



September 10, 2024

Ms. Cheryl Tubbs
LILBURN CORPORATION
1905 Business Center Drive
San Bernardino, California 92408

RE: Olive Grove Residential (River Ranch Parkway) Noise Analysis
Project No. 19747

Dear Ms. Tubbs:

Ganddini Group, Inc. is pleased to provide this Noise Analysis for the Olive Grove Residential (River Ranch Pkwy) project. The 4.1-acre project site (APN: 0264-03-221) is located on River Ranch Parkway between Sycamore Avenue and Powell Drive in the City of Rialto, California. The project site is currently vacant and zoned as Single Family Residential. A project location map, showing the project's location, is provided on Figure 1.

This noise study summarizes our methodology, analysis, and findings. Although this is a technical report, effort has been made to write the report clearly and concisely. To assist the reader with technical terms related to noise analysis, a list of common acronyms is provided in Appendix A and a glossary is provided in Appendix B.

PROJECT DESCRIPTION

The proposed project involves the development of 29 single-family homes. Vehicle access for the project site is proposed via River Ranch Parkway.

The project site plan is shown on Figure 2.



Figure 1
Project Location Map

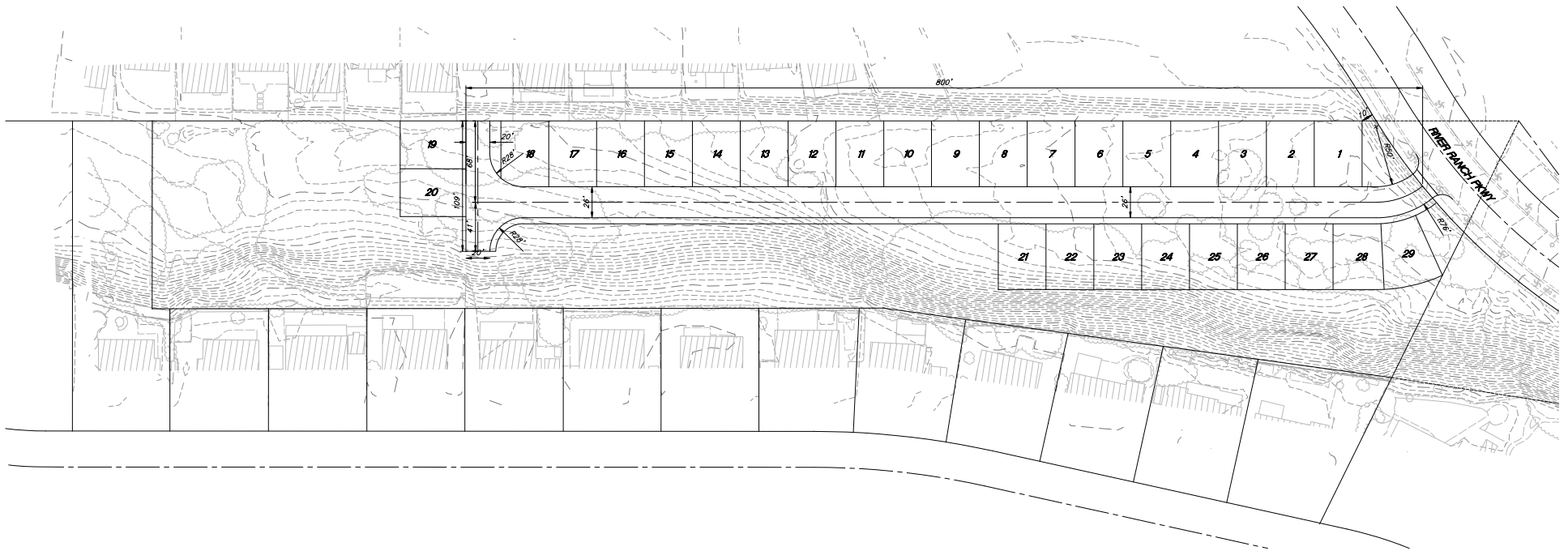


Figure 2
Site Plan

EXISTING SETTING

Existing Land Uses in the Project Vicinity

The project site is bordered by single-family residential uses to the north/northeast, south/southwest and west and River Ranch Parkway to the east/southeast of the project site.

The State of California defines sensitive receptors as those land uses that require serenity or are otherwise adversely affected by noise events or conditions. Schools, libraries, churches, hospitals, single and multiple-family residential, including transient lodging, motels and hotel uses make up the majority of these areas. Sensitive land uses that may be affected by project noise include the existing single-family residential uses with property lines located adjacent to the north/northeast, south/southwest, and west of the project site.

Measured Ambient Noise Levels

An American National Standards Institute (ANSI Section SI.4 2014, Class 1) Larson Davis model LxT sound level meter was used to document existing ambient noise levels. In order to document existing ambient noise levels in the project area, three (3) 15-minute daytime noise measurements were taken between 12:39 PM and 2:36 PM on August 5, 2024. Field worksheets and noise measurement output data are included in Appendix C.

As shown on Figure 3, existing ambient noise measurements were taken at the following locations:

- NM1: Noise measurement represents the southeastern portion of the project site as well as the residential uses located adjacent to the south/southwest of the project site (2187 Sycamore Street and 2184 Oakdale Avenue, Rialto). The noise meter was placed just southeast of the project's southeastern property line and west of River Ranch Parkway.
- NM2: Noise measurement represents the residential uses located adjacent to the northeast of the project site (2300 Powell Drive, Rialto). The noise meter was placed just south of the residential use near the northeastern project boundary.
- NM3: Noise measurement represents the northwestern portion of the project site as well as the residential uses located adjacent to the north/northeast of the project site (2348 Powell Drive, Rialto). The noise meter was placed just northwest of the project site and south of the residential uses.

Table 1 provides a summary of the short-term ambient noise data. Short-term ambient noise levels were measured between 41.7 and 55.5 dBA L_{eq} . The dominant noise sources were from vehicles traveling along River Ranch Parkway, Powell Drive, Interstate 210 Freeway, and other surrounding roadways.

Table 1
Short-Term Noise Measurement Summary (dBA)

Daytime Measurements ^{1,2}								
Site Location	Time Started	Leq	Lmax	Lmin	L(2)	L(8)	L(25)	L(50)
NM1	12:39 PM	55.5	73.7	37.6	64.6	57.8	52.1	45.0
NM2	1:33 PM	41.7	50.8	38.2	46.1	43.9	41.9	41.0
NM3	2:21 PM	44.8	61.5	37.6	53.5	45.6	43.3	41.2

Notes:

- (1) See Figure 5 for noise measurement locations. Each noise measurement was performed over a 15-minute duration.
 (2) Noise measurements performed on August 5, 2024.



Legend

-  Noise Measurement Location
- NM 1**
- ST NM** Short-Term Noise Measurement

Figure 3
Noise Measurement Location Map

APPLICABLE STANDARDS

California Department of Transportation

The California Department of Transportation (Caltrans) has developed several publications on groundborne vibration. The *Transportation and Construction Vibration Guidance Manual* (Caltrans, 2020) provides informational content that supplements previous publications with improved knowledge and information relating to groundborne transportation- and construction-induced vibrations. Although the *Transportation and Construction Vibration Guidance Manual* is not an official policy, standard, specification, or regulation, it serves as a useful guide for evaluating vibration impacts.

Table 2 and Table 3 show the guideline criteria for potential damage and annoyance resulting from groundborne vibration. As shown in Table 2, these guidelines recommend that the threshold at which there is a risk of architectural damage is a peak particle velocity (PPV) of 0.25 inches/second (in/sec) for historic buildings, PPV of 0.3 in/sec at older residential structures, and a PPV of 0.5 in/sec at new residential structures and modern commercial/industrial buildings. Table 3 shows that a PPV of 0.4 in/sec is the threshold at which groundborne vibration becomes severe in regard to annoyance (Caltrans, 2020).

City of Rialto General Plan

The City has adopted a version of the State of California's exterior noise and land use compatibility standards for land use development in the Safety and Noise Chapter of its General Plan, as shown in Table 4. These Guidelines establish standards for outdoor noise levels that are normally acceptable, conditionally acceptable, normally unacceptable and clearly unacceptable for a variety of land uses. Exterior noise levels of up to 60 dBA CNEL are considered "normally acceptable" and up to 65 dBA CNEL are considered "conditionally acceptable" at single-family residential land uses, these standards apply to the proposed project itself.

The City of Rialto General Plan contains goals and policies that address noise. The following goals and policies are presented in the City's General Plan Safety and Noise Chapter and are applicable to the proposed project:

- Goal 5-10** Minimize the impact of point source and ambient noise levels throughout the community.
- Policy 5-10.3* Ensure that acceptable noise levels are maintained near schools, hospitals, and other noise sensitive areas in accordance with the Municipal Code and noise standards contained in Table 5.
- Policy 5-10.4* Limit the hours of operation at all noise generation sources that are adjacent to noise-sensitive areas.
- Policy 5-10.5* Require all exterior noise sources (construction operations, air compressors, pumps, fans and leaf blowers) to use available noise suppression devices and techniques to reduce exterior noise to acceptable levels that are compatible with adjacent land uses.

City of Rialto Municipal Code

The City addresses noise in ordinances provided in Chapter 9.5 Noise Control of its Municipal Code. These ordinances are summarized below.

Section 9.50.050 Controlled hours of operation

It is unlawful for any person to engage in the following activities other than between the hours of 7:00 AM and 8:00 PM in all zones:

- B. Load or unload any vehicle, or operate or permit the use of dollies, carts, forklifts, or other wheeled equipment that causes any impulsive sound, raucous or unnecessary noise within one thousand feet of a residence;
- C. Operate or permit the use of domestic power tools, or machinery or any other equipment or tool in any garage, workshop, house or any other structure;
- D. Operate or permit the use of gasoline or electric powered leaf blowers, such as commonly used by gardeners and other persons for cleaning lawns, yards, driveways, gutters and other property;
- E. Operate or permit the use of privately operated street/parking lot sweepers or vacuums, except that emergency work and/or work necessitated by unusual conditions may be performed with the written consent of the city manager;
- F. Operate or permit the use of pile driver, steam or gasoline shovel, pneumatic hammer, steam or electric hoist or other similar devices;
- G. Operate or permit the use of electrically operated compressor, fan, and other similar devices;
- I. Operate or permit the use of any motor vehicle with a gross vehicle weight rating in excess of ten thousand pounds, or of any auxiliary equipment attached to such a vehicle, including but not limited to refrigerated truck compressors, for a period longer than fifteen minutes in any hour while the vehicle is stationary and on a public right-of-way or public space except when movement of the vehicle is restricted by other traffic;

Section 9.50.060 Exemptions

The following activities and noise sources shall be exempt from the provisions of Chapter 9.50 Noise Control of the City of Rialto's Municipal Code:

- A. Those noise events in the community (e.g., airport noise, arterial traffic noise, railroad noise) that are more accurately measured by application of the general plan noise element policy, utilizing the community noise equivalent level (CNEL) method;
- L. Construction, repair or excavation work performed pursuant to a valid written agreement with the city or any of its political subdivisions which agreement provides for noise mitigation measures;

Section 9.50.070 Disturbances from construction activity

- A. No person shall be engaged or employed or cause any other person to be engaged or employed, in any work of construction, erection, alteration, repair, addition, movement, demolition, or improvement to any building or structure except within the hours provided for by subsection B of Section 9.50.070.

B. The permitted hours for such construction work are as follows:

1. October 1st through April 30th.
 - i. Monday – Friday: 7:00 AM to 5:30 PM
 - ii. Saturday: 8:00 AM to 5:00 PM
 - iii. Sunday: No permissible hours
 - iv. State holidays: No permissible hours
2. May 1st through September 30th.
 - i. Monday- Friday: 6:00 AM to 7:00 PM
 - ii. Saturday: 8:00 AM to 5:00 PM
 - iii. Sunday: No permissible hours
 - iv. State holidays: No permissible hours

C. For purposes of this section, the following definitions shall apply:

1. "Building" means any structure used or intended for supporting or sheltering any use or occupancy.
2. "Structure" means that which is built or constructed, an edifice or building of any kind, or any piece of work artificially built up or composed of parts joined together in some definite manner.

D. For purposes of this section, the following exceptions shall apply:

1. Emergency repair of existing installations, equipment, or appliances; and
2. Such work that complies with the terms and conditions of a written early work permit issued by the city manager or his or her designee upon a showing of a sufficient need and justification for the permit due to hot or inclement weather, the use of an unusually long process material, or other circumstances of an unusual and compelling nature.

Table 2
Guideline Vibration Damage Potential Threshold Criteria

Structure Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Source: California Department of Transportation. Transportation and Construction Vibration Guidance Manual, Chapter 7 Table 19, April 2020.

Notes:

(1) Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Table 3
Guideline Vibration Annoyance Potential Criteria

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

Source: California Department of Transportation. Transportation and Construction Vibration Guidance Manual, Chapter 7 Table 20, April 2020.

Notes:

(1) Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Table 4
City of Rialto Noise Guidelines for Land Use Planning

Land Use Category	Community Noise Equivalent Level (CNEL), dB						
	55	60	65	70	75	80	85
R2- Residential 2, R6- Residential 6							
R12- Residential 12							
R21- Residential 21 R45- Residential 45							
DMU- Downtown Mixed-Use							
CC- Community Commercial							
GC- General Commercial							
BP- Business Park, O- Office							
LI- Light Industrial							
GI- General Industrial							
P- Public Facility, P- School Facility							
OSRC Open Space - Recreation							
OSRC Open Space - Resources							

	Normally Acceptable:	Specified land use is satisfactory, assuming buildings are of conventional construction.
	Conditionally Acceptable:	New development should be undertaken only after a detailed analysis of noise reduction requirements are made.
	Normally Unacceptable:	New development should generally be discouraged, if not, a detailed analysis of noise reduction requirements must be made.
	Clearly Unacceptable:	New development should generally not be undertaken.

Source: City of Rialto General Plan Safety and Noise Element Exhibit 5.5, December 2021.

ANALYTICAL METHODOLOGY AND MODEL PARAMETERS

Construction Noise Modeling

Construction noise will vary depending on the construction process, type of equipment involved, location of the construction site with respect to sensitive receptors, the schedule proposed to carry out each task (e.g., hours and days of the week) and the duration of the construction work.

Construction noise associated with the proposed project was calculated at the sensitive receptor locations utilizing methodology presented in the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (2018) together with several key construction parameters, including: distance to each sensitive receiver, equipment usage, percent usage factor, and baseline parameters for the project site.

The equipment used to calculate the construction noise levels for each phase were based on the assumptions provided in the Air Quality Study prepared for the project by Lilburn Corporation (2024). For analysis purposes, the distance measured from the project site to sensitive receptors was assumed to be the acoustical center of the project site to the property line of residential properties with existing residential buildings. Sound emission levels associated with typical construction equipment as well as typical usage factors are provided in Table 5. Construction noise worksheets are provided in Appendix D.

Mobile Source Noise Modeling

Noise from vehicular traffic (Existing, Existing Plus Project, and Future) was modeled using a computer program that replicates the FHWA Traffic Noise Prediction Model (FHWA-RD-77-108). The FHWA model arrives at the predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). Key model parameters and REMEL adjustments are presented below:

- Roadway classification (e.g., freeway, major arterial, arterial, secondary, collector, etc.),
- Roadway active width (distance between the center of the outer most travel lanes on each side of the roadway),
- Average Daily Traffic (ADT) Volumes, Travel Speeds, Percentages of automobiles, medium trucks and heavy trucks,
- Roadway grade and angle of view,
- Site conditions (e.g., soft vs. hard), and
- Percentage of total ADT which flows each hour throughout a 24-hour period.

Traffic noise levels were calculated at the right-of-way based on distance from the centerline of the analyzed roadway. The modeling is theoretical and does not take into account any existing barriers, structures, and/or topographical features that may further reduce noise levels. Therefore, the modeled noise levels are shown for comparative purposes only to show the difference between with and without project conditions. Traffic noise calculation worksheets are included Appendix E.

Existing and Existing Plus Project Traffic Noise Levels

Project generated vehicle traffic is expected to utilize River Ranch Parkway to access the project site. Existing average daily vehicle trips were estimated through use of the existing ambient noise measurements.¹ Project average daily vehicle trips were estimated based on the trip generation provided in the *Olive Grove Residential (River Ranch Parkway) Transportation Screening Assessment* (TSA) prepared for the project (Ganddini 2024). Per the TSA, the project is anticipated to generate 273 new daily trips. As project trip distribution is not provided in the TSA, for modeling purposes, it was assumed that all project generated vehicle trips would travel along River Ranch Parkway. Table 6 includes the modeled roadway segments as well as the average daily traffic volumes, posted speed limits, and vehicle mix utilized in this analysis.

Future Roadway Noise

River Ranch Parkway borders the project site to the east/southeast. It is currently designated as a “local roadway” on the City of Rialto General Plan Street Classification Exhibit. Local Streets are neighborhood roadways with one travel lane in each direction. They are narrower in width than Collector streets. Local Streets typically accommodate on-street parking and are designed for 25 mile-per hour speeds.

Groundborne Vibration Modeling

Groundborne vibration modeling was performed using vibration propagation equations and construction equipment source levels obtained from the *FTA Transit Noise and Vibration Impact Assessment Manual* (2018). Table 7 shows typical vibration levels associated with commonly used construction equipment based on data from the FTA.

There are several types of construction equipment that can cause vibration levels high enough to annoy persons in the vicinity and/or result in architectural or structural damage to nearby structures and improvements. For example, as shown in Table 7, a vibratory roller could generate up to 0.21 in/sec PPV at and operation of a large bulldozer could generate up to 0.089 PPV at a distance of 25 feet (two of the most vibratory pieces of construction equipment). Groundborne vibration at sensitive receptors associated with this equipment would drop off as the equipment moves away. For example, as the vibratory roller moves further than 100 feet from the sensitive receptors, the vibration associated with it would drop below 0.0026 in/sec PPV. It should be noted that these vibration levels are reference levels and may vary slightly depending upon soil type and specific usage of each piece of equipment. Groundborne vibration calculations are provided in Appendix F.

The fundamental equation used to calculate vibration propagation through average soil conditions and distance is as follows:

$$PPV_{\text{equipment}} = PPV_{\text{ref}} (25/D_{\text{rec}})^n$$

Where: PPV_{ref} = reference PPV at 25ft.

D_{rec} = distance from equipment to receiver in ft.

n = 1.5 (the value related to the attenuation rate through ground)

¹ The existing average daily traffic volume for River Ranch Parkway was estimated based on the ambient noise measurements (NM1, see Table 1). Per the field sheets for NM1 (see Appendix C), 45 cars passed the noise meter during the 15-minute measurement along River Ranch Parkway. Therefore, for modeling/discussion purposes, it was estimated that up to 4,320 daily vehicle trips (45 cars every 15-minutes = 180 cars per hour = 4,320 cars for a 24 hour day) could occur along the road segment of River Ranch Parkway that lies in vicinity of the project site.

Table 5
CA/T Equipment Noise Emissions and Acoustical Usage Factor Database

Equipment Description	Impact Device?	Acoustical Use Factor (%)	Spec. Lmax @ 50ft (dBA, slow)	Actual Measured Lmax @ 50ft (dBA, slow)	No. of Actual Data Samples (Count)
All Other Equipment > 5 HP	No	50	85	-N/A-	0
Backhoe	No	40	80	78	372
Compressor (air)	No	40	80	78	18
Concrete Batch Plant	No	15	83	-N/A-	0
Concrete Mixer Truck	No	40	85	79	40
Concrete Pump Truck	No	20	82	81	30
Crane	No	16	85	81	405
Dozer	No	40	85	82	55
Drum Mixer	No	50	80	80	1
Dump Truck	No	40	84	76	31
Excavator	No	40	85	81	170
Flat Bed Truck	No	40	84	74	4
Forklift ^{2,3}	No	50	n/a	61	n/a
Front End Loader	No	40	80	79	96
Grader	No	40	85	-N/A-	0
Jackhammer	Yes	20	85	89	133
Pavement Scarafier	No	20	85	90	2
Paver	No	50	85	77	9
Pickup Truck	No	50	85	77	9
Paving Equipment	No	50	85	77	9
Pneumatic Tools	No	50	85	85	90
Roller	No	20	85	80	16
Scraper	No	40	85	84	12
Tractor	No	40	84	-N/A-	0
Vibratory Concrete Mixer	No	20	80	80	1
Warning Horn	No	5	85	83	12
Welder/Torch	No	40	73	74	5

Notes:

- (1) Source: FHWA Roadway Construction Noise Model User's Guide January 2006.
 (2) Warehouse & Forklift Noise Exposure - NoiseTesting.info Carl Stautins, November 4, 2014
<http://www.noisetesting.info/blog/carl-straatins/page-3/>
 (3) Data provided Leq as measured at the operator. Sound Level at 50 feet is calculated using Inverse Square Law.

Table 6
Project Average Daily Traffic Volumes and Roadway Parameters

Roadway	Segment	Average Daily Traffic Volume ¹		Posted Travel Speeds (MPH)	Site Conditions
		Existing	Existing Plus Project		
River Ranch Parkway	In vicinity of the project site	4,320	4,593	25	Hard

Vehicle Distribution (Light Mix) ²			
Motor-Vehicle Type	Daytime % (7 AM-7 PM)	Evening % (7 PM-10 PM)	Night % (10 PM-7 AM)
Automobiles	75.56	13.96	10.49
Medium Trucks	48.91	2.17	48.91
Heavy Trucks	47.30	5.41	47.30

Notes:

(1) The existing average daily traffic volume for River Ranch Parkway was estimated based on the ambient noise measurements (NM1, see Table 1). Per the field sheets for NM1 (see Appendix C), 45 cars passed the noise meter during the 15-minute measurement along River Ranch Parkway. Therefore, for modeling/discussion purposes, it was estimated that up to 4,320 daily vehicle trips (45 cars every 15-minutes = 180 cars per hour = 4,320 cars for a 24 hour day) could occur along the road segment of River Ranch Parkway that lies in vicinity of the project site. Project average daily vehicle trips were estimated based on the trip generation provided in the *Olive Grove Residential (River Ranch Parkway) Transportation Screening Assessment* (TSA) prepared for the project (Ganddini, August 7, 2024). Per the TSA, the project is anticipated to generate 273 new daily trips. As project trip distribution is not provided in the TSA, for modeling purposes, it was assumed that all project generated vehicle trips would travel along River Ranch Parkway in the vicinity of the project site.

(2) Existing vehicle percentages are based on the Riverside County Industrial Hygiene Letter for Traffic Noise.

Table 7
Construction Equipment Vibration Source Levels

Equipment		PPV at 25 ft, in/sec	Approximate Lv* at 25 ft
Pile Driver (impact)	upper range	1.518	112
	typical	0.644	104
Pile Driver (sonic)	upper range	0.734	105
	typical	0.170	93
clam shovel drop (slurry wall)		0.202	94
Hydromill (slurry wall)	in soil	0.008	66
	in rock	0.017	75
Vibratory Roller		0.210	94
Hoe Ram		0.089	87
Large Bulldozer		0.089	87
Caisson Drilling		0.089	87
Loaded Trucks		0.076	86
Jackhammer		0.035	79
Small Bulldozer		0.003	58

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

*RMS velocity in decibels, VdB re 1 micro-in/sec

DISCUSSION AND RECOMMENDATIONS

Construction Impacts

On-Site Equipment

Construction noise is regulated within Section 9.50.070 of the City of Rialto's Municipal Code which prohibits construction activities as follows:

- October 1st through April 30th.
 - Monday – Friday: 7:00 AM to 5:30 PM
 - Saturday: 8:00 AM to 5:00 PM
 - Sunday: No permissible hours
 - State holidays: No permissible hours
- May 1st through September 30th.
 - Monday- Friday: 6:00 AM to 7:00 PM
 - Saturday: 8:00 AM to 5:00 PM
 - Sunday: No permissible hours
 - State holidays: No permissible hours

However, neither the City of Rialto General Plan or Municipal Code establish numeric maximum acceptable construction source noise levels at potentially affected receivers, which would allow for a quantified determination of what CEQA consists as a *substantial temporary or periodic noise increase*. Therefore, a numerical construction noise threshold based on the Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* is used for analysis of daytime construction impacts, as discussed below.

According to the FTA, local noise ordinances are typically not very useful in evaluating construction noise. They usually relate to nuisance and hours of allowed activity, and sometimes specify limits in terms of maximum levels, but are generally not practical for assessing the impact of a construction project. Project construction noise criteria should account for the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land use. Due to the lack of standardized construction noise thresholds, the FTA provides guidelines that can be considered reasonable criteria for construction noise assessment. The FTA considers a daytime exterior construction noise level of 80 dBA L_{eq} as a reasonable threshold for noise sensitive residential land use.

Accordingly, the project would result in a significant impact if:

- Project construction occurs outside the hours as stated within Section 9.50.070 of the City of Rialto's Municipal Code (as stated above) or,
- Project construction noise exceeds 80 dBA L_{eq} at a residential use.

Project construction noise levels at nearby sensitive receptors were calculated using the FTA methodology. Construction noise modeling worksheets for each phase are provided in Appendix D. Anticipated noise levels during each construction phase are presented in Table 8.

The single-family residential uses to the north/northeast and south/southwest of the project site boundaries may be affected by short-term noise impacts associated with construction noise. Construction noise will vary

depending on the construction process, type of equipment involved, location of the construction site with respect to sensitive receptors, the schedule proposed to carry out each task (e.g., hours and days of the week) and the duration of the construction work. Assumptions for the phasing, duration, and required equipment for the construction of the proposed project were obtained from the project applicant.

As shown in Table 8 modeled construction noise levels are forecast to reach up to 83.9 dBA L_{eq} at the nearest residential property line to the northeast and southwest of the project site. Table 8 also includes a comparison of existing noise levels and project construction noise levels. Noise measurement (NM)2 was chosen to represent noise levels at the nearest property lines of the residential uses located to the northeast and southwest of the project site.

Project construction will not occur outside of the hours outlined as “exempt” in City of Rialto’s Municipal Code Section 9.50.070. Based on the modeled construction noise levels (see Table 8), construction noise levels are estimated to reach up to 83.9 dBA L_{eq} at the nearest residential uses and are anticipated to exceed the FTA residential construction noise standard of 80 dBA L_{eq} during the demolition, site preparation, grading, and building construction phases. With incorporation of the mitigation measures listed below, as shown in Table 8, project construction would no longer exceed the FTA residential construction noise standard of 80 dBA L_{eq} . Therefore, with incorporation of mitigation measures 1 through 2 below, the project would not exceed established standards relating to construction noise. The project impact is less than significant with incorporation of mitigation.

During the demolition, site preparation, grading, and building construction phases of project construction the following mitigation measures are required.

Mitigation Measure 1: The following measure will be utilized during the operation of concrete saws, generator sets, and similar equipment:

- Surround the concrete saws, generator sets, and other similar equipment with 8-foot-high solid barriers that can be made of 1-inch plywood or sound blankets during use. The goal is to achieve at least 5 dB of reduction in the noise level. The barrier must reach to the ground and be without any holes or cracks.

Mitigation Measure 2: The following measure will be utilized during the operation of excavators, graders, rubber-tired dozers, tractors, loaders, backhoes, and cranes:

- Install a muffler that reduces operational noise levels by at least 5 dB.

Furthermore, notwithstanding the above, best management practices (BMPs) have also been provided below and should be added to project plans and in contract specifications to further minimize construction noise emanating from the proposed project.

The following best management practices (BMPs) shall be provided on project plans and in contract specifications to minimize construction noise emanating from the proposed project:

1. All equipment, whether fixed or mobile, will be equipped with properly operating and maintained mufflers, consistent with manufacturer standards.
2. All stationary construction equipment will be placed so that emitted noise is directed away from the noise sensitive receptors nearest the project site.
3. As applicable, all equipment shall be shut off and not left to idle when not in use.

4. To the degree possible, equipment staging will be located in areas that create the greatest distance between construction-related noise and vibration sources and existing sensitive receptors.
5. Jackhammers, pneumatic equipment, and all other portable stationary noise sources will be directed away and shielded from existing residences in the vicinity of the project site. Either one-inch plywood or sound blankets can be utilized for this purpose. They should reach up from the ground and block the line of sight between equipment and existing residences. The shielding should be without holes and cracks.
6. No amplified music and/or voice will be allowed on the project site during construction.
7. Haul truck deliveries will not occur outside of the hours presented as exempt for construction per Section 9.50.070 of the City of Rialto's Municipal Code.

Construction Vehicle Trips

Construction truck trips would occur throughout the construction period. According to the FHWA, the traffic volumes need to be doubled in order to increase noise levels by 3 dBA CNEL.² The estimated existing average daily trips along River Ranch Parkway is up to 4,320 daily vehicle trips.³ As shown in the CalEEMod output files provided in the Air Quality Study prepared for the proposed project (Lilburn, 2024) the greatest number of construction-related vehicle trips per day would be up to 20 worker vehicle trips per day during paving. Given the project site's location, it is anticipated that vendor and/or haul truck traffic would take the most direct route to the 215 Freeway. Therefore, the addition of project vendor/haul trucks and worker vehicles per day along off-site roadway segments would not be anticipated to result in a doubling of traffic volumes. Off-site project generated construction vehicle trips would result in a negligible noise level increase and would not result in a substantial increase in ambient noise levels. Impacts would be less than significant. No mitigation measures are required.

Traffic Noise Impacts from Project Generated Vehicle Traffic

California courts have rejected use of what is effectively a single "absolute noise level" threshold of significance (e.g., exceed 65 dBA CNEL) on the grounds that the use of such a threshold fails to consider the magnitude or severity of increases in noise levels attributable to the project in different environments (see *King and Gardiner Farms, LLC v. County of Kern* (2020) 45 Cal.App.5th 814). California courts have also upheld the use of "ambient plus increment" thresholds for assessing project noise impacts as consistent with CEQA, noting however, that the severity of existing noise levels should not be ignored by incorporating a smaller incremental threshold for areas where existing ambient noise levels were already high (see *Mission Bay Alliance v. Office of Community Investment and Infrastructure* (2016) 6 Cal.App.5th 160).

It is widely accepted that the average healthy human ear can barely perceive changes of 3 dBA in an outdoor environment and that a change of 5 dBA is readily perceptible.⁴ Therefore, considering relevant case law, the project would result in a significant impact if:

- The addition of project trips on surrounding roadways causes noise levels to increase by:
 - 5 dBA where the existing ambient noise level is less than or equal to a CNEL of 60 dBA; or,

² Federal Highway Administration, Highway Noise Prediction Model, December 1978.

³ The existing average daily traffic volume for River Ranch Parkway was estimated based on the ambient noise measurements (NM1, see Table 1). Per the field sheets for NM1 (see Appendix C), 45 cars passed the noise meter during the 15-minute measurement along River Ranch Parkway. Therefore, for modeling/discussion purposes, it was estimated that up to 4,320 daily vehicle trips (45 cars every 15-minutes = 180 cars per hour = 4,320 cars for a 24 hour day) could occur along the road segment of River Ranch Parkway that lies in vicinity of the project site.

⁴ California Department of Transportation's *Technical Noise Supplement to the Traffic Noise Analysis Protocol* (2013)

- 3 dBA where the existing ambient noise level is a CNEL of 60 dBA to 65 dBA; or
- 1.5 dBA where the existing ambient noise level is greater than or equal to a 65 dBA CNEL.

Roadway noise levels were calculated for land uses adjacent to roadways in the project vicinity based on the FHWA Traffic Noise Prediction Model methodology. During operation, the proposed project is expected to generate a total of approximately 273 daily trips, including 20 trips during the AM peak hour and 27 trips during the PM peak hour.⁵ Roadway noise levels were calculated for the following scenarios:

- *Existing (without Project)*: This scenario refers to existing year traffic noise conditions.
- *Existing Plus Project*: This scenario refers to existing year plus project traffic noise conditions.

Table 9 shows the change in existing roadway noise levels with the addition of project-generated operational trips. FHWA Traffic Noise Prediction Model calculation worksheets are provided in Appendix F.

As shown in Table 9, the modeled existing traffic noise level along River Ranch Parkway is 62.7 dBA CNEL and the modeled Existing Plus Project traffic noise level along River Ranch Parkway is 65.3 dBA CNEL at the right-of-way of the roadway.

Therefore, with a modeled existing noise level of 62.7 dBA CNEL, the appropriate threshold would be an increase of approximately 3 dB. As shown in Table 9, the modeled noise level increase along River Ranch Parkway is approximately 2.66 dB; therefore, project generated vehicle traffic does not exceed the threshold of a 3 dB increase. Therefore, the addition of project trips is not expected to change noise levels in excess of the applicable threshold at any of the study roadway segments (see Table 9). The project impact is less than significant; no mitigation is required.

Noise/Land Use Compatibility Impacts - Traffic Noise Impacts to the Project Site

The City of Rialto General Plan identifies exterior noise levels up to 60 dBA CNEL as normally acceptable and up to 65 dBA as conditionally acceptable for single-family residential uses (see Table 4).

River Ranch Parkway borders the project site to the east/southeast. It is currently designated as a “local roadway” on the City of Rialto General Plan Street Classification Exhibit. Local Streets are neighborhood roadways with one travel lane in each direction. They are narrower in width than Collector streets. Local Streets typically accommodate on-street parking and are designed for 25 mile-per hour speeds. The project impact will be less than significant; no mitigation is required.

Groundborne Vibration Impacts

The City of Rialto has not established thresholds of significance concerning groundborne vibration. In the absence of City-established thresholds, groundborne vibration impacts are based on guidance from the *Transportation and Construction Vibration Guidance Manual* (California Department of Transportation, 2020) (see Regulatory Setting section). Accordingly, the project would result in a significant impact if:

- Groundborne vibration levels generated by the project have the potential to cause architectural damage at nearby buildings by exceeding the following PPV:
 - 0.08 in/sec at extremely fragile historic buildings, ruins, ancient monuments

⁵ Project trip generation per the *Olive Grove Residential (River Ranch Parkway) Transportation Screening Assessment (TSA)* prepared for the project (Ganddini 2024).

- 0.10 in/sec at fragile buildings
 - 0.25 in/sec at historic and some old buildings
 - 0.30 in/sec at older residential structures
 - 0.50 in/sec at new residential structures and modern industrial/commercial buildings.
- Groundborne vibration levels generated by the project have the potential to cause severe annoyance to people living or working in nearby buildings by exceeding a PPV of 0.4 in/sec.

Groundborne vibration modeling worksheets are provided in Appendix F.

Based on the groundborne vibration modeling Table 10), use of a vibratory roller is expected to generate a PPV of 0.560 in/sec and use of a bulldozer is expected to generate a PPV of 0.237 in/sec at the closest off-site building, a residential dwelling unit located approximately 13 feet south of the project site. Based on the groundborne vibration modeling, if a vibratory roller is used within 23 feet of residential structures to the south of the project site there will be some potential for this equipment to result in architectural damage and significant impacts. A vibration-related mitigation measure is provided below that will prevent construction vibration from exceeding architectural damage thresholds, as identified above, at off-site sensitive receptors. Furthermore, with incorporation of the mitigation measure required for architectural damage impacts, the potential vibration related annoyance at the nearest residential uses will not exceed the annoyance threshold of 0.4 PPV in/sec and would be expected to be temporary and only during daytime hours. Therefore, project construction would not result in the exposure of persons to excessive groundborne vibration and impacts would be less than significant with incorporation of mitigation.

Vibration Mitigation Measure 1 The use of vibratory equipment such as vibratory rollers, or other similar vibratory equipment, will not be used within 23 feet of structures to the south of the project site.

The most substantial sources of groundborne vibration during post-construction project operations will include the movement of passenger vehicles and trucks on paved and generally smooth surfaces. Loaded trucks generally have a PPV of 0.076 at a distance of 25 feet (Caltrans 2020), which is a substantially lower PPV than that of a vibratory roller (0.210 in/sec PPV at 25 feet). Therefore, groundborne vibration levels generated by project operation would not exceed those modeled for project construction.

Table 8
Construction Noise Levels (dBA L_{eq})

Phase	Receptor Location	Existing Ambient Noise Levels (dBA Leq) ²	Construction Noise Levels (dBA Leq)	Construction Noise Levels Exceed 80 dBA FTA Threshold?	Mitigated Construction Noise Levels (dBA Leq)	Mitigated Construction Noise Levels Exceed 80 dBA FTA Threshold?
Demolition	Residential to Northeast (2308 Powell Drive)	41.7	82.9	Yes	77.9	No
	Residential to Northeast (2269 Sycamore Ave)	41.7	82.9	Yes	77.9	No
Site Preparation	Residential to Northeast (2308 Powell Drive)	41.7	83.9	Yes	78.9	No
	Residential to Northeast (2269 Sycamore Ave)	41.7	83.9	Yes	78.9	No
Grading	Residential to Northeast (2308 Powell Drive)	41.7	83.5	Yes	78.5	No
	Residential to Northeast (2269 Sycamore Ave)	41.7	83.5	Yes	78.5	No
Building Construction	Residential to Northeast (2308 Powell Drive)	41.7	82.1	Yes	77.3	No
	Residential to Northeast (2269 Sycamore Ave)	41.7	82.1	Yes	77.3	No
Paving	Residential to Northeast (2308 Powell Drive)	41.7	79.7	No	-	-
	Residential to Northeast (2269 Sycamore Ave)	41.7	79.7	No	-	-
Architectural Coating	Residential to Northeast (2308 Powell Drive)	41.7	70.2	No	-	-
	Residential to Northeast (2269 Sycamore Ave)	41.7	70.2	No	-	-

Notes:

(1) Construction noise worksheets are provided in Appendix D.

(2) Per measured existing ambient noise levels. NM2 was chosen to represent noise levels at the property lines of the single-family residential uses to the northeast and southwest of the project site.

Table 9
Increase in Existing Noise Levels Along Roadways as a Result of Project (dBA CNEL)

Roadway	Segment	Distance from roadway centerline to ROW (feet) ¹	Modeled Noise Levels (dBA CNEL) ²				
			Existing Without Project	Existing Plus Project	Change in Noise Level	Exceeds Standards ³	Increase of 3 dB or More?
River Ranch Parkway	In the vicinity of the project site	30	62.67	65.33	2.66	Yes	No

Notes:

- (1) Right-of-way (ROW) per the City of Rialto General Plan street classifications (December 2010).
- (2) Exterior noise levels calculated 5 feet above pad elevation, perpendicular to subject roadway at right-of-way (ROW).
- (3) Per the City of Rialto "normally acceptable" exterior standards for residential uses of 60 dBA CNEL (see Table 4).

Table 10
Construction Vibration Levels at the Nearest Receptors

Receptor Location	Distance from Property Line to Nearest Structure (feet)	Equipment	Vibration Level ¹	Vibration Level Exceeded? ²	Vibration Level with Mitigation ^{1,3}	Threshold Exceeded With Mitigation? ²
<i>Architectural Damage Analysis</i>						
Residential to North (2328 Powell Drive)	24	Vibratory Roller	0.223	No	-	-
	24	Large Bulldozer	0.095	No	-	-
Residential to South (2313 Sycamore Ave)	13	Vibratory Roller	0.560	Yes	0.238	No
	13	Large Bulldozer	0.237	No	-	-

Notes:

(1) Vibration levels are provided in PPV in/sec.

(2) Caltrans identifies the threshold at which there is a risk to "architectural" damage to historic and some old buildings as 0.25 in/sec PPV and to modern industrial/commercial buildings as 0.5 in/sec PPV (see Table 2).

Ms. Cheryl Tubbs
LILBURN CORPORATION
September 10, 2024

CONCLUSIONS

With incorporation of mitigation specified in the above analysis, noise impacts associated with construction and operation of the proposed Olive Grove Residential project are anticipated to be compliant with the City's Municipal Code and General Plan and other applicable noise regulations.

It has been a pleasure to assist you with this project. Should you have any questions or if we can be of further assistance, please do not hesitate to call at (714) 975-3100.

Sincerely,
GANDDINI GROUP, INC.



Roma Stromberg, M.S.
Senior Noise Analyst

APPENDIX A

LIST OF ACRONYMS

TERMS

ADT
ANSI
APN
Caltrans
Calveno
CEQA
CFR
CNEL
D/E/N
dB
dBA or dB(A)
EIR
EPA
FAA
FHWA
FTA
Hz
INCE
L₀₂, L₀₈, L₅₀, L₉₀

DNL
L_{eq(x)}
L_{max}
L_{min}
LOS C
MPH
NEPA
OPR
Peak Hour L_{eq}
PPV
RCNM
RMS
SEL
SPL
STC
VdB

DEFINITIONS

Average Daily Traffic volume
American National Standard Institute
Assessor's Parcel Number
California Department of Transportation
California Vehicle Noise
California Environmental Quality Act
Code of Federal Regulations
Community Noise Equivalent Level
Day/Evening/Night
Decibel
Decibel "A-Weighted"
Environmental Impact Report
Environmental Protection Agency
Federal Aviation Administration
Federal Highway Administration
Federal Transit Administration
Hertz
Institute of Noise Control Engineering
A-weighted Noise Levels at 2 percent, 8 percent, 50 percent, and 90 percent, respectively, of the time period
Day-Night Average Noise Level
Equivalent Noise Level for "x" period of Time
Maximum Level of Noise (measured using a sound level meter)
Minimum Level of Noise (measured using a sound level meter)
Level of Service C
Miles Per Hour
National Environmental Policy Act
California Governor's Office of Planning and Research
Peak Hour Equivalent Sound Level
Peak Particle Velocity
Road Construction Noise Model
Root Mean Square
Single Event Level or Sound Exposure Level
Sound Pressure Level
Sound Transmission Class
Vibration Velocity Decibels

APPENDIX B

GLOSSARY

Term	Definition
Ambient Noise Level	The all-encompassing noise environment associated with a given environment, at a specified time, usually a composite of sound from many sources, at many directions, near and far, in which usually no particular sound is dominant.
A-Weighted Sound Level, dBA	The sound level obtained by use of A-weighting. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear.
CNEL	Community Noise Equivalent Level. CNEL is a weighted 24-hour noise level that is obtained by adding five decibels to sound levels in the evening (7:00 PM to 10:00 PM), and by adding ten decibels to sound levels at night (10:00 PM to 7:00 AM). This weighting accounts for the increased human sensitivity to noise during the evening and nighttime hours.
Decibel, dB	A logarithmic unit of noise level measurement that relates the energy of a noise source to that of a constant reference level; the number of decibels is 10 times the logarithm (to the base 10) of this ratio.
DNL, Ldn	Day Night Level. The DNL, or Ldn is a weighted 24-hour noise level that is obtained by adding ten decibels to sound levels at night (10:00 PM to 7:00 AM). This weighting accounts for the increased human sensitivity to noise during the nighttime hours.
Equivalent Continuous Noise Level, L_{eq}	A level of steady state sound that in a stated time period, and a stated location, has the same A-weighted sound energy as the time-varying sound.
Fast/Slow Meter Response	The fast and slow meter responses are different settings on a sound level meter. The fast response setting takes a measurement every 100 milliseconds, while a slow setting takes one every second.
Frequency, Hertz	In a function periodic in time, the number of times that the quantity repeats itself in one second (i.e., the number of cycles per second).
L_{02} , L_{08} , L_{50} , L_{90}	The A-weighted noise levels that are equaled or exceeded by a fluctuating sound level, 2 percent, 8 percent, 50 percent, and 90 percent of a stated time period, respectively.
L_{max} , L_{min}	L_{max} is the RMS (root mean squared) maximum level of a noise source or environment measured on a sound level meter, during a designated time interval, using fast meter response. L_{min} is the minimum level.
Offensive/ Offending/ Intrusive Noise	The noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of sound depends on its amplitude, duration, frequency, and time of occurrence, and tonal information content as well as the prevailing ambient noise level.
Root Mean Square (RMS)	A measure of the magnitude of a varying noise source quantity. The name derives from the calculation of the square root of the mean of the squares of the values. It can be calculated from either a series of lone values or a continuous varying function.

APPENDIX C

NOISE MEASUREMENT FIELD WORKSHEETS AND METER OUTPUT

**Noise Measurement
Field Data**

Project Name: Olive Grove, City of Rialto **Date:** August 5, 2024

Project #: 19747

Noise Measurement #: STNM1 Run Time: 15 minutes **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: 2197 N Sycamore Avenue, Rialto, CA 92377

Site Description (Type of Existing Land Use and any other notable features): Measurement Site: Near the southeastern boundary of the project site, just west of River Ranch Parkway. Project site is the easement like area between 2197 N Sycamore Ave & RiverPkw. Adjacent: River Ranch Pkwy (running N-S) just east/southeast, residential to the south/southwest, and some kind of open mining operation to the east (across River Ranch Parkway). 210 Fwy ~1,300' S of STNM1.

Weather: Clear skies, sunshine. Sunset 8:19 PM **Settings:** SLOW FAST

Temperature: 106 deg F **Wind:** 9 mph **Humidity:** 21% **Terrain:** Flat

Start Time: 12:39 PM **End Time:** 12:54 PM **Run Time:** _____

Leq: 55.5 dB **Primary Noise Source:** Traffic noise from the 45 vehicles passing STNM1 microphone traveling along

Lmax 73.7 dB River Ranch Pkwy during 15-minute noise measurement.

L2 64.6 dB **Secondary Noise Sources:** Traffic ambiance from other roads, noise from overhead air traffic, residential

L8 57.8 dB ambiance. Leaf rustle from 9mph breeze.

L25 52.1 dB

L50 45.0 dB

NOISE METER: SoundTrack LXT Class 1 **CALIBRATOR:** Larson Davis CAL 200

MAKE: Larson Davis **MAKE:** Larson Davis

MODEL: LXT1 **MODEL:** CAL 200

SERIAL NUMBER: 3855 **SERIAL NUMBER:** 11178

FACTORY CALIBRATION DATE: 3/31/2021 **FACTORY CALIBRATION DATE:** 11/18/2021

FIELD CALIBRATION DATE: 8/5/2024

Noise Measurement
Field Data

PHOTOS:



STNM1 looking E towards River Ranch Pkwy (traveling N-S).



STNM1 looking W up berm towards backyard of residence 2197 N Sycamore Avenue, Rialto.

Summary			
File Name on Meter	LxT_Data.106.s		
File Name on PC	LxT_0003855-20240805 123922-LxT_Data.106.ldbin		
Serial Number	3855		
Model	SoundTrack LxT®		
Firmware Version	2.404		
User	Ian Edward Gallagher		
Location	STNM1 34° 8'23.55"N 117°21'59.20"W		
Job Description	15 minute noise measurement		
Note	Ganddini Project 19747 Olive Grove, City of Rialto		
Measurement			
Start	2024-08-05 12:39:22		
Stop	2024-08-05 12:54:22		
Duration	00:15:00.0		
Run Time	00:15:00.0		
Pause	00:00:00.0		
Pre-Calibration	2024-08-05 12:35:44		
Post-Calibration	None		
Overall Settings			
RMS Weight	A Weighting		
Peak Weight	A Weighting		
Detector	Slow		
Preamplifier	PRMLxT1		
Microphone Correction	Off		
Integration Method	Linear		
OBA Range	Normal		
OBA Bandwidth	1/1 and 1/3		
OBA Frequency Weighting	A Weighting		
OBA Max Spectrum	Bin Max		
Overload	145.3 dB		
Results			
LAeq	55.5		
LAE	85.1		
EA	35.74443 µPa²h		
EA8	1.143822 mPa²h		
EA40	5.719108 mPa²h		
LApeak (max)	2024-08-05 12:40:37	85.6 dB	
LASmax	2024-08-05 12:40:43	73.7 dB	
LASmin	2024-08-05 12:44:08	37.6 dB	
		Statistics	
LCeq	65.7 dB	LA2.00	64.6 dB
LAeq	55.5 dB	LA8.00	57.8 dB
LCeq - LAeq	10.2 dB	LA25.00	52.1 dB
LAlaq	57.0 dB	LA50.00	45.0 dB
LAeq	55.5 dB	LA66.60	43.3 dB
LAlaq - LAeq	1.4 dB	LA90.00	41.2 dB
Overload Count	0		
Overload Duration	0.0 s		

Measurement Report

Report Summary

Meter's File Name	LxT_Data.106.s	Computer's File Name	LxT_0003855-20240805 123922-LxT_Data.106.ldbin
Meter	LxT1 0003855		
Firmware	2.404		
User	Ian Edward Gallagher	Location	STNM1 34° 8'23.55"N 117°21'59.20"W
Job Description	15 minute noise measurement		
Note	Ganddini Project 19747 Olive Grove, City of Rialto		
Start Time	2024-08-05 12:39:22	Duration	0:15:00.0
End Time	2024-08-05 12:54:22	Run Time	0:15:00.0
		Pause Time	0:00:00.0

Results

Overall Metrics

LA _{eq}	55.5 dB		
LAE	85.1 dB	SEA	--- dB
EA	35.7 µPa²h	LAFTM5	60.2 dB
EA8	1.1 mPa²h		
EA40	5.7 mPa²h		
LA _{peak}	85.6 dB	2024-08-05 12:40:37	
LAS _{max}	73.7 dB	2024-08-05 12:40:43	
LAS _{min}	37.6 dB	2024-08-05 12:44:08	
LA _{eq}	55.5 dB		
LC _{eq}	65.7 dB	LC _{eq} - LA _{eq}	10.2 dB
LAI _{eq}	57.0 dB	LAI _{eq} - LA _{eq}	1.4 dB

Exceedances

	Count	Duration
LAS > 65.0 dB	3	0:00:19.5
LAS > 85.0 dB	0	0:00:00.0
LA _{peak} > 135.0 dB	0	0:00:00.0
LA _{peak} > 137.0 dB	0	0:00:00.0
LA _{peak} > 140.0 dB	0	0:00:00.0

Community Noise

LDN	LDay	LNight
--- dB	--- dB	0.0 dB
LDEN	LDay	LEve
--- dB	--- dB	---
		LNight
		--- dB

Any Data

	Level	A Time Stamp	Level	C Time Stamp	Level	Z Time Stamp
L _{eq}	55.5 dB		65.7 dB		--- dB	
LS _(max)	73.7 dB	2024-08-05 12:40:43	--- dB		--- dB	
LS _(min)	37.6 dB	2024-08-05 12:44:08	--- dB		--- dB	
L _{Peak(max)}	85.6 dB	2024-08-05 12:40:37	--- dB		--- dB	

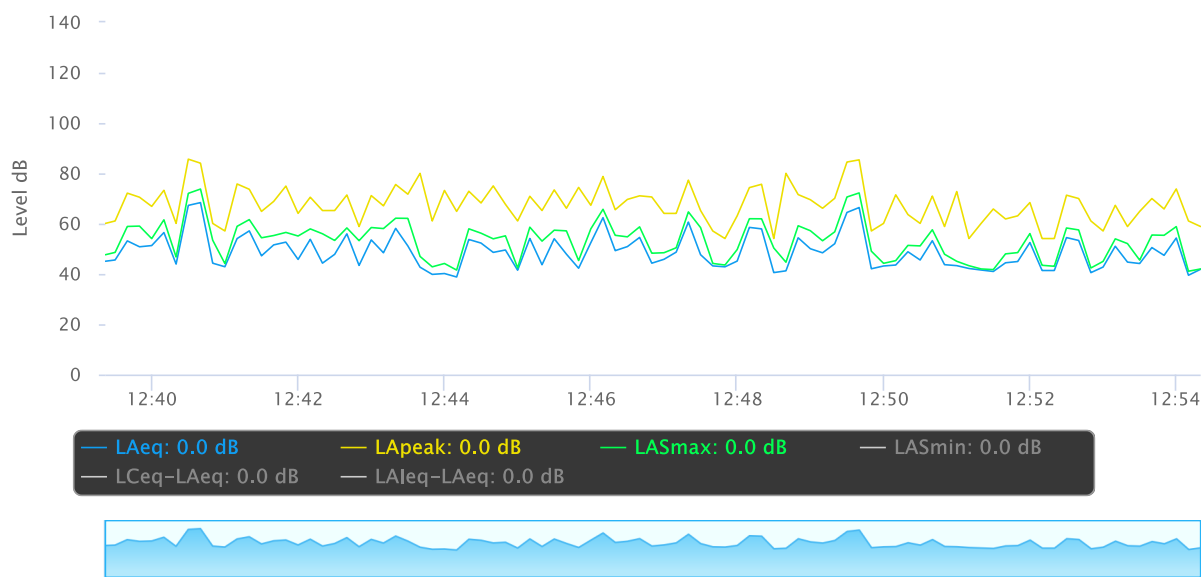
Overloads

Count	Duration	OBA Count	OBA Duration
0	0:00:00.0	0	0:00:00.0

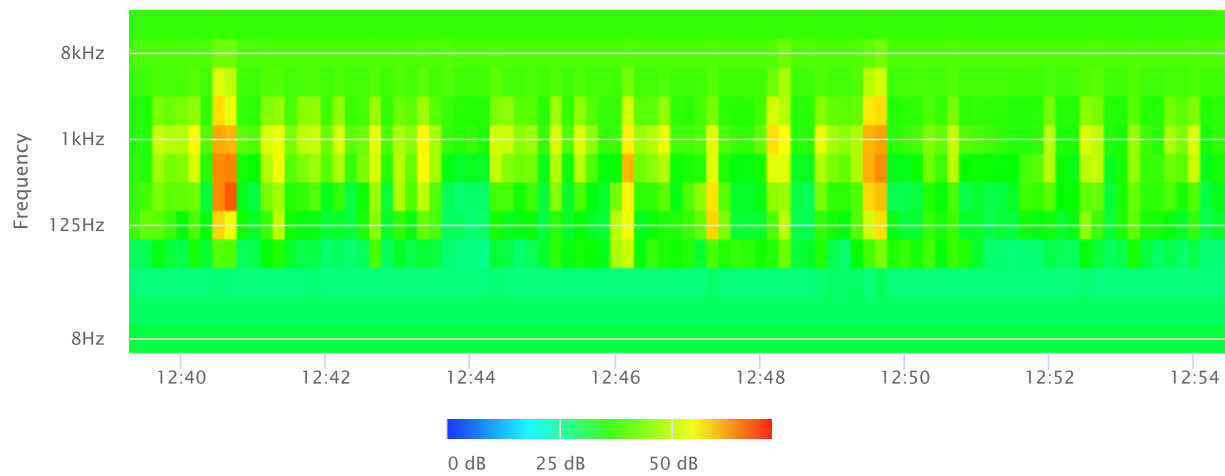
Statistics

LAS 2.0	64.6 dB
LAS 8.0	57.8 dB
LAS 25.0	52.1 dB
LAS 50.0	45.0 dB
LAS 66.6	43.3 dB
LAS 90.0	41.2 dB

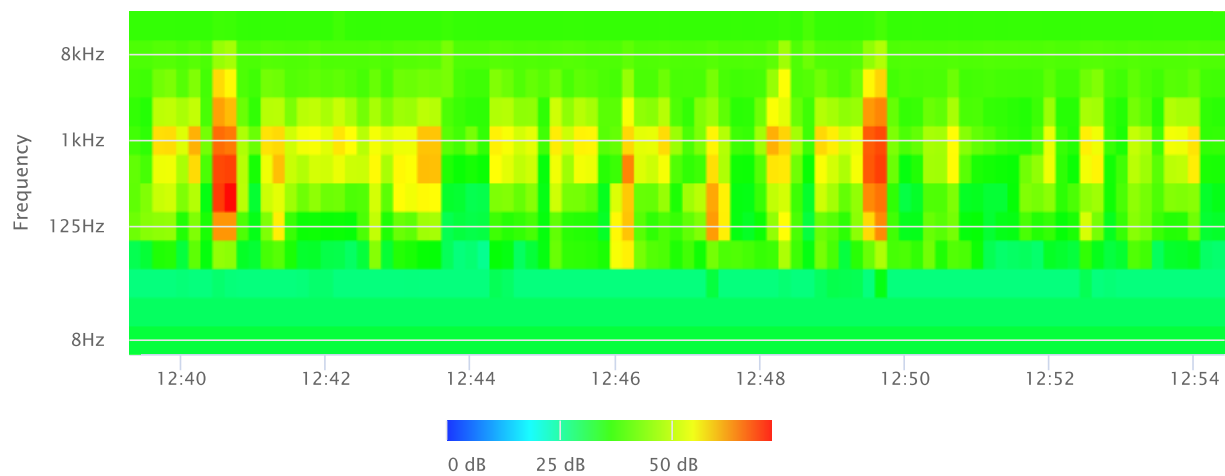
Time History



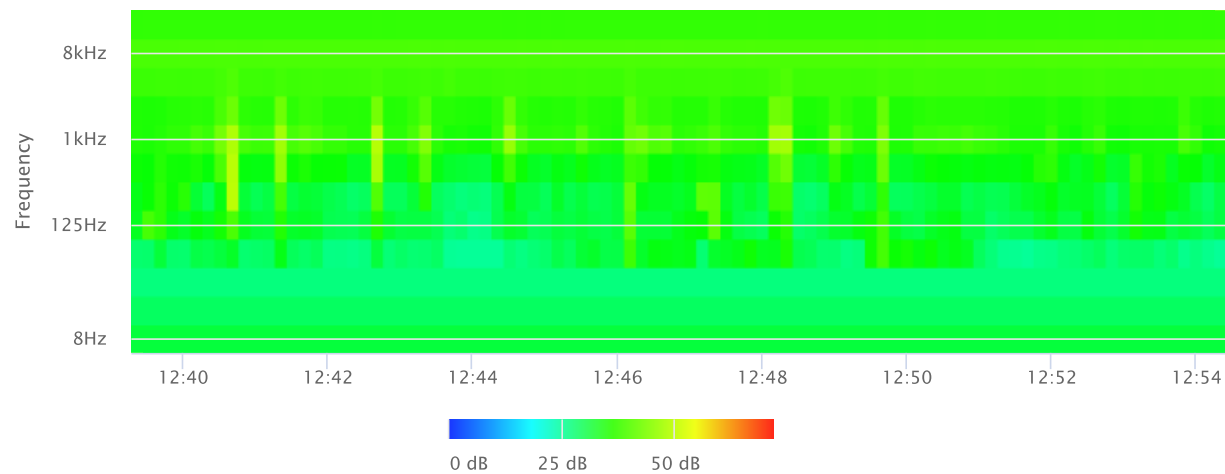
OBA 1/1 Leq



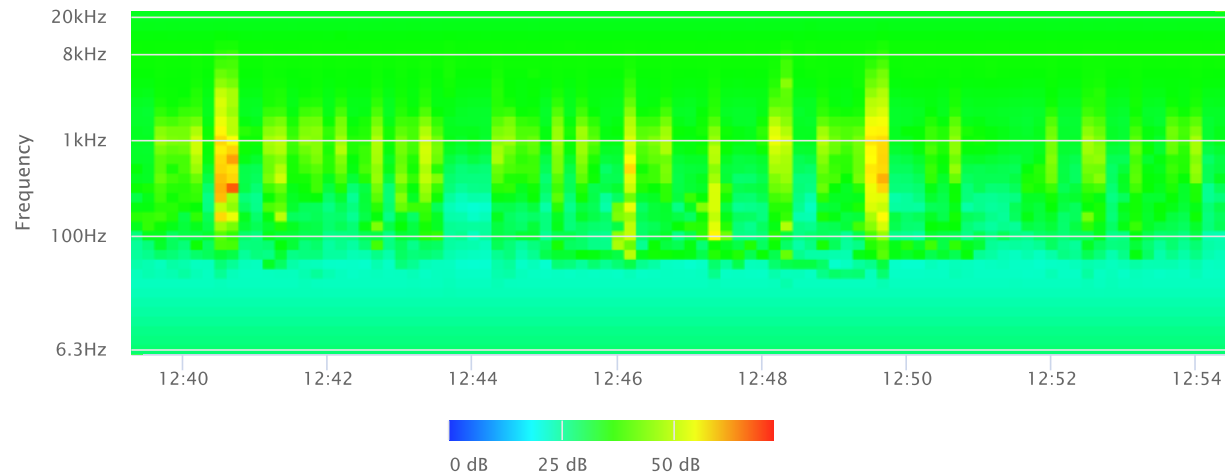
OBA 1/1 Lmax



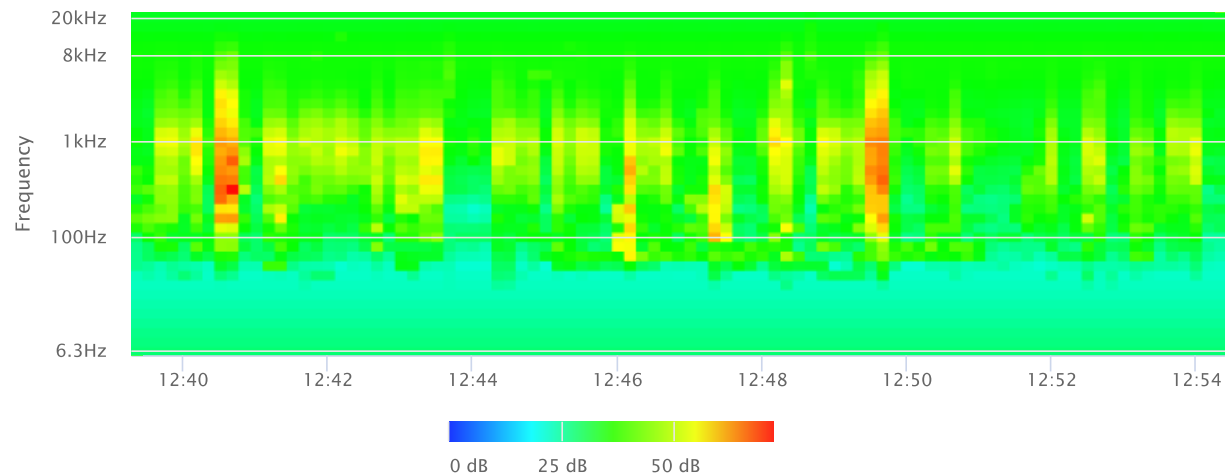
OBA 1/1 Lmin



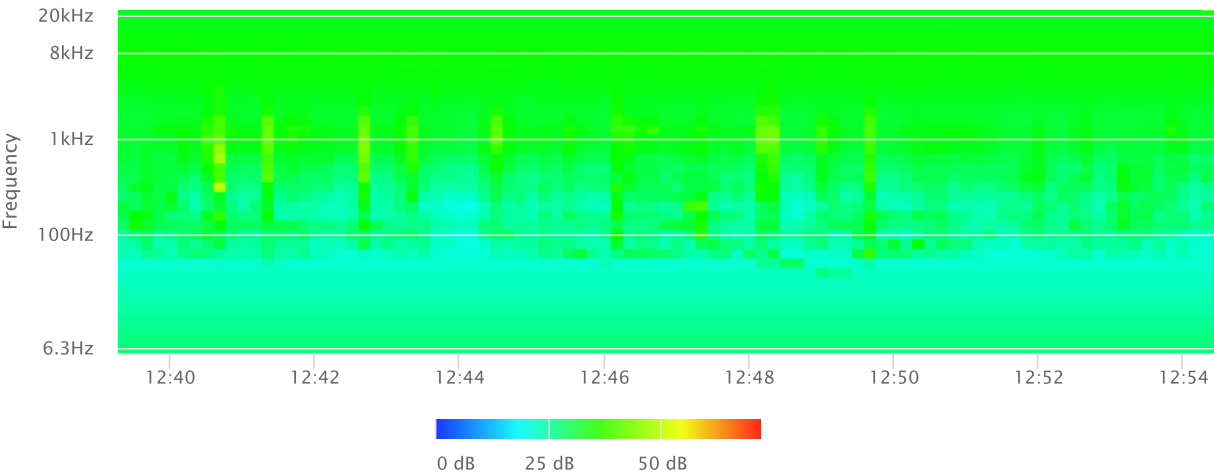
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin



**Noise Measurement
Field Data**

Project Name: Olive Grove, City of Rialto **Date:** August 5, 2024

Project #: 19747

Noise Measurement #: STNM2 Run Time: 15 minutes **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: 2304 Powell Drive, Rialto, CA 92377

Site Description (Type of Existing Land Use and any other notable features): Measurement Site: Near the center of the project site's northeastern property line.
Project site is an easement like area to south of residence 2304 Powell Dr. Adjacent: River Ranch Pkwy (running N-) ~334' east/southeast, residential to the northeast,
vacant project site to south with residential further south, & open mining operation to the east (across project site and River Ranch Parkway). 210 Fwy ~1,700' S.

Weather: Clear skies, sunshine. Sunset 8:19 PM **Settings:** SLOW FAST

Temperature: 106 deg F **Wind:** 9 mph **Humidity:** 21% **Terrain:** Flat

Start Time: 1:33 PM **End Time:** 1:43 PM **Run Time:** _____

Leq: 41.7 dB **Primary Noise Source:** Traffic ambiance from vehicles traveling along River Ranch Pkwy, Powell Drive,

Lmax 50.8 dB 210 Fwy & other roads.

L2 46.1 dB **Secondary Noise Sources:** Occasional noise from overhead air traffic, residential ambiance.

L8 43.9 dB Leaf rustle from 9mph breeze.

L25 41.9 dB

L50 41.0 dB

NOISE METER: <u>SoundTrack LXT Class 1</u>	CALIBRATOR: <u>Larson Davis CAL 200</u>
MAKE: <u>Larson Davis</u>	MAKE: <u>Larson Davis</u>
MODEL: <u>LXT1</u>	MODEL: <u>CAL 200</u>
SERIAL NUMBER: <u>3855</u>	SERIAL NUMBER: <u>11178</u>
FACTORY CALIBRATION DATE: <u>3/31/2021</u>	FACTORY CALIBRATION DATE: <u>11/18/2021</u>
FIELD CALIBRATION DATE: <u>8/5/2024</u>	

Noise Measurement
Field Data

PHOTOS:



STNM2 looking NNE towards closest residence 2304 Powell Drive, Rialto (grey roof ~140' NNE). Cinder block wall is ~6' high & ~70' NNE of STNM2 microphone.



STNM2 looking SE along project site towards River Ranch Pkwy (~420' SE).

Summary			
File Name on Meter	LxT_Data.107.s		
File Name on PC	LxT_0003855-20240805 133306-LxT_Data.107.ldbin		
Serial Number	3855		
Model	SoundTrack LxT®		
Firmware Version	2.404		
User	Ian Edward Gallagher		
Location	STNM2 34° 8'23.55"N 117°21'59.20"W		
Job Description	15 minute noise measurement		
Note	Ganddini Project 19747 Olive Grove, City of Rialto		
Measurement			
Start	2024-08-05 13:33:06		
Stop	2024-08-05 13:48:06		
Duration	00:15:00.0		
Run Time	00:15:00.0		
Pause	00:00:00.0		
Pre-Calibration	2024-08-05 13:32:30		
Post-Calibration	None		
Overall Settings			
RMS Weight	A Weighting		
Peak Weight	A Weighting		
Detector	Slow		
Preamplifier	PRMLxT1		
Microphone Correction	Off		
Integration Method	Linear		
OBA Range	Normal		
OBA Bandwidth	1/1 and 1/3		
OBA Frequency Weighting	A Weighting		
OBA Max Spectrum	Bin Max		
Overload	145.4 dB		
Results			
LAeq	41.7		
LAE	71.2		
EA	1.473633 µPa²h		
EA8	47.15625 µPa²h		
EA40	235.7813 µPa²h		
LApeak (max)	2024-08-05 13:46:32	82.0 dB	
LASmax	2024-08-05 13:43:23	50.8 dB	
LASmin	2024-08-05 13:33:54	38.2 dB	
Statistics			
LCeq	59.2 dB	LA2.00	46.1 dB
LAeq	41.7 dB	LA8.00	43.9 dB
LCeq - LAeq	17.5 dB	LA25.00	41.9 dB
LAleq	45.5 dB	LA50.00	41.0 dB
LAeq	41.7 dB	LA66.60	40.4 dB
LAleq - LAeq	3.8 dB	LA90.00	39.6 dB
Overload Count	0		
Overload Duration	0.0 s		

Measurement Report

Report Summary

Meter's File Name	LxT_Data.107.s	Computer's File Name	LxT_0003855-20240805 133306-LxT_Data.107.ldbin
Meter	LxT1 0003855		
Firmware	2.404		
User	Ian Edward Gallagher	Location	STNM2 34° 8'23.55"N 117°21'59.20"W
Job Description	15 minute noise measurement		
Note	Ganddini Project 19747 Olive Grove, City of Rialto		
Start Time	2024-08-05 13:33:06	Duration	0:15:00.0
End Time	2024-08-05 13:48:06	Run Time	0:15:00.0
		Pause Time	0:00:00.0

Results

Overall Metrics

LA _{eq}	41.7 dB		
LAE	71.2 dB	SEA	--- dB
EA	1.5 µPa²h	LAFTM5	46.6 dB
EA8	47.2 µPa²h		
EA40	235.8 µPa²h		
LA _{peak}	82.0 dB	2024-08-05 13:46:32	
LAS _{max}	50.8 dB	2024-08-05 13:43:23	
LAS _{min}	38.2 dB	2024-08-05 13:33:54	
LA _{eq}	41.7 dB		
LC _{eq}	59.2 dB	LC _{eq} - LA _{eq}	17.5 dB
LAI _{eq}	45.5 dB	LAI _{eq} - LA _{eq}	3.8 dB

Exceedances

	Count	Duration
LAS > 65.0 dB	0	0:00:00.0
LAS > 85.0 dB	0	0:00:00.0
LA _{peak} > 135.0 dB	0	0:00:00.0
LA _{peak} > 137.0 dB	0	0:00:00.0
LA _{peak} > 140.0 dB	0	0:00:00.0

Community Noise

LDN	LDay	LNight	
--- dB	--- dB	0.0 dB	
LDEN	LDay	LEve	LNight
--- dB	--- dB	--- dB	--- dB

Any Data

	Level	A Time Stamp	Level	C Time Stamp	Level	Z Time Stamp
L _{eq}	41.7 dB		59.2 dB		--- dB	
LS _(max)	50.8 dB	2024-08-05 13:43:23	--- dB		--- dB	
LS _(min)	38.2 dB	2024-08-05 13:33:54	--- dB		--- dB	
L _{Peak(max)}	82.0 dB	2024-08-05 13:46:32	--- dB		--- dB	

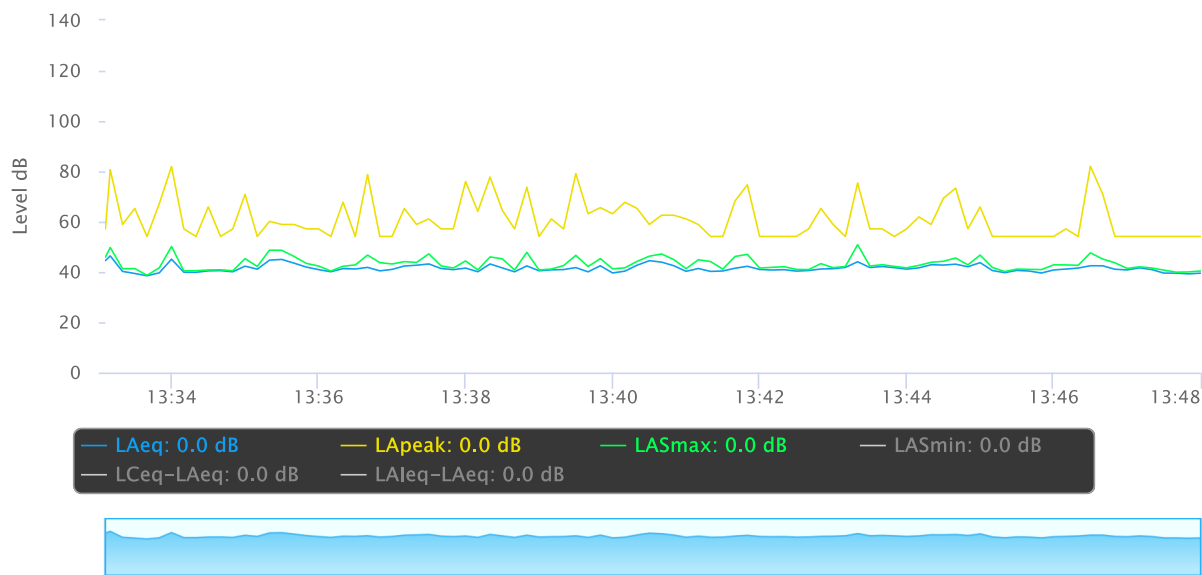
Overloads

Count	Duration	OBA Count	OBA Duration
0	0:00:00.0	0	0:00:00.0

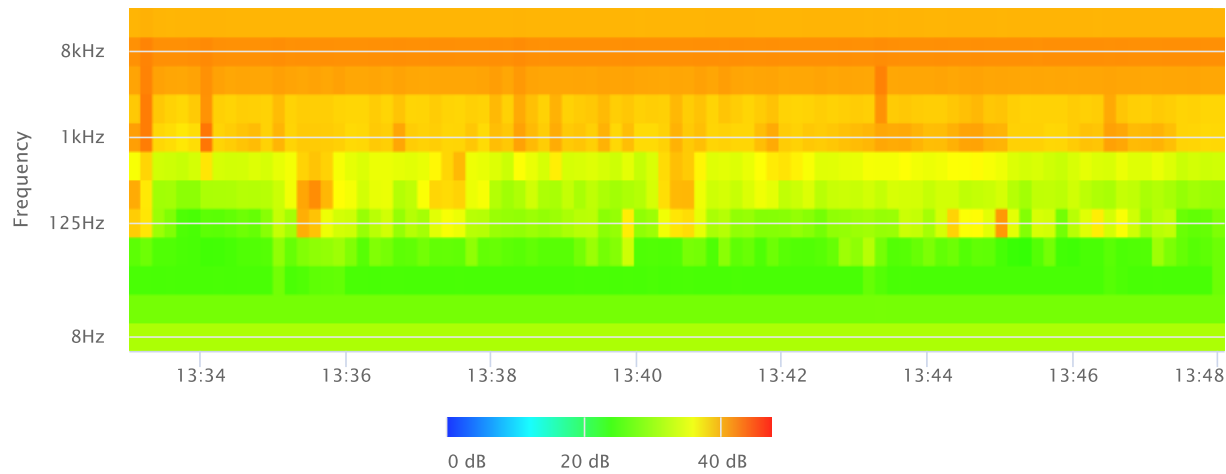
Statistics

LAS 2.0	46.1 dB
LAS 8.0	43.9 dB
LAS 25.0	41.9 dB
LAS 50.0	41.0 dB
LAS 66.6	40.4 dB
LAS 90.0	39.6 dB

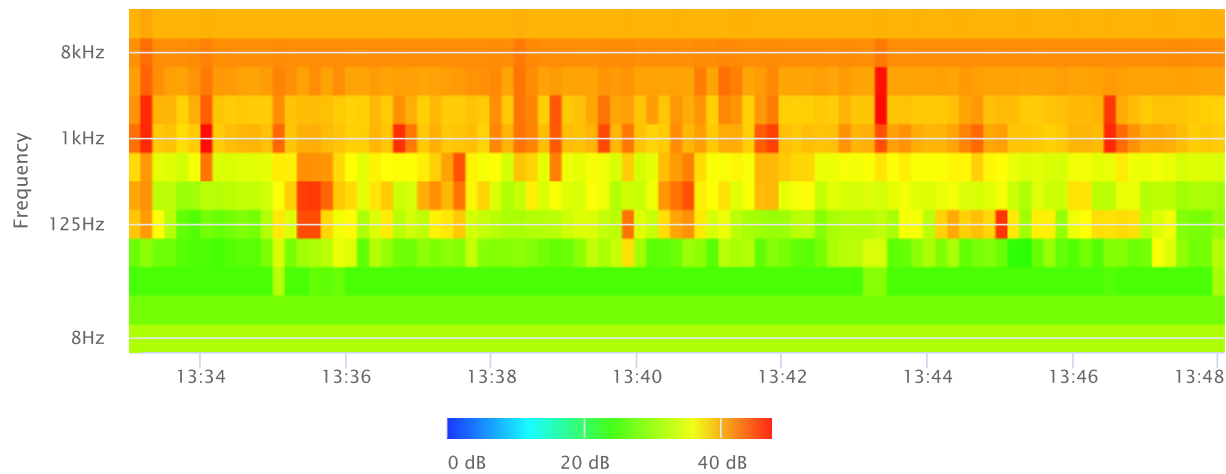
Time History



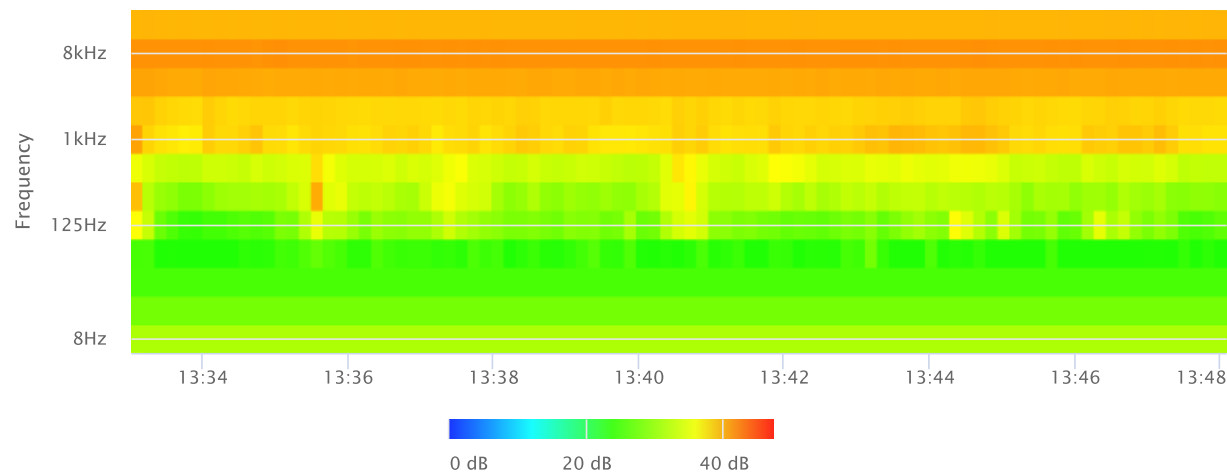
OBA 1/1 Leq



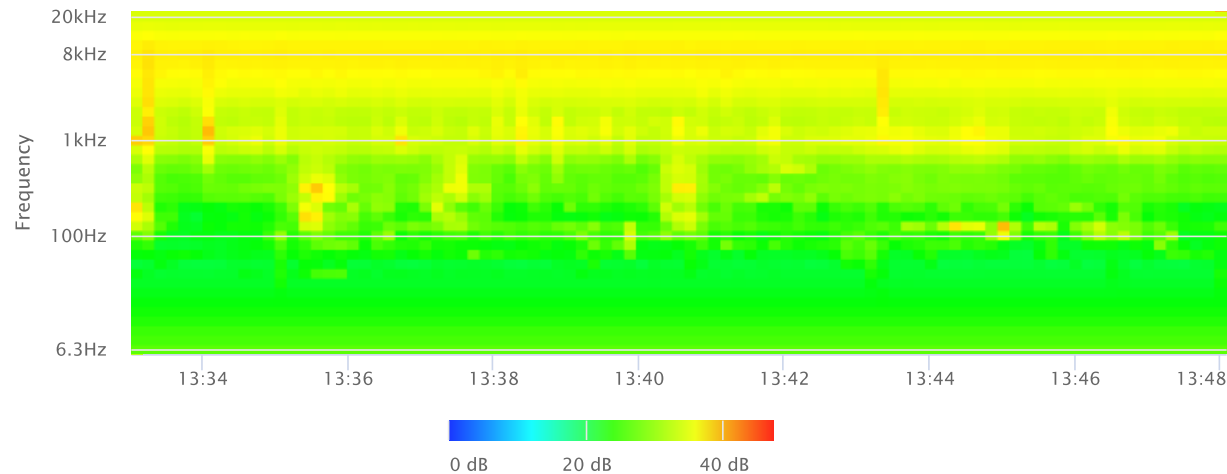
OBA 1/1 Lmax



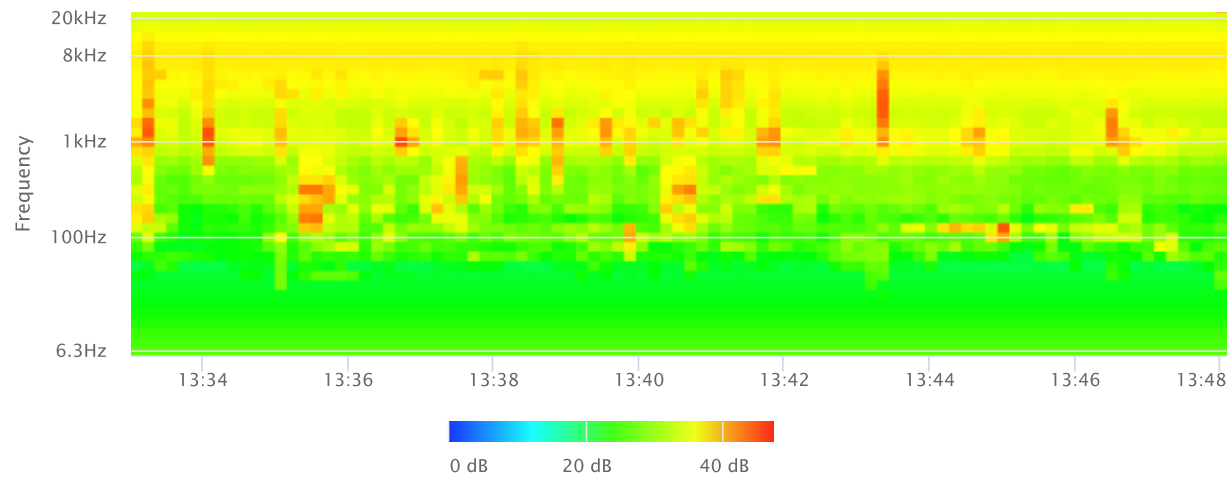
OBA 1/1 Lmin



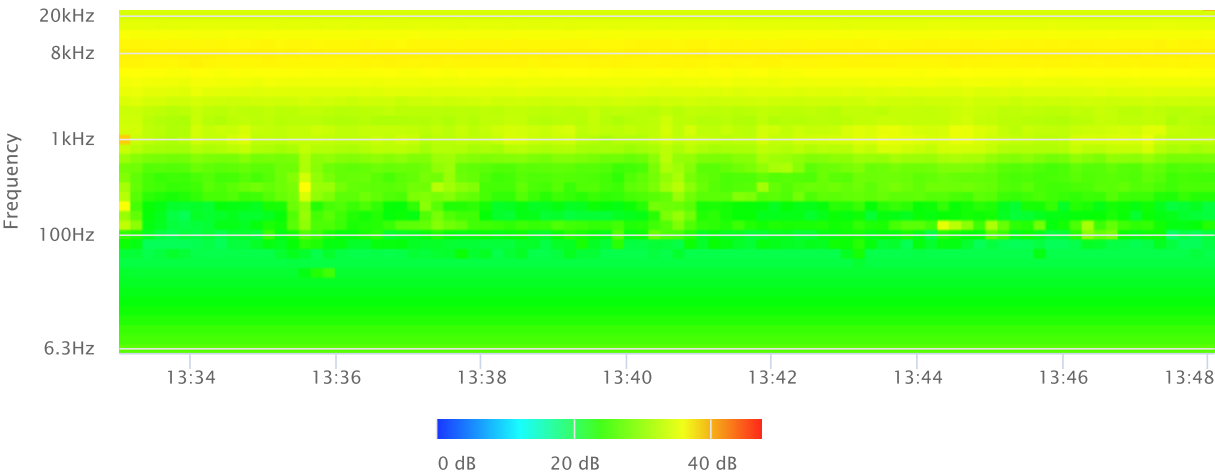
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin



**Noise Measurement
Field Data**

Project Name: Olive Grove, City of Rialto **Date:** August 5, 2024

Project #: 19747

Noise Measurement #: STNM3 Run Time: 15 minutes **Technician:** Ian Edward Gallagher

Nearest Address or Cross Street: 2356 Powell Drive, Rialto, CA 92377

Site Description (Type of Existing Land Use and any other notable features): Measurement Site: Just northwest of the project site. Project site is an easement like area southeast of residence 2356 Powell Dr. Adjacent: River Ranch Pkwy (running N-S) ~750' east/southeast, residential to northeast, and vacant project site to southeast with residential further southeast. 210 Fwy ~2,200' S of STNM3.

Weather: Clear skies, sunshine. Sunset 8:19 PM **Settings:** SLOW FAST

Temperature: 106 deg F **Wind:** 9 mph **Humidity:** 21% **Terrain:** Flat

Start Time: 2:21 PM **End Time:** 2:36 PM **Run Time:** _____

Leq: 44.8 dB **Primary Noise Source:** Traffic ambiance from vehicles traveling along River Ranch Pkwy, Powell Drive,

Lmax 61.5 dB 210 Fwy & other roads.

L2 53.5 dB **Secondary Noise Sources:** Occasional noise from overhead air traffic, residential ambiance.

L8 45.6 dB Leaf rustle from 9mph breeze.

L25 43.3 dB

L50 41.2 dB

NOISE METER: <u>SoundTrack LXT Class 1</u>	CALIBRATOR: <u>Larson Davis CAL 200</u>
MAKE: <u>Larson Davis</u>	MAKE: <u>Larson Davis</u>
MODEL: <u>LXT1</u>	MODEL: <u>CAL 200</u>
SERIAL NUMBER: <u>3855</u>	SERIAL NUMBER: <u>11178</u>
FACTORY CALIBRATION DATE: <u>3/31/2021</u>	FACTORY CALIBRATION DATE: <u>11/18/2021</u>
FIELD CALIBRATION DATE: <u>8/5/2024</u>	

Noise Measurement
Field Data

PHOTOS:



STNM3 looking NE towards back yard wall of residence 2356 Powell Drive, Rialto. Wall is ~50' NE of STNM3 microphone, constructed out of cinder block and is ~6' tall.



STNM3 looking N towards residence 2360 Powell Drive, Rialto (terracotta roof, ~110' N).

Summary				
File Name on Meter	LxT_Data.108.s			
File Name on PC	LxT_0003855-20240805 142137-LxT_Data.108.lbin			
Serial Number	0003855			
Model	SoundTrack LxT®			
Firmware Version	2.404			
User	Ian Edward Gallagher			
Location	STNM3 34° 8'30.93"N 117°22'9.06"W			
Job Description	15 minute noise measurement			
Note	Ganddini Project 19747 Olive Grove, City of Rialto			
Measurement				
Start	2024-08-05 14:21:37			
Stop	2024-08-05 14:36:37			
Duration	00:15:00.0			
Run Time	00:15:00.0			
Pause	00:00:00.0			
Pre-Calibration	2024-08-05 14:19:26			
Post-Calibration	None			
Overall Settings				
RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamplifier	PRMLxT1			
Microphone Correction	Off			
Integration Method	Linear			
OBA Range	Normal			
OBA Bandwidth	1/1 and 1/3			
OBA Frequency Weighting	A Weighting			
OBA Max Spectrum	Bin Max			
Overload	145.3 dB			
Results				
LAeq	44.8			
LAE	74.4			
EA	3.046 µPa²h			
EA8	97.456 µPa²h			
EA40	487.280 µPa²h			
LApeak (max)	2024-08-05 14:30:02	89.0 dB		
LASmax	2024-08-05 14:27:46	61.5 dB		
LASmin	2024-08-05 14:26:43	37.6 dB		
Statistics				
LCeq	59.6 dB		LA2.00	53.5 dB
LAeq	44.8 dB		LA8.00	45.6 dB
LCeq - LAeq	14.8 dB		LA25.00	43.3 dB
LALeq	47.5 dB		LA50.00	41.2 dB
LAeq	44.8 dB		LA66.60	40.4 dB
LALeq - LAeq	2.7 dB		LA90.00	38.7 dB
Overload Count	0			
Overload Duration	0.0 s			

Measurement Report

Report Summary

Meter's File Name	LxT_Data.108.s	Computer's File Name	LxT_0003855-20240805 142137-LxT_Data.108.ldbin
Meter	LxT1 0003855		
Firmware	2.404		
User	Ian Edward Gallagher	Location	STNM3 34° 8'30.93"N 117°22'9.06"W
Job Description	15 minute noise measurement		
Note	Ganddini Project 19747 Olive Grove, City of Rialto		
Start Time	2024-08-05 14:21:37	Duration	0:15:00.0
End Time	2024-08-05 14:36:37	Run Time	0:15:00.0
		Pause Time	0:00:00.0

Results

Overall Metrics

LA _{eq}	44.8 dB		
LAE	74.4 dB	SEA	--- dB
EA	3.0 µPa²h	LAFTM5	49.0 dB
EA8	97.5 µPa²h		
EA40	487.3 µPa²h		
LA _{peak}	89.0 dB	2024-08-05 14:30:02	
LAS _{max}	61.5 dB	2024-08-05 14:27:46	
LAS _{min}	37.6 dB	2024-08-05 14:26:43	
LA _{eq}	44.8 dB		
LC _{eq}	59.6 dB	LC _{eq} - LA _{eq}	14.8 dB
LAI _{eq}	47.5 dB	LAI _{eq} - LA _{eq}	2.7 dB

Exceedances

	Count	Duration
LAS > 65.0 dB	0	0:00:00.0
LAS > 85.0 dB	0	0:00:00.0
LA _{peak} > 135.0 dB	0	0:00:00.0
LA _{peak} > 137.0 dB	0	0:00:00.0
LA _{peak} > 140.0 dB	0	0:00:00.0

Community Noise

LDN	LDay	LNight	
--- dB	--- dB	0.0 dB	
LDEN	LDay	LEve	LNight
--- dB	--- dB	--- dB	--- dB

Any Data

	Level	A Time Stamp	Level	C Time Stamp	Level	Z Time Stamp
L _{eq}	44.8 dB		59.6 dB		--- dB	
LS _(max)	61.5 dB	2024-08-05 14:27:46	--- dB		--- dB	
LS _(min)	37.6 dB	2024-08-05 14:26:43	--- dB		--- dB	
L _{Peak(max)}	89.0 dB	2024-08-05 14:30:02	--- dB		--- dB	

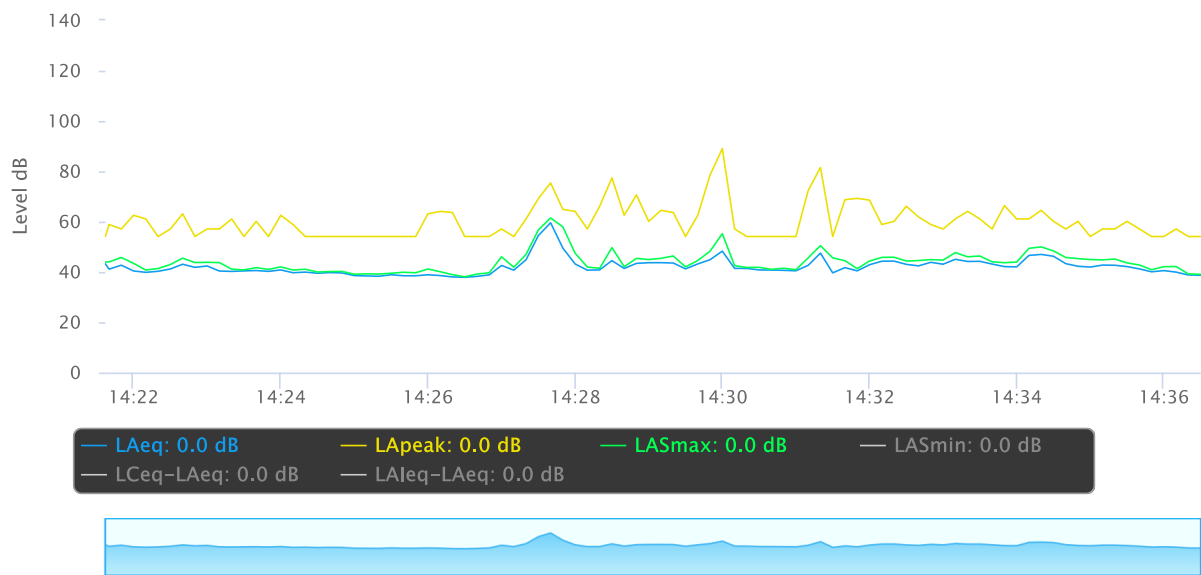
Overloads

Count	Duration	OBA Count	OBA Duration
0	0:00:00.0	0	0:00:00.0

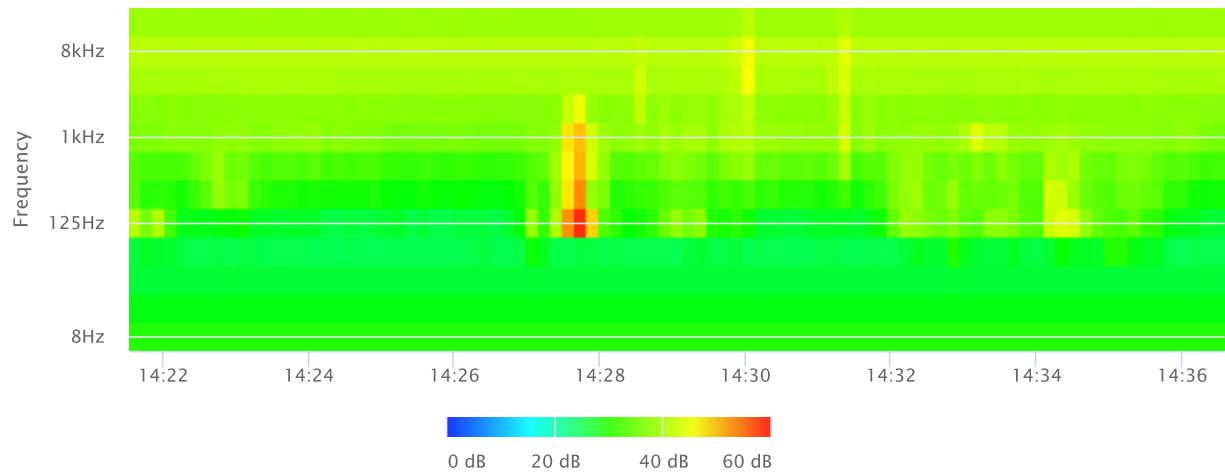
Statistics

LAS 2.0	53.5 dB
LAS 8.0	45.6 dB
LAS 25.0	43.3 dB
LAS 50.0	41.2 dB
LAS 66.6	40.4 dB
LAS 90.0	38.7 dB

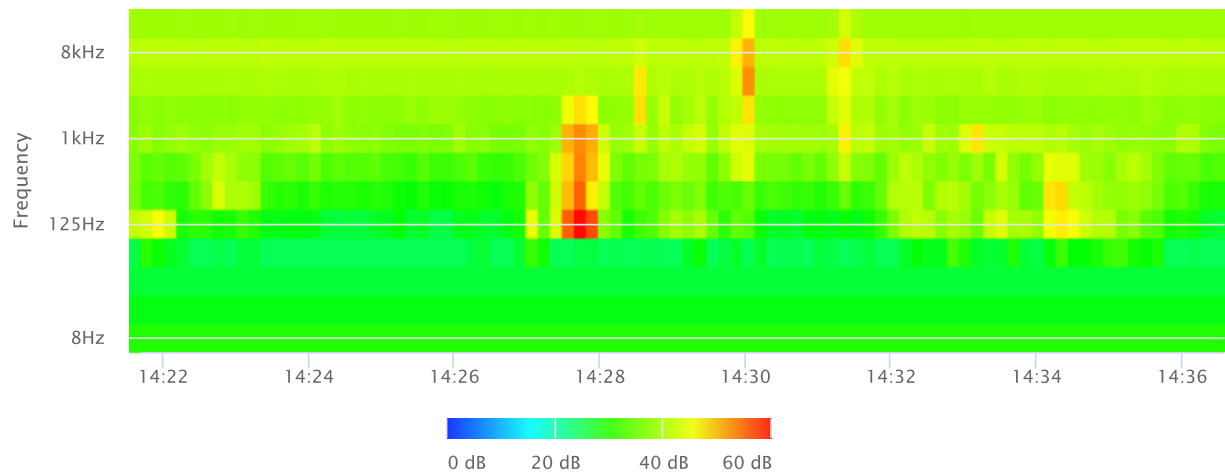
Time History



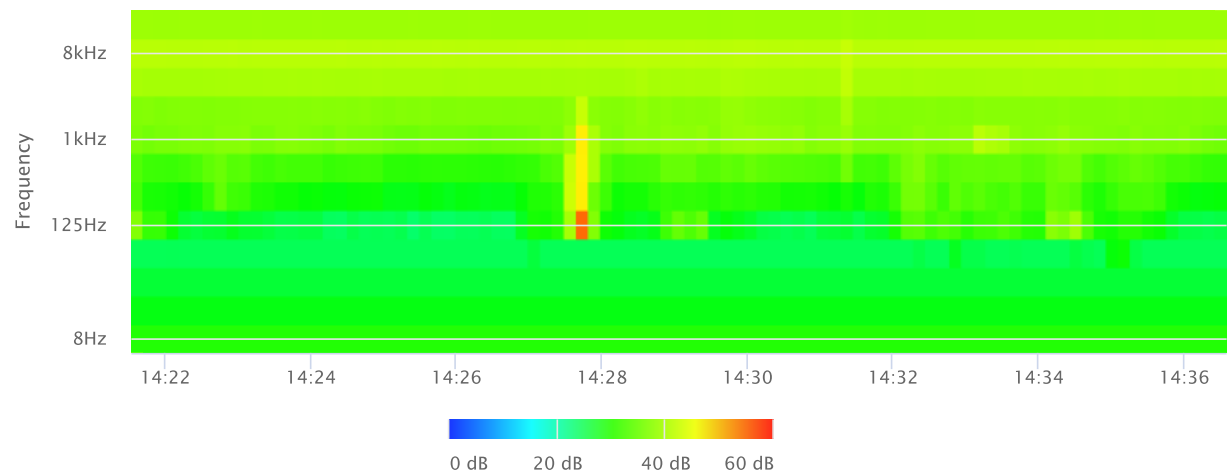
OBA 1/1 Leq



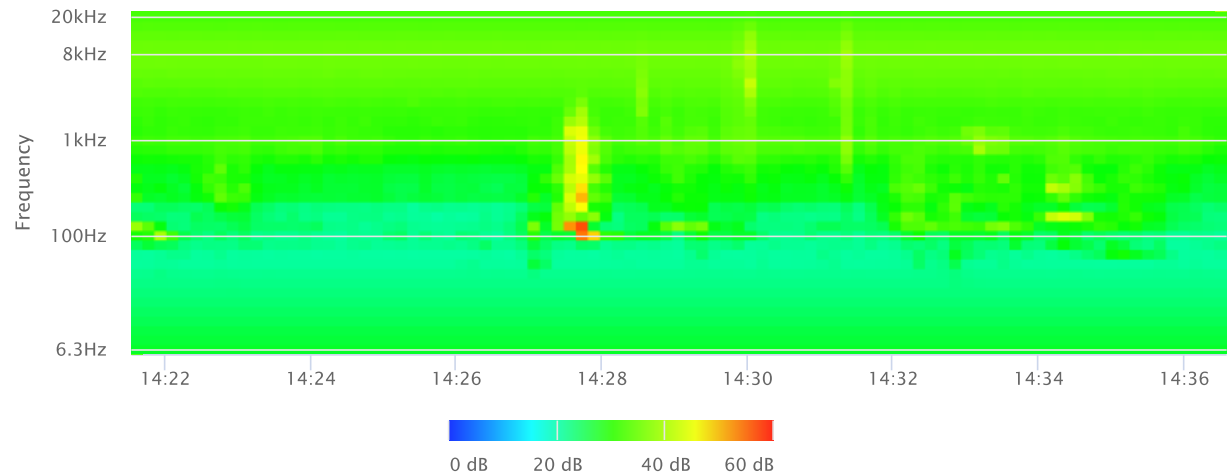
OBA 1/1 Lmax



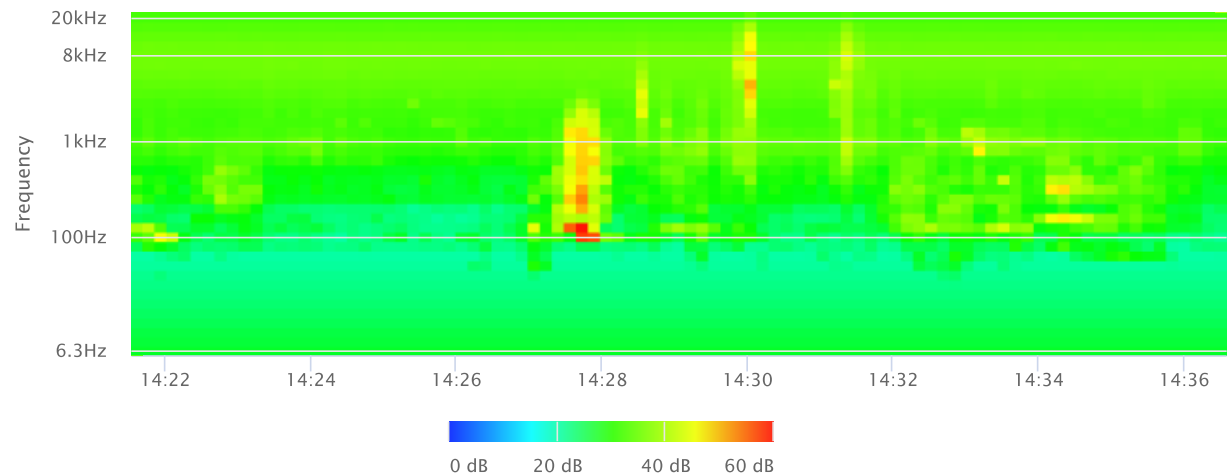
OBA 1/1 Lmin



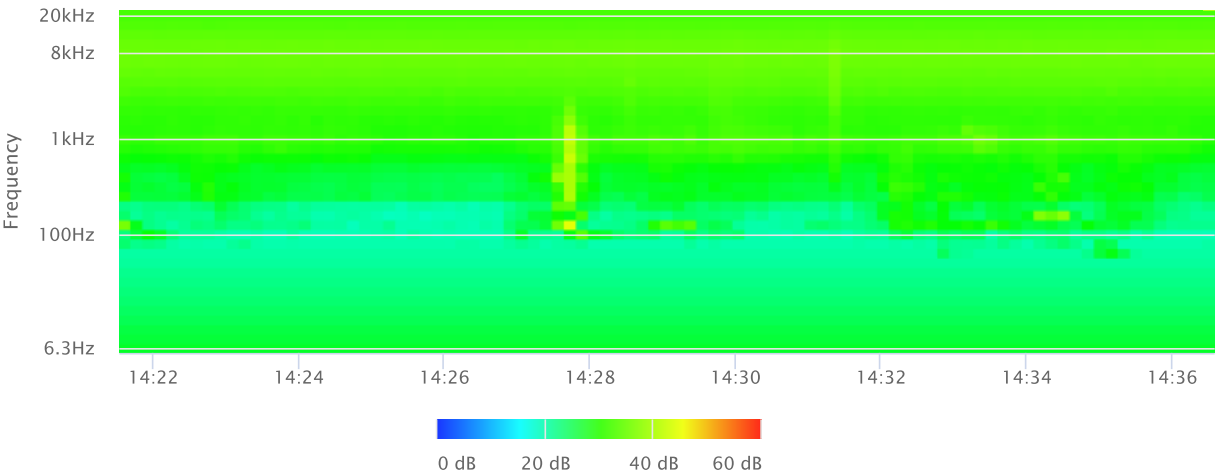
OBA 1/3 Leq



OBA 1/3 Lmax



OBA 1/3 Lmin



APPENDIX D

CONSTRUCTION NOISE MODELING

Receptor - Residential to Northeast (2308 Powell Drive, Rialto)												
Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA ¹	Distance to Receptor ²	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA	Required Mitigation	Mitigated Noise Level	Reduction (dBA Leq)
Demolition												
Excavator	3	81	78	40	1.20	-3.9	0.8	77.1	77.9	Muffler (5 dB Reduction)	72.9	5.0
Rubber Tired Dozers	2	82	78	40	0.80	-3.9	-1.0	78.1	77.2	Muffler (5 dB Reduction)	72.2	
Concrete/Industrial Saws	1	90	78	20	0.20	-3.9	-7.0	86.1	79.1	Enclosure or Acoustic Tent (5 dB Reduction)	74.1	
Log Sum								82.9		77.9		
Site Preparation												
Rubber Tired Dozers	3	82	78	40	1.20	-3.9	0.8	78.1	78.9	Muffler (5 dB Reduction)	73.9	5.0
Tractors/Loaders/Backhoes	4	84	78	40	1.60	-3.9	2.0	80.1	82.2	Muffler (5 dB Reduction)	77.2	
Log Sum								83.9		78.9		
Grading												
Excavator	1	81	78	40	0.40	-3.9	-4.0	77.1	73.2	Muffler (5 dB Reduction)	68.2	5.0
Graders	1	85	78	40	0.40	-3.9	-4.0	81.1	77.2	Muffler (5 dB Reduction)	72.2	
Rubber Tired Dozers	1	82	78	40	0.40	-3.9	-4.0	78.1	74.2	Muffler (5 dB Reduction)	69.2	
Tractors/Loaders/Backhoes	3	84	78	40	1.20	-3.9	0.8	80.1	80.9	Muffler (5 dB Reduction)	75.9	
Log Sum								83.5		78.5		
Building Construction												
Cranes	1	81	78	16	0.16	-3.9	-8.0	77.1	69.2	Muffler (5 dB Reduction)	64.2	4.8
Forklifts ³	3	48	78	40	1.20	-3.9	0.8	44.1	44.9	n/a	44.9	
Generator Sets	1	81	78	50	0.50	-3.9	-3.0	77.1	74.1	Enclosure or Acoustic Tent (5 dB Reduction)	69.1	
Welders	1	74	78	40	0.40	-3.9	-4.0	70.1	66.2	n/a	66.2	
Tractors/Loaders/Backhoes	3	84	78	40	1.20	-3.9	0.8	80.1	80.9	Muffler (5 dB Reduction)	75.9	
Log Sum								82.1		77.3		
Paving												
Cement and Mortar Mixers	2	79	78	40	0.80	-3.9	-1.0	75.1	74.2	-	-	-
Pavers	1	77	78	50	0.50	-3.9	-3.0	73.1	70.1	-	-	
Paving Equipment	2	77	78	50	1.00	-3.9	0.0	73.1	73.1	-	-	
Rollers	2	80	78	20	0.40	-3.9	-4.0	76.1	72.2	-	-	
Tractors/Loaders/Backhoes	1	84	78	20	0.20	-3.9	-7.0	80.1	73.1	-	-	
Log Sum								79.7		-		
Architectural Coating												
Air Compressors	1	78	78	40	0.40	-3.9	-4.0	74.1	70.2	-	-	-
Log Sum								70.2		-		

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construction Noise Model User's Guide (January 2006)

(2) Source: SoundPLAN reference list.

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (property line).

Receptor - Residential to Northeast (2269 Sycamore Avenue, Rialto)												
Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA ¹	Distance to Receptor ²	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Receptor Item Lmax, dBA	Receptor Item Leq, dBA	Required Mitigation	Mitigated Noise Level	Reduction (dBA Leq)
Demolition												
Excavator	3	81	78	40	1.20	-3.9	0.8	77.1	77.9	Muffler (5 dB Reduction)	72.9	5.0
Rubber Tired Dozers	2	82	78	40	0.80	-3.9	-1.0	78.1	77.2	Muffler (5 dB Reduction)	72.2	
Concrete/Industrial Saws	1	90	78	20	0.20	-3.9	-7.0	86.1	79.1	Enclosure or Acoustic Tent (5 dB Reduction)	74.1	
								Log Sum	82.9		77.9	
Site Preparation												
Rubber Tired Dozers	3	82	78	40	1.20	-3.9	0.8	78.1	78.9	Muffler (5 dB Reduction)	73.9	5.0
Tractors/Loaders/Backhoes	4	84	78	40	1.60	-3.9	2.0	80.1	82.2	Muffler (5 dB Reduction)	77.2	
								Log Sum	83.9		78.9	
Grading												
Excavator	1	81	78	40	0.40	-3.9	-4.0	77.1	73.2	Muffler (5 dB Reduction)	68.2	5.0
Graders	1	85	78	40	0.40	-3.9	-4.0	81.1	77.2	Muffler (5 dB Reduction)	72.2	
Rubber Tired Dozers	1	82	78	40	0.40	-3.9	-4.0	78.1	74.2	Muffler (5 dB Reduction)	69.2	
Tractors/Loaders/Backhoes	3	84	78	40	1.20	-3.9	0.8	80.1	80.9	Muffler (5 dB Reduction)	75.9	
								Log Sum	83.5		78.5	
Building Construction												
Cranes	1	81	78	16	0.16	-3.9	-8.0	77.1	69.2	Muffler (5 dB Reduction)	64.2	4.8
Forklifts ³	3	48	78	40	1.20	-3.9	0.8	44.1	44.9	n/a	44.9	
Generator Sets	1	81	78	50	0.50	-3.9	-3.0	77.1	74.1	Enclosure or Acoustic Tent (5 dB Reduction)	69.1	
Welders	1	74	78	40	0.40	-3.9	-4.0	70.1	66.2	n/a	66.2	
Tractors/Loaders/Backhoes	3	84	78	40	1.20	-3.9	0.8	80.1	80.9	Muffler (5 dB Reduction)	75.9	
								Log Sum	82.1		77.3	
Paving												
Cement and Mortar Mixers	2	79	78	40	0.80	-3.9	-1.0	75.1	74.2	-	-	-
Pavers	1	77	78	50	0.50	-3.9	-3.0	73.1	70.1	-	-	
Paving Equipment	2	77	78	50	1.00	-3.9	0.0	73.1	73.1	-	-	
Rollers	2	80	78	20	0.40	-3.9	-4.0	76.1	72.2	-	-	
Tractors/Loaders/Backhoes	1	84	78	20	0.20	-3.9	-7.0	80.1	73.1	-	-	
								Log Sum	79.7		-	
Architectural Coating												
Air Compressors	1	78	78	40	0.40	-3.9	-4.0	74.1	70.2	-	-	-
								Log Sum	70.2		-	

Notes:

(1) Source: Referenced noise levels from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018) and the FHWA Roadway Construction Noise Model User's Guide (January 2006)

(2) Source: SoundPLAN reference list.

(3) Distance to receptor calculated from center of site. Construction noise projected from the center of the project site to nearest sensitive use (property line).

APPENDIX E

FHWA WORKSHEETS

Existing Traffic Noise

Project: **19747 Olive Grove Residential**Road: **River Ranch Parkway**Segment: **In vicinity of the project site**

	DAYTIME			EVENING			NIGHTTIME			ADT	4320.00
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	SPEED	25.00
										DISTANCE	30.00
INPUT PARAMETERS											
Vehicles per hour	264.94	3.24	1.26	195.80	0.57	0.58	49.04	4.32	1.68	% A	97.4
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	1.84
NOISE CALCULATIONS											
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24	% HT	0.74
ADJUSTMENTS											
Flow	19.95	0.82	-3.28	18.63	-6.69	-6.68	12.62	2.07	-2.03		
Distance	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	CNEL	62.67
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	DAY LEQ	58.19
LEQ	56.53	49.06	51.11	55.22	41.55	47.71	49.21	50.31	52.36	Day hour	89.00
										Absorbtive?	no
	DAY LEQ	58.19		EVENING LEQ	56.09		NIGHT LEQ	55.60		Use hour?	no
										GRADE dB	0.00
		CNEL	62.67								

Existing Plus Project Traffic Noise

Project: **19747 Olive Grove Residential**Road: **River Ranch Parkway**Segment: **In vicinity of the project site**

	DAYTIME			EVENING			NIGHTTIME			ADT	4593.00
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	SPEED	25.00
										DISTANCE	30.00
INPUT PARAMETERS											
Vehicles per hour	276.00	4.89	3.51	203.97	0.87	1.61	51.09	6.52	4.68	% A	95.43
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	2.61
NOISE CALCULATIONS											
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24	% HT	1.94
ADJUSTMENTS											
Flow	20.12	2.60	1.17	18.81	-4.90	-2.23	12.80	3.85	2.42		
Distance	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	CNEL	65.33
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	DAY LEQ	59.78
LEQ	56.71	50.84	55.56	55.40	43.33	52.16	49.39	52.09	56.80	Day hour	89.00
										Absorbtive?	no
	DAY LEQ	59.78		EVENING LEQ	57.26		NIGHT LEQ	58.62		Use hour?	no
										GRADE dB	0.00
		CNEL	65.33								

APPENDIX F

VIBRATION WORKSHEETS

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19747 Olive Grove Residential		Date: 8/5/24
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Residential to North		
Address:	2328 Powell Drive, Rialto		
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment =	1	Vibratory Roller	INPUT SECTION IN GREEN
Type			
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	24.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.			
RESULTS			
PPV =	0.223	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19747 Olive Grove Residential		Date: 8/5/24
Source:	Large Bulldozer		
Scenario:	Unmitigated		
Location:	Residential to North		
Address:	2328 Powell Drive, Rialto		
PPV = $PPV_{ref}(25/D)^n$ (in/sec)			
INPUT			
Equipment = Type	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	24.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.			
RESULTS			
PPV =	0.095	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19747 Olive Grove Residential		Date: 8/5/24
Source:	Vibratory Roller		
Scenario:	Unmitigated		
Location:	Residential to South		
Address:	2313 Sycamore Avenue, Rialto		
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment = Type	1	Vibratory Roller	INPUT SECTION IN GREEN
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	13.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.			
RESULTS			
PPV =	0.560	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19747 Olive Grove Residential		Date: 8/5/24
Source:	Large Bulldozer		
Scenario:	Unmitigated		
Location:	Residential to South		
Address:	2313 Sycamore Avenue, Rialto		
PPV = $PPV_{ref}(25/D)^n$ (in/sec)			
INPUT			
Equipment = Type	2	Large Bulldozer	INPUT SECTION IN GREEN
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	13.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.			
RESULTS			
PPV =	0.237	IN/SEC	OUTPUT IN BLUE

GROUNDBORNE VIBRATION ANALYSIS			
Project:	19747 Olive Grove Residential		Date: 8/5/24
Source:	Vibratory Roller		
Scenario:	With BMPs		
Location:	Residential to South		
Address:			
PPV = PPVref(25/D)^n (in/sec)			
INPUT			
Equipment =	1	Vibratory Roller	INPUT SECTION IN GREEN
Type			
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	23.00	Distance from Equipment to Receiver (ft)	
n =	1.50	Vibration attenuation rate through the ground	
Note: Based on reference equations from the Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020, pg 37.			
RESULTS			
PPV =	0.238	IN/SEC	OUTPUT IN BLUE