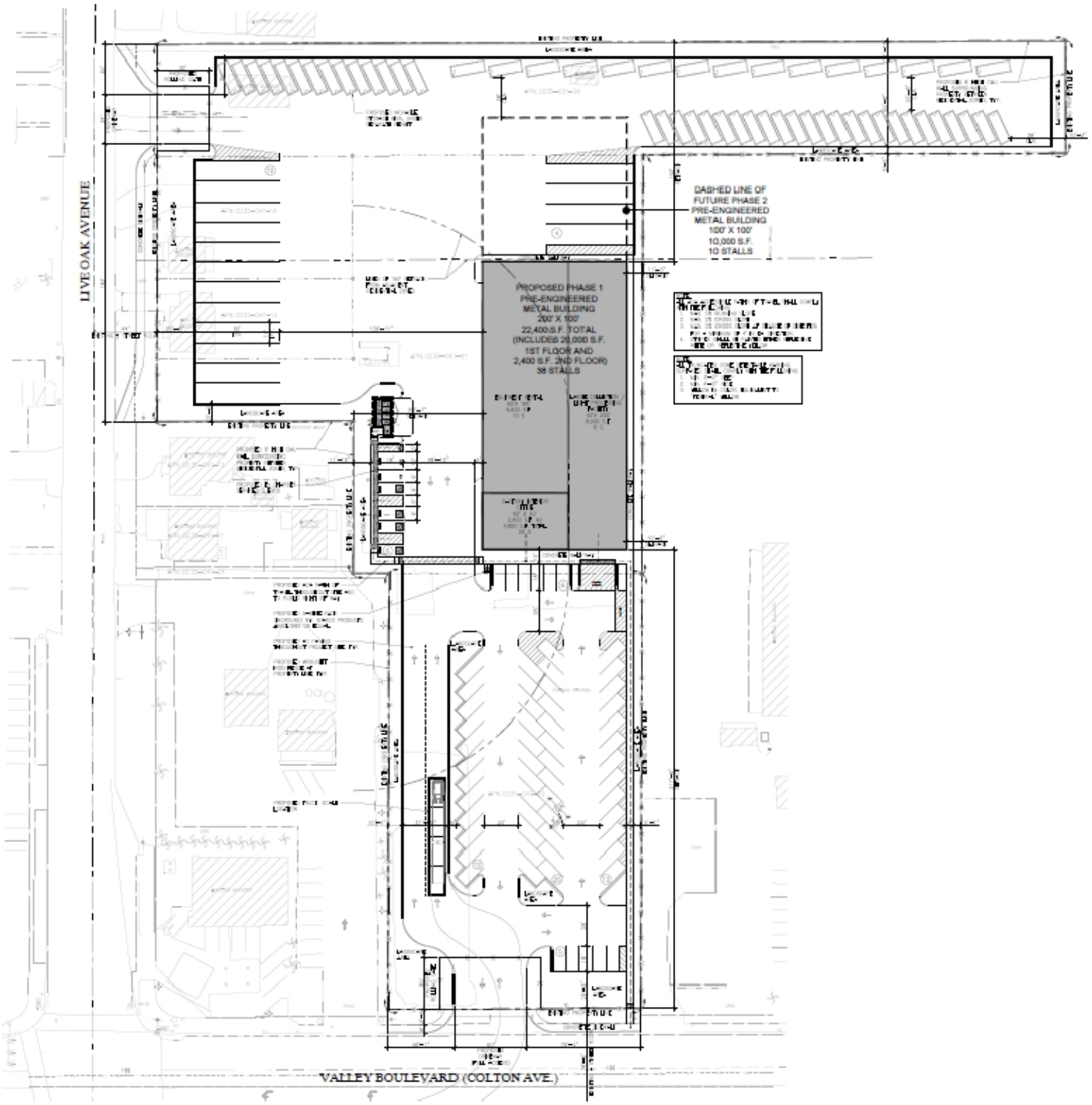
APPENDIX 7

NOISE IMPACT STUDY

LIVE OAK AVENUE AND VALLEY BOULEVARD EQUIPMENT RENTAL AND RECYCLING CENTER NOISE IMPACT STUDY COUNTY OF SAN BERNARDINO



LIVE OAK AVENUE & VALLEY BOULEVARD EQUIPMENT RENTAL & RECYCLING CENTER NOISE IMPACT STUDY
County of San Bernardino, California

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1.0 Introduction

1.1 Purpose of Analysis and Study Objectives

The purpose of this report is to evaluate the potential noise impacts from the proposed Live Oak Avenue and Valley Boulevard Recycling Center (project) and provide recommendations, if necessary, to minimize any project noise impacts. This assessment was conducted pursuant to the County of San Bernardino Municipal Code noise standards and requirements. The following is provided in this report:

The scope of this study focuses on operational noise generated by the project to the surrounding residential properties.

- A description of the study area and the proposed project
- Information regarding the fundamentals of noise
- Identification of the regulatory setting and applicable noise standards
- Analysis of the existing noise environment
- Analysis of the project's operational noise impact to adjacent receptors
- Summary of recommended mitigation measures and project design features to reduce noise level impacts.

1.2 Site Location

The existing project is located near the northeast corner of Live Oak Avenue and Valley Boulevard, in the County of San Bernardino. The project site is located approximately 1,066 feet above sea level and the topography is flat.

The project site location map is provided in Exhibit A.

Several sensitive land uses are present surrounding the project site include the following:

- Existing residential properties located immediately adjacent to the west of the project site.

- Existing residential properties located across Live Oak Avenue approximately 75 feet to the west of the site.

- Existing residential properties located immediately adjacent to the north of the project site.

1.3 Project Description

The 4.24 acre project site currently consists of the Titan Industrial Metal Corp. Recycling Center. The existing site consists of approximately 11,264 sqaure feet of existing structures, a truck scale, and outdoor service yard.

The project is proposing to demolish all existing structures on-site and construct approximately 32,400 square feet of new building to house an equipment rental facility, maintenance/repair shop, and a large collection/light processing recycling facility. The project will relocate the existing truck scale near the southwest property line and operate an outdoor equipment yard with movable storage bins.

The site plan used for this analysis is illustrated on Exhibits B.

This report analyzes long-term operational noise impacts associated with the project. The primary sources of long-term noise impacts would be associated with day-to-day operations on the site and would include noise from the equipment rental yard, commercial truck activities, weighing scale, employee parking lot, the recycling baler equipment, and the maintenance/repair shop.

1.4 Summary of Recommendations

The following recommendations are provided to help reduce noise impacts.

1. Provide a ten (10) foot high CMU block or tilt-up concrete wall around the shared property line of the residential homes located at 10031 and 10041 Live Oak Avenue. Refer Exhibit D for wall recommendations.

2. Provide an eight (8) foot high CMU block or tilt-up concrete wall along the northern property line of the project site. Refer Exhibit D for wall recommendations.

3. Provide a six (6) foot high CMU block or tilt-up concrete wall along portions of the western property line of the project site. Refer Exhibit D for wall recommendations.

4. All on-site recycling operational noise activities, including truck operations, loading and deliveries, and use of the baler should take place during daytime hours only from 7 a.m. to 10 p.m. No nighttime operational activity should occur from 10 p.m. to 7 a.m.

2.0 Fundamentals of Noise

This section of the report provides basic information about noise and vibration and presents some of the terms used in the report.

2.1 Sound, Noise, and Acoustics

The sound is a disturbance created by a moving or vibrating source and is capable of being detected by the hearing organs. The sound may be thought of as mechanical energy of a moving object transmitted by pressure waves through a medium to a human ear. For traffic or stationary noise, the medium of concern is air. *Noise* is defined as sound that is loud, unpleasant, unexpected, or unwanted.

2.2 Frequency and Hertz

A continuous sound is described by its *frequency* (pitch) and its *amplitude* (loudness). Frequency relates to the number of pressure oscillations per second. Low-frequency sounds are low in pitch (bass sounding) and high-frequency sounds are high in pitch (squeak). These oscillations per second (cycles) are commonly referred to as Hertz (Hz). The human ear can hear from the bass pitch starting out at 20 Hz all the way to the high pitch of 20,000 Hz.

2.3 Sound Pressure Levels and Decibels

The *amplitude* of a sound determines its loudness. The loudness of sound increases or decreases, as the amplitude increases or decreases. Sound pressure amplitude is measured in units of micro-Newton per square inch meter (N/m2), also called micro-Pascal (μPa). One μPa is approximately one hundred billionths (0.00000000001) of normal atmospheric pressure. Sound pressure level (SPL or L_p) is used to describe in logarithmic units the ratio of actual sound pressures to a reference pressure squared. These units are called decibels and abbreviated as dB.

2.4 Addition of Decibels

Because decibels are on a logarithmic scale, sound pressure levels cannot be added or subtracted by simple plus or minus addition. When two (2) sounds of equal SPL are combined, they will produce an SPL 3 dB greater than the original single SPL. In other words, sound energy must be doubled to produce a 3dB increase.

If two (2) sounds differ by approximately 10 dB the higher sound level is the predominant sound.

2.5 Human Response to Changes in Noise Levels[1]

In general, the healthy human ear is most sensitive to sounds between 1,000 Hz and 5,000 Hz, (A-weighted scale) and it perceives a sound within that range as being more intense than a sound with a higher or lower frequency with the same magnitude. For purposes of this report as well as with most environmental documents, the A-scale weighing is typically reported in terms of A-weighted decibel (dBA). Typically, the human ear can barely perceive the change in the noise level of 3 dB. A change in 5 dB is readily perceptible, and a change in 10 dB is perceived as being twice or half as loud. As previously discussed, a doubling of sound energy results in a 3 dB increase in sound, which means that a doubling of sound energy (e.g. doubling the volume of traffic on a highway), would result in a barely perceptible change in sound level.

2.6 Noise Descriptors

Noise in our daily environment fluctuates over time. Some noise levels occur in regular patterns, others are random. Some noise levels are constant, while others are sporadic. Noise descriptors were created to describe the different time-varying noise levels. Following are the most commonly used noise descriptors along with brief definitions.

A-Weighted Sound Level

The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighting filter de-emphasizes the very low and very high-frequency components of the sound in a manner similar to the response of the human ear. A numerical method of rating human judgment of loudness.

Ambient Noise Level

The composite of noise from all sources, near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

[1] Technical Noise Supplement to the Traffic Noise Analysis Protocol, September 2013.

Community Noise Equivalent Level (CNEL)

The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of five (5) decibels to sound levels in the evening from 7:00 to 10:00 PM and after addition of ten (10) decibels to sound levels in the night before 7:00 AM and after 10:00 PM.

Decibel (dB)

A unit for measuring the amplitude of a sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micro-pascals.

dB(A)

A-weighted sound level (see definition above).

Equivalent Sound Level (LEQ)

The sound level corresponding to a steady noise level over a given sample period with the same amount of acoustic energy as the actual time-varying noise level. The energy average noise level during the sample period.

Habitable Room

Any room meeting the requirements of the Uniform Building Code or other applicable regulations which is intended to be used for sleeping, living, cooking or dining purposes, excluding such enclosed spaces as closets, pantries, bath or toilet rooms, service rooms, connecting corridors, laundries, unfinished attics, foyers, storage spaces, cellars, utility rooms, and similar spaces.

L(n)

The A-weighted sound level exceeded during a certain percentage of the sample time. For example, L10 in the sound level exceeded 10 percent of the sample time. Similarly, L50, L90, and L99, etc.

Noise

Any unwanted sound or sound which is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying. The State Noise Control Act defines noise as "...excessive undesirable sound...".

Percent Noise Levels

See L(n).

Sound Level (Noise Level)

The weighted sound pressure level obtained by use of a sound level meter having a standard frequency-filter for attenuating part of the sound spectrum.

Sound Level Meter

An instrument, including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement and determination of noise and sound levels.

Single Event Noise Exposure Level (SENEL)

The dBA level which, if it lasted for one (1) second, would produce the same A-weighted sound energy as the actual event.

2.7 Sound Propagation

As sound propagates from a source it spreads geometrically. The sound from a small, localized source (i.e., a point source) radiates uniformly outward as it travels away from the source in a spherical pattern. The sound level attenuates at a rate of 6 dB per doubling of distance. The movement of vehicles down a roadway makes the source of the sound appear to propagate from a line (i.e., line source) rather than a point source. This line source results in the noise propagating from a roadway in a cylindrical spreading versus a spherical spreading that results from a point source. The sound level attenuates for a line source at a rate of 3 dB per doubling of distance.

As noise propagates from the source, it is affected by the ground and atmosphere. Noise models use the hard site (reflective surfaces) and soft site (absorptive surfaces) to help calculate predicted noise levels. Hard site conditions assume no excessive ground

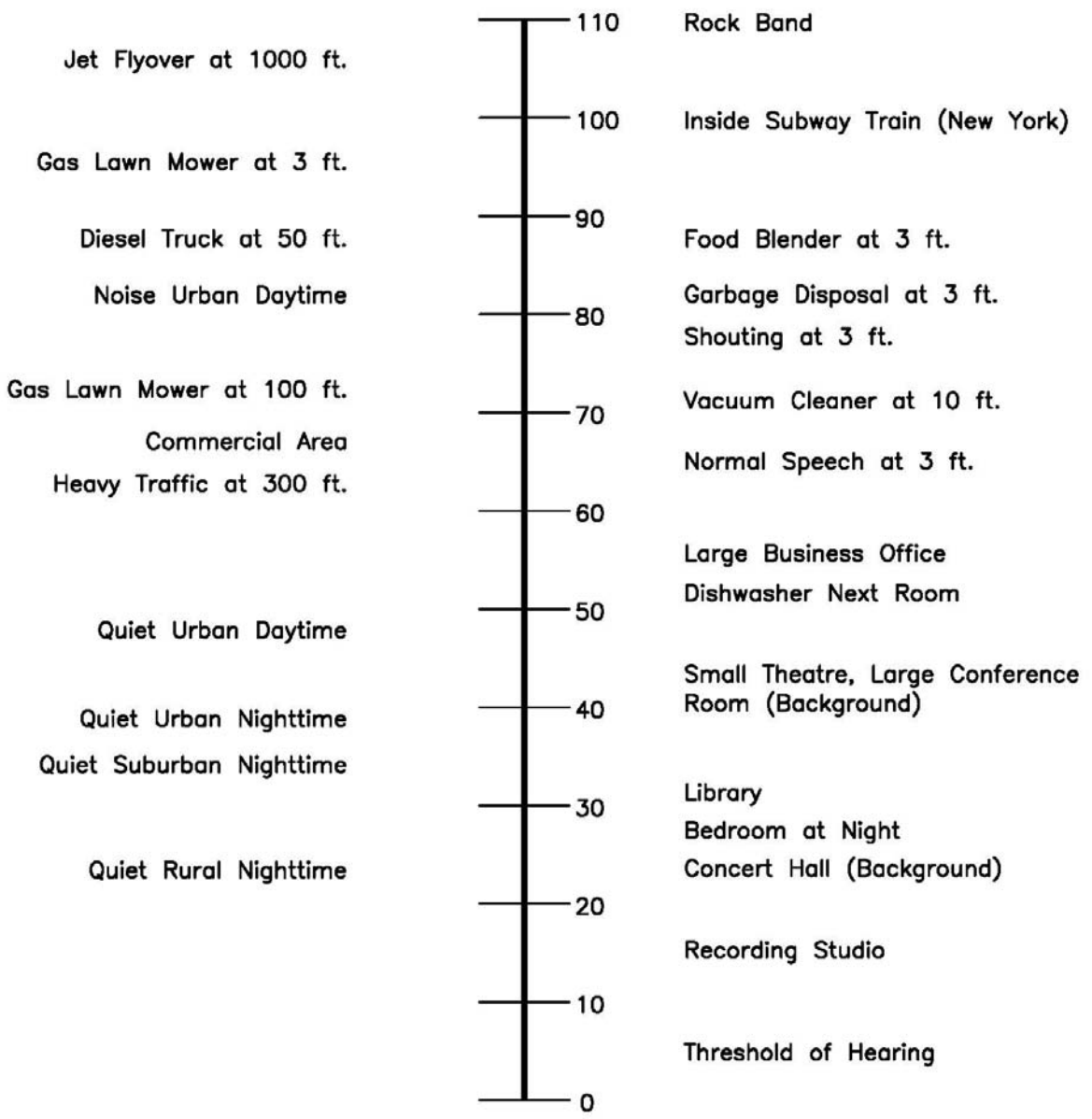
absorption between the noise source and the receiver. Soft site conditions such as grass, soft dirt or landscaping attenuate noise at an additional rate of 1.5 dB per doubling of distance. When added to the geometric spreading, the excess ground attenuation results in an overall noise attenuation of 4.5 dB per doubling of distance for a line source and 6.0 dB per doubling of distance for a point source.

Research has demonstrated that atmospheric conditions can have a significant effect on noise levels when noise receivers are located 200 feet and greater from a noise source. Wind, temperature, air humidity, and turbulence can further impact how far sound can travel.

Figure 1 shows typical sound levels from indoor and outdoor noise sources.

Figure 1[2]

TYPICAL SOUND LEVELS FROM
INDOOR AND OUTDOOR NOISE SOURCES



[2] Technical Noise Supplement to the Traffic Noise Analysis Protocol, September 2013.

3.0 Regulatory Setting

The project is located in the County of San Bernardino and will be evaluated pursuant to applicable noise regulations adopted by the County of San Bernardino.

3.1 County of San Bernardino Municipal Code Noise Ordinance

Noise generated on the project site that crosses the boundary of an adjoining use is regulated by the noise standards in the San Bernardino County Municipal Code Section 83.01.080(C) – Stationary Noise Regulations. The County's Noise Ordinance is provided in Appendix A. Table 1 shows the sound level standards established in the County's Code of Ordinances.

Table 1
San Bernardino County Noise Ordinance Standards

Land Uses	Maximum Decibel Level (Leq)	
	7 am—10 pm	10 pm—7 am
Residential	55 dBA	45 dBA
Professional Services	55 dBA	55dBA
Other Commercial	60 dBA	60 dBA
Industrial	70 dBA	70 dBA

Leq = (Equivalent Energy Level). The sound level corresponding to a steady-state sound level containing the same total energy as a time varying signal over a given sample period, typically one, eight, or 24 hours.
dB(A) = (A-weighted Sound Pressure Level). The sound pressure level, in decibels, as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound, placing greater emphasis on those frequencies within the sensitive range of the human ears.

3.1.1 Noise Limit Categories:

No person shall operate or cause to be operated a source of sound at a location or allow the creation of noise on property owned, leased, occupied, or otherwise controlled by the person, which causes the noise level, when measured on another property, either incorporated or unincorporated, to exceed any one of the following:

(A) The noise standard for the receiving land use as specified in Subdivision (b) (Noise-Impacted Areas), above, for a cumulative period of more than 30 minutes in any hour.

(B) The noise standard plus five dB(A) for a cumulative period of more than 15 minutes in any hour.

(C) The noise standard plus ten dB(A) for a cumulative period of more than five minutes in any hour.

(D) The noise standard plus 15 dB(A) for a cumulative period of more than one minute in any hour.

(E) The noise standard plus 20 dB(A) for any period of time.

3.1.2 Exempt Noise:

The following sources of noise shall be exempt from the regulations of this Section:

(1) Motor vehicles not under the control of the commercial or industrial use.

(2) Emergency equipment, vehicles, and devices.

(3) Temporary construction, maintenance, repair, or demolition activities between 7:00 a.m. and 7:00 p.m., except Sundays and Federal holidays.

4.0 Study Method and Procedures

The following section describes the measurement procedures, measurement location, and noise modeling procedures and assumptions used in the noise analysis.

4.1 Measurement Procedures and Criteria

Noise measurement is taken to determine the existing noise levels. A noise receiver or receptor is any location in the noise analysis in which noise might produce an impact. The following criteria are used to select measurement location and receptors:

- Location expected to receive the highest noise impacts, such as the first row of houses
- Location that is acoustically representative and equivalent of the area of concern
- Human land usage
- Sites clear of major obstruction and contamination

RK conducted the sound level measurement in accordance with Caltrans technical noise specifications. All measurement equipment meets American National Standards Institute (ANSI) specifications for sound level meters (ANSI S1.4: Specification for Sound Level Meter, 1983).

A Piccolo-II Type 2 integrating-averaging level meter was used to conduct noise measurements at the project site.

The Leq, Lmin, Lmax, L2, L8, L25, and L50 statistical data were recorded over the measurement time period intervals and the information was utilized to define the noise characteristics for the project. The following gives a brief description of the Caltrans Technical Noise Supplement procedures for sound level measurements:

- Microphones for sound level meters were placed approximately six (6) feet above the ground.
- Sound level meters were calibrated before and after each measurement.
- Following the calibration of equipment, a windscreen was placed over the microphone.
- Frequency weighting was set on "A" and slow response.
- Results of the noise measurements were recorded on field data sheets.
- Temperature and sky conditions were observed and documented.

Appendix B includes photos, field sheets, and measured noise data.

4.2 Stationary Noise Modeling

The proposed on-site stationary noise sources were analyzed using SoundPLAN™ noise modeling software. SoundPLAN™ is a standards-based program that incorporates more than twenty national and international noise modeling guidelines. This project includes both parking lot noise and stationary noise sources which are classified under industrial sources.

Projected noise levels from SoundPLAN™ are based on the following key parameters:

- Developing three-dimensional noise models of the project,
- Predicting the project noise levels at the selected community locations and
- Comparing the predicted noise with the existing community ambient noise levels at the receptor locations.

The sides of the buildings, walls, etc. were modeled as reflective surfaces and also as diffractive bodies. The noise sources are shown as red spheres (point sources) and red surfaces (area sources). A light blue line outlines the perimeter of each operation. The surrounding roads are displayed as grey surfaces.

Most of the ground within the project site and adjacent areas are covered with paved surfaces and were analyzed as a hard site to be conservative (Ground Factor=0). The elevation profile for the project site is derived from Google Earth and all the receptors were placed at 5 foot above the ground level, as is standard practice.

Sound Power and Sound Pressure Level

Sound power level is the acoustic energy emitted by a source which produces a sound pressure level at some distance. While the sound power level of a source is fixed, the sound pressure level depends upon the distance from the source and the acoustic characteristics of the area in which it is located.

SoundPLAN requires that the source noise level be input using sound power level and which must be back calculated based on a measured sound pressure level. The sound power level is calculated using SoundPLAN software by calibrating the source noise level to equal the sound pressure level at an equal distance from the source in which the referenced measurement was taken.

4.3 Referenced Noise Levels

To estimate the future noise levels during typical operational conditions, referenced noise levels are input into SoundPLAN and projected to the nearest sensitive receptor locations. Referenced noise levels represent similar noise sources operating under similar conditions as would be found on the project site. Adjusted noise levels are based on the distance of the receptor location relative to the noise source, local topography and physical barriers including buildings and sound walls.

4.3.1 Equipment Rental Yard

Typical noise associated with the equipment rental yard includes noise from trucks entering and exiting the site, idling, exhaust, forklifts, and loading and delivery activities. On-site truck movements are expected to occur throughout the site. Approximately 54 movable storage bins will be stored near the north property line. Additional large equipment, including but not limited to cranes, would also be stored in the yard. Truck loading noise levels are referenced from the SoundPLAN model. "Truck: loading general cargo" has been used to determine the project's equipment rental yard activities noise levels.

Table 2 indicates the referenced noise levels for on-site equipment rental yard noise sources.

Table 2
Truck Loading Activity Referenced Noise Levels[1]

Source[1]	Noise Levels (dBA) L_{eq}
Truck: Loading General Cargo	80.0

Source: SoundPLAN

4.3.2 Parking Lot Noise

Parking lot noise would occur from vehicles and trucks entering and exiting the site, idling, exhaust, loading and delivery activities, doors slamming, tires screeching, people talking, and the occasional horn honking. Parking lot noise would occur throughout the site and is assessed by using referenced noise levels in the SoundPLAN model. Parking lot noise is based on the type of vehicle and number of movements per hour. Referenced noise levels for parking lot activities are based on the SoundPLAN™ standard *Parkplatzlärmstudie 2007*. Key inputs for parking lot noise include size of area source, number of movements per hour, type of vehicles, and number of parking spaces within each lot.

4.3.3 Baler Equipment Noise

A baler is used for metal compacting and recycling. The raw materials are sent via a conveyor system and the hydraulic compactor system is used to compact the waste metal. The baler is powered by an on-site generator. The main source of noise associated with the baler includes noise from the conveyor system, generator, metal movements/crushing and compactor motor.

RK conducted an on-site field review on April 30, 2019 to measure the baler noise. Table 3 shows the existing noise level from the baler activity at nearest residential property line at the north and west. See Appendix C for referenced noise sheets.

It should be noted that all on-site truck activity ceased during the measurement of baler noise.

Table 3
Baler Activity Referenced Noise Levels

Site No.	Time Started	Leq	Lmin	Lmax	L_2	L_8	L_{25}	L_{50}
ST-1	12:01 PM	58.3	69.2	51.6	65.6	62.6	58.8	55.2
ST-2	12:01 PM	63.6	78.0	59.6	71.7	67.5	63.2	59.8

ST-1 Measurement taken at approximately 10 feet from the north property line of the site. Noise sources includes traffic noise from Live Oak Avenue and baler activity on-site.

ST-2 Measurement taken at approximately 18 feet from the west property line of the site. Noise sources includes traffic noise from Valley Boulevard, noise from the detail shop activity and baler activity on-site.

4.3.4 Weighing Scale Noise

Typical noise associated with the weighing scale would include noise from the trucks weighing on the scale. The weighing scale is expected to be located at approximately 30 feet from the western property line. RK has conducted an on-site field review on March 9, 2021 to measure the noise levels associated with the scale. Table 4 shows the noise level from the existing on-site weighing scale.

It should be noted, during the field measurements RK did not identify any banging and/or rattling noise during the operation of the weighing scale. See Appendix C for referenced noise sheets.

Table 4
Weighing Scale Referenced Noise Levels

Site No.	Time Started	Leq	Lmax	Lmin	L_2	L_8	L_{25}	L_{50}
ST-1	12:14 PM	65.1	70.3	54.7	70.2	69.7	67.4	61.0
ST-2	12:19 PM	67.9	75.7	57.8	74.5	72.6	69.6	64.4

ST-1 Measurement taken at approximately 15 feet from the existing on-site weighing scale. Noise sources includes traffic noise from Live Oak Avenue and all other on-site activities were ceased during the measurement.

ST-2 Measurement taken at approximately 18 feet from the west property line of the site. Noise sources includes traffic noise from Valley Boulevard, noise from the detail shop activity and baler activity on-site.

4.3.5 Repair Shop Noise

To determine the future noise levels from the project, RK performed referenced sound level measurements from an auto shop/tire facility.

Activities observed during the sound level measurements included: pneumatic screw guns, tire lifts, tire balancing machines, phones/alarms, fans, and vehicular and pedestrian activity in the parking lot. The referenced tire shop is considered to be representative of the proposed project operational noise levels.

Sound level measurements were performed over a 10-minute duration using a Larson Davis 831 type 1 sound level meter that was calibrated per the IEC 61672-1:2013 and ANSI S1.4 standards.

The results indicate that the average noise level @ 50 feet measured 69.0 dBA Leq in full operation and 64.0 dBA with no operations. A 5 dBA difference between with and without project scenarios. Therefore, RK extrapolated the noise contribution from America's Tire using the Sound Pressure Level Addition and Subtraction Formula (see Appendix B). Using

said equation, the project's operational noise level @ 50 feet, with ambient roadway noise removed, is 67.4 dBA Leq.

See Appendix C for referenced noise sheets.

5.0 Existing Noise Environment

The existing noise environment for the project site and surrounding area has been established based on noise measurement data collected by RK.

5.1 Long-Term (24-Hour) Noise Measurement Results

To determine the existing noise level environment, RK conducted two (2) 24-hour noise measurements at the project study area.

Noise levels were measured on March 31, 2022 using a Piccolo-II Type 2 integrating-averaging sound level meters. The information was utilized to establish the noise characteristics of the existing ambient environment.

The noise monitoring locations were selected based on the proximity and location to adjacent sensitive receptors. Exhibit C graphically illustrates the location of the long-term measurement.

- Long-term noise monitoring (Location – 1) was taken along the western property line of the project site (along the eastern property line of 10041 Live Oak Avenue) approximately 70 feet from the existing weighing scale.

- Long-term noise monitoring (Location – 2) was taken approximately 5 feet from the northern property line and approximately 42 feet from the centerline of the Live Oak Avenue.

Long term noise monitoring location represent the existing noise levels near the adjacent noise sensitive land uses and the project site. Long-term noise measurements results are summarized in Table 5 and Table 6. Appendix B includes photographs, field sheets and measured noise data.

Table 5
Location – 1: 24 Noise Measurement Results[1]

Time	Leq (dBA)	Time	Leq (dBA)
12:00 AM	46.3	12:00 PM	64.6
1:00 AM	63.9	1:00 PM	69.6
2:00 AM	51.2	2:00 PM	71.7
3:00 AM	51.0	3:00 PM	69.1
4:00 AM	60.7	4:00 PM	68.9
5:00 AM	58.6	5:00 PM	59.5
6:00 AM	55.2	6:00 PM	55.6
7:00 AM	58.8	7:00 PM	52.2
8:00 AM	60.2	8:00 PM	51.1
9:00 AM	61.6	9:00 PM	51.5
10:00 AM	64.8	10:00 PM	56.7
11:00 AM	64.1	11:00 PM	47.5
24-Hour CNEL			**66.6**

[1] Long-term noise monitoring was taken on 03/31/2022.

Table 6
Location – 2: 24 Noise Measurement Results[1]

Time	Leq (dBA)	Time	Leq (dBA)
12:00 AM	60.4	12:00 PM	64.9
1:00 AM	58.2	1:00 PM	67.4
2:00 AM	57.1	2:00 PM	66.2
3:00 AM	62.7	3:00 PM	67.3
4:00 AM	64.2	4:00 PM	66.7
5:00 AM	66.2	5:00 PM	67.8
6:00 AM	65.3	6:00 PM	67.1
7:00 AM	66.3	7:00 PM	66.1
8:00 AM	65.8	8:00 PM	65.2
9:00 AM	63.3	9:00 PM	63.3
10:00 AM	63.9	10:00 PM	63.6
11:00 AM	64.6	11:00 PM	60.3
24-Hour CNEL			**70.3**

[1] Long-term noise monitoring was taken on 03/31/2022.

6.0 Operational Noise Impacts

This assessment analyzes the anticipated noise levels generated by the project operational activities and noise level impacts are compared to the County of San Bernardino noise standards.

The project must demonstrate that noise levels generated by the project site would not be in excess of standards established in the local general plan or noise ordinance.

6.1 Stationary Source Noise Impacts

Project operational activities are analyzed for long-term noise impacts associated with the day-to-day operations of the project. The main sources of noise generated by the project would include on-site equipment rental yard truck activities, weighing scale, employee parking lot noise, baler equipment noise from the recycling facility and maintenance/repair shop.

The results shown in Table 7 takes into account of the recommended noise barrier walls along the property line to the north and west as shown in Exhibit D. The project is also not expected to operate during nighttime hours (10 PM to 7 AM), as a result, no nighttime noise impact analysis has been provided.

As shown in Table 7, operational noise levels generated by the project's operations are not expected to exceed the County's daytime standards of 55 dBA Leq. Stationary noise calculation worksheets are shown in Appendix D.

Table 7
Project Operational Noise Levels

Receptor Location[1]	Project Noise Level (L_{eq} dBA)	County of San Bernardino Residential Exterior Noise Standard (dBA)	Project Exceeds Noise Standard
1. Residential – 9995 Live Oak Avenue	48.1	55	No
2. Residential - 9998 Live Oak Avenue	49.1		No
3. Residential - 10008 Live Oak Avenue	48.8		No
4. Residential - 10018 Live Oak Avenue	49.5		No
5. Residential – 10028 Live Oak Avenue	48.1		No
6. Residential – 10031 Live Oak Avenue	50.2		No
7. Residential – 10041 Live Oak Avenue	53.0		No

[1] Refer Exhibit D for receptor location map. Project noise levels include the attenuation effects of the recommended property line walls. See Exhibit E for wall recommendations.

6.2 Operational Design Features

The following recommendations are provided to help reduce noise impacts.

1. Provide a ten (10) foot high CMU block or tilt-up concrete wall around the shared property line of the residential homes located at 10031 and 10041 Live Oak Avenue. Refer Exhibit D for wall recommendations.

2. Provide an eight (8) foot high CMU block or tilt-up concrete wall along the northern property line of the project site. Refer Exhibit D for wall recommendations.

3. Provide a six (6) foot high CMU block or tilt-up concrete wall along portions of the western property line of the project site. Refer Exhibit D for wall recommendations.

4. All on-site recycling operational noise activities, including truck operations, loading and deliveries, and use of the baler should take place during daytime hours only from 7 a.m. to 10 p.m. No nighttime operational activity should occur from 10 p.m. to 7 a.m.

Exhibits

Exhibit A

Location Map

N

Exhibit B
Site Plan

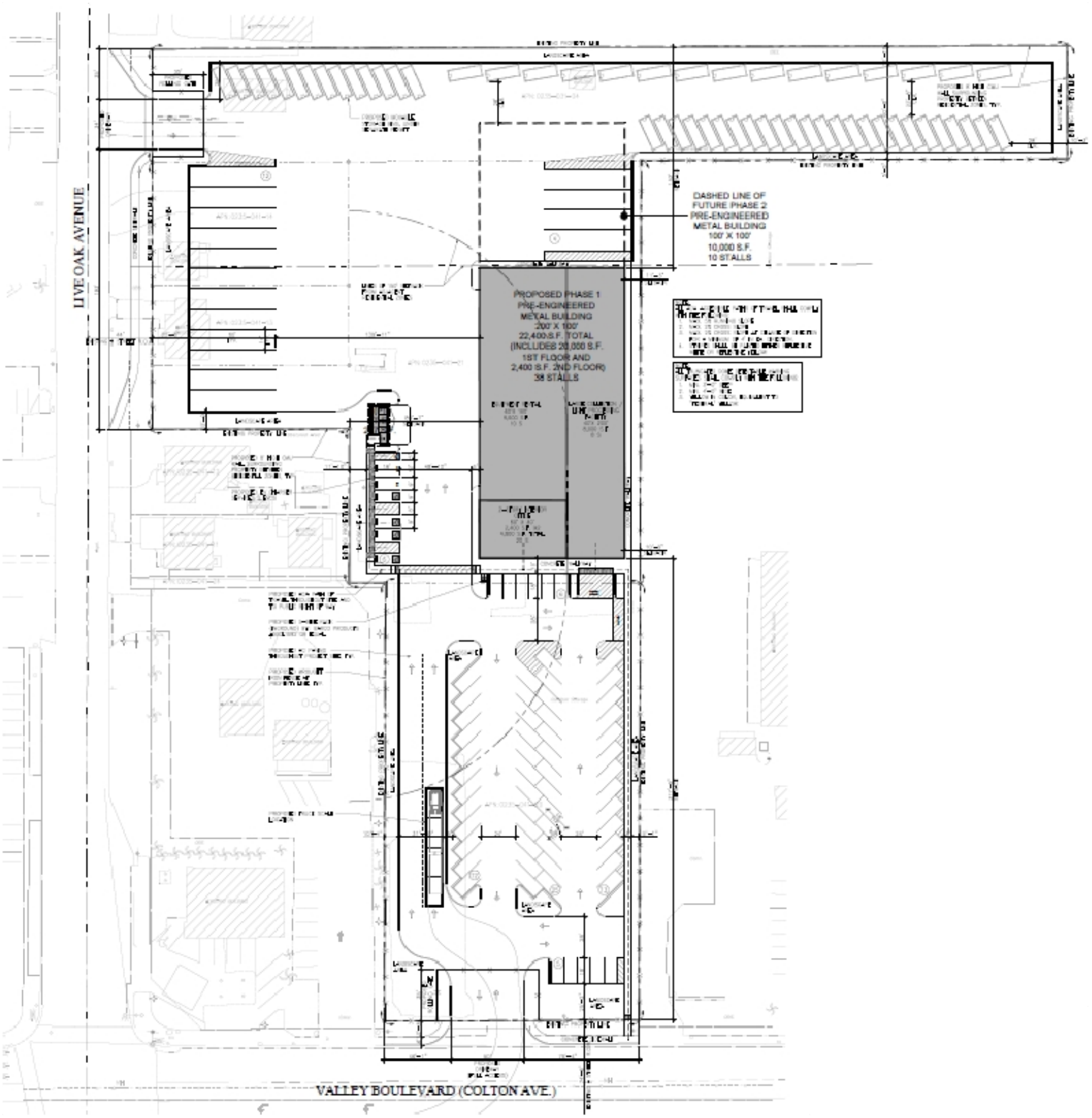


Exhibit C

Noise Monitoring Locations

Legend:

(1) = Long Term (60-min) Noise Monitoring Location

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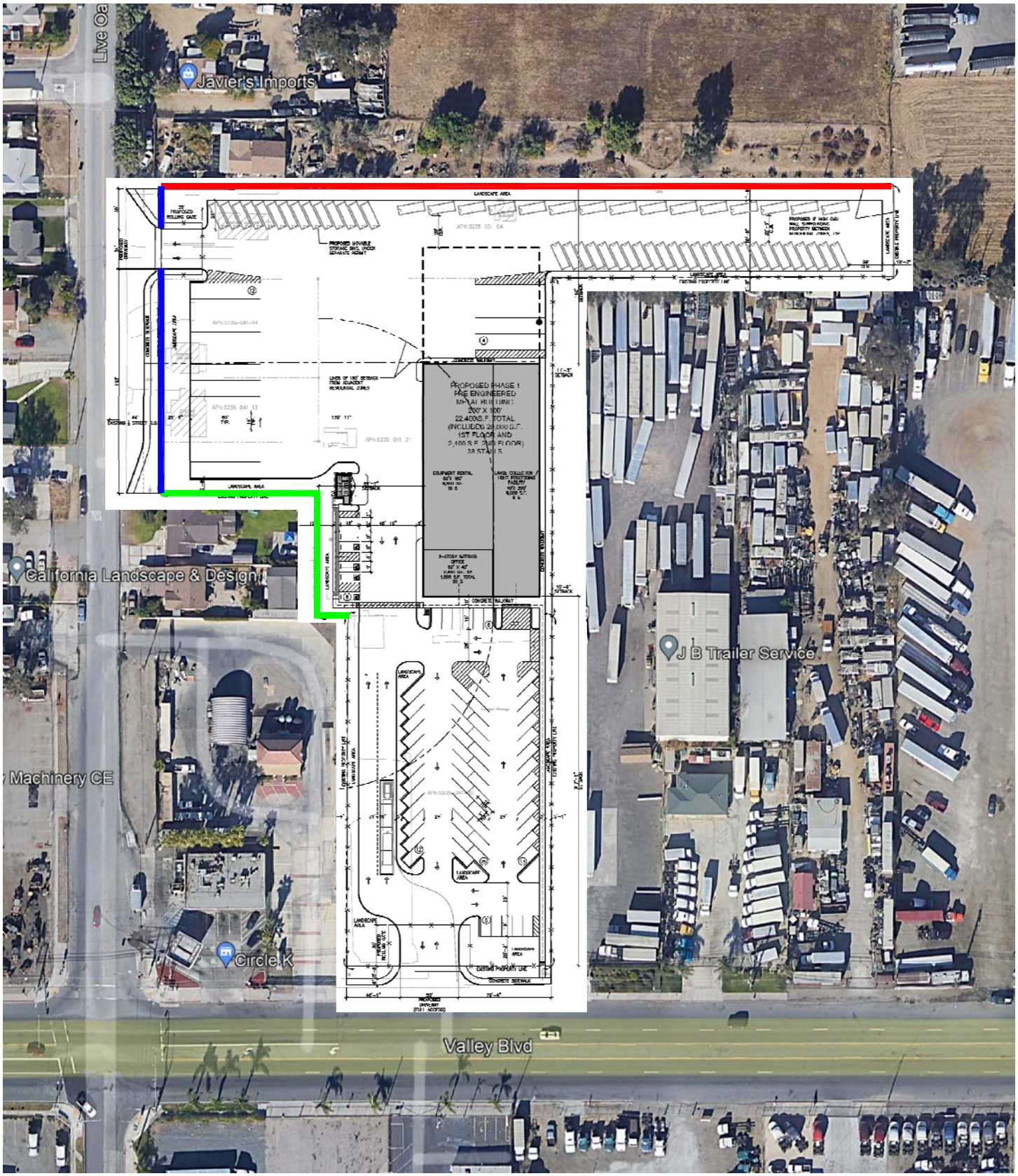
Exhibit D

Wall Recommendations



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Legend:

= Noise Barrier Wall (8 foot high)
= Noise Barrier Wall (6 foot high)
= Noise Barrier Wall (10 foot high)

SoundPLAN Project Noise Level Results

SoundPLAN Daytime Noise Contours

Appendices

Appendix A

County of San Bernardino
Noise Standards

§ 83.01.080. Noise.

Latest version.

This Section establishes standards concerning acceptable noise levels for both noise-sensitive land uses and for noise-generating land uses.

(a) *Noise Measurement.* Noise shall be measured:

(1) At the property line of the nearest site that is occupied by, and/or zoned or designated to allow the development of noise-sensitive land uses;

(2) With a sound level meter that meets the standards of the American National Standards Institute (ANSI § SI4 1979, Type 1 or Type 2);

(3) Using the "A" weighted sound pressure level scale in decibels (ref. pressure = 20 micronewtons per meter squared). The unit of measure shall be designated as dB(A).

(b) *Noise Impacted Areas.* Areas within the County shall be designated as "noise-impacted" if exposed to existing or projected future exterior noise levels from mobile or stationary sources exceeding the standards listed in Subdivision (d) (Noise Standards for Stationary Noise Sources) and Subdivision (e) (Noise Standards for Adjacent Mobile Noise Sources), below. New development of residential or other noise-sensitive land uses shall not be allowed in noise-impacted areas unless effective mitigation measures are incorporated into the project design to reduce noise levels to these standards. Noise-sensitive land uses shall include residential uses, schools, hospitals, nursing homes, religious institutions, libraries, and similar uses.

(c) *Noise Standards for Stationary Noise Sources.*

(1) *Noise Standards.* Table 83-2 (Noise Standards for Stationary Noise Sources) describes the noise standard for emanations from a stationary noise source, as it affects adjacent properties:

Table 83-2		
Noise Standards for Stationary Noise Sources		
Affected Land Uses (Receiving Noise)	7:00 a.m. - 10:00 p.m. Leq	10:00 p.m. - 7:
Residential	55 dB(A)	45

Professional Services	55 dB(A)	55
Other Commercial	60 dB(A)	60
Industrial	70 dB(A)	70

Leq = (Equivalent Energy Level). The sound level corresponding to a steady-state sound level co same total energy as a time-varying signal over a given sample period, typically one, eight or 24

dB(A) = (A-weighted Sound Pressure Level). The sound pressure level, in decibels, as measured level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very lo high frequency components of the sound, placing greater emphasis on those frequencies within range of the human ear.

Ldn = (Day-Night Noise Level). The average equivalent A-weighted sound level during a 24-hour by adding 10 decibels to the hourly noise levels measured during the night (from 10:00 p.m. to 7 this way Ldn takes into account the lower tolerance of people for noise during nighttime periods.

(2) *Noise Limit Categories.* No person shall operate or cause to be operated a source of sound at a location or allow the creation of noise on property owned, leased, occupied, or otherwise controlled by the person, which causes the noise level, when measured on another property, either incorporated or unincorporated, to exceed any one of the following:

(A) The noise standard for the receiving land use as specified in Subdivision (b) (Noise-Impacted Areas), above, for a cumulative period of more than 30 minutes in any hour.

(B) The noise standard plus five dB(A) for a cumulative period of more than 15 minutes in any hour.

(C) The noise standard plus ten dB(A) for a cumulative period of more than five minutes in any hour.

(D) The noise standard plus 15 dB(A) for a cumulative period of more than one minute in any hour.

(E) The noise standard plus 20 dB(A) for any period of time.

(d) *Noise Standards for Adjacent Mobile Noise Sources.* Noise from mobile sources may affect adjacent properties adversely. When it does, the noise shall be mitigated for any new development to a level that shall not exceed the standards described in the following Table 83-3 (Noise Standards for Adjacent Mobile Noise Sources).

Table 83-3

Noise Standards for Adjacent Mobile Noise Sources

Land Use		Ldn (or CNEL) dB(A)	
Categories	Uses	Interior [1]	Exteri
Residential	Single and multi-family, duplex, mobile homes		
Commercial	Hotel, motel, transient housing		
Commercial retail, bank, restaurant	50		
Office building, research and development,	45		

professional offices	
Amphitheater, concert hall, auditorium, movie theater	45
Institutional/Public	Hospital, nursing home, school classroom, religious institution, library
Open Space	Park
Notes:	
(1) The indoor environment shall exclude bathrooms, kitchens, toilets, closets and corridors.	
(2) The outdoor environment shall be limited to: · Hospital/office building patios · Hotel and motel recreation areas · Mobile home parks · Multi-family private patios or balconies · Park picnic areas · Private yard of single-family dwellings · School playgrounds	
(3) An exterior noise level of up to 65 dB(A) (or CNEL) shall be allowed provided exterior noise le been substantially mitigated through a reasonable application of the best available noise reductio and interior noise exposure does not exceed 45 dB(A) (or CNEL) with windows and doors closed that windows and doors remain closed to achieve an acceptable interior noise level shall necess of air conditioning or mechanical ventilation.	
CNEL = (Community Noise Equivalent Level). The average equivalent A-weighted so during a 24-hour day, obtained after addition of approximately five decibels to sound evening from 7:00 p.m. to 10:00 p.m. and ten decibels to sound levels in the night fro p.m. to 7:00 a.m.	

(e) *Increases in Allowable Noise Levels.* If the measured ambient level exceeds any of the first four noise limit categories in Subdivision (d)(2), above, the allowable noise exposure standard shall be increased to reflect the ambient noise level. If the ambient noise level exceeds the fifth noise limit category in Subdivision (d)(2), above, the maximum allowable noise level under this category shall be increased to reflect the maximum ambient noise level.

(f) *Reductions in Allowable Noise Levels.* If the alleged offense consists entirely of impact noise or simple tone noise, each of the noise levels in Table 83-2 (Noise Standards for Stationary Noise Sources) shall be reduced by five dB(A).

(g) *Exempt Noise.* The following sources of noise shall be exempt from the regulations of this Section:

(1) Motor vehicles not under the control of the commercial or industrial use.

(2) Emergency equipment, vehicles, and devices.

(3) Temporary construction, maintenance, repair, or demolition activities between 7:00 a.m. and 7:00 p.m., except Sundays and Federal holidays.

(h) *Noise Standards for Other Structures.* All other structures shall be sound attenuated against the combined input of all present and projected exterior noise to not exceed the criteria.

Table 83-4	
Noise Standards for Other Structures	
Typical Uses	12-Hour Equivalent Sound Leve dBA Ldn
Educational, institutions, libraries, meeting facilities, etc.	45
General office, reception, etc.	50
Retail stores, restaurants, etc.	55
Other areas for manufacturing, assembly, testing, warehousing, etc.	65

In addition, the average of the maximum levels on the loudest of intrusive sounds occurring during a 24-hour period shall not exceed 65 dBA interior.

(Ord. 4011, passed - -2007; Am. Ord. 4245, passed - -2014)

Appendix B

Field Data and Photos

Field Sheet

Project: Live Oak Avenue and Valley Boulevard Equipment Rental and Recycling Center Noise Impact Study

Engineer: D. Shivaiah

Date: 3/31/2022

JN: 2824-2022-01

Measurement Address: 14930 Valley Boulevard

County: County of San Bernardino

Site No.: 1

Sound Level Meter:

Piccolo II

Serial # P0218042101

Serial # P0218092808

Serial # P0221010801

Serial # P0221010802

Calibrator:

CA114 Sound Calibrator

Serial # 500732

Calibration Record:

	Input, dB/	Cali. Date	Time
1	94.0	03/30/2022	1:00 PM
2	94.0	03/30/2022	1:00 PM
3	94.0		
4	94.0		

Notes:

Temp: 74

Windspeed: 11 MPH

Direction: SW

Skies: Clear

Camera:

Photo Nos.

Meter Settings:

☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS ___60____- MINUTE

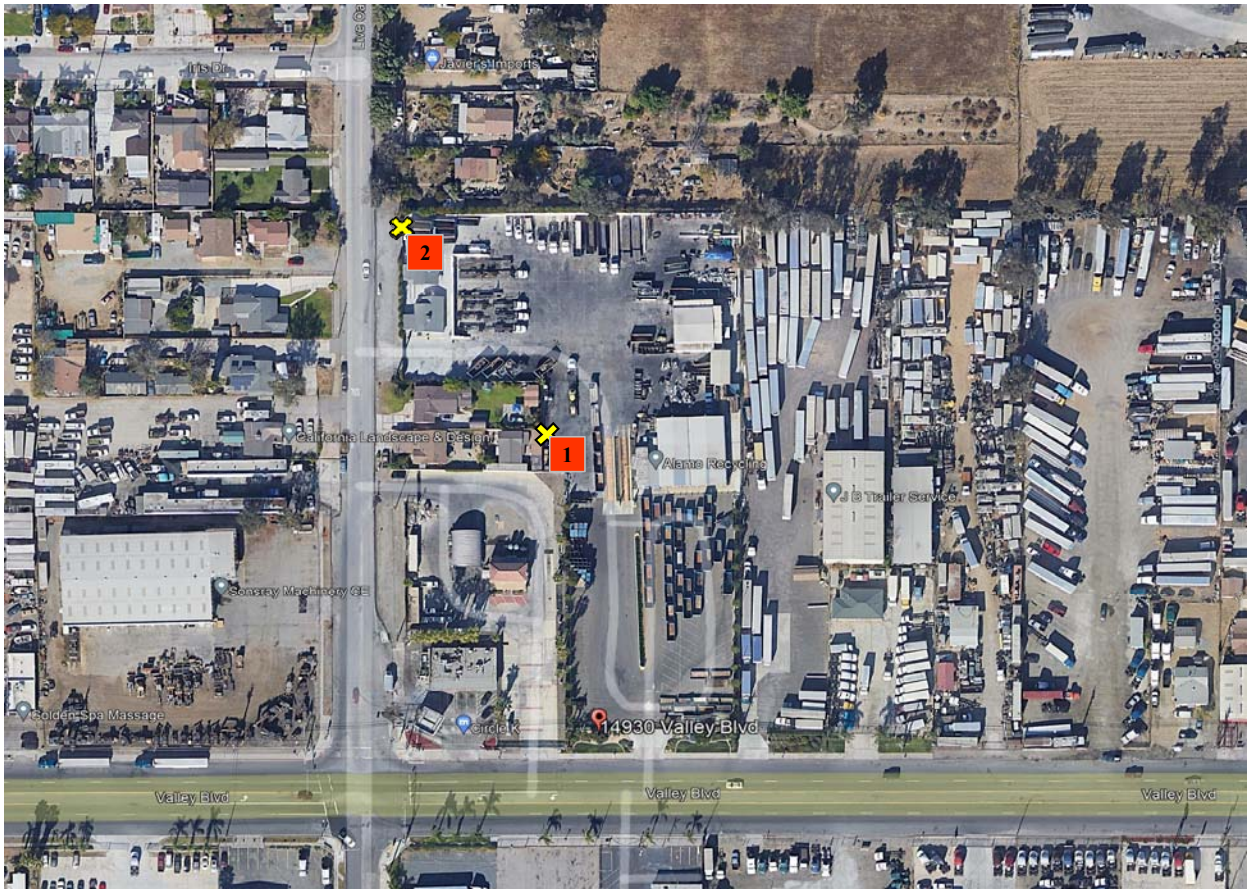
☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

Notes:

Measurement Type:

Long-term X

Short-term



RK engineering group, inc.

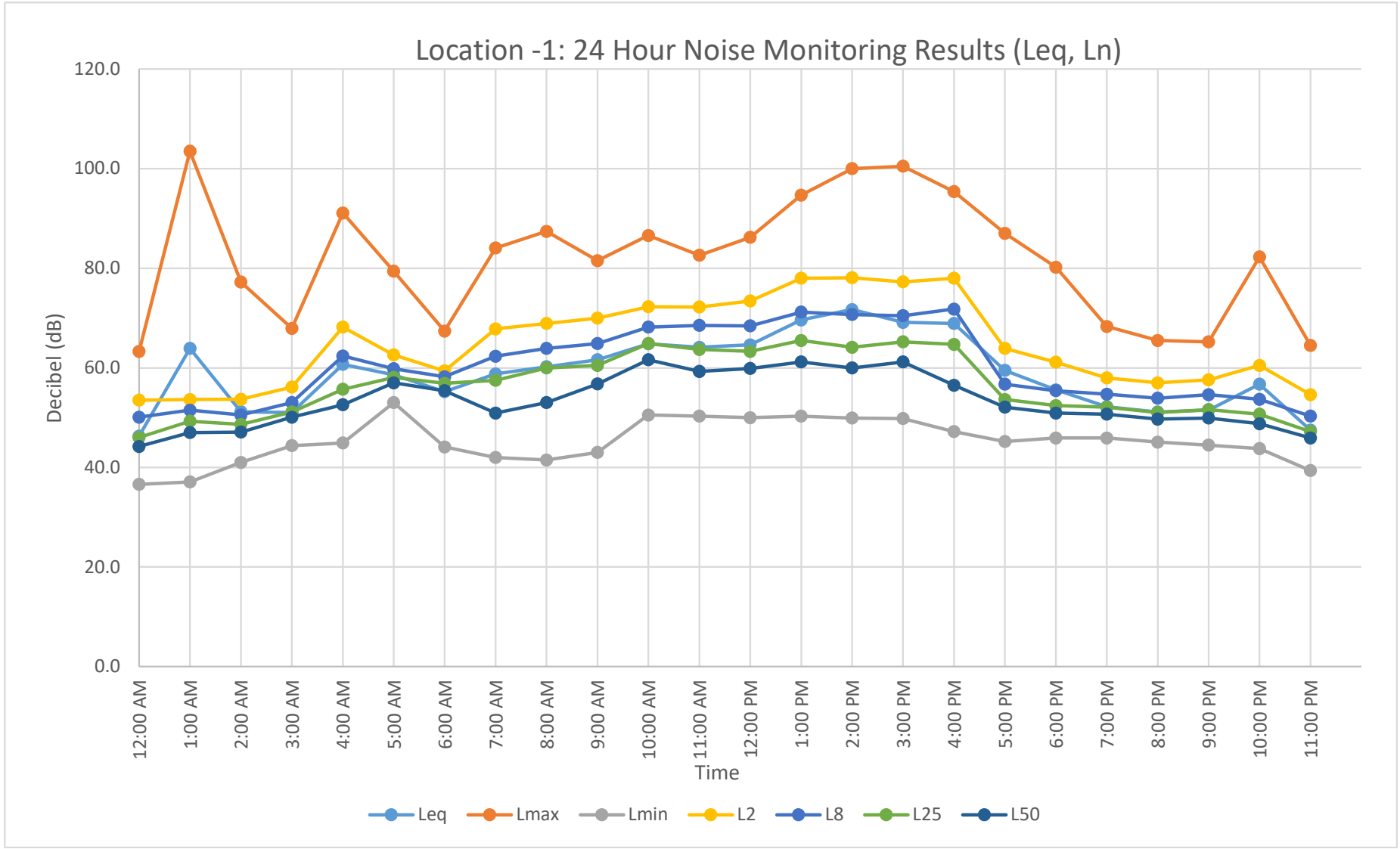
Location-1: Photos

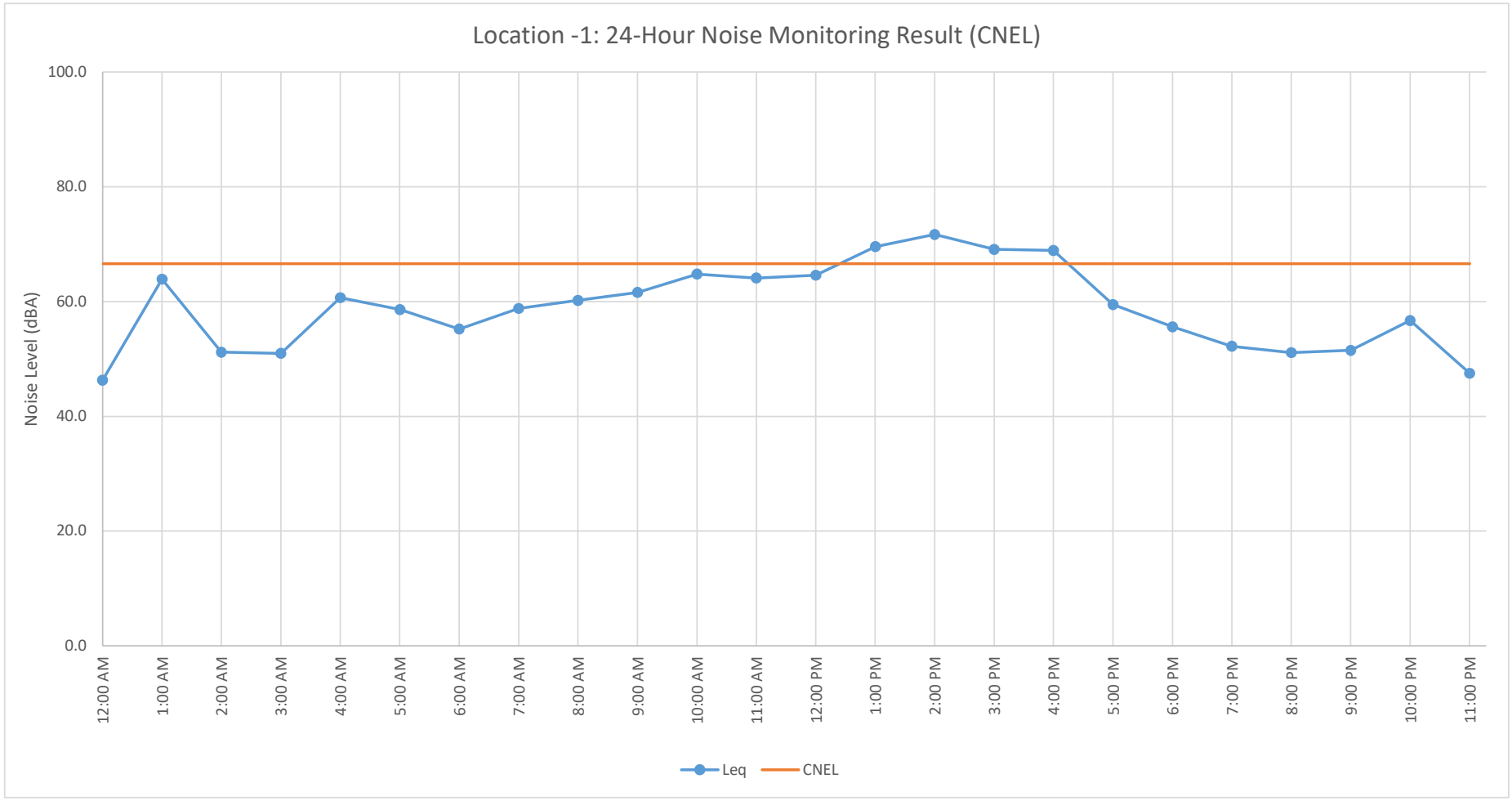
Project:	Live Oak Avenue and Valley Boulevard Equipment Rental and Recycling Center Noise Impact Study	**Engineer:** D. Shivaiah	**Date:** 5/10/2022 **JN:** 2824-2022-01
Measurement Address:		**County:** County of San Bernardino	**Site No.:** 1
Measurement was taken along the western property line of the project site (along the eastern property line of 10041 Live Oak Avenue) approximately 70 feet from the existing weighing scale.			

RK engineering group, inc.

PROJECT:	Live Oak Ave and Valley Blvd Equipment Rental and Recycling Center					JOB #:	2824-2022-01
NOISE METER	Piccolo II SLM, 24-Hour Measurement					DATE:	03/31/2022
LOCATION:	Measurement was taken along the western property line of the project site (along the eastern property line of 10041 Live Oak Avenue) approximately 70 feet from the existing weighing scale.					BY:	D. Shivaiah

Time	Leq	Lmax	Lmin	L2	L8	L25	L50
12:00 AM	46.3	63.3	36.6	53.5	50.1	46.0	44.2
1:00 AM	63.9	103.5	37.1	53.6	51.5	49.3	47.0
2:00 AM	51.2	77.2	41.0	53.7	50.5	48.6	47.1
3:00 AM	51.0	67.9	44.4	56.1	53.0	51.1	50.1
4:00 AM	60.7	91.1	44.9	68.2	62.4	55.7	52.6
5:00 AM	58.6	79.4	53.0	62.6	59.8	58.1	57.0
6:00 AM	55.2	67.4	44.1	59.4	58.2	56.9	55.4
7:00 AM	58.8	84.1	42.0	67.8	62.3	57.5	50.9
8:00 AM	60.2	87.4	41.5	68.9	63.9	60.0	53.0
9:00 AM	61.6	81.5	43.0	70.0	64.9	60.5	56.8
10:00 AM	64.8	86.6	50.5	72.3	68.2	64.9	61.6
11:00 AM	64.1	82.6	50.3	72.2	68.5	63.7	59.3
12:00 PM	64.6	86.2	50.0	73.4	68.4	63.3	59.9
1:00 PM	69.6	94.7	50.3	78.0	71.2	65.5	61.2
2:00 PM	71.7	100.0	49.9	78.1	70.7	64.1	60.0
3:00 PM	69.1	100.5	49.8	77.3	70.5	65.2	61.2
4:00 PM	68.9	95.4	47.2	78.0	71.8	64.7	56.5
5:00 PM	59.5	87.0	45.2	63.9	56.7	53.6	52.1
6:00 PM	55.6	80.2	45.9	61.1	55.4	52.4	50.9
7:00 PM	52.2	68.3	45.9	58.0	54.7	52.1	50.7
8:00 PM	51.1	65.5	45.1	57.0	53.9	51.0	49.7
9:00 PM	51.5	65.2	44.5	57.6	54.6	51.6	49.9
10:00 PM	56.7	82.3	43.8	60.5	53.7	50.7	48.8
11:00 PM	47.5	64.5	39.4	54.6	50.3	47.2	45.9
Daytime	65.3	100.5	41.5	73.1	67.0	61.7	57.4
Nighttime	58.0	103.5	36.6	61.3	57.0	53.7	52.1

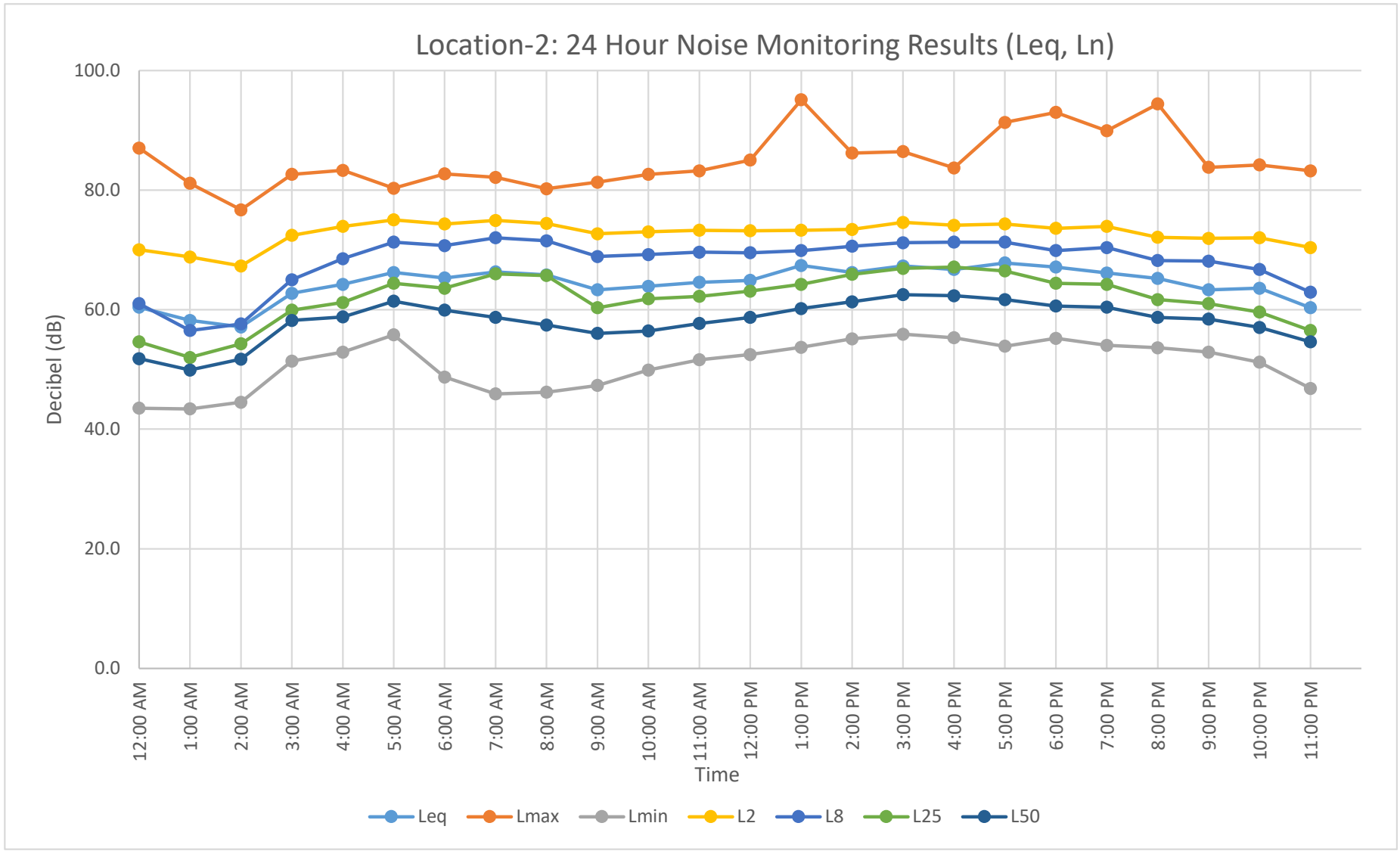

Location -1: 24 Hour Noise Monitoring Results (Leq, Ln)
Decibel (dB)
120.0
100.0
80.0
60.0
40.0
20.0
0.0
12:00 AM
1:00 AM
2:00 AM
3:00 AM
4:00 AM
5:00 AM
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
2:00 PM
3:00 PM
4:00 PM
5:00 PM
6:00 PM
7:00 PM
8:00 PM
9:00 PM
10:00 PM
11:00 PM
Time
Leq
Lmax
Lmin
L2
L8
L25
L50


Location -1: 24-Hour Noise Monitoring Result (CNEL)
Noise Level (dBA)
100.0
80.0
60.0
40.0
20.0
0.0
12:00 AM
1:00 AM
2:00 AM
3:00 AM
4:00 AM
5:00 AM
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
2:00 PM
3:00 PM
4:00 PM
5:00 PM
6:00 PM
7:00 PM
8:00 PM
9:00 PM
10:00 PM
11:00 PM
Leq
CNEL

Location-2: Photos

Project:	Live Oak Avenue and Valley Boulevard Equipment Rental and Recycling Center Noise Impact Study	**Engineer:** D. Shivaiah	**Date:** 3/31/2022 **JN:** 2824-2022-01
Measurement Address:		**County:** County of San Bernardino	**Site No.:** 2
Measurement was taken approximately 5 feet from the northern property line and approximately 42 feet from the centerline of the Live Oak Avenue.			

PROJECT:	Live Oak Ave and Valley Blvd Equipment Rental and Recycling Center					JOB #:	2824-2022-01
NOISE METER	Piccolo II SLM, 24-Hour Measurement					DATE:	31-Mar-22
LOCATION:	Measurement was taken approximately 5 feet from the northern property line and approximately 42 feet from the centerline of the Live Oak Avenue.					BY:	D. Shivaiah
Time	Leq	Lmax	Lmin	L2	L8	L25	L50
12:00 AM	60.4	87.0	43.5	70.0	61.0	54.6	51.8
1:00 AM	58.2	81.1	43.4	68.8	56.5	52.0	49.9
2:00 AM	57.1	76.7	44.5	67.3	57.6	54.3	51.7
3:00 AM	62.7	82.6	51.4	72.4	65.0	59.9	58.2
4:00 AM	64.2	83.3	52.9	73.9	68.5	61.2	58.8
5:00 AM	66.2	80.3	55.8	75.0	71.3	64.4	61.4
6:00 AM	65.3	82.7	48.7	74.3	70.7	63.6	59.9
7:00 AM	66.3	82.1	45.9	74.9	72.0	66.0	58.7
8:00 AM	65.8	80.2	46.2	74.4	71.5	65.7	57.4
9:00 AM	63.3	81.3	47.3	72.7	68.9	60.3	56.0
10:00 AM	63.9	82.6	49.9	73.0	69.2	61.8	56.4
11:00 AM	64.6	83.2	51.6	73.3	69.6	62.2	57.7
12:00 PM	64.9	85.0	52.5	73.2	69.5	63.1	58.7
1:00 PM	67.4	95.1	53.7	73.3	69.9	64.2	60.2
2:00 PM	66.2	86.2	55.1	73.4	70.6	65.9	61.3
3:00 PM	67.3	86.4	55.9	74.6	71.2	66.9	62.5
4:00 PM	66.7	83.7	55.3	74.1	71.3	67.1	62.3
5:00 PM	67.8	91.3	53.9	74.3	71.3	66.5	61.7
6:00 PM	67.1	93.0	55.2	73.6	69.9	64.4	60.6
7:00 PM	66.1	89.9	54.0	73.9	70.4	64.2	60.4
8:00 PM	65.2	94.4	53.6	72.1	68.2	61.7	58.7
9:00 PM	63.3	83.8	52.9	71.9	68.1	61.0	58.4
10:00 PM	63.6	84.2	51.2	72.0	66.7	59.6	57.0
11:00 PM	60.3	83.2	46.8	70.4	62.9	56.5	54.6
Daytime	65.8	95.1	45.9	73.5	70.1	64.4	59.7
Nighttime	62.8	87.0	43.4	72.3	67.0	60.3	57.5


Location-2: 24 Hour Noise Monitoring Results (Leq, Ln)
Decibel (dB)
100.0
80.0
60.0
40.0
20.0
0.0
12:00 AM
1:00 AM
2:00 AM
3:00 AM
4:00 AM
5:00 AM
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
2:00 PM
3:00 PM
4:00 PM
5:00 PM
6:00 PM
7:00 PM
8:00 PM
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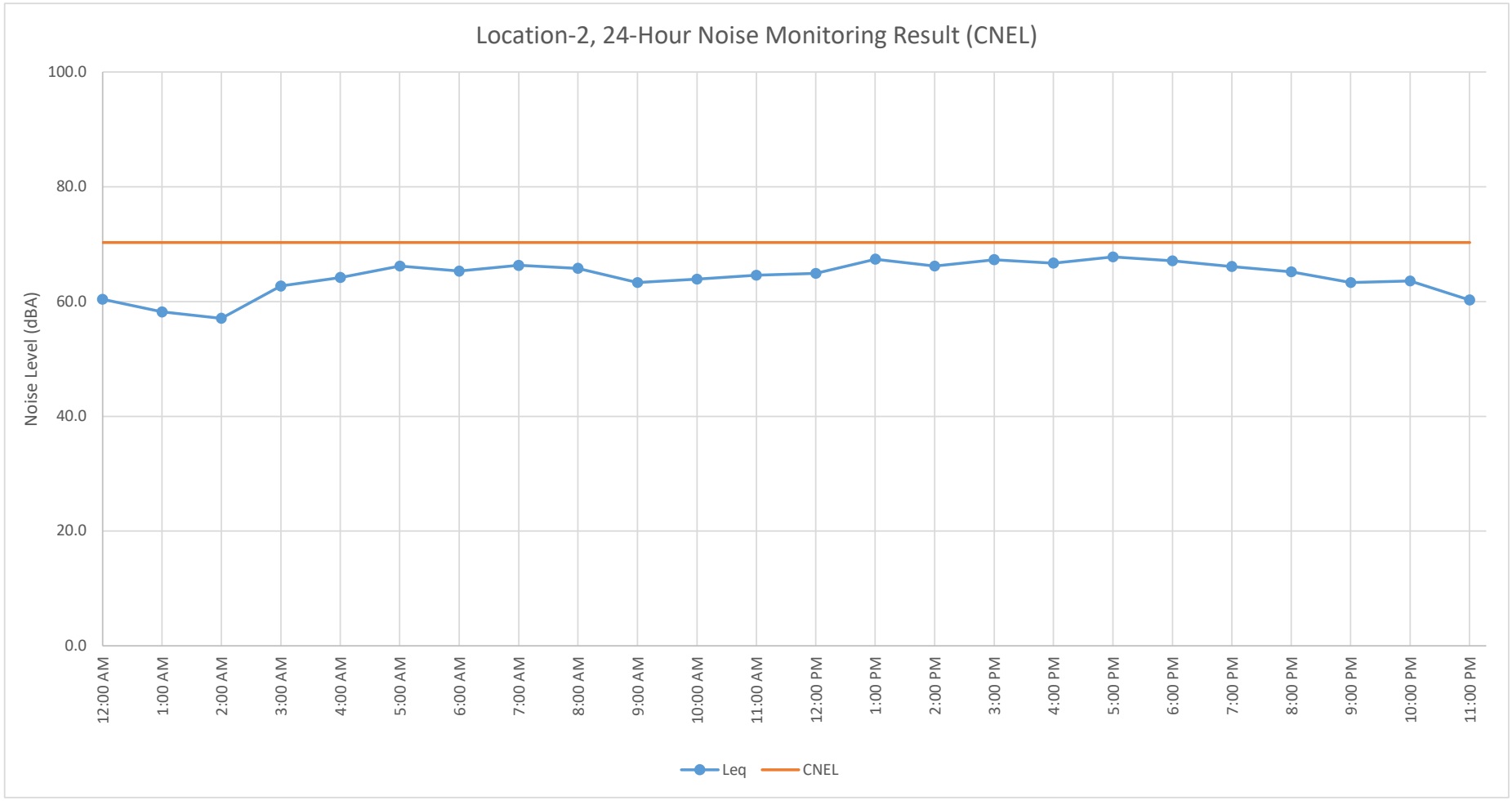
10:00 PM
11:00 PM
Time
Leq
Lmax
Lmin
L2
L8
L25
L50


Location-2, 24-Hour Noise Monitoring Result (CNEL)
Noise Level (dBA)
100.0
80.0
60.0
40.0
20.0
0.0
12:00 AM
1:00 AM
2:00 AM
3:00 AM
4:00 AM
5:00 AM
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
2:00 PM
3:00 PM
4:00 PM
5:00 PM
6:00 PM
7:00 PM
8:00 PM
9:00 PM
10:00 PM
11:00 PM
Leq
CNEL

Appendix C

Reference Noise Sheets

Field Sheet

Project:	Live Oak and Valley Blvd Recycling Center	**Engineer:** D. Shivaiah	**Date:** 4/30/2019
			JN: 2824-2019-01
Measurement Address: Live Oak and Valley Blvd		**City:** County of San Bernardino	**Site No.:** 1

Sound Level Meter:
LD-712
Serial # A0520

Calibrator:
LD-250 250
Serial # 1322

Calibration Record:

	Input, dB/	Reading, dB/	Offset, dB/	Time
Before				
After				
Before	94.0	94.0	0.0	12:00 PM
After	94.0	94.0	0.0	12:00 PM

Notes:

Temp:	74
Windspeed:	10 MPH
Direction:	ENE
Skies:	Clear
Camera:	
Photo Nos.	

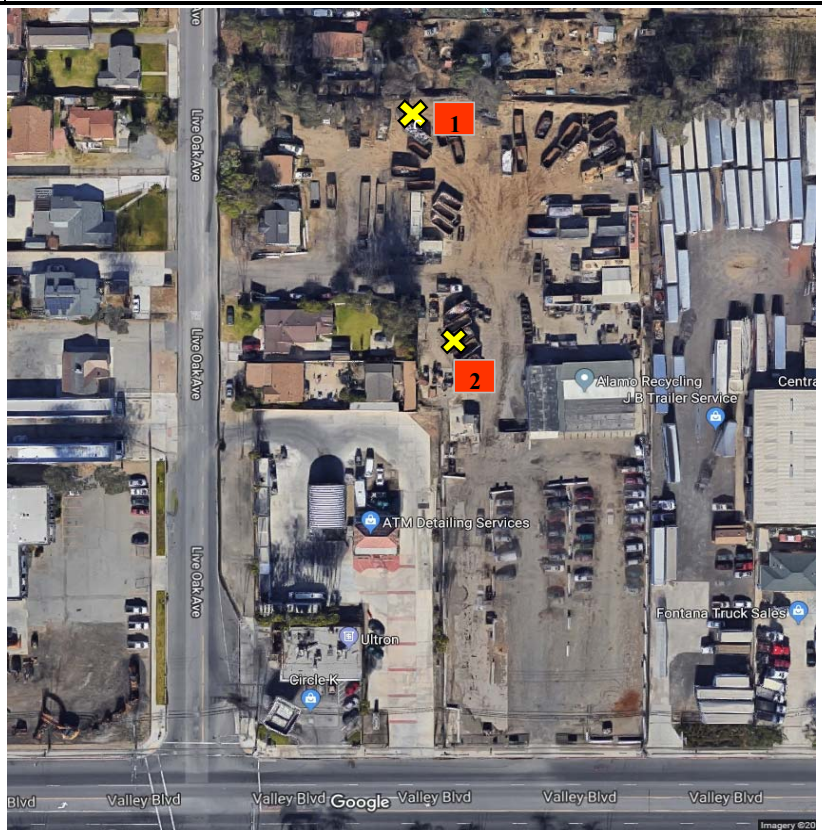
Meter Settings:

☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS ___10____- MINUTE
☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

Notes: Bailer Noise

Measurement Type:
Long-term
Short-term X

		Start Time	Stop Time	Leq	Lmin	Lmax	L2	L8	L25	L50
Locations	1	12:01 PM	12:11 PM	58.3	51.6	69.2	65.6	62.6	58.8	55.2
		Measurement taken at approximately 10 feet from the north property line of the site. Noise sources includes traffic noise from Live Oak Avenue and bailer activity on-site.								
	2	11:58 AM	12:08 PM	63.6	53.6	78.0	71.7	67.5	63.2	59.8
		Measurement taken at approximately 18 feet from the west property line of the site. Noise sources includes traffic noise from Valley Boulevard, noise from the detail shop activity and bailer activity on-site.								
	3									



RK engineering group, inc.

Field Sheet - ST1 Location Photos

Project: Live Oak and Valley Blvd Recycling Center	**Engineer:** D. Shivaiah	**Date:**	4/30/2019
		JN:	2824-2019-01
Measurement Address: Live Oak and Valley Blvd	**City:** County of San Bernardino	**Site No.:**	1

RK engineering group, inc.

Field Sheet - ST2 Location Photos

Project: Live Oak and Valley Blvd Recycling Center	**Engineer:** D. Shivaiah	**Date:**	4/30/2019
		JN:	2824-2019-01
Measurement Address: Live Oak and Valley Blvd	**City:** County of San Bernardino	**Site No.:**	2

RK engineering group, inc.

Field Sheet

Project: Live Oak Avenue and Valley Boulevard
Equipment Rental and Recycling Center

Engineer: B. Estrada

Date: 3/9/2021
JN: 2824-2022-01

Measurement Address:
14930 Valley Boulevard

County:
County of San Bernardino

Site No.: 1

Sound Level Meter:
Piccolo II
Serial # P0218042101
Serial # P0218092808
Serial # P0221010801
Serial # P0221010802

Calibrator:
CA114 Sound Calibrator
Serial # 500732

Calibration Record:

	Input, dB/	Cali. Date	Time
1	94.0	3/9/2021	12:00 PM
2	94.0		
3	94.0		
4	94.0		

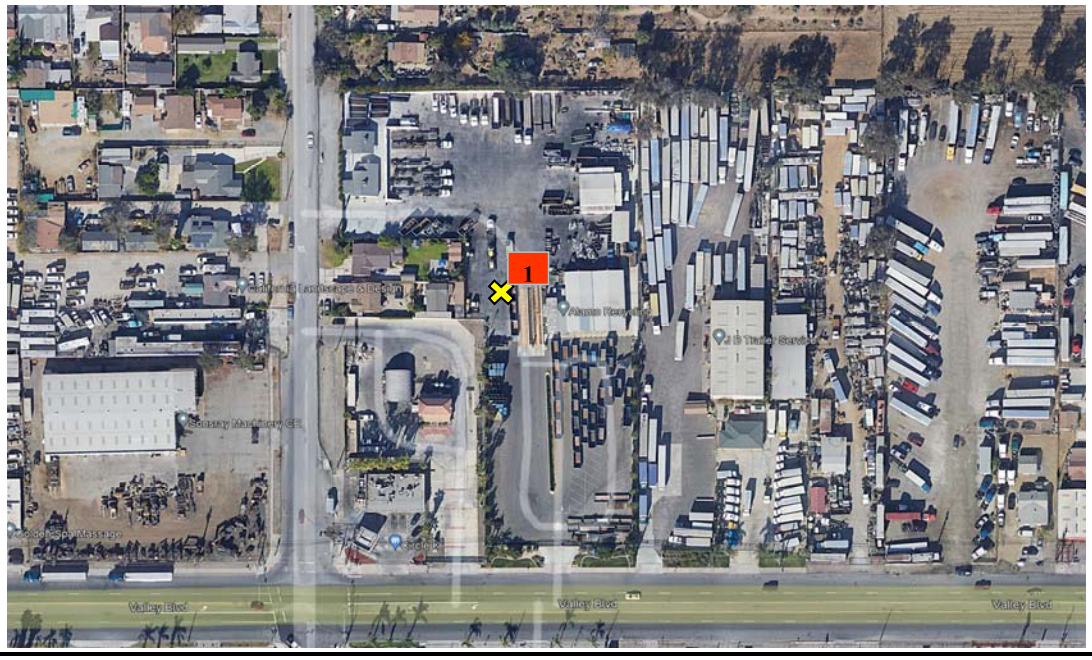
Notes:
Temp: 74
Windspeed: 11 MPH
Direction: SW
Skies: Clear
Camera:
Photo Nos.

Meter Settings:
☒ A-WTD ☐ LINEAR ☒ SLOW ☐ 1/1 OCT ☒ INTERVALS ___1____- MINUTE
☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☒ L_N PERCENTILE VALUES

Notes:

Measurement Type:
Long-term
Short-term X

		Start Time	Stop Time	Leq	Lmax	Lmin	L2	L8	L25	L50
Locations	1	12:14 PM	12:15 PM	65.1	70.3	54.7	70.2	69.7	67.4	61
		Measurement taken at approximately 15 feet from the existing on-site weighing scale. Noise sources includes traffic noise from Live Oak Avenue and all other on-site activities were ceased during the measurement.								
		12:19 PM	12:20 PM	67.9	75.7	57.8	74.5	72.6	69.6	64.4
		Measurement taken at approximately 15 feet from the existing on-site weighing scale. Noise sources includes traffic noise from Live Oak Avenue and all other on-site activities were ceased during the measurement.								
	2									
	3									



RK engineering group, inc.

Field Sheet - ST1 Location Photos

Project: Live Oak Avenue and Valley Boulevard Equipment Rental and Recycling Center **Engineer:** B. Estrada	**Date:** 3/9/2021 **JN:** 2824-2022-01
Measurement Address: Measurement taken at approximately 15 feet from the existing on-site weighing scale. Noise sources includes traffic noise from Live Oak Avenue and all other on-site activities were ceased during the measurement.	**Site No.:** 1

RK engineering group, inc.

Field Sheet

Project:	America's Tire Reference Noise Levels	**Engineer:** Bryan Estrada & Jethro Narciso	**Date:** 5/15/2018 **JN:** 1615-2016-01
Measurement Address: 2915 Bristol Street		**City:** Costa Mesa	**Site No.:** 1-3

Sound Level Meter: LD-831

Calibrator: LD-CA250

Calibration Record:

	Input, dB/	Reading, dB/	Offset, dB/	Time
Before	114.0/	113.9	0.1	11:05 AM
After	114.0	114.0	0.0	11:05 AM
Before	/	/	/	
After	/	/	/	

Notes:

Temp:	67°
Windspeed:	7 MPH
Direction:	--
Skies:	Sunny
Camera:	
Photo Nos.	

Meter Settings:

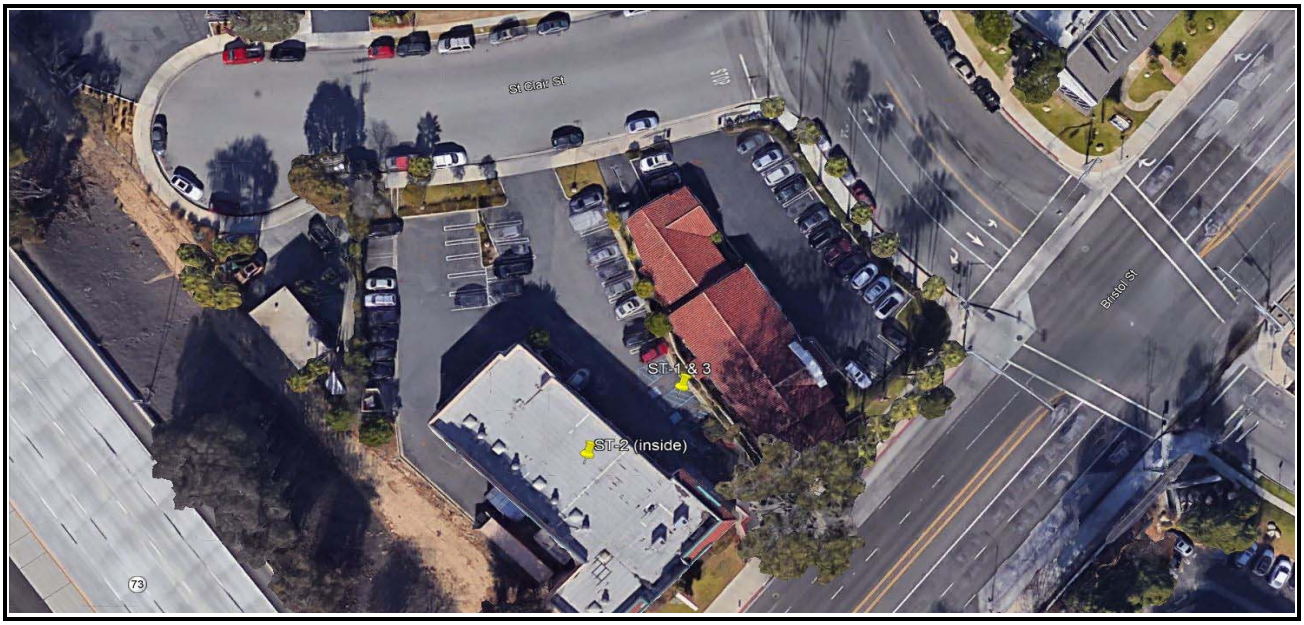
☐ A-WTD ☐ LINEAR ☐ SLOW ☐ 1/1 OCT ☐ INTERVALS ___10____- MINUTE

☐ C-WTD ☐ IMPULSE ☐ FAST ☐ 1/3 OCT ☐ L_N PERCENTILE VALUES

Notes:

Measurement Type:
Long-term ____
Short-term X

		Start Time	Stop Time	Leq	Lmin	Lmax	L2	L8	L25	L50
Locations	1	11:30 AM	11:40 AM	69.0	59.9	83.0	76.5	73.3	69.3	66.0
		Measurement taken approximately 50 feet from America's Tire Bay #2. Operational noise from guns/drills, lifts, tire machines, phones, alarms, yelling etc. Three (3) cars in service.								
	2	11:45 AM	11:55 AM	78.1	58.3	91.0	86.8	83.5	78.3	71.3
		Measurement taken inside bay, with noise from guns/drills, lifts, tire machines, phones, alarms, and additional sources associated with on-site operations. Four (4) cars in service.								
	3	12:12 PM	12:17 PM	64.0	59.4	71.7	68.0	66.5	64.5	63.3
		Measurement taken at the same location as ST-1, but with on-site operations on hold for the duration of the measurement. This is considered the ambient noise measurement.								
	4									
	5									



RK engineering group, inc.

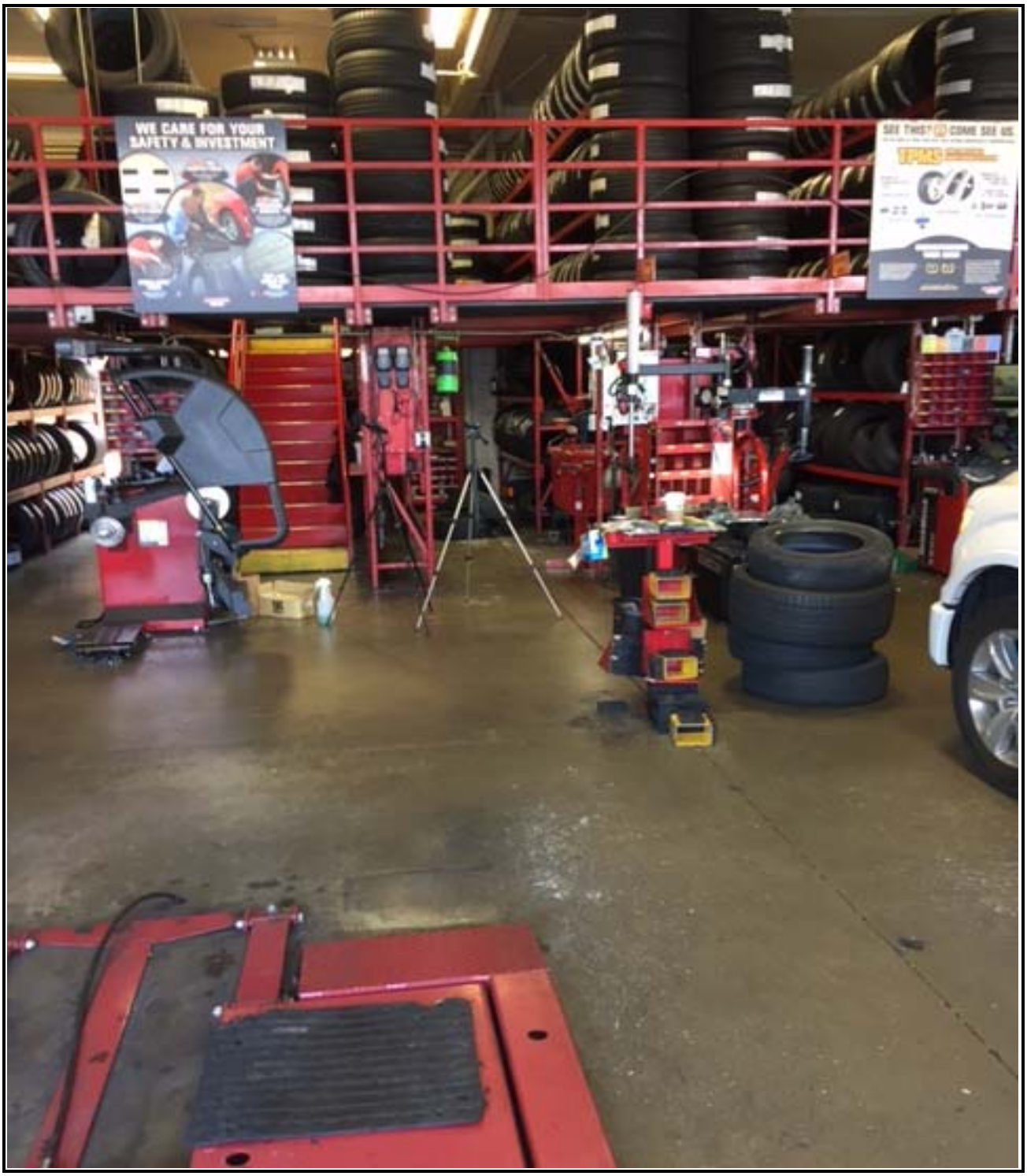
Field Sheet - ST1 & 3 Location Photos

Project: America's Tire Reference Noise Levels	**Engineer:** Bryan Estrada & Jethro Narciso	**Date:**	5/15/2018
		JN:	1615-2016-01
Measurement Address: 2915 Bristol Street	**City:** Costa Mesa	**Site No.:**	1 & 3

RK engineering group, inc.

Field Sheet - ST2 Location Photos

Project:	America's Tire Reference Noise Levels	**Engineer:** Bryan Estrada & Jethro Narciso	**Date:** 5/15/2018 **JN:** 1615-2016-01
Measurement Address: 2915 Bristol Street		**City:** Costa Mesa	**Site No.:** 2



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Noise Measurement Summary

Measurement Location	Scenario	dB(A)					
		Leq	Lmax	L2	L8	L25	L50
1-50 feet from Bays	3-bays fully operational	69.0	83.0	76.5	73.3	69.3	66.0
3-50 feet from Bays	No operations	64.0	71.7	68.0	66.5	64.5	63.3
Change	N/A	5.0	11.3	8.5	6.8	4.8	2.7

***Note: The change in the average noise level results in a 5.0 dBA increase between the fully operational scenario vs. the no operations scenario at 50 feet from the bays. Therefore, one can deduce the tire store noise level projections using the decibel addition or subtraction formula.

$$L = 10\log_{10}\left(\sum_{i=1}^{n} 10^{(Li/10)}\right)$$

Sound pressure level addition or subtraction formula

Tire Store Operational Noise Level Calculation (Removal of Ambient), dBA

Scenario	Leq	Energy
Ambient Condition	64.0	2511886
Tire Store Contribution	**67.4**	5495409
Combined Level	69.0	8007295

*** The bold value illustrates the sound level required to achieve a 69.0 dBA combined level at 50 feet from the tire bay store. Therefore, the tire store's average projected sound level (without ambient conditions, eg: roadway noise) is 67.4 dBA @ 50 feet from the bay doors.

$I \sim p^2 \sim \frac{1}{r^2}$ this means that $p \sim \frac{1}{r}$ $L2 = L1 - 10\log\frac{r2^2}{r1^2}$

Inverse sqaure law and relationship with, sound intensity, sound pressure.

Therefore, the final projected America's Tire operational noise level at the facade of Round Table Pizza can be calculated based on the inverse square law.

R1	Reference Dist.:	50 ft
L1	Reference Level:	67.4 dBA
R2	Facade Dist.:	72.5 ft
L2	Projected Level:	64.2 dBA

Appendix D

Stationary Noise Analysis
(SoundPLAN Results Sheets)

Noise emissions of industry sources

Source name	Reference	Level		Frequency spectrum [dB(A)]								Corrections		
			dB(A)	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	Cwall dB	CI dB	CT dB
Weighing Scale Noise	Lw/	Day	90.8									-	-	-
		Night	-									-	-	-
Truck Activity Noise	Lw/unit	Day	80.0	47.0	57.0	64.1	70.1	73.0	74.0	74.1	72.0	-	-	-
		Night	-	-	-	-	-	-	-	-	-	-	-	-
Repair Shop & Compactor Noise	Lw/unit	Day	97.4									3.0	-	-
		Night	-									3.0	-	-

Noise emissions of parking lot traffic

Name	Parking lot type	Size	Movements per hour		Road surface	Separated method	Lw,ref
			Day	Night			dB(A)
Parking Lot	Visitors and staff	79 Parking bays	0.250	0.000	Asphaltic driving lanes	no	86.6

Receiver list

No.	Receiver name	Building side	Floor	Limit		Level w/o NP		Level w NP		Difference		Conflict	
				Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
				dB(A)		dB(A)		dB(A)		dB		dB	
1	9995 Live Oak Ave	-	GF	-	-	49.0	0.0	47.4	0.0	-1.6	0.0	-	-
2	9998 Live Oak Ave	-	GF	-	-	49.7	0.0	49.1	0.0	-0.6	0.0	-	-
3	10008 Live Oak Ave	-	GF	-	-	49.5	0.0	48.8	0.0	-0.7	0.0	-	-
4	10018 Live Oak Ave	-	GF	-	-	50.2	0.0	49.5	0.0	-0.7	0.0	-	-
5	10028 Live Oak Ave	-	GF	-	-	48.9	0.0	48.1	0.0	-0.8	0.0	-	-
6	10031 Live Oak Ave	-	GF	-	-	56.1	0.0	50.2	0.0	-5.9	0.0	-	-
7	10041 Live Oak Ave	-	GF	-	-	59.6	0.0	53.0	0.0	-6.6	0.0	-	-

Contribution levels of the receivers

Source name	Traffic lane	Level w/o NP Day	Level w/o NP Night	Level w NP Day	Level w NP Night
		dB(A)		dB(A)	
9995 Live Oak Ave	GF	49.0	0.0	47.4	0.0
Parking Lot	-	30.6	-	24.9	-
Repair Shop & Compactor Noise	-	48.5	-	47.3	-
Truck Activity Noise	-	36.8	-	30.9	-
Weighing Scale Noise	-	33.1	-	25.9	-
9998 Live Oak Ave	GF	49.7	0.0	49.1	0.0
Parking Lot	-	30.7	-	27.4	-
Repair Shop & Compactor Noise	-	49.5	-	48.9	-
Truck Activity Noise	-	33.9	-	32.5	-
Weighing Scale Noise	-	29.5	-	29.0	-
10008 Live Oak Ave	GF	49.5	0.0	48.8	0.0
Parking Lot	-	28.7	-	25.0	-
Repair Shop & Compactor Noise	-	49.3	-	48.7	-
Truck Activity Noise	-	34.0	-	31.5	-
Weighing Scale Noise	-	27.3	-	26.9	-
10018 Live Oak Ave	GF	50.2	0.0	49.5	0.0
Parking Lot	-	27.0	-	23.9	-
Repair Shop & Compactor Noise	-	50.1	-	49.5	-
Truck Activity Noise	-	33.7	-	30.7	-
Weighing Scale Noise	-	27.0	-	26.9	-
10028 Live Oak Ave	GF	48.9	0.0	48.1	0.0
Parking Lot	-	26.3	-	25.9	-
Repair Shop & Compactor Noise	-	48.7	-	47.9	-
Truck Activity Noise	-	32.1	-	29.1	-
Weighing Scale Noise	-	31.3	-	31.2	-
10031 Live Oak Ave	GF	56.1	0.0	50.2	0.0
Parking Lot	-	35.2	-	30.7	-
Repair Shop & Compactor Noise	-	55.6	-	49.2	-
Truck Activity Noise	-	39.6	-	27.8	-
Weighing Scale Noise	-	44.3	-	43.0	-
10041 Live Oak Ave	GF	59.6	0.0	53.0	0.0
Parking Lot	-	42.3	-	34.9	-
Repair Shop & Compactor Noise	-	59.2	-	52.5	-
Truck Activity Noise	-	38.0	-	28.1	-
Weighing Scale Noise	-	47.1	-	42.8	-