Environmental Noise Assessment

Dutch Bros. Freedom Point

City of Roseville, California

February 21, 2024

Project #240204

Prepared for:

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INTRODUCTION

The Dutch Bros. Freedom Point Project is located in the City of Roseville, California. The project will consist of a drive-thru coffee shop with a parking lot. The primary noise source associated with operation of the project is drive-thru operations and parking lot circulation. Single family residential uses are located to the south of the project site. The purpose of this analysis is to predict the noise generation associated with these uses and to achieve compliance with the applicable City of Roseville noise level standards.

Figure 1 shows the project site plan. **Figure 2** shows an aerial photo of the project site and noise measurement locations.

ENVIRONMENTAL SETTING

BACKGROUND INFORMATION ON NOISE

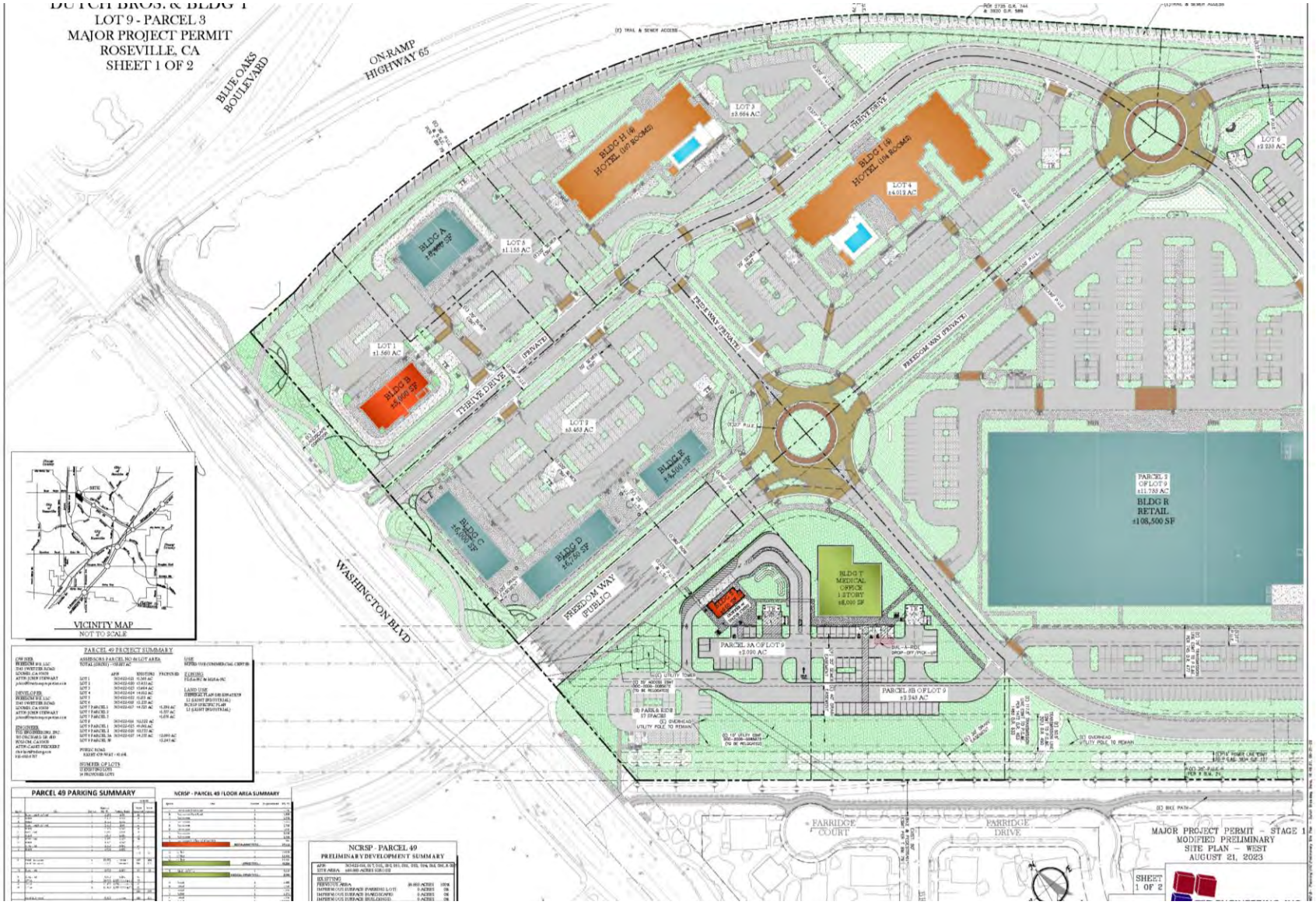
Fundamentals of Acoustics

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. All noise levels reported in this section are in terms of A-weighted levels, but are expressed as dB, unless otherwise noted.



Dutch Bros. Freedom Point

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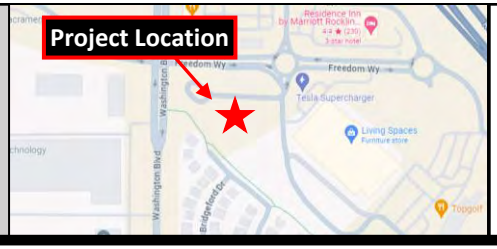
Figure 1

Project Site Plan



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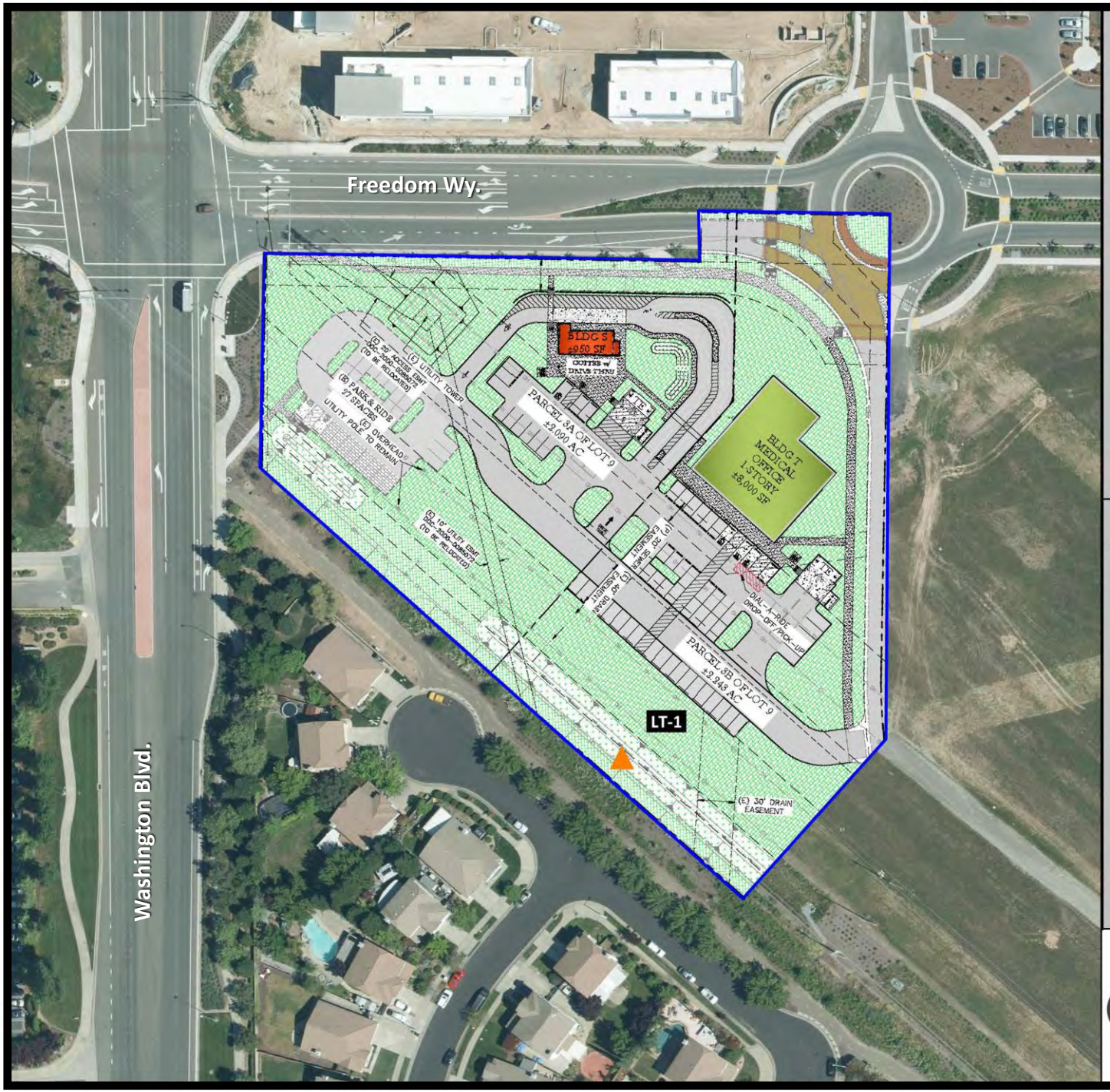

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Figure 2

Noise Measurement Sites

Legend

- Project Site
- Noise Measurement Site - Long Term

0 ft 50 ft 100 ft 200 ft

Projection: UTM Zone 10 / WGS84 / meters
Rev. Date: 02/21/2024

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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 (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 AMBIENT NOISE LEVELS

The existing noise environment in the project area is defined primarily by traffic on Washington Boulevard and Freedom Way.

To quantify the existing ambient noise environment in the project vicinity, Saxelby Acoustics conducted a continuous (24-hr.) noise level measurement at one location on the project site. 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 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 precision integrating sound level meters were used for the ambient noise level measurement survey. The meters were calibrated before and after use with a CAL200 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 (west project boundary)	2/9/24	58	55	52	71	51	50	61
	2/10/24	59	56	51	72	52	50	62
	2/11/24	56	51	49	67	50	49	63
	2/12/24	57	52	49	69	51	49	62
Average		58	54	50	70	51	50	62

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 2024*

REGULATORY CONTEXT

FEDERAL

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

STATE

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

LOCAL

City of Roseville Municipal Code - § 9.24.100 Sound limits for sensitive receptors.

It is unlawful for any person at any location to create any sound, or to allow the creation of any sound, on property owned, leased, occupied or otherwise controlled by such person, which causes the exterior sound level when measured at the property line of any affected sensitive receptor to exceed the ambient sound level by three dBA or exceed the sound level standards as set forth in Table 1 **(Table 3)**, by three dBA, whichever is greater.

TABLE 3: SOUND LEVEL STANDARDS (FOR NON-TRANSPORTATION OR FIXED SOUND SOURCES)

Sound Level Descriptor	Daytime (7:00 a.m. to 10:00 p.m.)	Nighttime (10:00 p.m. to 7:00 a.m.)
Hourly L_{eq}, dB	50	45
Maximum Level, dB	70	65

A. Each of the sound level standards specified in Table 1 **(Table 3)** shall be reduced by five dB for simple tone noises, consisting of speech and music. However, in no case shall the sound level standard be lower than the ambient sound level plus three dB.

B. If the intruding sound source is continuous and cannot reasonably be discontinued or stopped for a time period whereby the ambient sound level can be measured, the sound level measured while the source is in operation shall be compared directly to the sound level standards of Table 1 **(Table 3)**.

(Ord. 3638 § 1, 2001)

Summary of Noise Level Standards

Table 3 shows the City of Roseville Municipal Code noise level standards for stationary noise sources. The Municipal Code sets a base noise level standard of 50 dBA L_{eq} during daytime (7:00 a.m. to 10:00 p.m.) hours and 45 dBA L_{eq} during nighttime (10:00 p.m. to 7:00 a.m.) hours at the property line of the adjacent residential uses. Where ambient noise exceeds these standards, the standard becomes the ambient noise level plus 3 dB.

As shown by **Table 2**, the average day/nighttime noise levels are 54 dBA L_{eq} and 51 dBA L_{eq}, respectively. Therefore, Saxelby Acoustics adjusted the City of Roseville stationary noise level standard to 57 dBA L_{eq} for daytime (7:00 a.m. to 10:00 p.m.) hours and 54 dBA L_{eq} for nighttime (10:00 p.m. to 7:00 p.m.) hours.

In addition, the City of Roseville maximum stationary noise level standard should be adjusted to 74 dBA L_{max} during daytime (7:00 a.m. to 10:00 p.m.) hours based on measured average maximum ambient noise levels. The nighttime maximum standard was left at 65 dBA L_{max} based upon the average nighttime maximum of 62 dBA L_{max}.

EVALUATION OF PROJECT OPERATIONAL NOISE ON EXISTING SENSITIVE RECEPTORS

The primary noise source on the proposed project site would be vehicle idling from the drive-thru lane with the addition of general parking lot circulation and deliveries. Saxelby Acoustics used noise level data collected by Bollard Acoustical Consultants (BAC) for a similar Dutch Bros.[1] It should be noted that Saxelby Acoustics conservatively assumed that the proposed project could operate daytime (7:00 a.m. to 10:00 p.m.) or nighttime (10:00 p.m. to 7:00 a.m.) hours.

Drive-Thru: Saxelby Acoustics estimated that project drive through lane usage could occur continuously during the day or night hours. The drive-through aisle are predicted to produce continuous noise levels of 61 dBA L_{eq} and 71 dBA L_{max} at 15 feet. No ordering speaker is proposed as all orders will be taken by Dutch Bros staff on foot in the drive-through queue lanes. Data includes normal car stereo noise, vehicle idling, and conversational speech between Dutch Bros staff and patrons.

On-Site Circulation: The project parking lot is assumed to fill and empty in a busy hour and could include up to two heavy trucks for deliveries or garbage collection. 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. 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 3** shows the noise level contours resulting from operation of the project.

[1] Bollard Acoustical Consultants (BAC), Dutch Bros. Coffee Drive-Through Environmental Noise Assessment Elk Grove, June 2020.

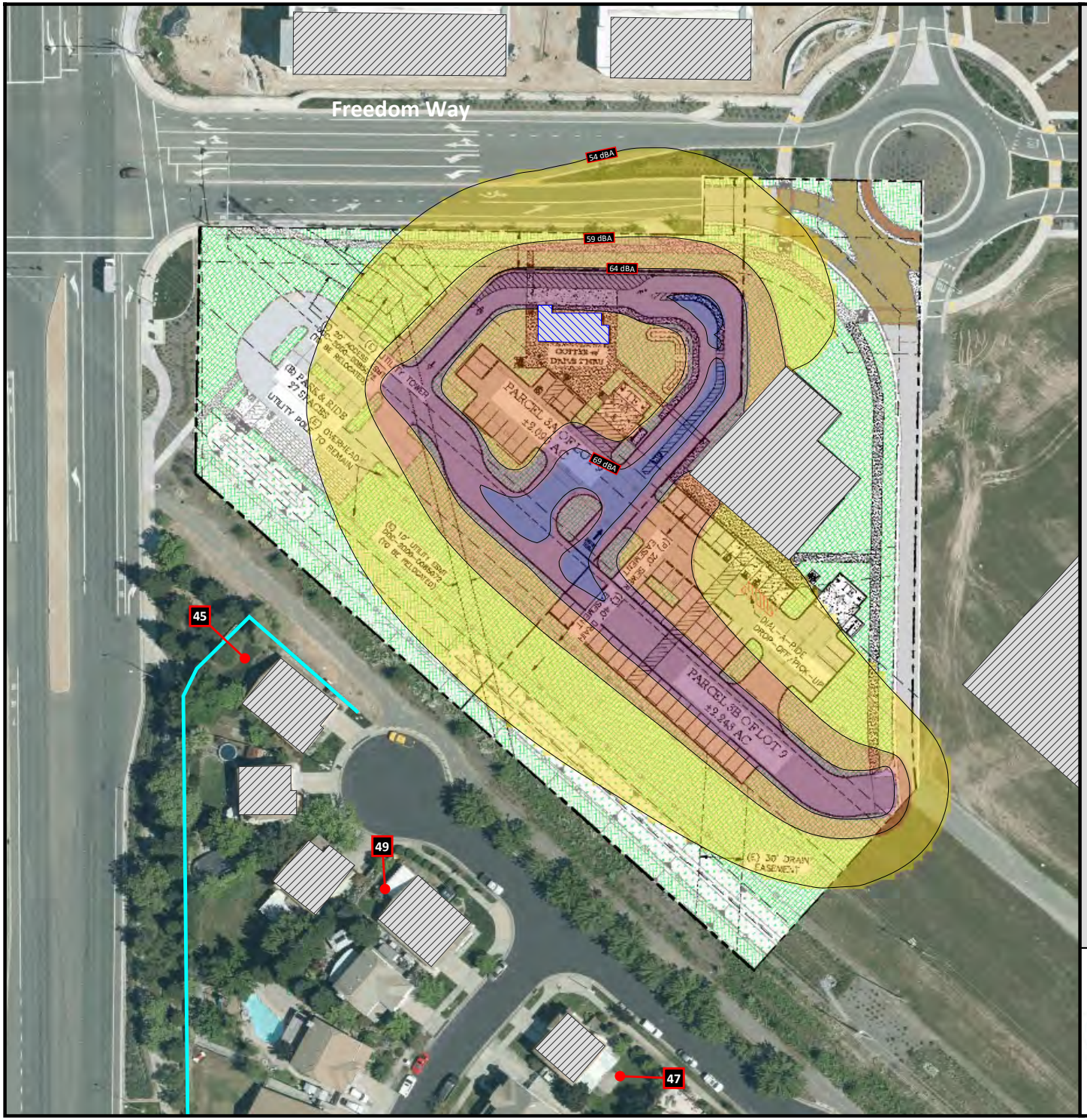

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Figure 3

Stationary Noise Level Contours
Leq dBA

Noise Level, dB(A)

54 <	<=	59
59 <	<=	64
64 <	<=	69
69 <		

Legend

- Project Building
- Existing Building
- Project Site

Scale 1:100

0 20 40 80 120 160 feet

N

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Operational Noise at Existing Sensitive Receptors

As shown on **Figure 4**, the project is predicted to expose nearby residences to noise levels up to 49 dBA, L_{eq} during both daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) hours. The predicted project noise levels would meet the ambient-adjusted noise level standard for stationary noise sources of 54 dBA, $L_{eq.}$

It should be noted that maximum noise levels generated by on-site activities are predicted to be 10-15 dBA, or less, than the average (L_{eq}) values. Based upon the predicted average noise levels of 49 dBA L_{eq}, the maximum noise levels are estimated to be 59-64 dBA L_{max}. This complies with the City's ambient adjusted daytime limit of 74 dBA L_{max} and nighttime limit of 65 dBA L_{max}.

CONCLUSIONS

The proposed project is predicted to comply with the City of Roseville noise level standards with no additional noise control measures.

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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.

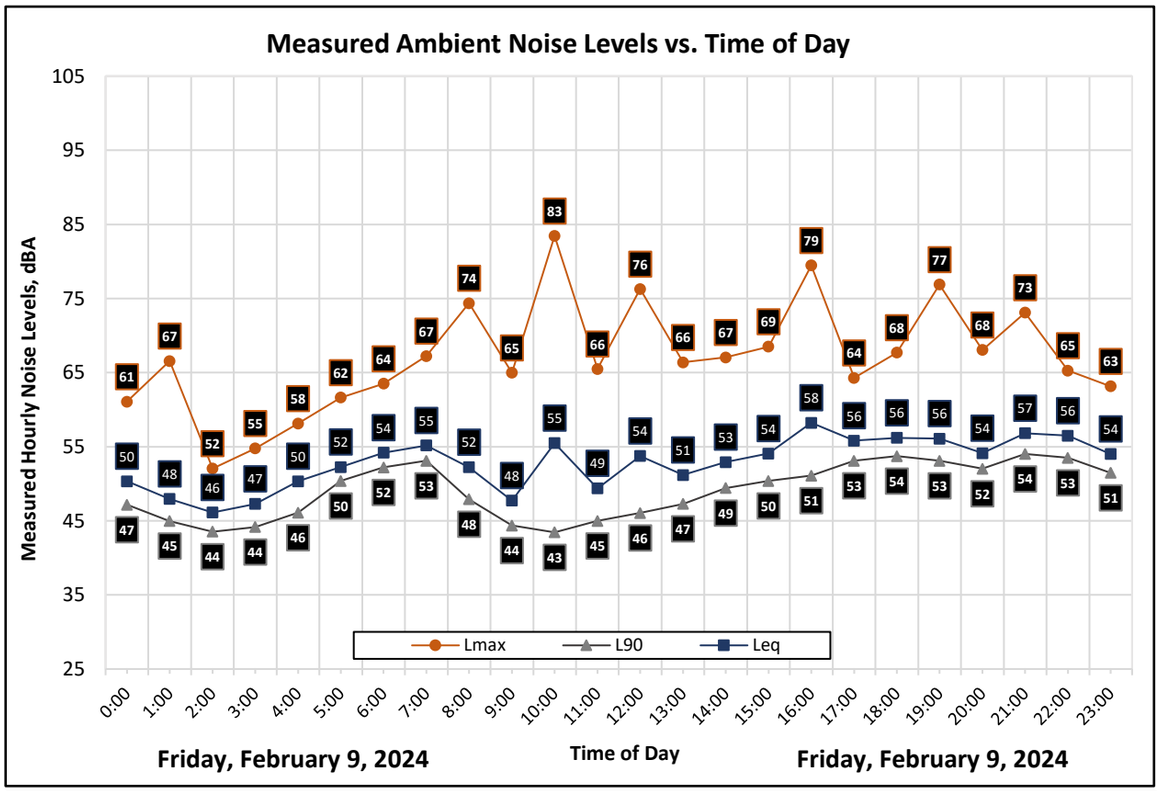
Appendix B: Continuous Ambient Noise Measurement Results

Appendix B1a: Continuous Noise Monitoring Results

Site: LT-1
Project: Dutch Bros. Freedom Point
Meter: LDL 820-6
Location: South of the Project Site
Calibrator: CAL200
Coordinates: 38.791147°,-121.298612°

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Friday, February 9, 2024	0:00	50	61	50	47
Friday, February 9, 2024	1:00	48	67	47	45
Friday, February 9, 2024	2:00	46	52	46	44
Friday, February 9, 2024	3:00	47	55	47	44
Friday, February 9, 2024	4:00	50	58	50	46
Friday, February 9, 2024	5:00	52	62	52	50
Friday, February 9, 2024	6:00	54	64	54	52
Friday, February 9, 2024	7:00	55	67	55	53
Friday, February 9, 2024	8:00	52	74	50	48
Friday, February 9, 2024	9:00	48	65	46	44
Friday, February 9, 2024	10:00	55	83	46	43
Friday, February 9, 2024	11:00	49	66	47	45
Friday, February 9, 2024	12:00	54	76	48	46
Friday, February 9, 2024	13:00	51	66	50	47
Friday, February 9, 2024	14:00	53	67	52	49
Friday, February 9, 2024	15:00	54	69	53	50
Friday, February 9, 2024	16:00	58	79	53	51
Friday, February 9, 2024	17:00	56	64	55	53
Friday, February 9, 2024	18:00	56	68	55	54
Friday, February 9, 2024	19:00	56	77	55	53
Friday, February 9, 2024	20:00	54	68	53	52
Friday, February 9, 2024	21:00	57	73	56	54
Friday, February 9, 2024	22:00	56	65	56	53
Friday, February 9, 2024	23:00	54	63	54	51

Statistics	Leq	Lmax	L50	L90
Day Average	55	71	52	50
Night Average	51	61	50	48
Day Low	48	64	46	43
Day High	58	83	56	54
Night Low	46	52	46	44
Night High	54	67	56	53
Ldn	58	Day %		81
CNEL	59	Night %		19

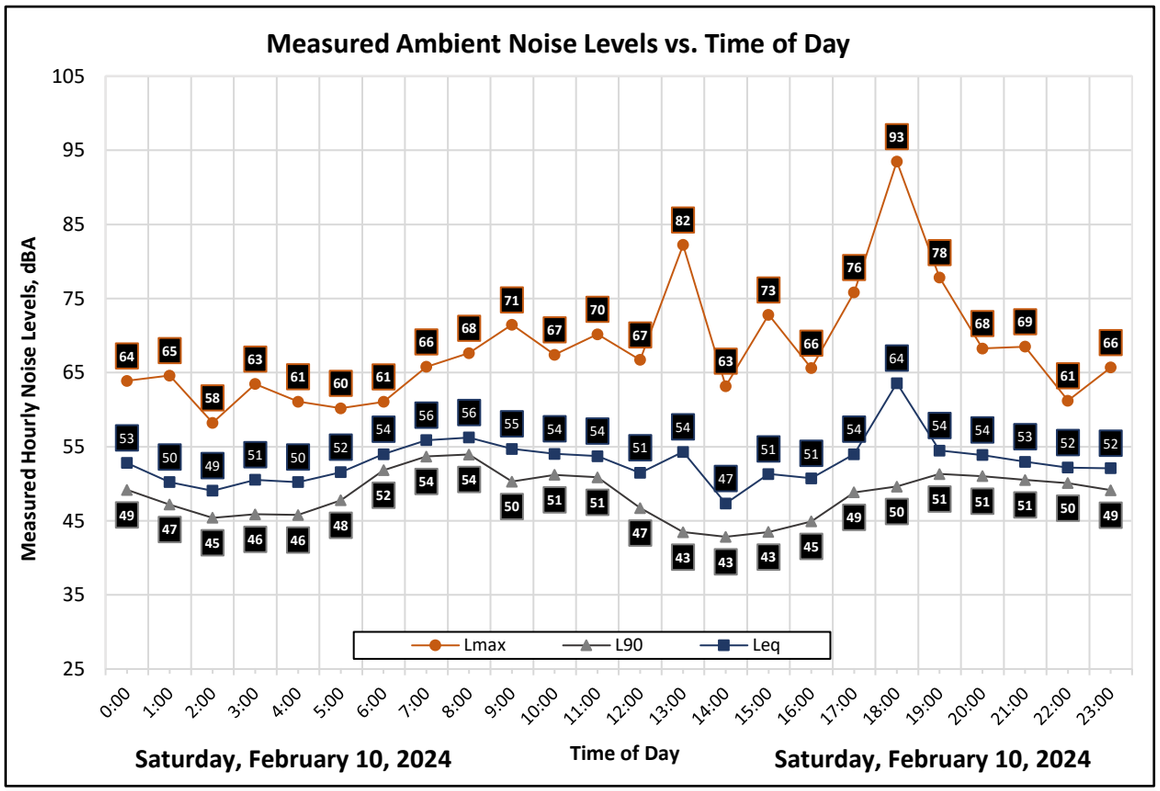


Appendix B1b: Continuous Noise Monitoring Results

Site: LT-1
Project: Dutch Bros. Freedom Point
Meter: LDL 820-6
Location: South of the Project Site
Calibrator: CAL200
Coordinates: 38.791147°,-121.298612°

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Saturday, February 10, 2024	0:00	53	64	51	49
Saturday, February 10, 2024	1:00	50	65	50	47
Saturday, February 10, 2024	2:00	49	58	48	45
Saturday, February 10, 2024	3:00	51	63	49	46
Saturday, February 10, 2024	4:00	50	61	49	46
Saturday, February 10, 2024	5:00	52	60	51	48
Saturday, February 10, 2024	6:00	54	61	54	52
Saturday, February 10, 2024	7:00	56	66	56	54
Saturday, February 10, 2024	8:00	56	68	56	54
Saturday, February 10, 2024	9:00	55	71	53	50
Saturday, February 10, 2024	10:00	54	67	53	51
Saturday, February 10, 2024	11:00	54	70	53	51
Saturday, February 10, 2024	12:00	51	67	50	47
Saturday, February 10, 2024	13:00	54	82	48	43
Saturday, February 10, 2024	14:00	47	63	45	43
Saturday, February 10, 2024	15:00	51	73	47	43
Saturday, February 10, 2024	16:00	51	66	48	45
Saturday, February 10, 2024	17:00	54	76	51	49
Saturday, February 10, 2024	18:00	64	93	52	50
Saturday, February 10, 2024	19:00	54	78	53	51
Saturday, February 10, 2024	20:00	54	68	53	51
Saturday, February 10, 2024	21:00	53	69	52	51
Saturday, February 10, 2024	22:00	52	61	52	50
Saturday, February 10, 2024	23:00	52	66	51	49

Statistics	Leq	Lmax	L50	L90
Day Average	56	72	51	49
Night Average	52	62	50	48
Day Low	47	63	45	43
Day High	64	93	56	54
Night Low	49	58	48	45
Night High	54	66	54	52
Ldn	59	Day %		83
CNEL	59	Night %		17

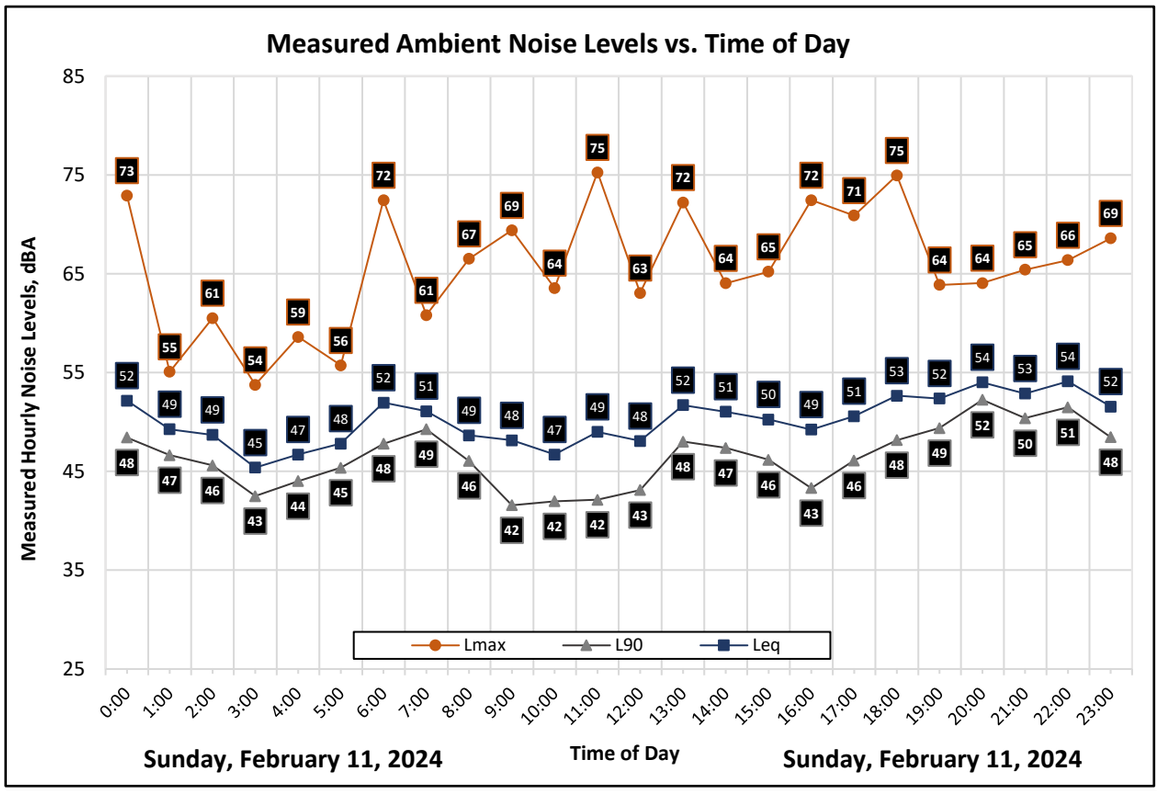


Appendix B1c: Continuous Noise Monitoring Results

Site: LT-1
Project: Dutch Bros. Freedom Point
Meter: LDL 820-6
Location: South of the Project Site
Calibrator: CAL200
Coordinates: 38.791147°,-121.298612°

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Sunday, February 11, 2024	0:00	52	73	51	48
Sunday, February 11, 2024	1:00	49	55	49	47
Sunday, February 11, 2024	2:00	49	61	48	46
Sunday, February 11, 2024	3:00	45	54	45	43
Sunday, February 11, 2024	4:00	47	59	46	44
Sunday, February 11, 2024	5:00	48	56	47	45
Sunday, February 11, 2024	6:00	52	72	50	48
Sunday, February 11, 2024	7:00	51	61	51	49
Sunday, February 11, 2024	8:00	49	67	48	46
Sunday, February 11, 2024	9:00	48	69	44	42
Sunday, February 11, 2024	10:00	47	64	44	42
Sunday, February 11, 2024	11:00	49	75	44	42
Sunday, February 11, 2024	12:00	48	63	46	43
Sunday, February 11, 2024	13:00	52	72	50	48
Sunday, February 11, 2024	14:00	51	64	50	47
Sunday, February 11, 2024	15:00	50	65	49	46
Sunday, February 11, 2024	16:00	49	72	46	43
Sunday, February 11, 2024	17:00	51	71	49	46
Sunday, February 11, 2024	18:00	53	75	51	48
Sunday, February 11, 2024	19:00	52	64	51	49
Sunday, February 11, 2024	20:00	54	64	54	52
Sunday, February 11, 2024	21:00	53	65	52	50
Sunday, February 11, 2024	22:00	54	66	53	51
Sunday, February 11, 2024	23:00	52	69	51	48

Statistics	Leq	Lmax	L50	L90
Day Average	51	67	49	46
Night Average	50	63	49	47
Day Low	47	61	44	42
Day High	54	75	54	52
Night Low	45	54	45	43
Night High	52	73	53	51
Ldn	56	Day %		71
CNEL	57	Night %		29



Appendix B1d: Continuous Noise Monitoring Results

Site: LT-1
Project: Dutch Bros. Freedom Point
Meter: LDL 820-6
Location: South of the Project Site
Calibrator: CAL200
Coordinates: 38.791147°,-121.298612°

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Monday, February 12, 2024	0:00	49	65	48	46
Monday, February 12, 2024	1:00	46	53	46	44
Monday, February 12, 2024	2:00	46	57	45	43
Monday, February 12, 2024	3:00	48	60	47	45
Monday, February 12, 2024	4:00	50	60	49	47
Monday, February 12, 2024	5:00	53	59	53	51
Monday, February 12, 2024	6:00	55	71	55	53
Monday, February 12, 2024	7:00	55	77	54	53
Monday, February 12, 2024	8:00	52	70	51	48
Monday, February 12, 2024	9:00	49	69	47	45
Monday, February 12, 2024	10:00	47	68	44	42
Monday, February 12, 2024	11:00	50	75	45	43
Monday, February 12, 2024	12:00	49	67	45	43
Monday, February 12, 2024	13:00	47	63	45	43
Monday, February 12, 2024	14:00	50	65	49	44
Monday, February 12, 2024	15:00	51	65	51	49
Monday, February 12, 2024	16:00	51	67	50	48
Monday, February 12, 2024	17:00	52	65	51	49
Monday, February 12, 2024	18:00	54	82	51	49
Monday, February 12, 2024	19:00	53	70	52	51
Monday, February 12, 2024	20:00	51	62	50	49
Monday, February 12, 2024	21:00	53	75	51	49
Monday, February 12, 2024	22:00	53	71	51	49
Monday, February 12, 2024	23:00	50	61	49	47

Statistics	Leq	Lmax	L50	L90
Day Average	52	69	49	47
Night Average	51	62	49	47
Day Low	47	62	44	42
Day High	55	82	54	53
Night Low	46	53	45	43
Night High	55	71	55	53
Ldn	57	Day %		69
CNEL	57	Night %		31