sensitive receptors along each roadway segment in the Project area. **Appendix C** provides the complete inputs and results of the FHWA traffic modeling.

[1] The Baseline condition is defined as the Existing (May 2025) conditions plus the addition of trips generated by the ParkeBridge East Residential Project.

TABLE 3: PREDICTED TRAFFIC NOISE LEVEL AND PROJECT-RELATED TRAFFIC NOISE LEVEL INCREASES

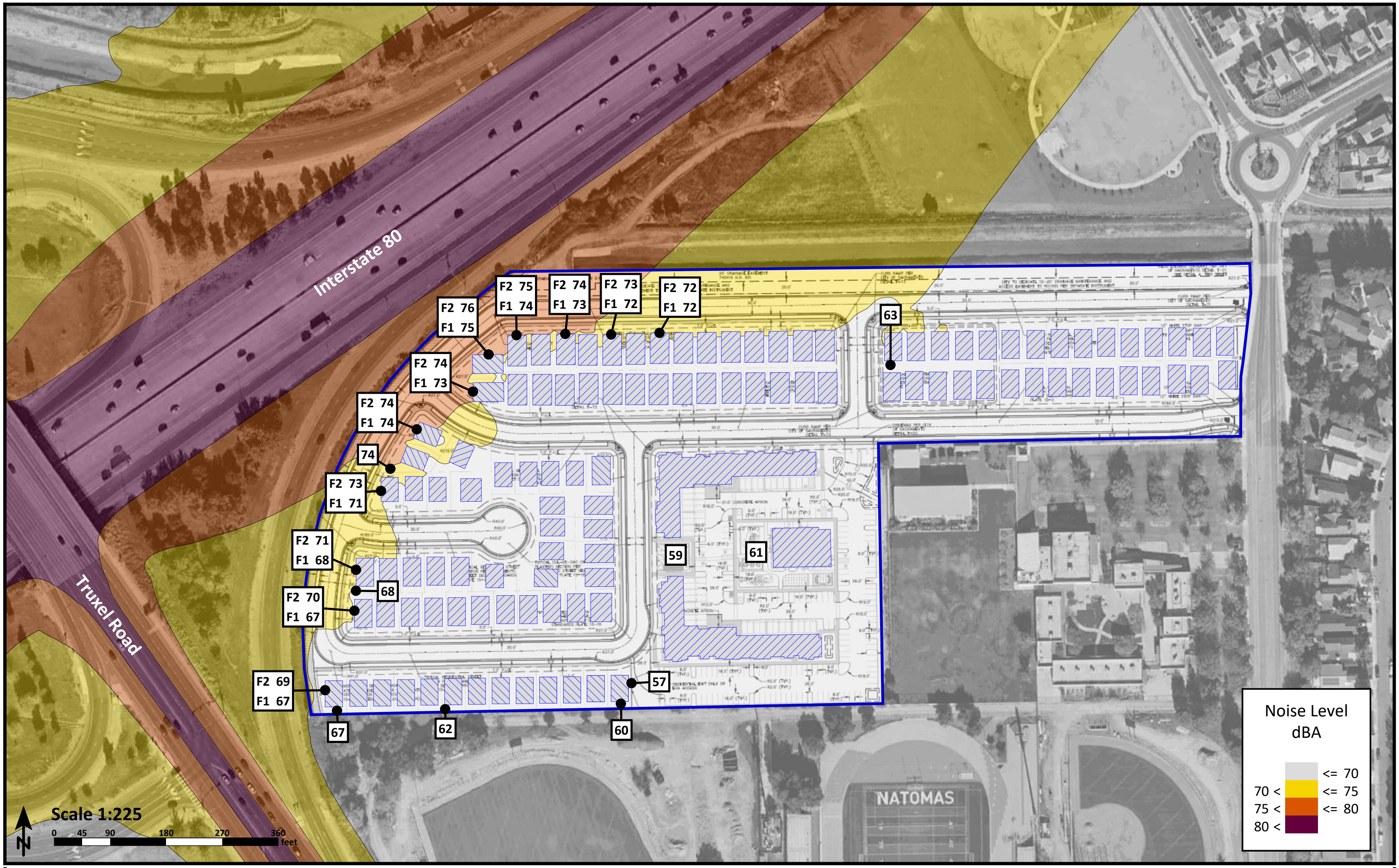
Roadway	Segment	Predicted Exterior Noise Level (dBA L_{dn}) at Closest Sensitive Receptors		
		Baseline No Project	Baseline + Project	Change
Truxel Rd	Between I-80 and San Juan Rd	63.3	63.4	0.1
San Juan Rd	East of Truxel Rd	61.7	61.9	0.2
Truxel Rd	North of San Juan Rd	66.0	66.0	0.0
Truxel Rd	South of San Juan Rd	62.3	62.4	0.1
Fong Ranch Rd	East of Bridgeway Cir	55.2	55.4	0.2
Fong Ranch Rd	South of Bridgeway Cir	55.1	55.4	0.3
Fong Ranch Rd	South of South St	57.0	58.1	1.1
Fong Ranch Rd	North of Old West Dr	58.0	59.2	1.2
Fong Ranch Rd	South of Old West Dr	58.5	59.4	0.9
Fong Ranch Rd	Between Old West Dr and San Juan Rd	61.5	62.6	1.1
Fong Ranch Rd	North of San Juan Rd	55.6	56.2	0.6
San Juan Rd	East of Fong Ranch Rd	63.8	63.9	0.1
San Juan Rd	West of Fong Ranch Rd	68.1	68.3	0.2
San Juan Rd	East of Pony Express Dr	61.3	61.4	0.1
San Juan Rd	East of Bridgeford Dr	59.8	59.9	0.1

Based upon the **Table 3** data, the proposed project is predicted to result in an increase in a maximum traffic noise level increase of 1.2 dBA.

EVALUATION OF FUTURE TRANSPORTATION NOISE ON PROJECT SITE

Saxelby Acoustics used the SoundPLAN noise model to calculate traffic noise levels at the proposed residential uses due to traffic on I-80. Inputs to the SoundPLAN noise model include topography, existing structures, roadway elevations, and the proposed building pad elevations. It was estimated that existing noise levels would increase by +1 dBA based upon an assumed 1% per year increase[2] in traffic volumes on I-80. This assumed increase is conservative compared with projected growth (Caltrans 2023). The results of this analysis are shown graphically on **Figure 3**.

[2] Conservatively assumes approximately 20% increase in traffic volumes.



Russell at Truxel Residential

City of Sacramento, California

Figure 3
Future Transportation Noise Levels (Ldn, dBA)

Legend
- Project Boundary
- Project Building
- Noise Level

EVALUATION OF STATIONARY NOISE ON PROJECT SITE

STATIONARY NOISE PREDICTION METHODOLOGY

The primary stationary noise sources affecting the proposed project would be from the Natomas High School football stadium and other sporting fields. Saxelby Acoustics utilized data from similar events to predict noise levels emanating from the sports facilities. The data used were collected at school facilities similar to Natomas High School. The following is a list of assumptions used for the noise modeling. All sporting activities listed below were conservatively assumed to operate concurrently.

Football Stadium:	Recreational Activity including PA system announcements, gameplay, crowd noise, half time band/dance team. 66 dBA L_{eq} at 250 feet from center of field for crowd size of approximately 3,000-5,000 spectators. Gameplay was assumed to take place at peak levels for a maximum of 6 hours in a 24-hour period. Saxelby Acoustics data.
Ball Fields:	Gameplay activity in center of field area at 55 dBA L_{eq} at 50 feet. Crowd cheering, talking loudly. 50 dBA L_{eq} at 50 feet from bleachers. Two speakers per field at a level of 70 dBA L_{eq} at center of crowd area. Assumed speaker would be active for a maximum of 5 minutes per hour. Gameplay was assumed to take place at peak levels for a maximum of 8 hours in a 24-hour period. Saxelby Acoustics data.
Tennis Courts:	Eight courts active at 61 dBA L_{eq} as measured 25 feet from the edge of each court. Gameplay was assumed to take place at peak levels for a maximum of 8 hours in a 24-hour period. Saxelby Acoustics data.
Swimming Pool:	Active sporting event at 64 dBA L_{eq} at 100 feet from center of pool during peak hour of activity. Sporting activity was assumed to take place at peak levels for a maximum of 8 hours in a 24-hour period.

Saxelby Acoustics used the SoundPLAN noise prediction model. Inputs to the model included sound power levels for the proposed amenities, existing and proposed buildings, terrain type, and locations of sensitive receptors. These predictions are made in accordance with International Organization for Standardization (ISO) standard 9613-2:1996 (Acoustics – Attenuation of sound during propagation outdoors). ISO 9613 is the most commonly used method for calculating exterior noise propagation. **Figure 4** shows the noise level contours resulting from stationary sources located at Natomas High School.

Russell at Truxel Residential

City of Sacramento, California

Figure 4
Stationary Noise on Project Site (L_{dn}, dBA)

Legend

Noise Level

SAXELBY ACOUSTICS
Acoustics • Noise • Vibration

EVALUATION OF PROJECT OPERATIONAL NOISE ON EXISTING SENSITIVE RECEPTORS

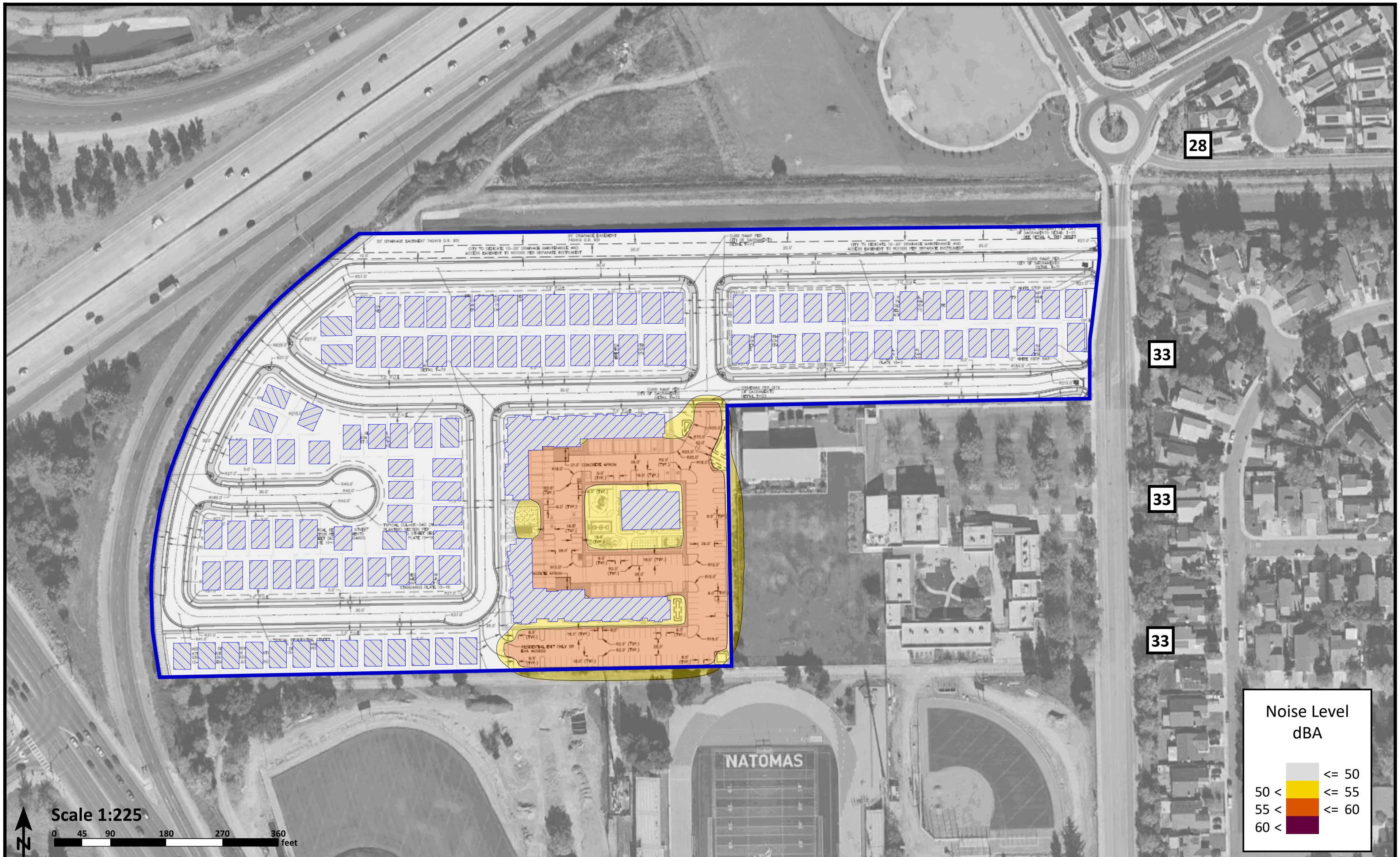
Project site traffic circulation and residential HVAC noise are considered to be the primary noise sources for this project. The following is a list of assumptions used for the noise modeling. The data used is based upon a combination of manufacturer's provided data and Saxelby Acoustics data from similar operations.

On-Site Circulation: The project is projected to generate 346 daily trips with 33 trips in the morning peak hour (Fehr & Peers). Saxelby Acoustics assumed that 1-2 of these trips could be heavy trucks. Parking lot movements are predicted to generate a sound exposure level (SEL) of 71 dBA SEL at 50 feet for cars and 85 dBA SEL at 50 feet for trucks. Nighttime traffic outside of the AM or PM peak hour is estimated to be approximately 1/4 of daytime trips during nighttime hours (10:00 p.m. to 7:00 a.m.). Saxelby Acoustics data.

HVAC: Assumes a single three-ton HVAC unit for each residential unit. The units were assumed to have a sound level rating of 70 dBA (manufacturer's data). Steady state HVAC noise does not fluctuate greatly, so exceedances of the City's maximum noise level standard are not predicted to occur.

Playground Area: Recreational activity in center of playground area at 55 dBA L_{50} and 75 dBA L_{max} at 100 feet. Daytime use only. Saxelby Acoustics data.

Saxelby Acoustics used the SoundPLAN noise prediction model. Inputs to the model included sound power levels for the proposed amenities, existing and proposed buildings, terrain type, and locations of sensitive receptors. These predictions are made in accordance with International Organization for Standardization (ISO) standard 9613-2:1996 (Acoustics – Attenuation of sound during propagation outdoors). ISO 9613 is the most commonly used method for calculating exterior noise propagation. **Figure 5** shows the noise level contours resulting from operation of the project.



Russell at Truxel Residential

City of Sacramento, California

Figure 5
Project-Generated Noise Levels (L_{50}, dBA)

Legend
- Project Site
- Project Building
- Noise Level

SAXELBY ACOUSTICS
Acoustics • Noise • Vibration

CONSTRUCTION NOISE ENVIRONMENT

During the construction of the proposed project, noise from construction activities would temporarily add to the noise environment in the project vicinity. As shown in **Table 6**, activities involved in construction would generate maximum noise levels ranging from 76 to 90 dB at a distance of 50 feet.

Table 4: Construction Equipment Noise

Type of Equipment	Maximum Level, dBA at 50 feet
Auger Drill Rig	84
Backhoe	78
Compactor	83
Compressor (air)	78
Concrete Saw	90
Dozer	82
Dump Truck	76
Excavator	81
Generator	81
Jackhammer	89
Pneumatic Tools	85

Source: Roadway Construction Noise Model User's Guide. Federal Highway Administration. FHWA-HEP-05-054. January 2006.

CONSTRUCTION VIBRATION ENVIRONMENT

The primary vibration-generating activities associated with the proposed project would occur during construction when activities such as grading, utilities placement, and parking lot construction occur. **Table 5** shows the typical vibration levels produced by construction equipment.

Table 5: Vibration Levels for Various Construction Equipment

Type of Equipment	Peak Particle Velocity at 25 feet (inches/second)	Peak Particle Velocity at 50 feet (inches/second)	Peak Particle Velocity at 100 feet (inches/second)
Large Bulldozer	0.089	0.031	0.011
Loaded Trucks	0.076	0.027	0.010
Small Bulldozer	0.003	0.001	0.000
Auger/drill Rigs	0.089	0.031	0.011
Jackhammer	0.035	0.012	0.004
Vibratory Hammer	0.070	0.025	0.009
Vibratory Compactor/roller	0.210 (Less than 0.20 at 26 feet)	0.074	0.026

Source: Transit Noise and Vibration Impact Assessment Guidelines. Federal Transit Administration. May 2006.

REGULATORY CONTEXT

FEDERAL

There are no federal regulations related to noise that apply to the Proposed Project.

STATE

California Environmental Quality Act

The California Environmental Quality Act (CEQA) Guidelines, Appendix G, indicate that a significant noise impact may occur if a project exposes persons to noise or vibration levels in excess of local general plans or noise ordinance standards, or cause a substantial permanent or temporary increase in ambient noise levels. CEQA standards are discussed more below under the Thresholds of Significance section.

LOCAL

City of Sacramento General Plan

The Environmental Resources and Constraints element of the City's General Plan identifies noise and land use compatibility standards for various land uses. The City's goal is to minimize noise impacts on human activity to ensure the health and safety of the community. **Table 6** below shows exterior noise compatibility standards for various land uses.

TABLE 6: CITY OF SACRAMENTO EXTERIOR NOISE COMPATIBILITY STANDARDS FOR VARIOUS LAND USES

Land Use Type	Highest Level of Noise Exposure that is Regarded as "Normally Acceptable"[a] (L_{dn}[b] or CNEL[c])
Residential - Low Density Single Family, Duplex, Mobile Homes	60 dBA[d,e]
Residential – Multi-family[g]	65 dBA
Urban Residential Infill[h] and Mixed-Use Projects[i,j]	70 dBA
Transient Lodging – Motels, Hotels	65 dBA
Schools, Libraries, Churches, Hospitals, Nursing Homes	70 dBA
Auditoriums, Concert Halls, Amphitheaters	Mitigation based on site-specific study
Sports Arena, Outdoor Spectator Sports	Mitigation based on site-specific study
Playgrounds, Neighborhood Parks	70 dBA
Golf Courses, Riding Stables, Water Recreation, Cemeteries	75 dBA
Office Buildings – Business, Commercial and Professional	70 dBA
Industrial, Manufacturing, Utilities, Agriculture	75 dBA

Source: Governor's Office of Planning and Research, State of California General Plan Guidelines 2003, October 2003

a. As defined in the California Office of Planning and Research Guidelines, "Normally Acceptable" means that the "specified land use is satisfactory, based upon the assumption that any building involved is of normal conventional construction, without any special noise insulation requirements.

b. Ldn, or day-night average sound level, is an average 24-hour noise measurement that factors in day and night noise levels.

c. CNEL, or Community Noise Equivalent Level, measurements are a weighted average of sound levels gathered throughout a 24-hour period.

d. Applies to the primary open space area of a detached single-family home, duplex, or mobile home, which is typically the backyard or fenced side yard, as measured from the center of the primary open space area (not the property line). This standard does not apply to secondary open space areas, such as front yards, balconies, stoops, and porches.

e. dBA, or A-weighted decibel scale, is a measurement of noise levels.

f. The exterior noise standard for the residential area west of McClellan Airport known as McClellan Heights/Parker Homes is 65 dBA.

g. Applies to the primary open space areas of townhomes and multi-family apartments or condominiums (private year yards for townhomes; common courtyards, roof gardens, or gathering spaces for multi-family developments). These standards shall not apply to balconies or small attached patios in multistoried multi-family structures.

h. Applies to the Central City and areas with a Residential Mixed-Use designation.

i. All mixed-use projects located anywhere in the City of Sacramento.

j. See notes d and g above for definition of primary open space areas for single-family and multi-family developments.

The Environmental Resources and Constraints element of the City's General Plan includes the following applicable policies:

ERC-10.1 Exterior Noise Standards.

The City shall require noise mitigation for all development where the projected exterior noise levels exceed those shown in Table ERC-1, to the extent feasible.

ERC-10.3 Interior Noise Standards

The City shall require new development to include noise attenuation to assure acceptable interior noise levels appropriate to the land use, as follows:

- 45 dBA L_{dn} for residential, transient lodgings, hospitals, nursing homes, and other uses where people normally sleep; and
- 45 dBA L_{eq} (peak hour with windows closed) for office buildings and similar uses.

ERC-10.4 Interior Noise Review for Multiple, Loud, Short-Term Events.

In cases where new development is proposed in areas subject to frequent, high-noise events (such as aircraft over-flights, or train and truck passbys), the City shall evaluate interior noise impacts at proposed sensitive receptors. The evaluation shall incorporate measures necessary to meet the 45 dBA L_{dn} standard.

City of Sacramento Municipal Code

The City of Sacramento Municipal Code, Section 8.68.060 establishes an allowable exterior noise level limit of 55 dBA L_{50} and 75 dBA L_{max} during daytime (7:00 a.m. to 10:00 p.m.) hours and 50 dBA L_{50} and 70 dBA L_{max} during nighttime (10:00 p.m. to 7:00 a.m.) for sources of noise which occur for more than 30 minutes per hour (L_{50}).

If the existing ambient noise level exceeds the 50/55 dBA L_{50} standard the allowable limit is increased in five dBA increments to encompass the ambient noise level. If the existing ambient noise level exceeds the 70/75 dBA L_{max} noise standard, the limit becomes the measured L_{max} existing ambient noise level. For example, if measured existing ambient daytime noise levels are 57 dBA L_{50} and 77 dBA L_{max}, the noise ordinance limits would be 60 dBA L_{50} and 77 dBA L_{max}.

The City of Sacramento Municipal Code standards are summarized in **Table 7** below.

TABLE 7: STATIONARY NOISE SOURCE NOISE STANDARDS

Noise Level Descriptor	Outdoor Activity Areas Daytime (7 a.m. to 10 p.m.)	Outdoor Activity Areas Nighttime (10 p.m. to 7 a.m.)
Hourly equivalent sound level (L_{50}), dB	55	50
Maximum sound level (L_{max}), dB	75	70

Source: City of Sacramento Municipal Code

The City of Sacramento Municipal Code section 8.68.070 exempts school bands, school athletic events, and school entertainment events from the noise level standards. Therefore, the City of Sacramento General Plan noise level standards listed in **Table 7** will be applied to noise levels on the proposed project which are due to school activities.

Criteria for Acceptable Vibration

Vibration is like noise in that it involves a source, a transmission path, and a receiver. While vibration is related to noise, it differs in that in that noise is generally considered to be pressure waves transmitted through air, whereas vibration usually consists of the excitation of a structure or surface. As with noise, vibration consists of an amplitude and frequency. A person's perception to the vibration will depend on their individual sensitivity to vibration, as well as the amplitude and frequency of the source and the response of the system which is vibrating.

Vibration can be measured in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration measures in terms of peak particle velocities in inches per second. Standards pertaining to perception as well as damage to structures have been developed for vibration levels defined in terms of peak particle velocities.

Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. **Table 8**, which was developed by Caltrans, shows the vibration levels which would normally be required to result in damage to structures. The vibration levels are presented in terms of peak particle velocity in inches per second.

Table 8 indicates that the threshold for architectural damage to structures is 0.20 in/sec p.p.v. A threshold of 0.20 in/sec p.p.v. is considered to be a reasonable threshold for short-term construction projects.

TABLE 8: EFFECTS OF VIBRATION ON PEOPLE AND BUILDINGS

Peak Particle Velocity		Human Reaction	Effect on Buildings
mm/second	in/second		
0.15-0.30	0.006-0.019	Threshold of perception; possibility of intrusion	Vibrations unlikely to cause damage of any type
2.0	0.08	Vibrations readily perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
2.5	0.10	Level at which continuous vibrations begin to annoy people	Virtually no risk of "architectural" damage to normal buildings
5.0	0.20	Vibrations annoying to people in buildings (this agrees with the levels established for people standing on bridges and subjected to relative short periods of vibrations)	Threshold at which there is a risk of "architectural" damage to normal dwelling - houses with plastered walls and ceilings. Special types of finish such as lining of walls, flexible ceiling treatment, etc., would minimize "architectural" damage
10-15	0.4-0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage

Source: *Transportation Related Earthborne Vibrations.* Caltrans. TAV-02-01-R9601. February 20, 2002.

IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Appendix G of the CEQA Guidelines states that a project would normally be considered to result in significant noise impacts if noise levels conflict with adopted environmental standards or plans or if noise generated by the project would substantially increase existing noise levels at sensitive receivers on a permanent or temporary basis. Significance criteria for noise impacts are drawn from CEQA Guidelines Appendix G (Items XI [a-c]).

Would the project:

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

b. Generate excessive groundborne vibration or groundborne noise levels?

c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Noise Level Increase Criteria for Long-Term Project-Related Noise Level Increases

The California Environmental Quality Act (CEQA) guidelines define a significant impact of a project if it "increases substantially the ambient noise levels for adjoining areas." Generally, a project may have a significant effect on the environment if it will substantially increase the ambient noise levels for adjoining areas or expose people to severe noise levels. In practice, more specific professional standards have been developed. These standards state that a noise impact may be considered significant if it would generate noise that would conflict with local project criteria or ordinances, or substantially increase noise levels at noise sensitive land uses. The potential increase in traffic noise from the project is a factor in determining significance. Research into the human perception of changes in sound level indicates the following:

- A 3-dB change is barely perceptible,
- A 5-dB change is clearly perceptible, and
- A 10-dB change is perceived as being twice or half as loud.

A limitation of using a single noise level increase value to evaluate noise impacts is that it fails to account for pre-project noise conditions. **Table 9** is based upon recommendations made by the Federal Interagency Committee on Noise (FICON) to provide guidance in the assessment of changes in ambient noise levels resulting from aircraft operations. The recommendations are based upon studies that relate aircraft noise levels to the percentage of persons highly annoyed by the noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, it has been accepted that they are applicable to all sources of noise described in terms of cumulative noise exposure metrics such as the L_{dn}.

TABLE 9: SIGNIFICANCE OF CHANGES IN NOISE EXPOSURE

Ambient Noise Level Without Project, L_{dn}	Increase Required for Significant Impact
<60 dB	+5.0 dB or more
60-65 dB	+3.0 dB or more
>65 dB	+1.5 dB or more

Source: Federal Interagency Committee on Noise (FICON).

Based on the **Table 9** data, an increase in the traffic noise level of 5 dB or more would be significant where the pre-project noise levels are less than 60 dB L_{dn}, or 3 dB or more where existing noise levels are between 60 to 65 dB L_{dn}. Extending this concept to higher noise levels, an increase in the traffic noise level of 1.5 dB or more may be significant where the pre-project traffic noise level exceeds 65 dB L_{dn}. The rationale for the **Table 9** criteria is that, as ambient noise levels increase, a smaller increase in noise resulting from a project is sufficient to cause annoyance.

Temporary Construction Noise Impacts

With temporary noise impacts (construction), identification of "substantial increases" depends upon the duration of the impact, the temporal daily nature of the impact, and the absolute change in decibel levels. The City of Sacramento's Noise Ordinance of the Municipal Code exempts construction activities from the noise standards, provided that construction takes place between the hours of 7:00 AM and 6:00 PM Monday through Saturday and 9:00 AM and 6:00 PM Sundays and holidays.

PROJECT-SPECIFIC IMPACTS AND CONDITIONS OF APPROVAL

Impact 1: ***Would the project generate 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?***

Traffic Noise Increases at Off-Site Receptors

The FICON guidelines specify criteria to determine the significance of traffic noise impacts. Where existing traffic noise levels are greater than 65 dB L_{dn}, a +1.5 dB L_{dn} increase in roadway noise levels will be considered significant. According to **Table 3**, the maximum increase in traffic noise at the nearest sensitive receptor is predicted to be 1.2 dBA, which is less than the lowest threshold of significance. Therefore, impacts resulting from increased traffic noise would be considered ***less-than-significant***.

Operational Noise at Existing Sensitive Receptors

The City of Sacramento noise level standards require that new projects in the vicinity of existing sensitive receptors generate noise levels no greater than 55 dBA L_{50} and 75 dBA L_{max} during daytime (7:00 a.m. to 10:00 p.m.) hours and 50 dBA L_{50} and 70 dBA L_{max} during nighttime (10:00 p.m. to 7:00 a.m.) hours.

As shown on **Figure 5**, the project is predicted to expose nearby residences to daytime noise levels up to 33 dBA L_{50}. This would comply with the City of Sacramento 55 dBA L_{50} daytime noise standard.

It should be noted that maximum noise levels generated by project uses are not expected to exceed 20 dBA above the median (L_{50}) project noise levels. The City of Sacramento maximum noise level standards are 20 dBA greater than the daytime and nighttime median noise level standards. Therefore, where project noise levels comply with the median noise level standard, they shall also comply with the maximum noise level standard.

Impacts resulting from exterior noise levels due to operation of the project would be considered ***less-than-significant***.

Construction Noise

During the construction phases of the project, noise from construction activities would add to the noise environment in the immediate project vicinity. As indicated in **Table 4**, activities involved in construction would generate maximum noise levels ranging from 76 to 90 dBA L_{max} at a distance of 50 feet. Most of the building construction would occur at distances of 100 feet or greater from the nearest residences. Construction noise associated with parking lot paving would be similar to noise that would be associated with public works projects, such as a roadway widening or street paving projects.

Construction activities would be temporary in nature and would be required to be carried out in conformance with the City's construction hours and therefore would occur during normal daytime working hours.

Noise would also be generated during the construction phase by increased truck traffic on area roadways. A project-generated noise source would be truck traffic associated with transport of heavy materials and equipment to and from the construction site. This noise increase would be of short duration and would occur primarily during daytime hours.

The City of Sacramento exempts construction noise from the Noise Ordinance provisions if construction activity is limited to daytime hours. These exemptions are typical of City and County noise ordinances and reflect the recognition that construction-related noise is temporary in character, is generally acceptable when limited to daylight hours, and is part of what residents of urban areas expect as part of a typical urban noise environment (along with sirens, etc.).

This is a **less-than-significant** impact.

Transportation Noise on Project Site (Non-CEQA Issue)

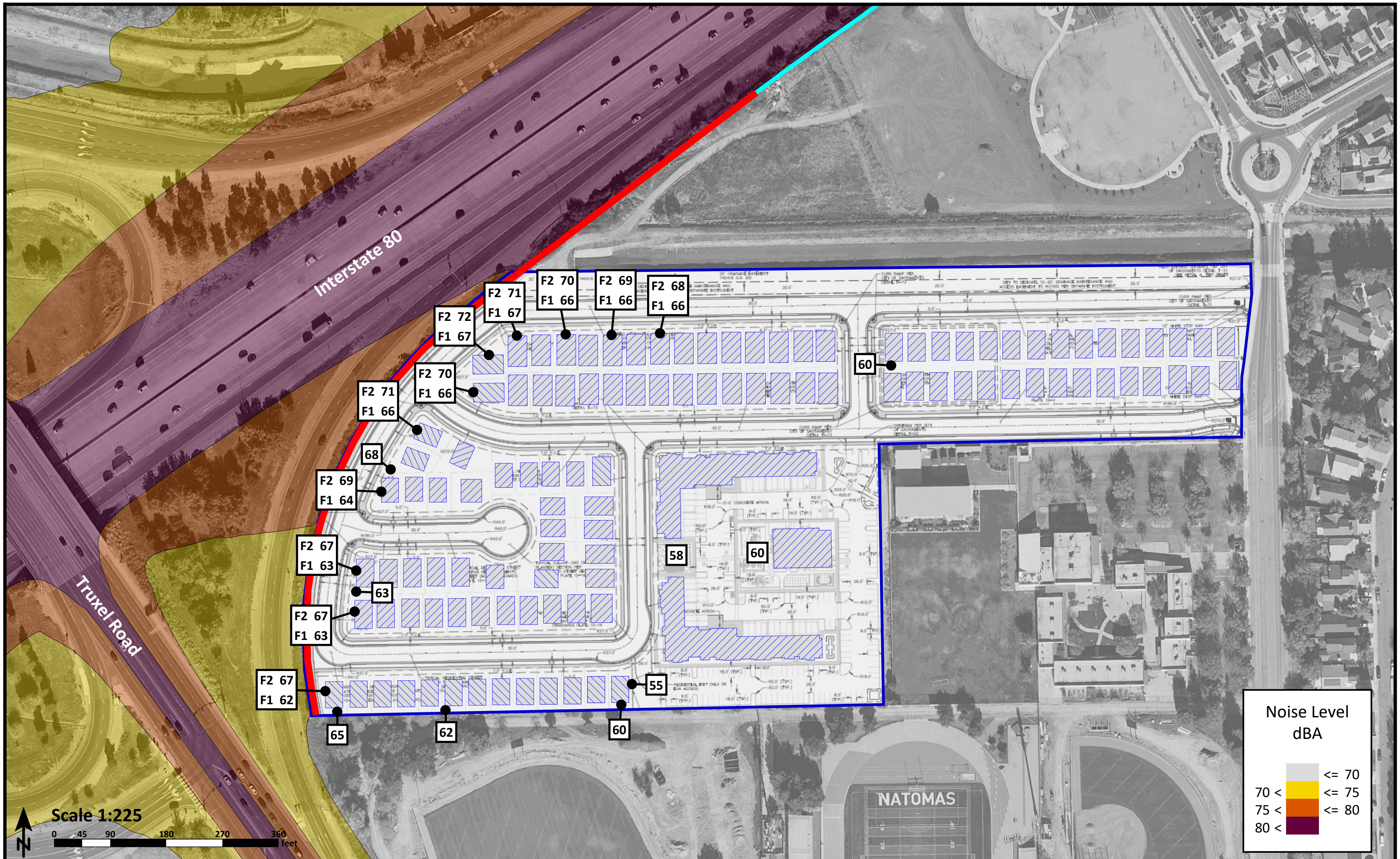
Exterior Transportation Noise

Compliance with City's standards on new noise-sensitive receptors is not a CEQA consideration. However, this information is provided here so that a determination can be made regarding the ability of the proposed project to meet the requirements the City of Sacramento for exterior and interior noise levels at new sensitive uses proposed under the project.

As shown on **Figure 3**, noise levels at the outdoor activity areas of the proposed residential uses are predicted to exceed the City of Sacramento standard of 70 dBA L_{dn} for Urban Residential Infill and Mixed-Use Projects. Therefore, additional noise control measures would be required.

To reduce outdoor noise levels to acceptable levels, Saxelby Acoustics recommends the construction of a 14-foot-tall sound barrier at the western edge of the project site. The barrier location and resulting noise levels are shown on **Figure 6**. Implementation of the noise barrier would reduce outdoor activity area noise levels to 68 dBA L_{dn} or less.

In addition to the recommended 14-foot-tall wall at the project site, the project will construct a wall to connect to the existing sound wall at the Fong Ranch Park. It was determined that this wall must be 12 feet in height to achieve the City standard of 70 dBA L_{dn} for parks.



Russell at Truxel Residential

City of Sacramento, California

Figure 6

Future Transportation Noise Levels with Walls (Ldn, dBA)

Legend

- Project Site
- Project Building
- Noise Level
- 14' Sound Wall
- 12' Sound Wall

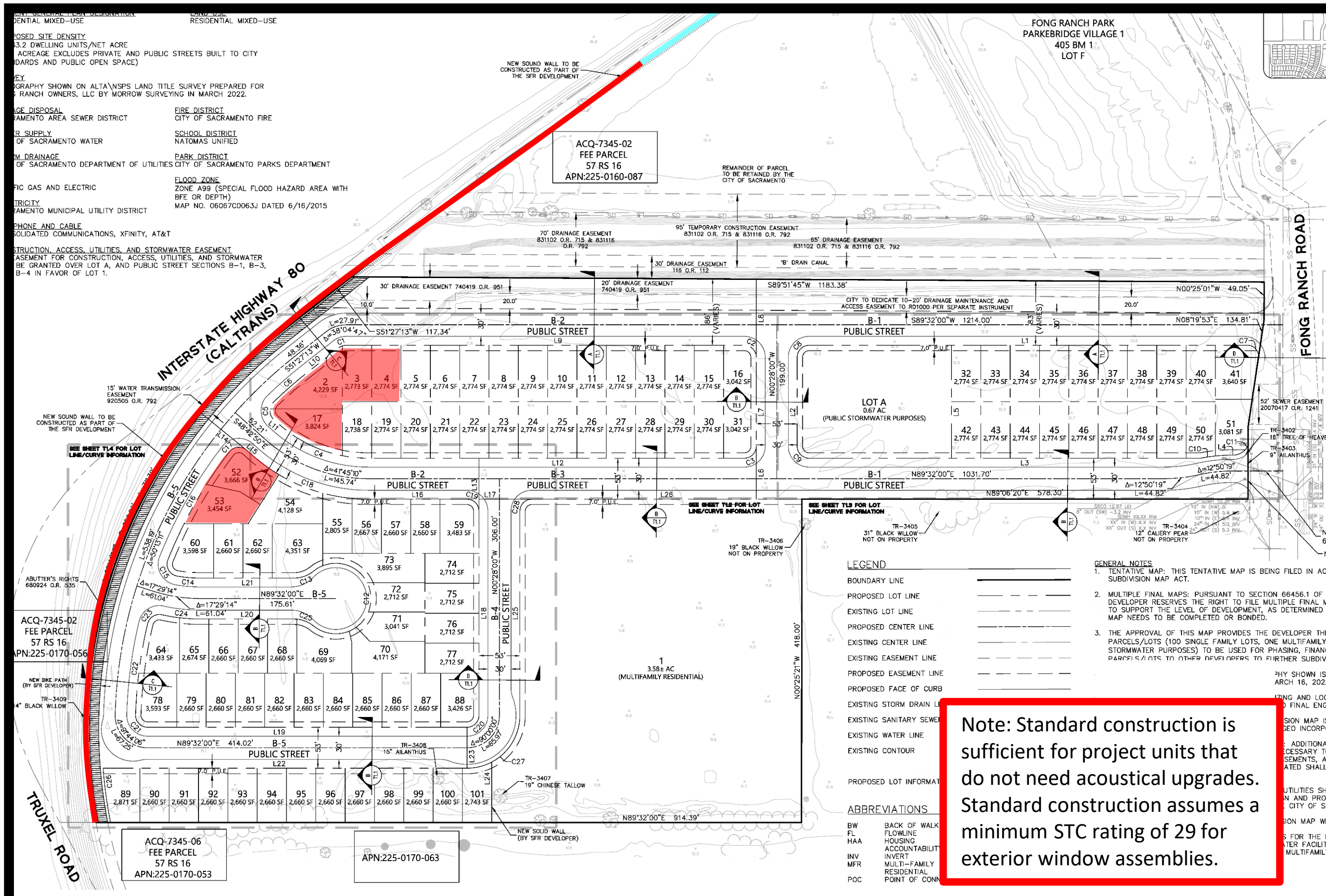
SAXELBY ACOUSTICS

Acoustics • Noise • Vibration

Interior Transportation Noise

Modern building construction methods typically yield an exterior-to-interior noise level reduction of 25 dBA assuming STC 29 or higher rated glazing is utilized. Therefore, where exterior noise levels are 70 dBA L_{dn}, or less, no additional interior noise control measures are typically required to achieve compliance with the City's interior noise level standard of 45 dBA L_{dn}. As shown on **Figure 6**, the proposed project would be exposed to exterior noise levels of up to 72 dBA L_{dn} at the building facades closest to I-80. This would result in interior noise levels of up to 47 dBA L_{dn} at these receivers based on typical building construction. This exceeds the City of Sacramento interior noise standard which requires that interior noise levels do not exceed 45 dBA L_{dn}. Therefore, additional noise control measures are required to reduce interior noise to acceptable levels.

In order to calculate interior noise levels for the actual project construction, it is necessary to determine the noise reduction provided by the residential building facades. This may be calculated by using a measured A-weighted noise frequency spectrum for I-80 road traffic. The composite transmission loss and resulting noise level in the receiving room is first determined. After correcting for room absorption, the overall noise level in the room is calculated. **Appendix D** shows the full inputs and results of these calculations. **Figure 7** shows the residences which require acoustic upgrades at second story exterior facades and details the required noise control measures.



Note: Standard construction is sufficient for project units that do not need acoustical upgrades. Standard construction assumes a minimum STC rating of 29 for exterior window assemblies.

Russell at Truxel Residential

City of Sacramento, California

Figure 7

Interior Noise Control Measures

Legend

Lots Needing Acoustic Upgrades at 2nd Floor

14-Foot Wall

12-Foot Wall

SAXELBY ACOUSTICS
Acoustics · Noise · Vibration

Interior Noise Control Measures
(Required for Indicated Facades of Proposed Building)

Glazing shall have Sound Transmission Class of 34 (STC) rating. Each building requiring interior noise control measures shall also include the following in design:

- *Exterior finish shall be 1-coat stucco with sheathing of equivalent weight;*
- *Interior gypsum at exterior walls shall be 5/8";*
- *Ceiling gypsum shall be 5/8";*
- *Mechanical ventilation shall be installed in all residential uses to allow residents to keep doors and windows closed, as desired for acoustical isolation;*
- *Flooring shall be vinyl plank or carpet.*

Exterior Stationary Noise

As shown on **Figure 4**, all sporting activities operating simultaneously are predicted to generate a maximum of 56 dBA L_{dn} at the nearest project building. The City of Sacramento Noise Ordinance exempts school bands, school athletic events, and school entertainment events. Therefore, the City of Sacramento Municipal Code Stationary Noise Standard does not apply to the proposed project. The City of Sacramento General Plan Noise Element establishes acceptable noise level standards for residential uses. **Table 3** shows that the acceptable noise level at multi-family residential uses is 56 dBA L_{dn}. Therefore, the project is expected to meet the City of Sacramento Exterior Noise Standard of 65 dBA L_{dn} without additional noise control measures, as it relates to noise associated with the school's outdoor sports facilities.

Condition of Approval

Implementation of the following condition of approval would reduce the above impact to a *less-than-significant* level.

The City shall establish the following as conditions of approval for any permit that results in the use of construction equipment:

- Construction shall be limited to 7:00 a.m. to 6:00 p.m. Monday through Saturday and 9:00 a.m. to 6:00 p.m. on Saturday.
- All construction equipment powered by internal combustion engines shall be properly muffled and maintained.
- Quiet construction equipment, particularly air compressors, are to be selected whenever possible.
- All stationary noise-generating construction equipment such as generators or air compressors are to be located as far as is practical from existing residences. In addition, the project contractor shall place such stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site.
- Unnecessary idling of internal combustion engines is prohibited.
- The construction contractor shall, to the maximum extent practical, locate on-site equipment staging areas to maximize the distance between construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction.

Implementation of the above condition of approval would help to reduce construction-generated noise levels. With implementation, this impact would be considered ***less-than-significant***.

<u>Recommended Condition of Approval</u>

Prior to approval of project improvement plans, the plans for the proposed project shall show that the first-row lots shall be shielded from I-80, through the use of minimum 14-foot-tall sound wall per the approval of the City Engineer. The sound wall should extend beyond the site boundary and transition to a 12-foot-tall barrier and finally connect to the existing sound wall at Fong Ranch Park. Sound walls may include a combination of earthen berm and masonry wall to achieve the required wall height. Wall heights shall be measured relative to either pad or roadway centerline elevations, whichever is higher. The approximate locations of these barriers are shown on ***Figure 6****. Other types of barrier may be employed but shall be reviewed by an acoustical engineer prior to being constructed.*

The proposed residential buildings of Lots 2, 3, 4, 17, 52, and 53 as depicted in ***Figure 7*** *shall be designed to achieve an interior noise level of no greater than 45 dBA L_{dn}.* ***Figure 7*** *and* ***Appendix D*** *provide interior noise control measures required to meet the applicable standard. These measures include the use of STC rated 34 glazing. These measures are required at the second floor only.*

Impact 2: Would the project generate excessive groundborne vibration or groundborne noise levels?

Construction vibration impacts include human annoyance and building structural damage. Human annoyance occurs when construction vibration rises significantly above the threshold of perception. Building damage can take the form of cosmetic or structural.

The **Table 7** data indicate that construction vibration levels anticipated for the project are less than the 0.2 in/sec threshold at distances of 26 feet. Sensitive receptors which could be impacted by construction related vibrations, especially vibratory compactors/rollers, are located further than 26 feet from typical construction activities. At distances greater than 26 feet construction vibrations are not predicted to exceed acceptable levels. Additionally, construction activities would be temporary in nature and would likely occur during normal daytime working hours.

This is a **less-than-significant** impact.

Impact 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?

There are no airports within two miles of the project vicinity. Therefore, this impact is not applicable to the proposed project.

REFERENCES

American National Standards Institute. (1998). *[Standard] ANSI S1.43-1997 (R2007): Specifications for integrating-averaging sound level meters*. New York: Acoustical Society of America.

American Standard Testing Methods, *Standard Guide for Measurement of Outdoor A-Weighted Sound Levels, American Standard Testing Methods (ASTM) E1014-08*, 2008.

ASTM E1014-12. *Standard Guide for Measurement of Outdoor A-Weighted Sound Levels*. ASTM International. West Conshohocken, PA. 2012.

ASTM E1780-12. *Standard Guide for Measuring Outdoor Sound Received from a Nearby Fixed Source.* ASTM International. West Conshohocken, PA. 2012.

Barry, T M. (1978). *FHWA highway traffic noise prediction model* (FHWA-RD-77-108). Washington, DC: U.S. Department of transportation, Federal highway administration, Office of research, Office of environmental policy.

California Department of Transportation (Caltrans), *I-80 Comprehensive Multimodal Corridor Plan,* January 2023.

California Department of Transportation (Caltrans), *Technical Noise Supplement, Traffic Noise Analysis Protocol*, September 2013.

California Department of Transportation (Caltrans), *Traffic Noise Analysis Protocol*, May 2011.

Egan, M. D. (1988). Architectural acoustics. United States of America: McGraw-Hill Book Company.

Federal Highway Administration. *FHWA Roadway Construction Noise Model User's Guide.* FHWA-HEP-05-054 DOT-VNTSC-FHWA-05-01. January 2006.

Hanson, Carl E. (Carl Elmer). (2006). *Transit noise and vibration impact assessment*. Washington, DC: U.S. Department of Transportation, Federal Transit Administration, Office of Planning and Environment.

International Electrotechnical Commission. Technical committee 29: Electroacoustics. International Organization of Legal Metrology. (2013). *Electroacoustics: Sound level meters*.

International Organization for Standardization. (1996). *Acoustic - ISO 9613-2: Attenuation of sound during propagation outdoors. Part 2: General methods of calculation*. Ginevra: I.S.O.

Miller, L. N., Bolt, Beranek, & and Newman, Inc. (1981). *Noise control for buildings and manufacturing plants*. Cambridge, MA: Bolt, Beranek and Newman, Inc.

SoundPLAN. SoundPLAN GmbH. Backnang, Germany. http://www.soundplan.eu/english/

Appendix A: Acoustical Terminology

Acoustics	The science of sound.
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
ASTC	Apparent Sound Transmission Class. Similar to STC but includes sound from flanking paths and correct for room reverberation. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Attenuation	The reduction of an acoustic signal.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel or dB	Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.
CNEL	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by +5 dBA and nighttime hours weighted by +10 dBA.
DNL	See definition of Ldn.
IIC	Impact Insulation Class. An integer-number rating of how well a building floor attenuates impact sounds, such as footsteps. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz (Hz).
Ldn	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
Leq	Equivalent or energy-averaged sound level.
Lmax	The highest root-mean-square (RMS) sound level measured over a given period of time.
L(n)	The sound level exceeded a described percentile over a measurement period. For instance, an hourly L50 is the sound level exceeded 50% of the time during the one-hour period.
Loudness	A subjective term for the sensation of the magnitude of sound.
NIC	Noise Isolation Class. A rating of the noise reduction between two spaces. Similar to STC but includes sound from flanking paths and no correction for room reverberation.
NNIC	Normalized Noise Isolation Class. Similar to NIC but includes a correction for room reverberation.
Noise	Unwanted sound.
NRC	Noise Reduction Coefficient. NRC is a single-number rating of the sound-absorption of a material equal to the arithmetic mean of the sound-absorption coefficients in the 250, 500, 1000, and 2,000 Hz octave frequency bands rounded to the nearest multiple of 0.05. It is a representation of the amount of sound energy absorbed upon striking a particular surface. An NRC of 0 indicates perfect reflection; an NRC of 1 indicates perfect absorption.
RT60	The time it takes reverberant sound to decay by 60 dB once the source has been removed.
Sabin	The unit of sound absorption. One square foot of material absorbing 100% of incident sound has an absorption of 1 Sabin.
SEL	Sound Exposure Level. SEL is a rating, in decibels, of a discrete event, such as an aircraft flyover or train pass by, that compresses the total sound energy into a one-second event.
SPC	Speech Privacy Class. SPC is a method of rating speech privacy in buildings. It is designed to measure the degree of speech privacy provided by a closed room, indicating the degree to which conversations occurring within are kept private from listeners outside the room.
STC	Sound Transmission Class. STC is an integer rating of how well a building partition attenuates airborne sound. It is widely used to rate interior partitions, ceilings/floors, doors, windows and exterior wall configurations. The STC rating is typically used to rate the sound transmission of a specific building element when tested in laboratory conditions where flanking paths around the assembly don't exist. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Threshold of Hearing	The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
Threshold of Pain	Approximately 120 dB above the threshold of hearing.
Impulsive	Sound of short duration, usually less than one second, with an abrupt onset and rapid decay.
Simple Tone	Any sound which can be judged as audible as a single pitch or set of single pitches.

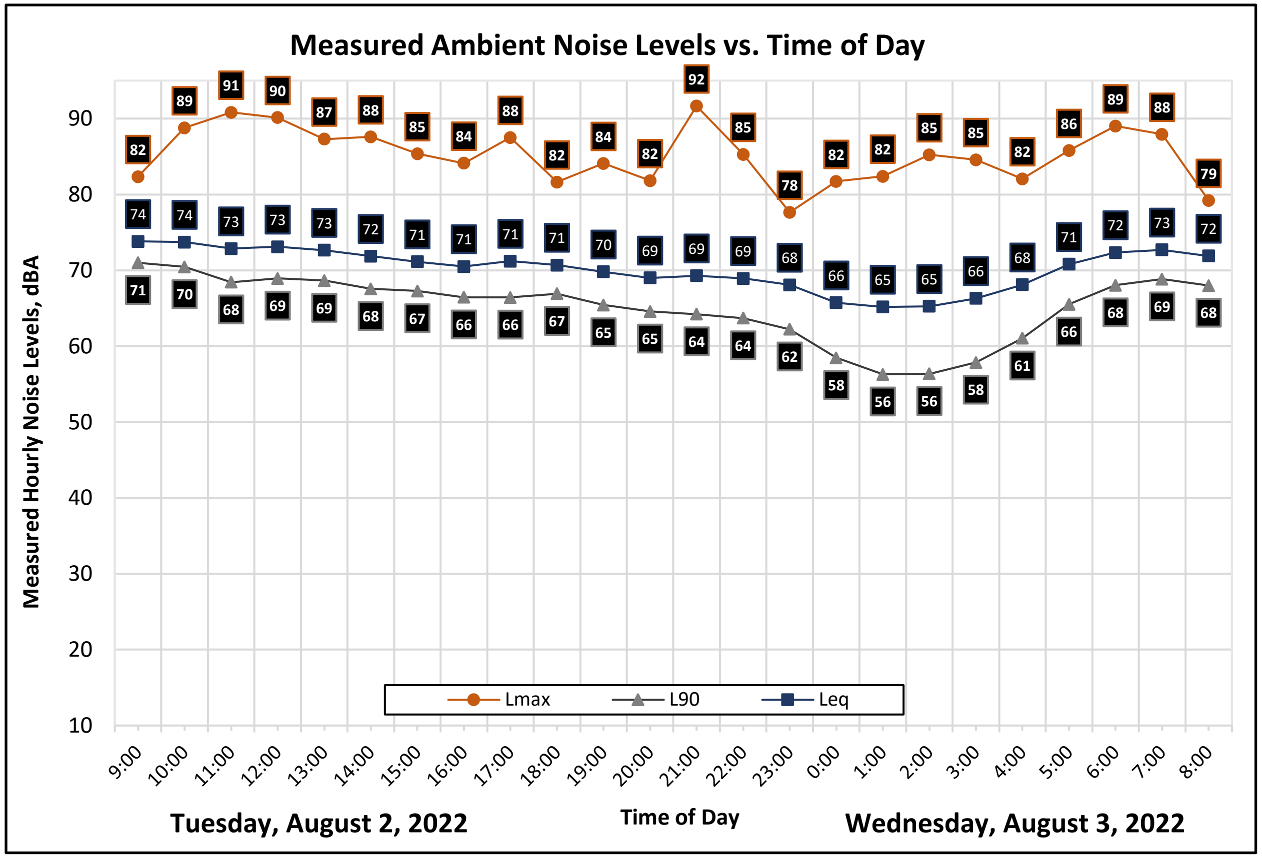
SAXELBY ACOUSTICS
Acoustics · Noise · Vibration

Appendix B1: Continuous Noise Monitoring Results

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Tuesday, August 2, 2022	9:00	74	82	73	71
Tuesday, August 2, 2022	10:00	74	89	73	70
Tuesday, August 2, 2022	11:00	73	91	72	68
Tuesday, August 2, 2022	12:00	73	90	72	69
Tuesday, August 2, 2022	13:00	73	87	72	69
Tuesday, August 2, 2022	14:00	72	88	71	68
Tuesday, August 2, 2022	15:00	71	85	70	67
Tuesday, August 2, 2022	16:00	71	84	70	66
Tuesday, August 2, 2022	17:00	71	88	70	66
Tuesday, August 2, 2022	18:00	71	82	70	67
Tuesday, August 2, 2022	19:00	70	84	69	65
Tuesday, August 2, 2022	20:00	69	82	68	65
Tuesday, August 2, 2022	21:00	69	92	67	64
Tuesday, August 2, 2022	22:00	69	85	67	64
Tuesday, August 2, 2022	23:00	68	78	67	62
Wednesday, August 3, 2022	0:00	66	82	64	58
Wednesday, August 3, 2022	1:00	65	82	62	56
Wednesday, August 3, 2022	2:00	65	85	63	56
Wednesday, August 3, 2022	3:00	66	85	64	58
Wednesday, August 3, 2022	4:00	68	82	66	61
Wednesday, August 3, 2022	5:00	71	86	70	66
Wednesday, August 3, 2022	6:00	72	89	71	68
Wednesday, August 3, 2022	7:00	73	88	72	69
Wednesday, August 3, 2022	8:00	72	79	71	68

Statistics	Leq	Lmax	L50	L90
Day Average	72	86	71	68
Night Average	69	84	66	61
Day Low	69	79	67	64
Day High	74	92	73	71
Night Low	65	78	62	56
Night High	72	89	71	68
Ldn	76	Day %		78
CNEL	76	Night %		22

Site: LT-1
Project: Russell at Truxel Residential
Meter: LDL 820-6
Location: Western Project Boundary
Calibrator: CAL200
Coordinates: 38.6327798°, -121.4981890°

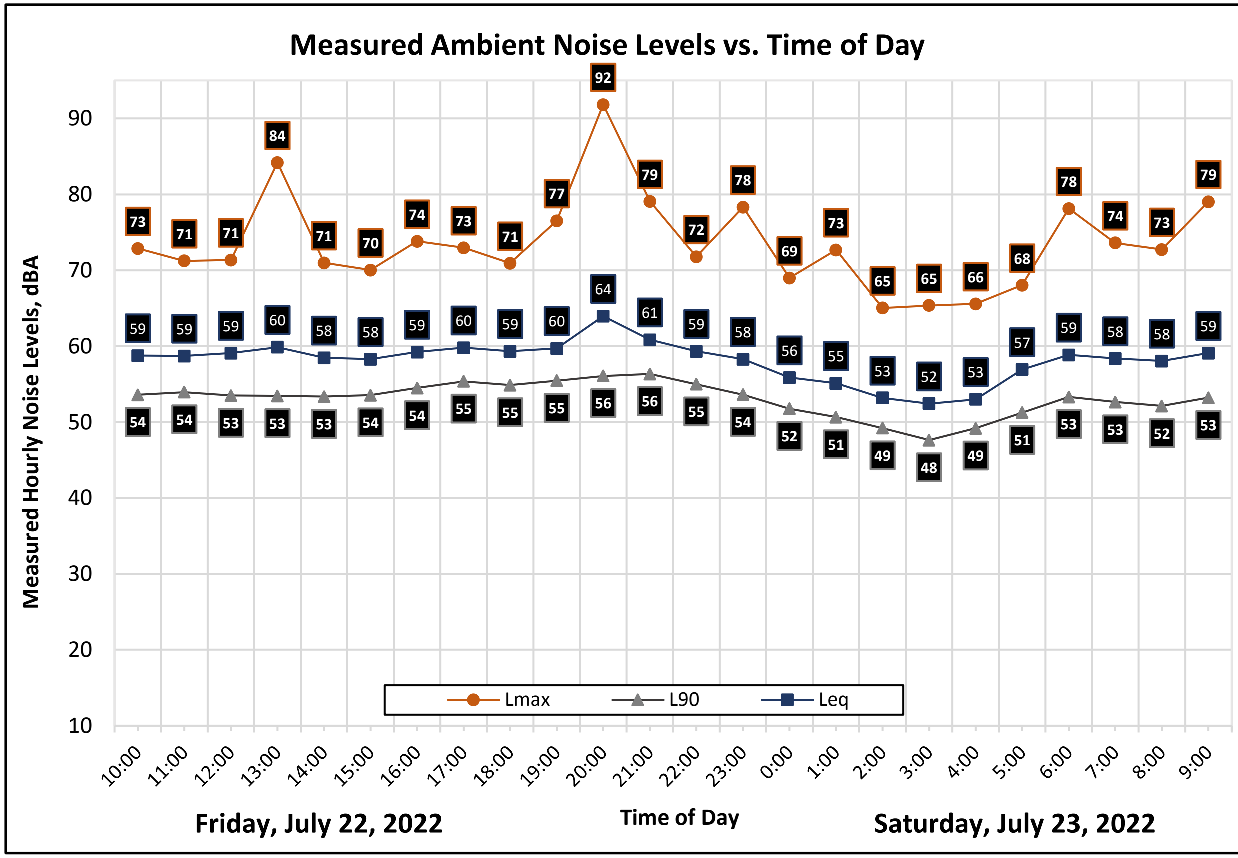


Appendix B2a: Continuous Noise Monitoring Results

Site: LT-2
Project: Russell at Truxel Residential
Location: Southern Project Boundary
Coordinates: 38.6327798°, -121.4981890°
Meter: LDL 820-3
Calibrator: CAL200

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Friday, July 22, 2022	10:00	59	73	57	54
Friday, July 22, 2022	11:00	59	71	57	54
Friday, July 22, 2022	12:00	59	71	57	53
Friday, July 22, 2022	13:00	60	84	57	53
Friday, July 22, 2022	14:00	58	71	57	53
Friday, July 22, 2022	15:00	58	70	57	54
Friday, July 22, 2022	16:00	59	74	58	54
Friday, July 22, 2022	17:00	60	73	59	55
Friday, July 22, 2022	18:00	59	71	58	55
Friday, July 22, 2022	19:00	60	77	58	55
Friday, July 22, 2022	20:00	64	92	59	56
Friday, July 22, 2022	21:00	61	79	59	56
Friday, July 22, 2022	22:00	59	72	58	55
Friday, July 22, 2022	23:00	58	78	56	54
Saturday, July 23, 2022	0:00	56	69	54	52
Saturday, July 23, 2022	1:00	55	73	53	51
Saturday, July 23, 2022	2:00	53	65	52	49
Saturday, July 23, 2022	3:00	52	65	51	48
Saturday, July 23, 2022	4:00	53	66	52	49
Saturday, July 23, 2022	5:00	57	68	55	51
Saturday, July 23, 2022	6:00	59	78	56	53
Saturday, July 23, 2022	7:00	58	74	56	53
Saturday, July 23, 2022	8:00	58	73	55	52
Saturday, July 23, 2022	9:00	59	79	57	53

Statistics	Leq	Lmax	L50	L90
Day Average	60	75	57	54
Night Average	57	70	54	51
Day Low	58	70	55	52
Day High	64	92	59	56
Night Low	52	65	51	48
Night High	59	78	58	55
Ldn	64	Day %		78
CNEL	64	Night %		22

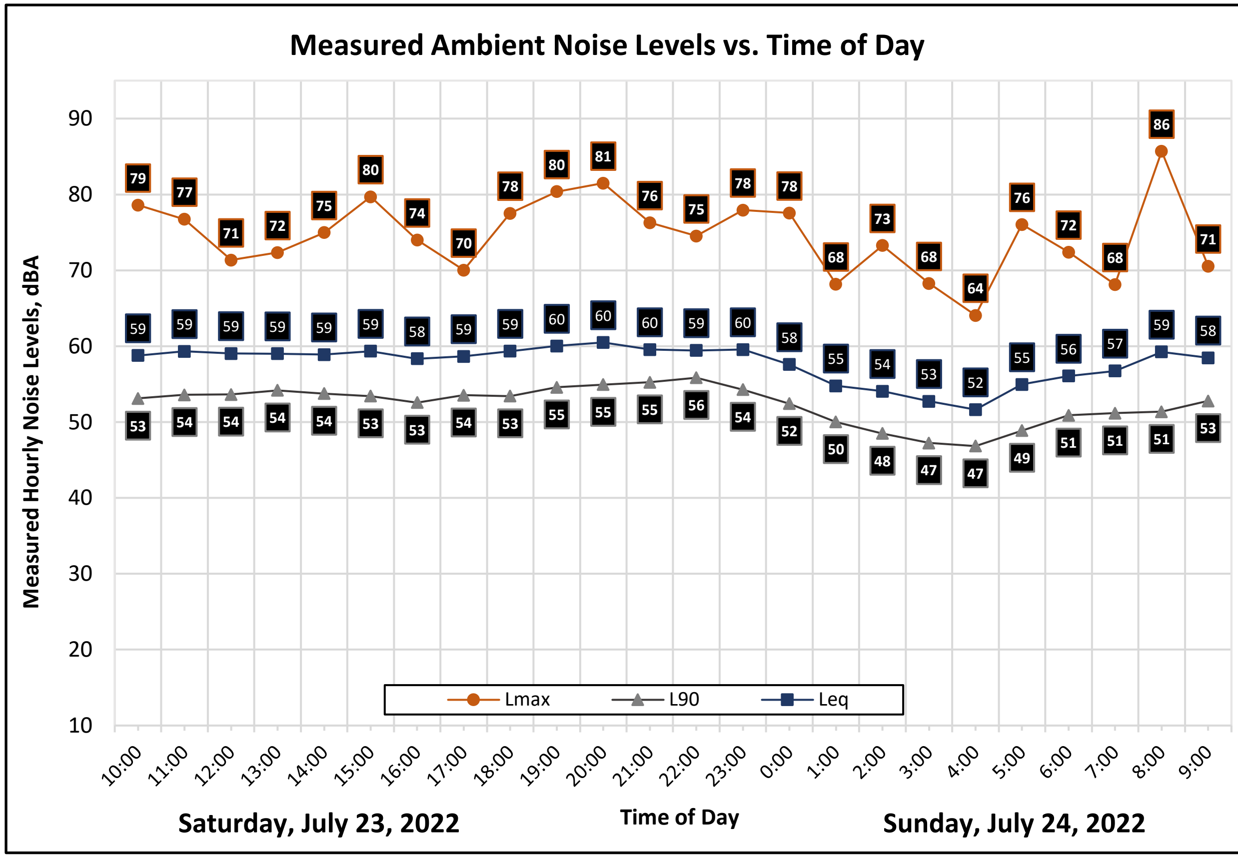


Appendix B2b: Continuous Noise Monitoring Results

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Saturday, July 23, 2022	10:00	59	79	56	53
Saturday, July 23, 2022	11:00	59	77	57	54
Saturday, July 23, 2022	12:00	59	71	57	54
Saturday, July 23, 2022	13:00	59	72	58	54
Saturday, July 23, 2022	14:00	59	75	57	54
Saturday, July 23, 2022	15:00	59	80	57	53
Saturday, July 23, 2022	16:00	58	74	56	53
Saturday, July 23, 2022	17:00	59	70	57	54
Saturday, July 23, 2022	18:00	59	78	57	53
Saturday, July 23, 2022	19:00	60	80	58	55
Saturday, July 23, 2022	20:00	60	81	58	55
Saturday, July 23, 2022	21:00	60	76	58	55
Saturday, July 23, 2022	22:00	59	75	58	56
Saturday, July 23, 2022	23:00	60	78	58	54
Sunday, July 24, 2022	0:00	58	78	56	52
Sunday, July 24, 2022	1:00	55	68	53	50
Sunday, July 24, 2022	2:00	54	73	52	48
Sunday, July 24, 2022	3:00	53	68	50	47
Sunday, July 24, 2022	4:00	52	64	50	47
Sunday, July 24, 2022	5:00	55	76	52	49
Sunday, July 24, 2022	6:00	56	72	54	51
Sunday, July 24, 2022	7:00	57	68	54	51
Sunday, July 24, 2022	8:00	59	86	55	51
Sunday, July 24, 2022	9:00	58	71	56	53

Statistics	Leq	Lmax	L50	L90
Day Average	59	76	57	53
Night Average	56	72	54	51
Day Low	57	68	54	51
Day High	60	86	58	55
Night Low	52	64	50	47
Night High	60	78	58	56
Ldn	63	Day %		75
CNEL	64	Night %		25

Site: LT-2
Project: Russell at Truxel Residential
Location: Southern Project Boundary
Coordinates: 38.6327798°, -121.4981890°
Meter: LDL 820-3
Calibrator: CAL200



Appendix B2c: Continuous Noise Monitoring Results

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Sunday, July 24, 2022	10:00	59	73	57	53
Sunday, July 24, 2022	11:00	59	73	57	53
Sunday, July 24, 2022	12:00	59	82	57	53
Sunday, July 24, 2022	13:00	59	71	57	54
Sunday, July 24, 2022	14:00	59	73	58	55
Sunday, July 24, 2022	15:00	59	81	56	53
Sunday, July 24, 2022	16:00	59	79	57	53
Sunday, July 24, 2022	17:00	60	79	58	54
Sunday, July 24, 2022	18:00	59	72	57	54
Sunday, July 24, 2022	19:00	59	81	57	55
Sunday, July 24, 2022	20:00	60	75	59	56
Sunday, July 24, 2022	21:00	59	75	58	55
Sunday, July 24, 2022	22:00	60	82	57	54
Sunday, July 24, 2022	23:00	56	76	54	52
Monday, July 25, 2022	0:00	55	78	52	50
Monday, July 25, 2022	1:00	53	67	51	48
Monday, July 25, 2022	2:00	51	65	49	47
Monday, July 25, 2022	3:00	52	65	51	48
Monday, July 25, 2022	4:00	56	67	54	51
Monday, July 25, 2022	5:00	59	82	57	53
Monday, July 25, 2022	6:00	61	74	59	56
Monday, July 25, 2022	7:00	61	75	59	56
Monday, July 25, 2022	8:00	59	73	57	54
Monday, July 25, 2022	9:00	58	77	56	53

Statistics	Leq	Lmax	L50	L90
Day Average	59	76	57	54
Night Average	57	73	54	51
Day Low	58	71	56	53
Day High	61	82	59	56
Night Low	51	65	49	47
Night High	61	82	59	56
Ldn	64	Day %		72
CNEL	64	Night %		28

Site: LT-2

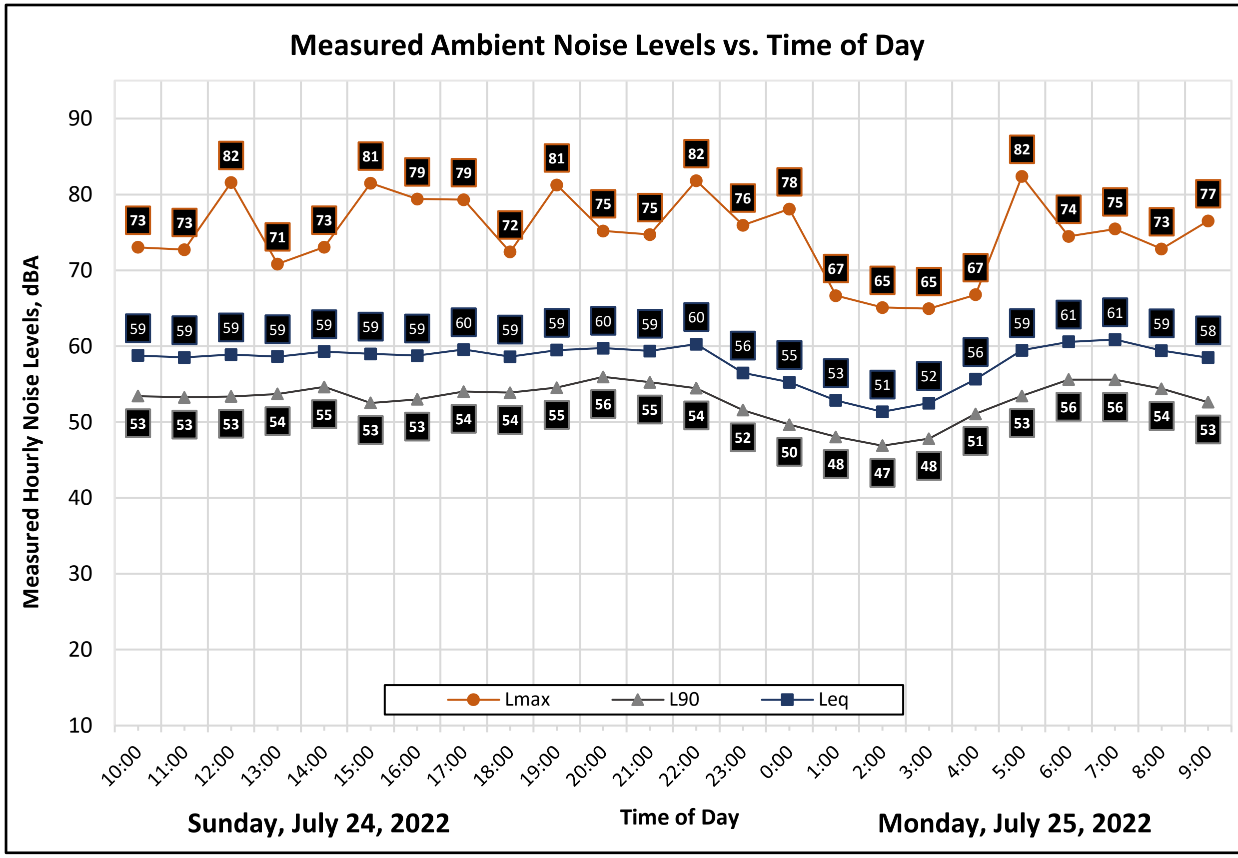
Project: Russell at Truxel Residential

Location: Southern Project Boundary

Coordinates: 38.6327798°, -121.4981890°

Meter: LDL 820-3

Calibrator: CAL200

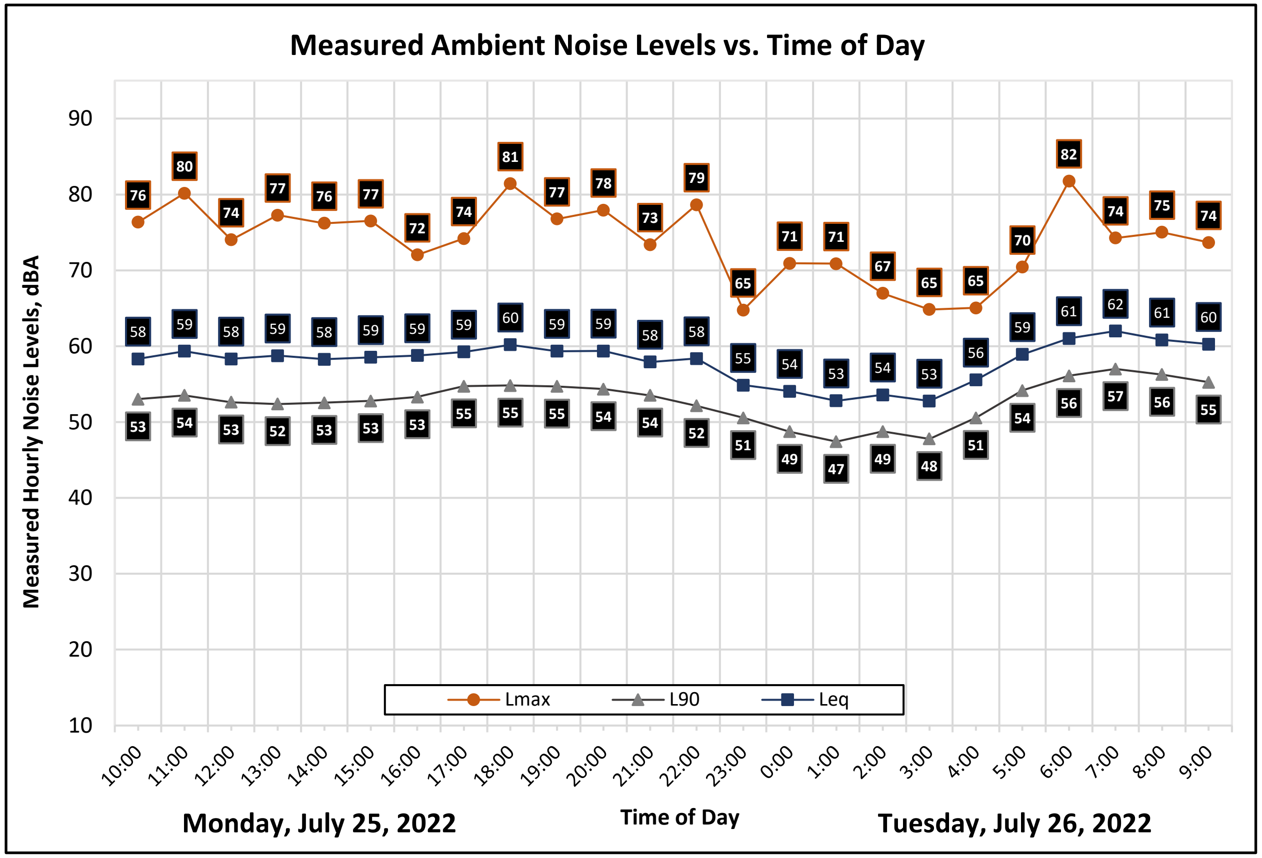


Appendix B2d: Continuous Noise Monitoring Results

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Monday, July 25, 2022	10:00	58	76	56	53
Monday, July 25, 2022	11:00	59	80	57	54
Monday, July 25, 2022	12:00	58	74	56	53
Monday, July 25, 2022	13:00	59	77	56	52
Monday, July 25, 2022	14:00	58	76	56	53
Monday, July 25, 2022	15:00	59	77	57	53
Monday, July 25, 2022	16:00	59	72	57	53
Monday, July 25, 2022	17:00	59	74	58	55
Monday, July 25, 2022	18:00	60	81	58	55
Monday, July 25, 2022	19:00	59	77	58	55
Monday, July 25, 2022	20:00	59	78	57	54
Monday, July 25, 2022	21:00	58	73	56	54
Monday, July 25, 2022	22:00	58	79	55	52
Monday, July 25, 2022	23:00	55	65	53	51
Tuesday, July 26, 2022	0:00	54	71	52	49
Tuesday, July 26, 2022	1:00	53	71	50	47
Tuesday, July 26, 2022	2:00	54	67	52	49
Tuesday, July 26, 2022	3:00	53	65	51	48
Tuesday, July 26, 2022	4:00	56	65	54	51
Tuesday, July 26, 2022	5:00	59	70	57	54
Tuesday, July 26, 2022	6:00	61	82	59	56
Tuesday, July 26, 2022	7:00	62	74	61	57
Tuesday, July 26, 2022	8:00	61	75	60	56
Tuesday, July 26, 2022	9:00	60	74	59	55

Statistics	Leq	Lmax	L50	L90
Day Average	59	76	57	54
Night Average	57	70	54	51
Day Low	58	72	56	52
Day High	62	81	61	57
Night Low	53	65	50	47
Night High	61	82	59	56
Ldn	64	Day %		76
CNEL	64	Night %		24

Site: LT-2
Project: Russell at Truxel Residential
Location: Southern Project Boundary
Coordinates: 38.6327798°, -121.4981890°
Meter: LDL 820-3
Calibrator: CAL200

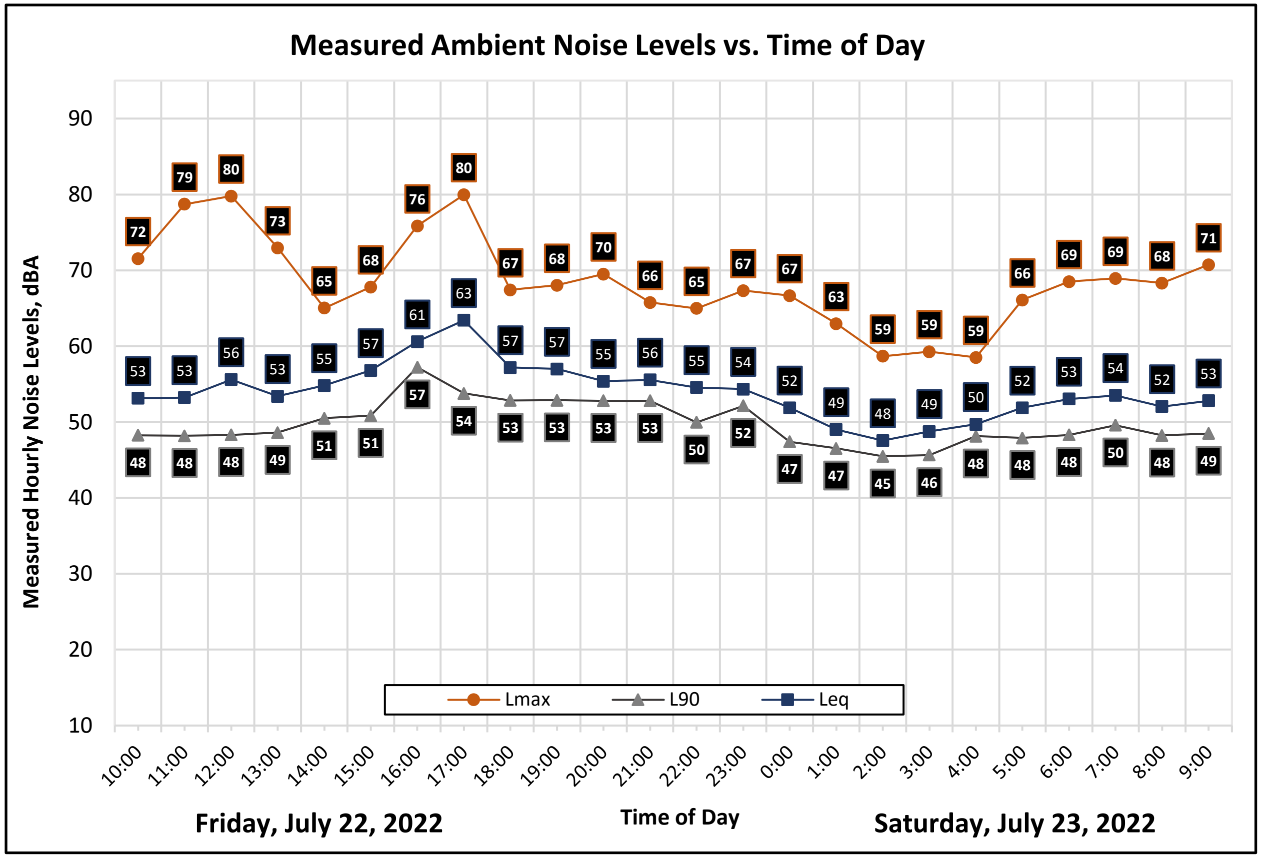


Appendix B3a: Continuous Noise Monitoring Results

Site: LT-3
Project: Russell at Truxel Residential
Meter: LDL 820-5
Location: South-Eastern Project Boundary
Calibrator: CAL200
Coordinates: 38.6327846°, -121.4958179°

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Friday, July 22, 2022	10:00	53	72	50	48
Friday, July 22, 2022	11:00	53	79	50	48
Friday, July 22, 2022	12:00	56	80	51	48
Friday, July 22, 2022	13:00	53	73	51	49
Friday, July 22, 2022	14:00	55	65	53	51
Friday, July 22, 2022	15:00	57	68	54	51
Friday, July 22, 2022	16:00	61	76	60	57
Friday, July 22, 2022	17:00	63	80	58	54
Friday, July 22, 2022	18:00	57	67	55	53
Friday, July 22, 2022	19:00	57	68	56	53
Friday, July 22, 2022	20:00	55	70	55	53
Friday, July 22, 2022	21:00	56	66	55	53
Friday, July 22, 2022	22:00	55	65	54	50
Friday, July 22, 2022	23:00	54	67	54	52
Saturday, July 23, 2022	0:00	52	67	49	47
Saturday, July 23, 2022	1:00	49	63	48	47
Saturday, July 23, 2022	2:00	48	59	47	45
Saturday, July 23, 2022	3:00	49	59	48	46
Saturday, July 23, 2022	4:00	50	59	49	48
Saturday, July 23, 2022	5:00	52	66	50	48
Saturday, July 23, 2022	6:00	53	69	50	48
Saturday, July 23, 2022	7:00	54	69	51	50
Saturday, July 23, 2022	8:00	52	68	50	48
Saturday, July 23, 2022	9:00	53	71	50	49

Statistics	Leq	Lmax	L50	L90
Day Average	57	71	53	51
Night Average	52	64	50	48
Day Low	52	65	50	48
Day High	63	80	60	57
Night Low	48	59	47	45
Night High	55	69	54	52
Ldn	59	Day %		84
CNEL	60	Night %		16

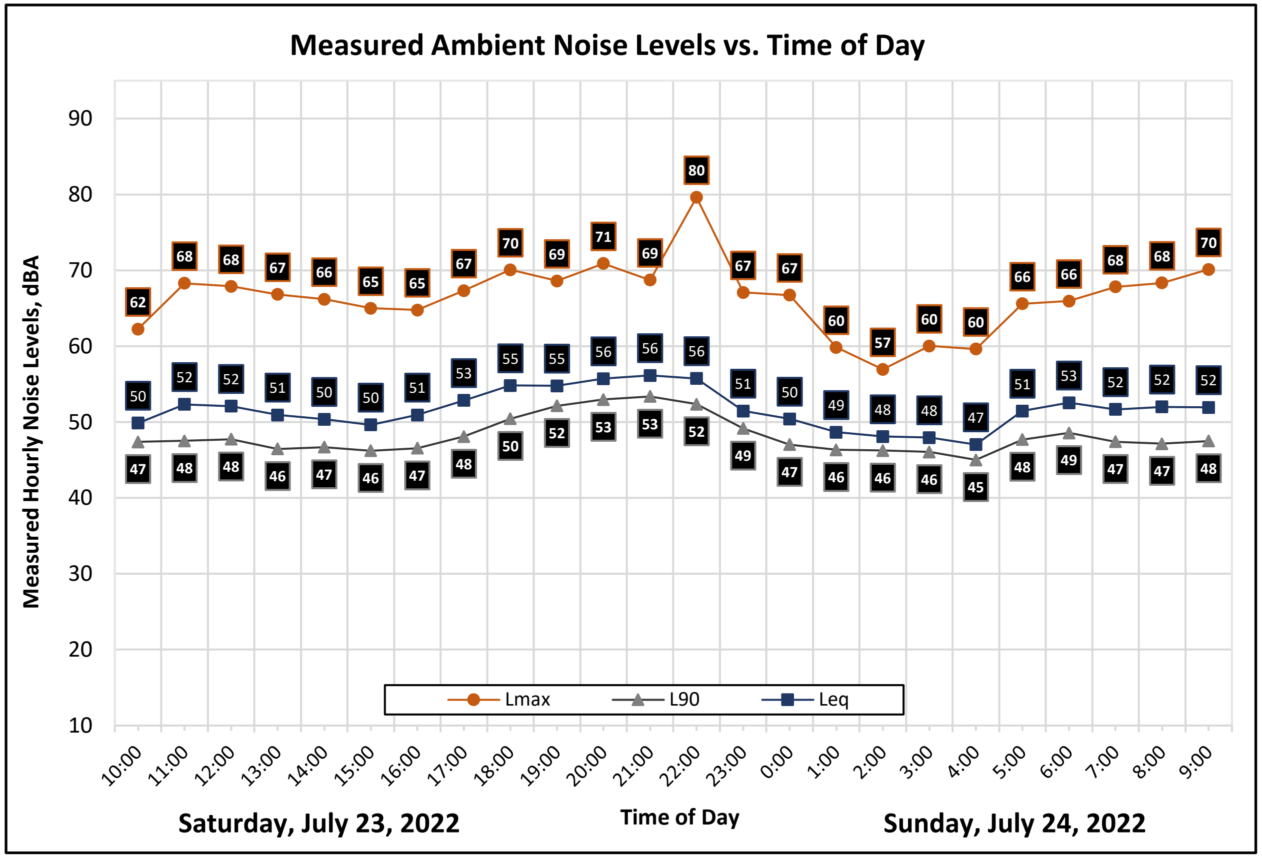


Appendix B3b: Continuous Noise Monitoring Results

Site: LT-3
Project: Russell at Truxel Residential
Location: South-Eastern Project Boundary
Coordinates: 38.6327846°, -121.4958179°
Meter: LDL 820-5
Calibrator: CAL200

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Saturday, July 23, 2022	10:00	50	62	49	47
Saturday, July 23, 2022	11:00	52	68	49	48
Saturday, July 23, 2022	12:00	52	68	50	48
Saturday, July 23, 2022	13:00	51	67	49	46
Saturday, July 23, 2022	14:00	50	66	49	47
Saturday, July 23, 2022	15:00	50	65	48	46
Saturday, July 23, 2022	16:00	51	65	49	47
Saturday, July 23, 2022	17:00	53	67	51	48
Saturday, July 23, 2022	18:00	55	70	53	50
Saturday, July 23, 2022	19:00	55	69	54	52
Saturday, July 23, 2022	20:00	56	71	55	53
Saturday, July 23, 2022	21:00	56	69	55	53
Saturday, July 23, 2022	22:00	56	80	54	52
Saturday, July 23, 2022	23:00	51	67	51	49
Sunday, July 24, 2022	0:00	50	67	49	47
Sunday, July 24, 2022	1:00	49	60	48	46
Sunday, July 24, 2022	2:00	48	57	48	46
Sunday, July 24, 2022	3:00	48	60	48	46
Sunday, July 24, 2022	4:00	47	60	46	45
Sunday, July 24, 2022	5:00	51	66	50	48
Sunday, July 24, 2022	6:00	53	66	50	49
Sunday, July 24, 2022	7:00	52	68	49	47
Sunday, July 24, 2022	8:00	52	68	49	47
Sunday, July 24, 2022	9:00	52	70	49	48

Statistics	Leq	Lmax	L50	L90
Day Average	53	68	50	49
Night Average	51	65	49	48
Day Low	50	62	48	46
Day High	56	71	55	53
Night Low	47	57	46	45
Night High	56	80	54	52
Ldn	58	Day %		71
CNEL	59	Night %		29

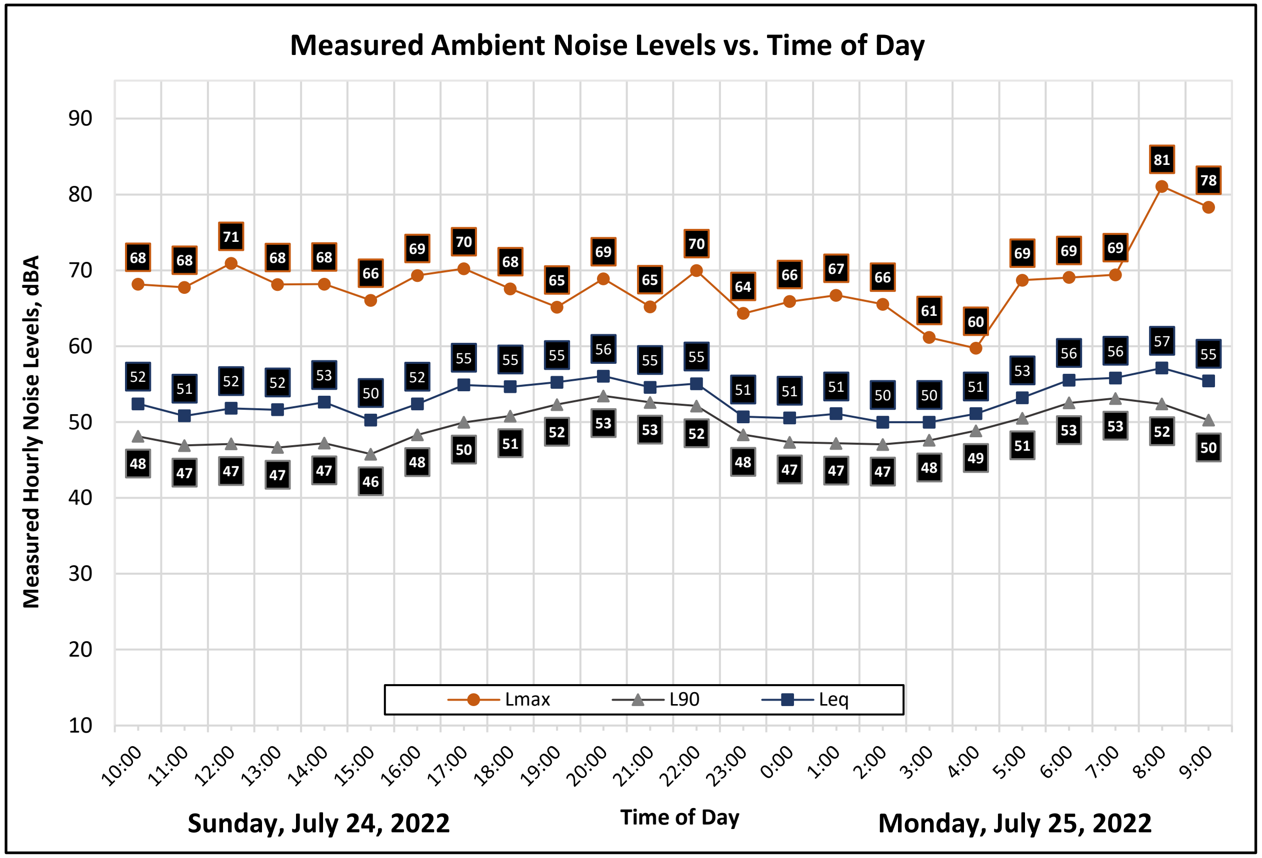


Appendix B3c: Continuous Noise Monitoring Results

Site: LT-3
Project: Russell at Truxel Residential
Location: South-Eastern Project Boundary
Coordinates: 38.6327846°, -121.4958179°
Meter: LDL 820-5
Calibrator: CAL200

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Sunday, July 24, 2022	10:00	52	68	50	48
Sunday, July 24, 2022	11:00	51	68	49	47
Sunday, July 24, 2022	12:00	52	71	49	47
Sunday, July 24, 2022	13:00	52	68	48	47
Sunday, July 24, 2022	14:00	53	68	49	47
Sunday, July 24, 2022	15:00	50	66	48	46
Sunday, July 24, 2022	16:00	52	69	51	48
Sunday, July 24, 2022	17:00	55	70	53	50
Sunday, July 24, 2022	18:00	55	68	53	51
Sunday, July 24, 2022	19:00	55	65	54	52
Sunday, July 24, 2022	20:00	56	69	55	53
Sunday, July 24, 2022	21:00	55	65	54	53
Sunday, July 24, 2022	22:00	55	70	54	52
Sunday, July 24, 2022	23:00	51	64	50	48
Monday, July 25, 2022	0:00	51	66	49	47
Monday, July 25, 2022	1:00	51	67	49	47
Monday, July 25, 2022	2:00	50	66	49	47
Monday, July 25, 2022	3:00	50	61	49	48
Monday, July 25, 2022	4:00	51	60	51	49
Monday, July 25, 2022	5:00	53	69	52	51
Monday, July 25, 2022	6:00	56	69	54	53
Monday, July 25, 2022	7:00	56	69	54	53
Monday, July 25, 2022	8:00	57	81	54	52
Monday, July 25, 2022	9:00	55	78	52	50

Statistics	Leq	Lmax	L50	L90
Day Average	54	70	52	50
Night Average	52	66	51	49
Day Low	50	65	48	46
Day High	57	81	55	53
Night Low	50	60	49	47
Night High	56	70	54	53
Ldn	59	Day %		71
CNEL	59	Night %		29

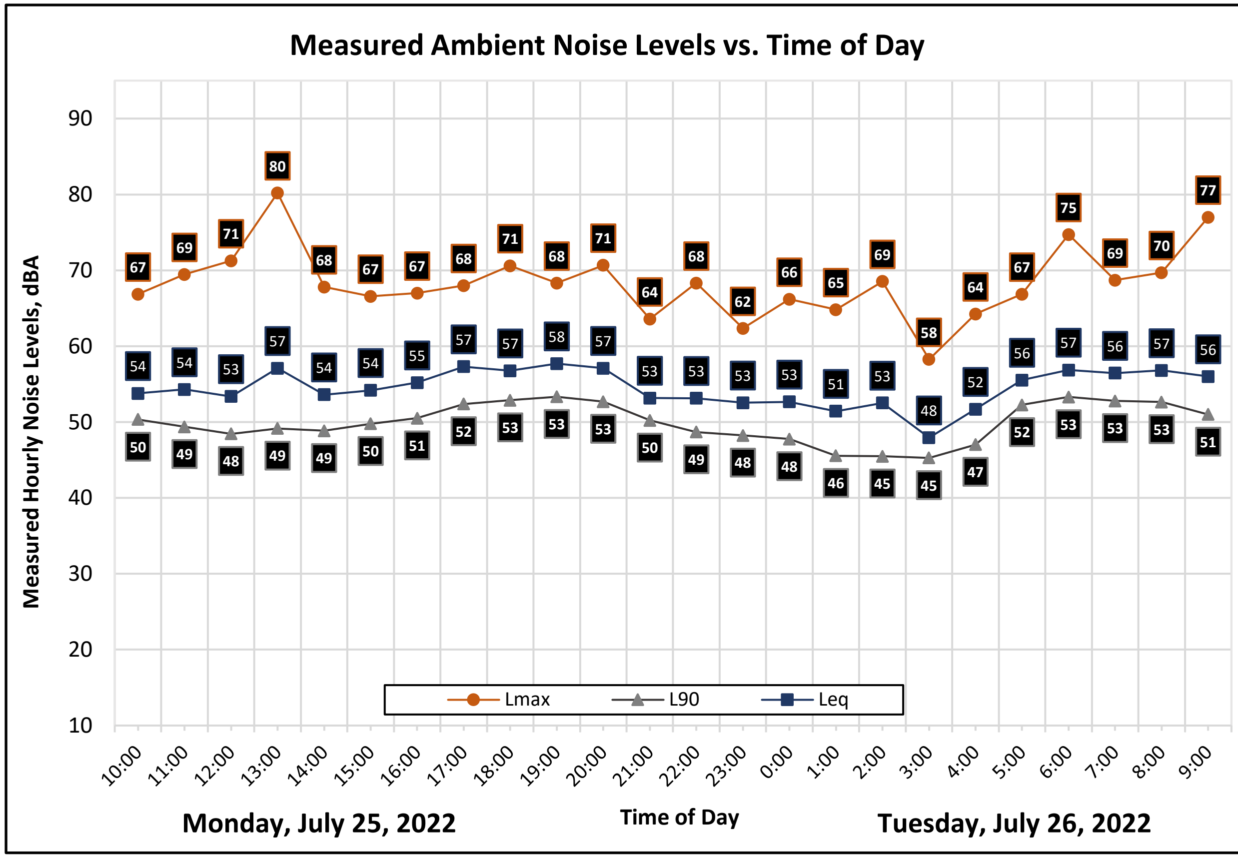


Appendix B3d: Continuous Noise Monitoring Results

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Monday, July 25, 2022	10:00	54	67	52	50
Monday, July 25, 2022	11:00	54	69	51	49
Monday, July 25, 2022	12:00	53	71	50	48
Monday, July 25, 2022	13:00	57	80	52	49
Monday, July 25, 2022	14:00	54	68	52	49
Monday, July 25, 2022	15:00	54	67	52	50
Monday, July 25, 2022	16:00	55	67	53	51
Monday, July 25, 2022	17:00	57	68	56	52
Monday, July 25, 2022	18:00	57	71	55	53
Monday, July 25, 2022	19:00	58	68	56	53
Monday, July 25, 2022	20:00	57	71	55	53
Monday, July 25, 2022	21:00	53	64	52	50
Monday, July 25, 2022	22:00	53	68	50	49
Monday, July 25, 2022	23:00	53	62	50	48
Tuesday, July 26, 2022	0:00	53	66	51	48
Tuesday, July 26, 2022	1:00	51	65	48	46
Tuesday, July 26, 2022	2:00	53	69	50	45
Tuesday, July 26, 2022	3:00	48	58	47	45
Tuesday, July 26, 2022	4:00	52	64	50	47
Tuesday, July 26, 2022	5:00	56	67	54	52
Tuesday, July 26, 2022	6:00	57	75	55	53
Tuesday, July 26, 2022	7:00	56	69	55	53
Tuesday, July 26, 2022	8:00	57	70	55	53
Tuesday, July 26, 2022	9:00	56	77	54	51

Statistics	Leq	Lmax	L50	L90
Day Average	56	70	53	51
Night Average	53	66	51	48
Day Low	53	64	50	48
Day High	58	80	56	53
Night Low	48	58	47	45
Night High	57	75	55	53
Ldn	60	Day %		75
CNEL	61	Night %		25

Site: LT-3
Project: Russell at Truxel Residential
Location: South-Eastern Project Boundary
Coordinates: 38.6327846°, -121.4958179°
Meter: LDL 820-5
Calibrator: CAL200



Appendix B4 : Short Term Noise Monitoring Results

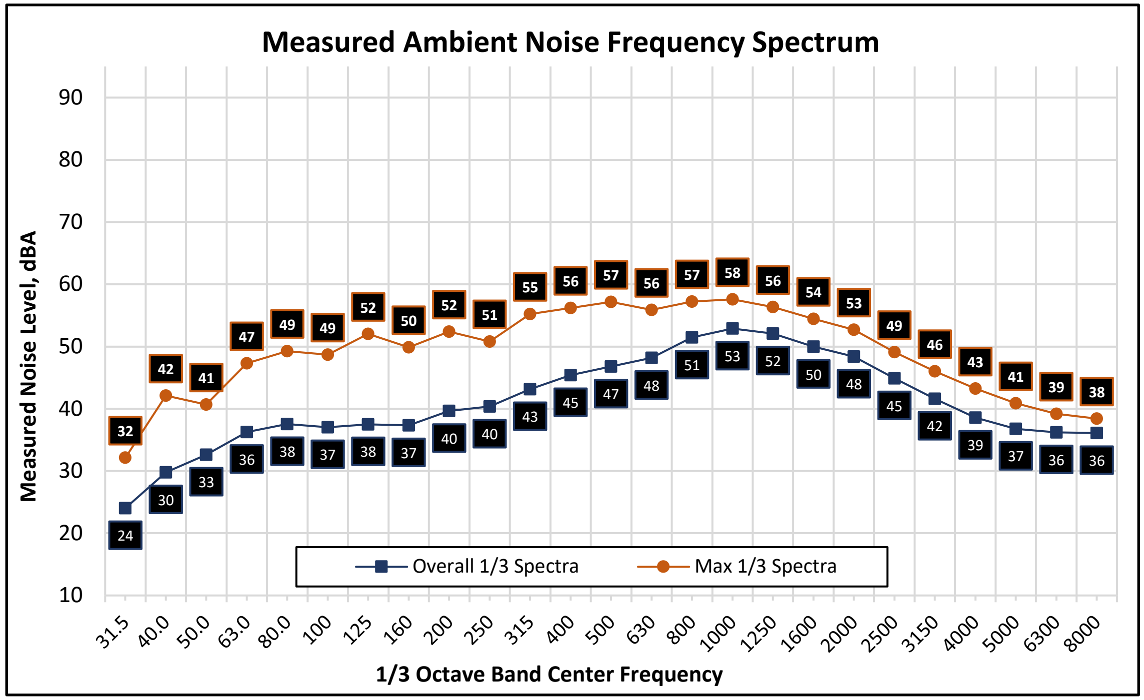
Site: ST-1
Project: Russell at Truxel Residential
Location: North-West Project Boundary
Coordinates: 38.633826023: -121.4974678157735°
Meter: LDL 831-3
Calibrator: CAL200

Start: 2022-07-22 10:16:33
Stop: 2022-07-22 10:26:43
SLM: Model 831
Serial: 1329

Measurement Results, dBA	
Duration:	0:10
L_{eq}:	60
L_{max}:	64
L_{min}:	55
L_{50}:	59
L_{90}:	56

Notes

Primary noise source was traffic on I-80, Aircrafts were observed overhead during short term measurement.



Appendix C: Traffic Noise Calculation Inputs and Results

Appendix C-1

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Project #: 220707
Description: EPAP Traffic
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) - No Offset 60 dBA	65 dBA	70 dBA	Level, dBA
1	Truxel Rd	Between I-80 and San Juan Rd	33,650	75	0	25	1.0%	1.0%	45	115	-5	411	191	89	63.3
2	San Juan Rd	East of Truxel Rd	19,830	75	0	25	1.0%	1.0%	40	85	-5	238	110	51	61.7
3	Truxel Rd	North of San Juan Rd	32,760	75	0	25	1.0%	1.0%	45	75	-5	404	187	87	66.0
4	Truxel Rd	South of San Juan Rd	22,980	75	0	25	1.0%	1.0%	40	85	-5	262	122	57	62.3
5	Fong Ranch Rd	East of Bridgeway Cir	2,950	75	0	25	1.0%	1.0%	25	75	0	36	17	8	55.2
6	Fong Ranch Rd	South of Bridgeway Cir	3,180	75	0	25	1.0%	1.0%	25	80	0	38	17	8	55.1
7	Fong Ranch Rd	South of South St	4,020	75	0	25	1.0%	1.0%	25	70	0	44	20	9	57.0
8	Fong Ranch Rd	North of Old West Dr	4,050	75	0	25	1.0%	1.0%	25	60	0	44	21	10	58.0
9	Fong Ranch Rd	South of Old West Dr	5,090	75	0	25	1.0%	1.0%	25	65	0	51	24	11	58.5
10	Fong Ranch Rd	Between Old West Dr and San Juan Rd	7,950	75	0	25	1.0%	1.0%	25	55	0	69	32	15	61.5
11	Fong Ranch Rd	North of San Juan Rd	9,730	75	0	25	1.0%	1.0%	25	155	0	79	37	17	55.6
12	San Juan Rd	East of Fong Ranch Rd	14,060	75	0	25	1.0%	1.0%	40	105	0	189	88	41	63.8
13	San Juan Rd	West of Fong Ranch Rd	18,480	75	0	25	1.0%	1.0%	40	65	0	227	105	49	68.1
14	San Juan Rd	East of Pony Express Dr	13,520	75	0	25	1.0%	1.0%	40	70	-5	184	86	40	61.3
15	San Juan Rd	East of Bridgeford Dr	12,740	75	0	25	1.0%	1.0%	40	85	-5	177	82	38	59.8

SAXELBY ACOUSTICS
Acoustics · Noise · Vibration

Appendix C-2
FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Project #: 220707
Description: EPAP Plus Project Traffic
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) - No Offset 60 dBA	65 dBA	70 dBA	Level, dBA
1	Truxel Rd	Between I-80 and San Juan Rd	34,150	75	0	25	1.0%	1.0%	45	115	-5	415	193	89	63.4
2	San Juan Rd	East of Truxel Rd	20,720	75	0	25	1.0%	1.0%	40	85	-5	245	114	53	61.9
3	Truxel Rd	North of San Juan Rd	33,260	75	0	25	1.0%	1.0%	45	75	-5	408	189	88	66.0
4	Truxel Rd	South of San Juan Rd	23,320	75	0	25	1.0%	1.0%	40	85	-5	265	123	57	62.4
5	Fong Ranch Rd	East of Bridgeway Cir	3,140	75	0	25	1.0%	1.0%	25	75	0	37	17	8	55.4
6	Fong Ranch Rd	South of Bridgeway Cir	3,390	75	0	25	1.0%	1.0%	25	80	0	39	18	8	55.4
7	Fong Ranch Rd	South of South St	5,270	75	0	25	1.0%	1.0%	25	70	0	53	24	11	58.1
8	Fong Ranch Rd	North of Old West Dr	5,310	75	0	25	1.0%	1.0%	25	60	0	53	25	11	59.2
9	Fong Ranch Rd	South of Old West Dr	6,340	75	0	25	1.0%	1.0%	25	65	0	60	28	13	59.4
10	Fong Ranch Rd	Between Old West Dr and San Juan Rd	10,300	75	0	25	1.0%	1.0%	25	55	0	82	38	18	62.6
11	Fong Ranch Rd	North of San Juan Rd	10,980	75	0	25	1.0%	1.0%	25	155	0	86	40	19	56.2
12	San Juan Rd	East of Fong Ranch Rd	14,420	75	0	25	1.0%	1.0%	40	105	0	192	89	41	63.9
13	San Juan Rd	West of Fong Ranch Rd	19,370	75	0	25	1.0%	1.0%	40	65	0	234	109	50	68.3
14	San Juan Rd	East of Pony Express Dr	13,840	75	0	25	1.0%	1.0%	40	70	-5	187	87	40	61.4
15	San Juan Rd	East of Bridgeford Dr	13,210	75	0	25	1.0%	1.0%	40	85	-5	181	84	39	59.9

SAXELBY ACOUSTICS
Acoustics · Noise · Vibration

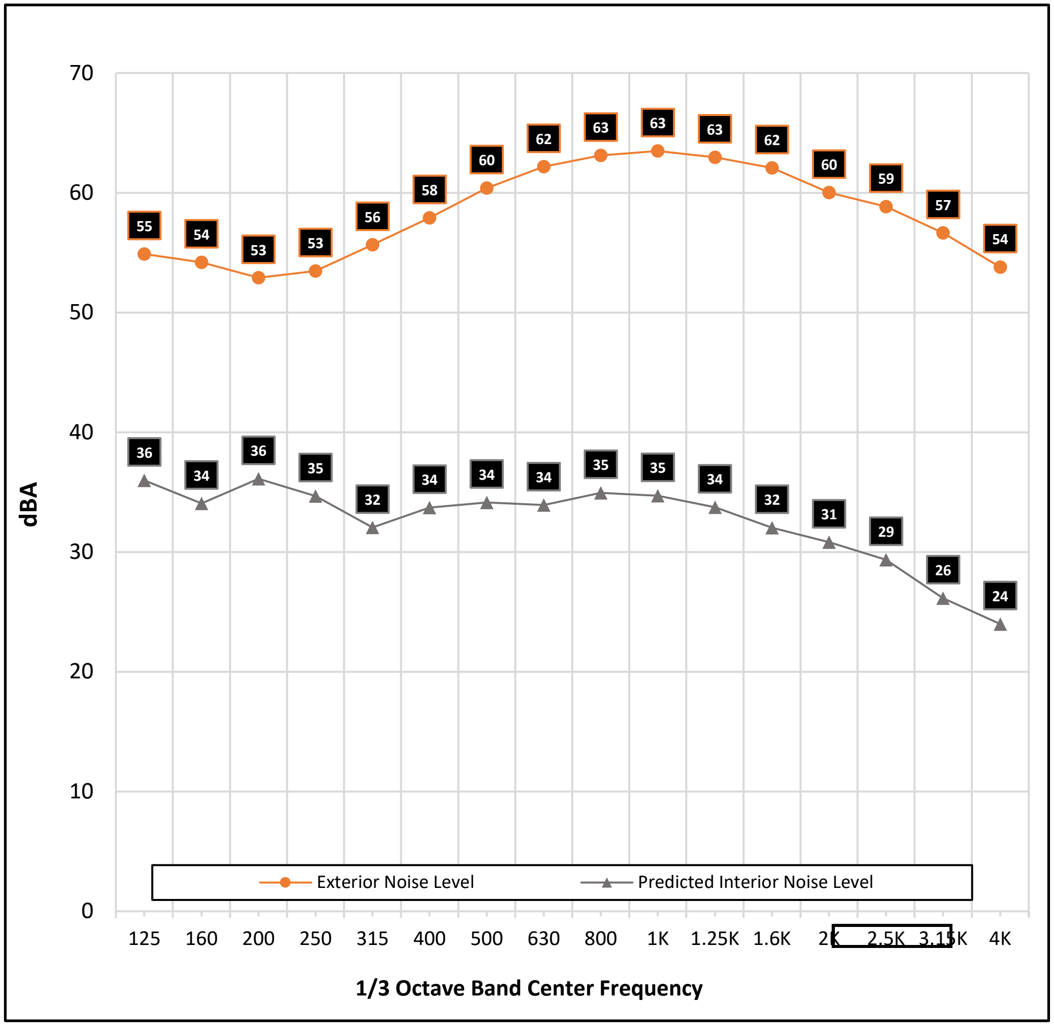
Appendix D: Exterior to Interior Noise Reduction Calculations

Appendix D1: Interior Noise Calculation Sheet

Project: Russell at Truxel Residential
Room Description: Bedroom

Inputs		
Parallel Exterior level, dBA:	72.0	**Ldn**
Correction Factor, dBA:	5.0	
Noise Source:	Freeway Traffic - I80 Davis	
Room Length, ft:	10.0	
Room Width, ft:	10.0	
Room Height, ft:	8.0	
Transmitting Panel Length, ft:	20.0	
Glazing Area, ft:	50.0	
Ceiling Finish:	**Gyp Board**	
Ceiling, sf:	100	
Wall Finish 1:	**Gyp Board**	
Wall Finish 1, sf:	270	
Wall Finish 2:	**Glass**	
Wall Finish 2, sf:	50	
Floor:	**Vinyl Plank**	
Floor, sf:	100	
Misc. Finish:	**Soft Furnishings**	
Misc. Finish, sf:	25	
Transmitting Element 1:	**Wall - 1-Coat Stucco, 5/8" gyp INSUL**	
Element 1, sf:	110	
Transmitting Element 2:	**Glazing - STC 34**	
Element 2, sf:	50	
Transmitting Element 3:		
Element 3, sf:		
Transmitting Element 4:		
Element 4, sf:		

Predicted Interior Noise Level, dBA: 45
Noise Reduction, dBA: -27



SAXELBY ACOUSTICS
Acoustics · Noise · Vibration