

APPENDIX F

Acoustical Analysis Report

This document is designed for double-sided printing to conserve natural resources.

NOISE AND VIBRATION ASSESSMENT

Chick-fil-A West 13th & Centre City Project

Escondido, California

For:

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By:

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July 22, 2024

JN 196051

MEMORANDUM

To: Ed Hale, Senior Development Director, 4G Development and Consulting, Inc.

From: Zhe Chen, Michael Baker International

Date: July 22, 2024

Subject: West 13th & Centre City Chick-fil-A Project – Noise and Vibration Assessment

PURPOSE

The purpose of this technical memorandum is to evaluate potential short- and long-term noise and groundborne vibration impacts resulting from the construction and operation of the West 13th & Centre City Chick-fil-A Project (project), located in the City of Escondido (City), California.

PROJECT LOCATION

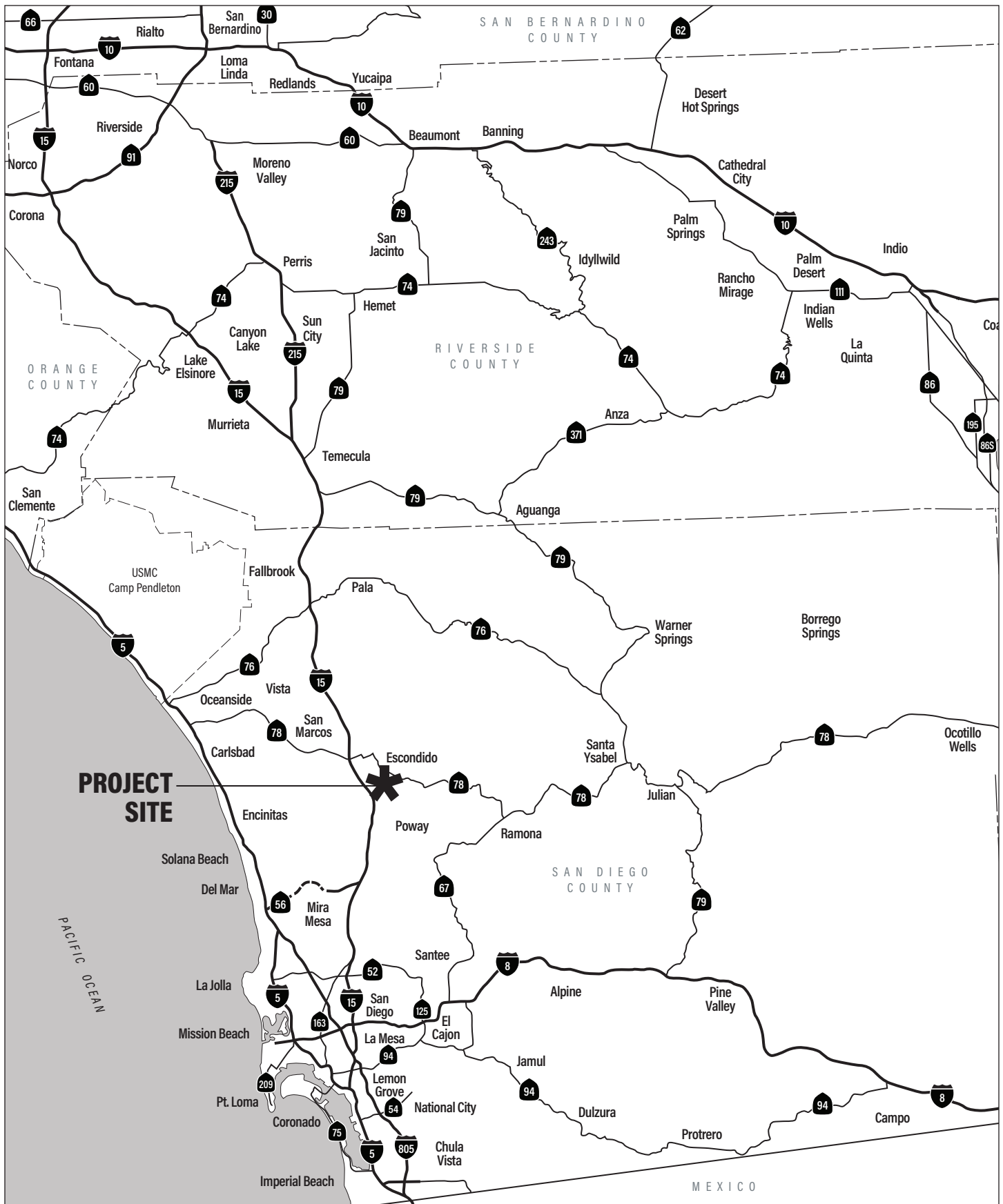
The proposed project is located at the southwest corner of West 13th Avenue and Centre City Parkway, Escondido, California. Regional access is provided by the Escondido Freeway (Interstate 15 [I-15]), State Route 78 (SR-78), and Centre City Parkway. Local access to the site is provided via West 13th Avenue and South Pine Street; refer to Exhibit 1, Regional Vicinity. Surrounding land uses include commercial uses to the north, west, and east, and residential uses to the south.

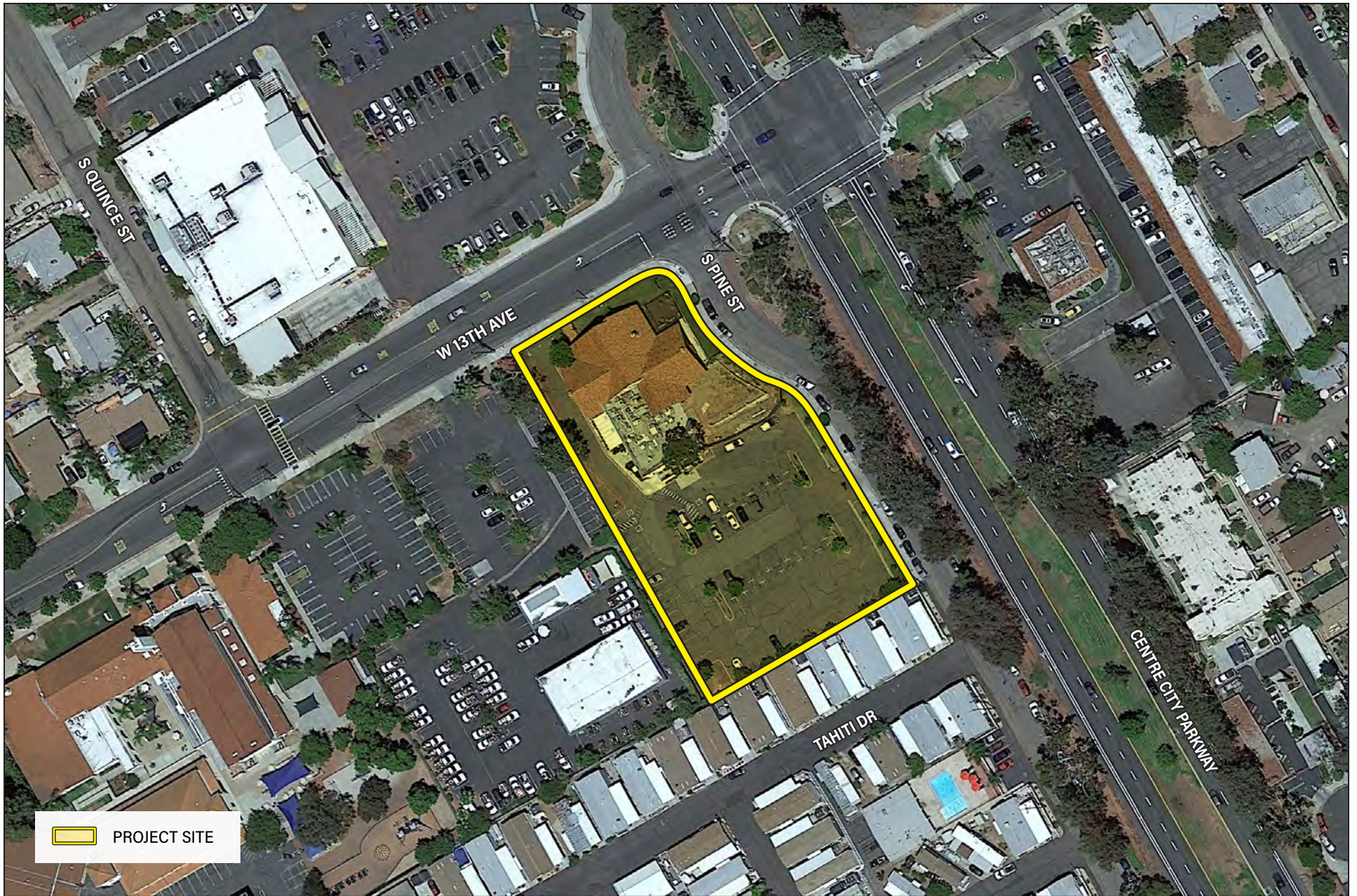
EXISTING SITE CONDITIONS

The approximate 1.4-acre project is located at 515 West 13th Avenue (Assessor's Parcel Numbers [APNs] 236-161-06-00 and -07-00); refer to Exhibit 2, Site Vicinity. The project site consists of a one-story restaurant building and associated surface parking. The project site is currently designated Specific Plan Area – South Centre City SPA #15 in the *City of Escondido General Plan* (General Plan).¹ The project site is located within the South Centre Specific Plan – 13th Street Corners District, and eating establishment is permitted in the area.²

¹ City of Escondido, *Escondido General Plan Land Use and Community Form*, May 2012, <https://www.escondido.org/Data/Sites/1/media/PDFs/Planning/GPUUpdate/GeneralPlanChapterII.pdf?v=2>, accessed June 15, 2023.

² City of Escondido, *South Centre City Specific Plan, Chapter 4: Land Use*, August 2018, <https://www.escondido.org/Data/Sites/1/media/PDFs/Planning/SouthCentreCityAreaPlan/FinalPlan/new/January25/04-LandUse.pdf?v=5>, accessed June 15, 2023.





Source: Google Earth Pro, June 2023



PROJECT DESCRIPTION

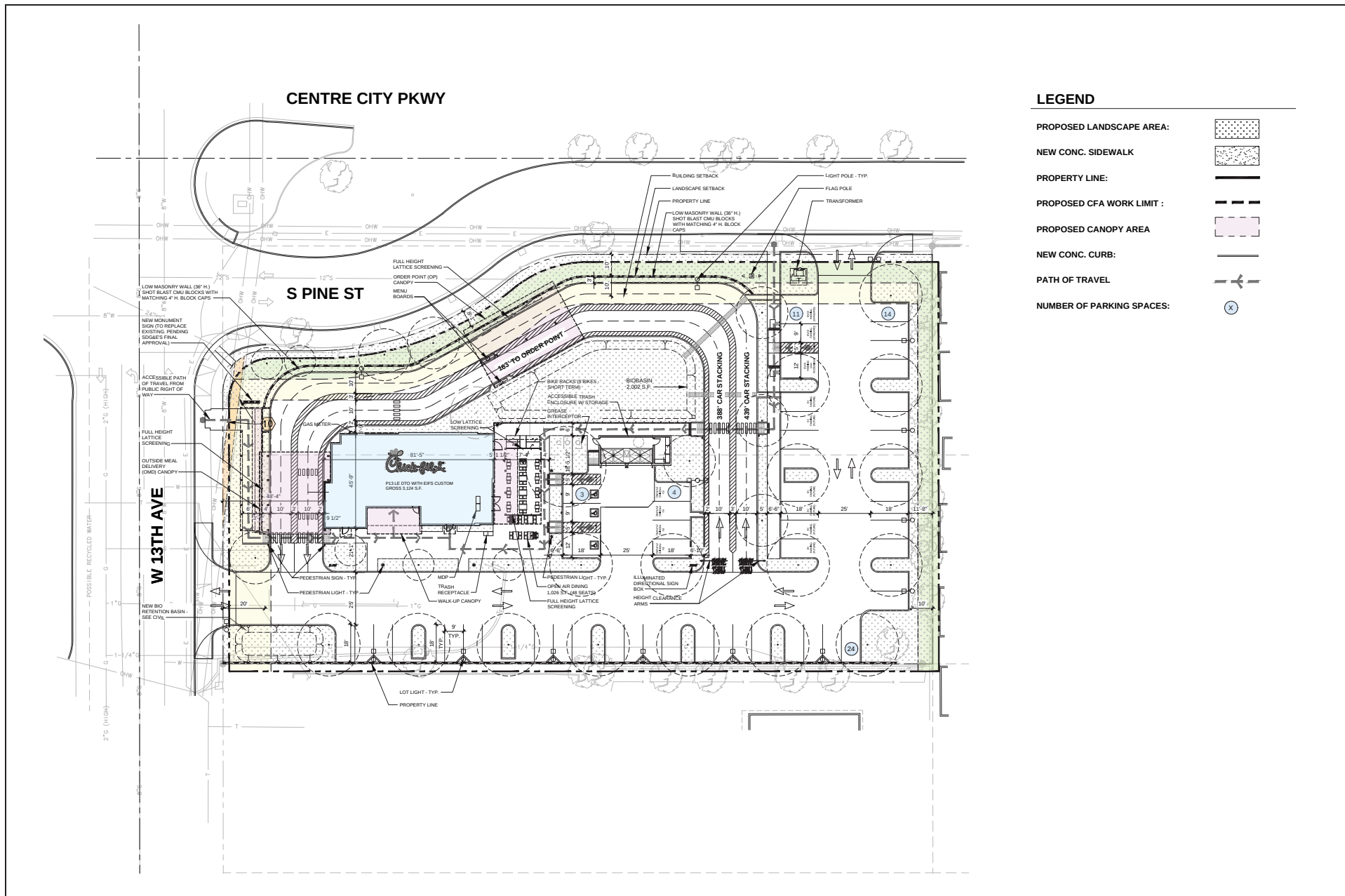
The proposed project would involve the demolition of the existing restaurant building and the construction of a 3124-square-foot Chick-fil-A restaurant building with a dual-lane drive-thru and surface parking lot; refer to [Exhibit 3, Site Plan](#). The restaurant would include a kitchen area, drive-thru windows and service area, outdoor dining areas (48 outdoor seats [including three Americans with Disabilities Act-compliant (ADA) seats]), kitchen area, and service area. The restaurant would also include office space for managerial purposes, a multi-purpose work area, team member room, information technology (IT) closet, two long-term bike racks, and men's and women's restrooms. The project would provide 56 vehicle parking spaces. The proposed hours of operation would be 5:30 a.m. to 11:00 p.m. Monday through Saturday. The restaurant would be closed on Sundays.

FUNDAMENTALS OF SOUND AND ENVIRONMENTAL NOISE

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air and is characterized by both its amplitude and frequency (or pitch). The human ear does not hear all frequencies equally. In particular, the ear deemphasizes low and very high frequencies. To better approximate the sensitivity of human hearing, the A-weighted decibel scale (dBA) has been developed. Decibels are based on the logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner similar to the Richter scale used to measure earthquakes. In terms of human response to noise, a sound 10 dBA higher than another is perceived to be twice as loud and 20 dBA higher is perceived to be four times as loud, and so forth. Everyday sounds normally range from 30 dBA (very quiet) to 100 dBA (very loud). On this scale, the human range of hearing extends from approximately 3 dBA to around 140 dBA.

Noise is generally defined as unwanted or excessive sound, which can vary in intensity by over one million times within the range of human hearing; therefore, a logarithmic scale, known as the decibel scale (dB), is used to quantify sound intensity. Noise can be generated by several sources, including mobile sources such as automobiles, trucks, and airplanes, and stationary sources such as construction sites, machinery, and industrial operations. Noise generated by mobile sources typically attenuates (is reduced) at a rate between 3 dBA and 4.5 dBA per doubling of distance. The rate depends on the ground surface and the number or type of objects between the noise source and the receiver. Hard and flat surfaces, such as concrete or asphalt, have an attenuation rate of 3 dBA per doubling of distance. Soft surfaces, such as uneven or vegetated terrain, have an attenuation rate of about 4.5 dBA per doubling of distance. Noise generated by stationary sources typically attenuates at a rate between 6 dBA and about 7.5 dBA per doubling of distance.

There are several metrics used to characterize community noise exposure, which fluctuate constantly over time. One such metric, the equivalent sound level (L_{eq}), represents a constant sound that, over the specified period, has the same sound energy as the time-varying sound. Noise exposure over a longer period is often evaluated based on the Day-Night Sound Level (L_{dn}). This is a measure of 24-hour noise levels that incorporates a 10-dBA penalty for sounds occurring between 10:00 p.m. and 7:00 a.m. The penalty is intended to reflect the increased human sensitivity to noises occurring during nighttime hours, particularly at times when people are sleeping and there are lower ambient noise conditions. Typical L_{dn} noise levels for light and medium density residential areas range from 55 dBA to 65 dBA.



Source: CRHO Architects, July 2024

Michael Baker
INTERNATIONAL



NOT TO SCALE

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WEST 13TH & CENTRE CITY CHICK-FIL-A PROJECT
NOISE AND VIBRATION ASSESSMENT

Site Plan

Exhibit 3

Similarly, Community Noise Equivalent Level (CNEL) is a measure of 24-hour noise levels that incorporates a 5-dBA penalty for sounds occurring between 7:00 p.m. and 10:00 p.m. and a 10-dBA penalty for sounds occurring between 10:00 p.m. and 7:00 a.m. to account for noise sensitivity in the evening and nighttime, respectively. Noise levels described by L_{dn} and CNEL are similar and usually do not differ by more than 1 dBA. Additionally, the L_{max} , or maximum sound level, describes the highest sound level at a single event in which the sound level changes value as time goes on. Although L_{max} is important in evaluating an interference caused by a single noise event, L_{max} could not be totaled into a one-hour or a 24-hour cumulative measure of impact.

FUNDAMENTALS OF ENVIRONMENTAL GROUNDBORNE VIBRATION

Sources of earth-borne vibrations include natural phenomena (earthquakes, volcanic eruptions, sea waves, landslides, etc.) or man-made causes (explosions, machinery, traffic, trains, construction equipment, etc.). Vibration sources may be continuous (e.g., factory machinery) or transient (e.g., explosions). Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several different methods are typically used to quantify vibration amplitude. One is the peak particle velocity (PPV); another is the root mean square (RMS) velocity. The PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. The RMS velocity is defined as the average of the squared amplitude of the signal. The PPV and RMS vibration velocity amplitudes are used to evaluate human response to vibration.

Table 1, *Human Reaction and Damage to Buildings for Continuous or Frequent Intermittent Vibration Levels*, displays the reactions of people and the effects on buildings produced by continuous vibration levels. The annoyance levels shown in the table should be interpreted with care since vibration may be found to be annoying at much lower levels than those listed, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Low-level vibrations frequently cause irritating secondary vibration, such as a slight rattling of windows, doors, or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage.

Ground vibration can be a concern in instances where buildings shake, and substantial rumblings occur. However, it is unusual for vibration from typical urban sources such as buses and heavy trucks to be perceptible. Common sources for groundborne vibration are planes, trains, and construction activities such as pile driving and vibratory compacting activities which require the use of heavy-duty earth moving equipment. For the purposes of this analysis, a PPV descriptor with units of inches per second (in/sec) is used to evaluate construction-generated vibration for building damage and human complaints.

Table 1
Human Reaction and Damage to Buildings for Continuous or Frequent Intermittent Vibration Levels

Peak Particle Velocity (inches/second)	Approximate Vibration Velocity Level (VdB)	Human Reaction	Effect on Buildings
0.006–0.019	64–74	Range of threshold of perception.	Vibrations unlikely to cause damage of any type.
0.08	87	Vibrations readily perceptible.	Recommended upper level to which ruins and ancient monuments should be subjected.
0.1	92	Level at which continuous vibrations may begin to annoy people, particularly those involved in vibration sensitive activities.	Virtually no risk of architectural damage to normal buildings.
0.2	94	Vibrations may begin to annoy people in buildings.	Threshold at which there is a risk of architectural damage to normal dwellings.
0.4–0.6	98–104	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges.	Architectural damage and possibly minor structural damage.

Source: California Department of Transportation, *Transportation Related Earthborne Vibrations*, 2002.

EXISTING NOISE SETTING

Noise Sensitive Receptors

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Additional land uses such as parks, historic sites, cemeteries, and recreation areas are considered sensitive to increases in exterior noise levels. Schools, churches, hotels, libraries, and other places where low interior noise levels are essential are also considered noise-sensitive land uses.

The nearest sensitive receptors to the project site are mobile home residences adjoining the project site to the south.

Existing Stationary Noise Levels

The primary sources of stationary noise in the project vicinity are urban-related activities (i.e., mechanical equipment and parking areas). The noise associated with these sources may represent a single-event noise occurrence, short-term, or long-term/continuous noise.

Existing Roadway Noise Levels

Most of the existing noise in the project area is generated from traffic along surrounding roadways including West 13th Avenue and Centre City Parkway.

Existing Ambient Noise Levels

To quantify existing ambient noise levels near the existing sensitive receptors, Michael Baker International conducted three short-term noise measurements on June 22, 2023. The noise measurement locations are shown in [Exhibit 4, Noise Measurement Locations](#), and were representative of typical existing noise exposure within the nearest sensitive receptors to the project site. The 10-minute measurements were taken between 10:00 a.m. and 11:00 a.m. Short-term (L_{eq}) measurements are considered representative of the noise levels throughout the day. The noise measurements were taken during “off-peak” (9:00 a.m. through 3:00 p.m.) traffic noise hours as this provides a more conservative baseline. During rush hour traffic, vehicle speeds and heavy truck volumes are often low. Free-flowing traffic conditions just before or after rush hour often yield higher noise levels.³ The noise levels measured near the project site is identified in [Table 2, Noise Measurements](#).

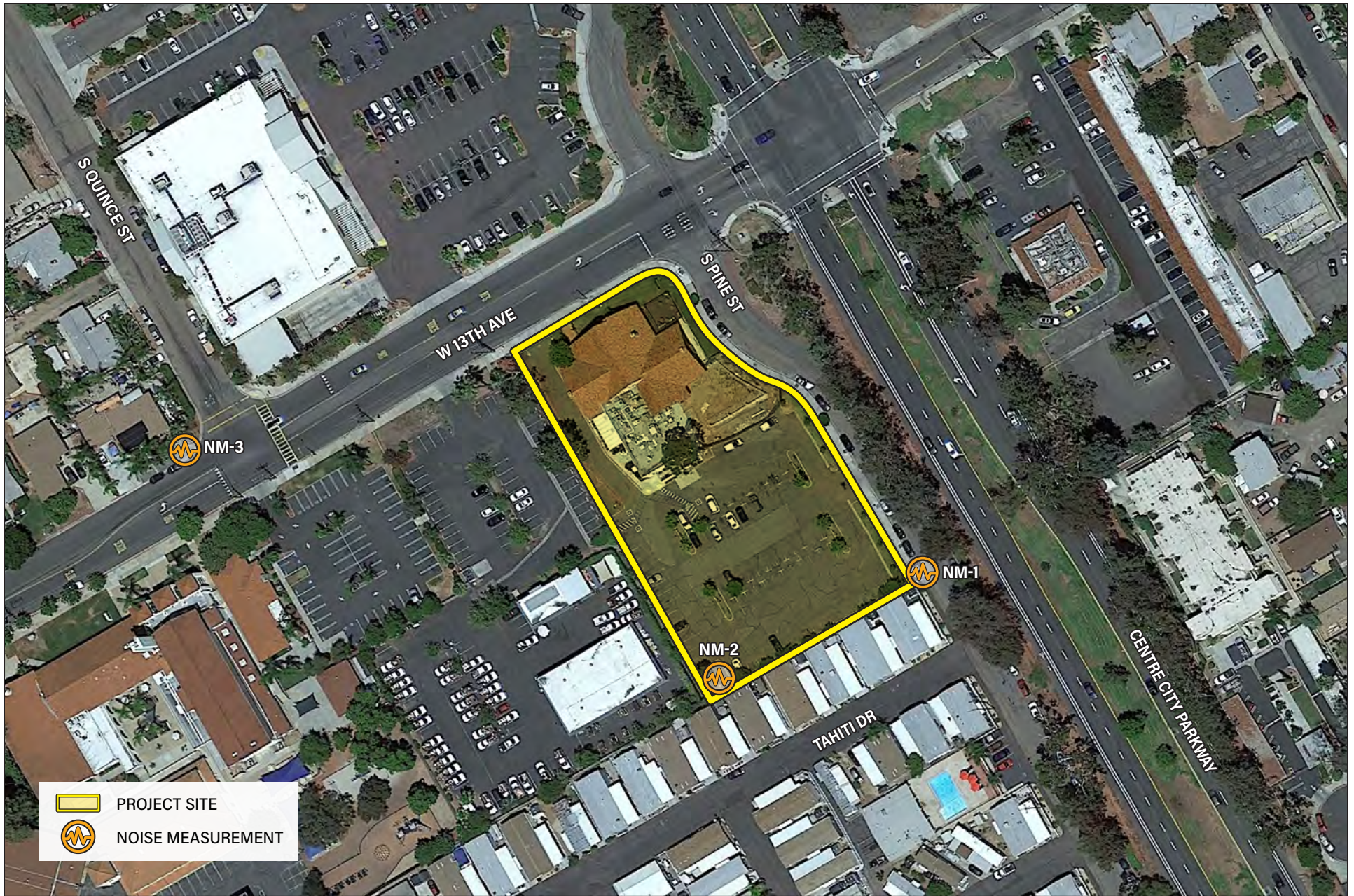
Table 2
Noise Measurements

Site No.	Location	L_{eq} (dBA)	L_{max} (dBA)	L_{min} (dBA)	Start Time
1	Northwest corner of Westwinds Mobile Home Park	62.5	78.9	43.9	10:03 a.m.
2	Southeast corner of existing surface parking lot within the project site; West of 555 West 13th Avenue	51.1	63.7	39.8	10:17 a.m.
3	Northeast corner of South Quince Street and West 13th Avenue Intersection	58.7	79.3	42.5	10:31 a.m.

Source: Michael Baker International, June 22, 2023. Refer to [Appendix A, Noise Data](#), for the results of the field measurements.

Meteorological conditions were sunny, mild temperatures (64 degrees Fahrenheit [°F]), and light wind speeds (approximately 5 miles per hour). The main source of noise includes traffic noise along the surrounding roadways. Noise monitoring equipment used for the ambient noise survey consisted of a Brüel & Kjær Hand-held Analyzer Type 2250 equipped with a Type 4189 pre-polarized microphone. The monitoring equipment complies with applicable requirements of the American National Standards Institute (ANSI) for Type I (precision) sound level meters. Refer to [Appendix A, Noise Data](#), for the results of the field measurement.

³ California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013.



Source: Google Earth Pro, June 2023

REGULATORY SETTING

State

California Noise Control Act of 1973

Sections 46000 through 46080 of the California Health and Safety Code, known as the California Noise Control Act, find that excessive noise is a serious hazard to public health and welfare and that exposure to certain levels of noise can result in physiological, psychological, and economic damage. The act also finds that there is a continuous and increasing bombardment of noise in urban, suburban, and rural areas. The California Noise Control Act declares that the State of California has a responsibility to protect the health and welfare of its citizens by the control, prevention, and abatement of noise. It is the policy of the State to provide an environment for all Californians that is free from noise that jeopardizes their health or welfare.

Local

City of Escondido General Plan

California State Government Code Section 65302g mandates that noise elements be included as a part of city general plans and that cities adopt comprehensive noise ordinances. The *City of Escondido General Plan* (General Plan) Chapter IV Community Protection, Section G Noise addresses noise mitigation regulations, strategies, and programs and delineates Federal, State, and City jurisdiction relative to rail, automotive, aircraft, and nuisance noise.⁴ Table 3, *City of Escondido Land Use Compatibility Matrix*, presents the City's Community Noise and Land Use Compatibility matrix and presents the land use compatibility chart for community noise adopted by the City through its General Plan. This table provides urban planners with a tool to gauge the compatibility of new land uses relative to existing and future exterior noise exposure levels.

Table 3
City of Escondido Land Use Compatibility Matrix

Land Use Category	Community Noise Exposure (L _{dn} or CNEL, dBA)			
	Clearly Acceptable	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable
Residential – Single Family, Duplex, Mobile Home	50 – 60	60 – 70	70 – 75	75 – 85
Residential – Multi-Family, Residential Mixed Use	50 – 65	60 – 70	70 – 75	70 – 85
Transient Lodging, Motels, Hotels	50 – 65	60 – 70	70 – 80	80 – 85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 – 65	60 – 70	70 – 80	80 – 85
Auditoriums, Concert Halls, Amphitheaters	NA	50 – 70	65 – 85	NA
Sports Arena, Outdoor Spectator Sports	NA	50 – 75	70 – 85	NA
Playgrounds, Parks	50 – 70	NA	67.5 – 75	72.5 – 85
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 – 75	NA	70 – 80	80 – 85
Office Buildings, Business Commercial, Professional	50 – 70	67.5 – 77.5	75 – 85	NA
Industrial, Manufacturing, Utilities, Agriculture	50 – 75	70 – 80	80 – 85	NA
L _{dn} = Day-Night Sound Level; CNEL = community noise equivalent level; dBA = A-weighted decibel scale; NA = not applicable				
Source: City of Escondido, <i>City of Escondido General Plan Chapter IV Community Protection, Section G Noise</i> , Figure VI-12, Land Use Noise Exposure Levels, May 2012.				

⁴ City of Escondido, *City of Escondido General Plan Chapter IV Community Protection, Section G Noise*, May 2012, <https://www.escondido.org/Data/Sites/1/media/PDFs/Planning/GPUupdate/GeneralPlanChapterVI.pdf>, accessed June 15, 2023.

The General Plan also outlines the objectives and policies for noise control within the City. The following goal and policies are applicable to the project:

Goal 5: Protection of the community from excessive noise exposure.

Noise Policy 5.1: Require development to meet acceptable exterior noise level standards as established in Figure VI-12 ([Table 3](#)), and use the future noise contour map (Figure VI-17) as a guide for evaluating the compatibility of new noise sensitive uses with projected noise levels.

Noise Policy 5.2: Apply a CNEL of 60 dB or less for single family and 65 dB or less for multi-family as goals where outdoor use is a major consideration (back yards and single-family housing developments, and recreation areas in multifamily housing developments) as discussed in Figure VI-13 (Noise Measurement Guidelines), and recognize that such levels may not necessarily be achievable in all residential areas.

Noise Policy 5.3: Require noise attenuation for outdoor spaces in all developments where projected incremental exterior noise levels exceed those shown in Figure VI-14 ([Table 4](#), *City of Escondido Exterior Noise Standards*).

Table 4
City of Escondido Exterior Noise Standards

Residences and Buildings Where People Normally Sleep ¹		Institutional Land Uses with Primarily Daytime and Evening Uses ²	
Existing L _{dn}	Allowable Noise Increment	Existing Peak Hour L _{eq}	Allowable Noise Increment
45	8	45	12
50	5	50	9
55	3	55	6
60	2	60	5
65	1	65	3
70	1	70	3
75	0	75	1
80	0	80	0

L_{dn} = Day-Night Sound Level; L_{eq} = equivalent sound level
Notes: Noise levels are measured at the property line of the noise-sensitive use.
1. This category includes homes, hospitals, and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.
2. This category includes schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material.
Source: City of Escondido, *City of Escondido General Plan Chapter IV Community Protection, Section G Noise*, Figure VI-14, Exterior Incremental Environmental Noise Impact Standards for Noise-Sensitive Uses (dBA), May 2012.

Noise Policy 5.5: Require construction projects and new development to ensure acceptable vibration levels at nearby noise-sensitive uses based on Federal Transit Administrator criteria.

Noise Policy 5.6: Require the preparation of noise studies, as deemed necessary by the Planning Department, to analyze potential noise impacts associated with new development which could significantly alter existing noise levels in accordance with provisions outlined in Figure VI-14 ([Table 4](#)).

Noise Policy 5.7: Encourage use of site and building design, noise barriers, and construction methods as outlined in Figure VI-15 (Noise Reduction Strategies) to minimize impacts on and from new development.

Noise Policy 5.10: Require development projects that are subject to discretionary approval to assess potential construction noise impacts on nearby sensitive uses and to minimize impacts on these uses, to the extent feasible.

Municipal Code Noise Ordinance

The City regulates stationary source noise in Municipal Code Article 12, Noise Abatement and Control.⁵ The following noise regulations are applicable to the project:

Sec. 17-229. Sound level limits.

(a) Unless a variance has been applied for and granted pursuant to this article, it shall be unlawful for any person to cause or allow the creation of any noise to the extent that the one-hour average sound level, at any point on or beyond the boundaries of the property on which the sound is produced, exceeds the applicable limits set forth in the following table (*Table 5, City of Escondido Noise Level Limits*), except that construction noise level limits shall be governed by Section 17-234 of this article.

Table 5
City of Escondido Noise Level Limits

Zone	Time	Applicable Limit One-hour Average Sound Level (Decibels)
Residential zones	7 a.m. to 10 p.m.	55
	10 p.m. to 7 a.m.	45
Multi-residential zones	7 a.m. to 10 p.m.	55
	10 p.m. to 7 a.m.	50
Commercial zones	7 a.m. to 10 p.m.	60
	10 p.m. to 7 a.m.	55
Light industrial/Industrial park zones	Anytime	70
General industrial zones	Anytime	75
Source: City of Escondido, <i>City of Escondido Municipal Code Article 12, Noise Abatement and Control, Section 17-229, Sound Level Limits.</i>		

Sec. 17-234. Construction equipment.

Except for emergency work, it shall be unlawful for any person, including the City of Escondido, to operate construction equipment as follows:

(a) It shall be unlawful for any person, including the City of Escondido, to operate construction equipment at any construction site, except on Monday through Friday during a week between the hours of seven (7) a.m. and six (6) p.m. and on Saturdays between the hours of nine (9) a.m. and five (5) p.m., and provided that the operation of such construction equipment complies with the requirements of subsection (d) of this section.

⁵ City of Escondido, *Article 12, Noise Abatement and Control.*

(b) It shall be unlawful for any person, including the City of Escondido, to operate construction equipment at any construction site on Sundays and on days designated by the president, governor or city council as public holidays.

(d) No construction equipment or combination of equipment, regardless of age or date of acquisition, shall be operated so as to cause noise in excess of a one-hour average sound level limit of seventy-five (75) dB at any time, unless a variance has been obtained in advance from the city manager.

(e) Persons engaged in construction for profit or as a business shall post signs at conspicuous places on a construction site, indicating hours of work as prescribed by this article or authorized by permit and the applicable noise level limits.

Sec. 17-238. Grading.

(a) It shall be unlawful for any person, including the City of Escondido, to do any authorized grading at any construction site, except on Mondays through Fridays during a week between the hours of seven (7) a.m. and six (6) p.m. and, provided a variance has been obtained in advance from the city manager, on Saturdays from ten (10) a.m. to five (5) p.m.

(b) For the purpose of this section, “grading” shall include but not be limited to compacting, drilling, rock crushing or splitting, bulldozing, clearing, dredging, digging, filling and blasting.

(c) In addition, any equipment used for grading shall not be operated so as to cause noise in excess of a one hour sound level limit of seventy-five (75) dB at any time when measured at or within the property lines of any property which is developed and used in whole or in part for residential purposes, unless a variance has been obtained in advance from the city manager.

CALIFORNIA ENVIRONMENTAL QUALITY ACT THRESHOLDS

The environmental analysis in this memorandum is patterned after the Initial Study Checklist recommended by the *CEQA Guidelines*. The issues presented in the Initial Study Checklist have been utilized as thresholds of significance in this section. Accordingly, a project may have a significant adverse impact related to noise and vibration if it would do any of the following:

- Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies (refer to Impact NOI-1);
- Generation of excessive groundborne vibration or groundborne noise levels (refer to Impact NOI-2); and/or
- For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels (refer to Impact NOI-3).

IMPACT ANALYSIS

NOI-1 Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Level of Significance: Less Than Significant Impact With Mitigation Incorporated.

Construction Noise Impacts

Construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g., grading, paving, building construction). Noise generated by construction equipment, including graders and concrete saws, can reach high levels. During construction, exterior noise levels could affect the residential neighborhoods in the vicinity of the construction site. Construction of the proposed project would include demolition, grading, building construction, paving, and architectural coating phases.

Construction noise is difficult to quantify because of the many variables involved, including the specific equipment types, size of equipment used, percentage of time each piece is in operation, condition of each piece of equipment, and number of pieces that would operate on the site. Construction equipment produce maximum noise levels when equipment is operating under full power conditions (i.e., the equipment engine at maximum speed). However, equipment used on construction sites typically operates under less than full power conditions, or part power. To more accurately characterize construction-period noise levels, the average (L_{eq}) noise level associated with each construction stage is calculated based on the quantity, type, and usage factors for each type of equipment that would be used during each construction stage. These noise levels are typically associated with multiple pieces of equipment simultaneously operating on part power.

The loudest construction phase would be the grading and paving phases as heavy-duty construction equipment may operate up to the closest sensitive receptors property lines (i.e., approximately 10 feet from the nearest residential property lines). Demolition, building construction, and architectural coating phases would occur in the northern portion of the project site where the existing structure to be demolished and the proposed building to be constructed are located. The estimated construction noise levels at the nearest noise-sensitive receptors are presented in Table 6, Construction Noise Levels at Adjacent Residential Receptors. To present a conservative impact analysis, the estimated noise levels were calculated for a scenario in which all heavy construction equipment were assumed to operate simultaneously and be located at the construction area nearest to the affected receptors. In addition, during the grading and paving phases when the construction activities would occur across the entire project site, estimated noise levels were also calculated from the center of the project site. According to the General Noise Assessment methodology prescribed in the *FTA Transit Noise and Vibration Impact Assessment Manual*, for a large facility spreading out over considerable area with various noise sources with different noise levels, noise can be considered as concentrated at the center of the site. The geographic center of the project site is approximately 170 feet from the closest sensitive receptors to the south.

Table 6
Construction Noise Levels at Adjacent Residential Receptors

Phase	Distance to Nearest Sensitive Receptor (feet)	Estimated Exterior Construction Noise Level (dBA L _{eq}) ¹	Estimated Exterior Construction Noise Level at 170 feet (Center of Project Site) (dBA L _{eq})
Demolition	185	73.9	-
Grading	10	98.0	73.4
Building Construction	180	70.5	-
Paving	10	98.9	74.3
Architectural Coating	180	62.6	-
Notes:			
1. These noise levels conservatively assume the simultaneous operation of all heavy construction equipment at the same precise location. Modeled heavy construction equipment include concrete saw, dozer, and loaders during the demolition phase, grader, dozer, and loaders during the grading phase, crane, forklift, generator, loader, and welders during the building construction phase, cement and mortar mixer, paver, paving equipment, roller, and loader during the paving phase, and air compressor during the architectural coating phase.			
Source: Federal Highway Administration, <i>Roadway Construction Noise Model (RCNM)</i> , 2006 (see Appendix A).			

It should be acknowledged that the project would adhere to the City's Noise Ordinance governing hours of construction and grading (Municipal Code Section 17-234 and Section 17-238). In accordance with these regulations, grading activities would be limited to 7:00 a.m. to 6:00 p.m. Monday through Friday, and construction activities would be limited to 7:00 a.m. to 6:00 p.m. Monday through Friday and 9:00 a.m. to 5:00 p.m. on Saturday. Grading and construction activities are not allowed on Sundays or holidays.

As depicted in [Table 6](#), adjacent residential receptors could be exposed to temporary and intermittent noise levels ranging from 62.6 to 98.9 dBA L_{eq}, which would exceed the City's 75 dBA L_{eq} threshold during construction and grading activities. However, noise levels during the grading and paving phases from the center of project site would be up to 74.3 dBA L_{eq} and would not exceed the City's 75 dBA L_{eq} threshold at nearest sensitive receptors. As such, construction noise would not exceed the City's threshold for the most time. For the instances when operation of construction equipment is sufficiently proximate to cause activity noise levels to exceed 75 dBA hourly L_{eq}, Mitigation Measure NOI-1 shall be implemented to reduce the noise levels. Mitigation Measure NOI-1 would include the installation of mufflers and noise attenuating devices on construction equipment, the designation of a "Noise Disturbance Coordinator", the orientation of stationary construction equipment away from nearby sensitive receivers, the adherence to permitted construction hours, and the use of a temporary noise barrier or enclosure along the southern boundary of the project site to break the line-of-sight between the construction equipment and the adjacent residences. With the implementation of Mitigation Measure NOI-1, construction noise impacts would be reduced to less than significant level.

Long-Term Operational Noise Impacts

Off-Site Mobile Noise

Future traffic generated by the proposed project would result in some additional traffic on adjacent roadways, thereby potentially increasing vehicular noise in the vicinity of existing and proposed land uses. The most prominent source of mobile traffic noise in the project vicinity is along West 13th Avenue and Centre City Parkway.

Based on *Local Mobility Analysis Chick-fil-A (#5524), 13th and Centre City* (Transportation Analysis), the proposed project would generate approximately 2,031 daily trips.⁶ Additionally, it should be noted that the existing restaurant is currently closed and as a conservative estimate, the Transportation Analysis does not take trip credits from existing uses. According to Caltrans, a doubling of traffic (100 percent increase) on a roadway would result in a perceptible increase in traffic noise levels (3 dBA). Per Table 8-2 of the Transportation Analysis prepared for the project, the proposed Chick-fil-A restaurant would not double current traffic volumes along West 13th Avenue. Therefore, the project would not generate a significant number of traffic to surrounding roadways. As such, the project-related increase in traffic volume along surrounding roadways would not result in a perceptible increase traffic noise level (less than 100 percent). Thus, less than significant impacts would occur in this regard.

Stationary Noise

Stationary noise sources associated with the project would include the operation of mechanical equipment, parking activities, slow-moving trucks, outdoor dining areas, and drive-thru operations.

Mechanical Equipment Noise

Heating, ventilation, and air conditioning (HVAC) units would be installed on the roof of the proposed building. Typically, mechanical equipment noise is approximately 66 dBA at 3 feet from the source.⁷ Based upon the Inverse Square Law, sound levels decrease by 6 dBA for each doubling of distance from the source.⁸ The nearest sensitive receptors to the project site are mobile home residences adjoining the project site to the south, approximately 220 feet from the closest proposed rooftop HVAC units. Noise from the proposed HVAC units would be approximately 29 dBA at 220 feet, which would not exceed the City's Municipal Code noise standards of 55 dBA L_{eq} during daytime and 45 dBA L_{eq} during nighttime for single-family residences. In addition, the proposed HVAC units noise would be significantly lower than existing ambient noise levels and therefore would not be audible; refer to [Table 2](#). Thus, the proposed project would not result in significant noise impacts from HVAC units to the nearest sensitive receptors. Impacts in this regard would be less than significant.

Outdoor Dining Areas

The project would include outdoor dining areas. The outdoor dining areas have the potential to be accessed by groups of people intermittently. Noise generated by groups of people (i.e., crowds) is dependent on several factors including vocal effort, impulsiveness, and the random orientation of the crowd members. Crowd noise is estimated at 60 dBA at one meter (3.28 feet) away for raised normal speaking.⁹ This noise level would have a +5 dBA adjustment for the impulsiveness of the noise source, and a -3 dBA adjustment for the random orientation of the crowd members.¹⁰ Therefore, crowd noise would be approximately 62 dBA at one meter from the source (i.e., the outdoor dining areas).

The closest sensitive receptors are mobile home residences adjoining the project site to the south, approximately 220 feet from the closest outdoor dining area located on the southern side of the proposed

⁶ Linscot Law and Greenspan Engineers, *Local Mobility Analysis Chick-fil-A (#5524), 13th and Centre City*, dated July 26, 2024.

⁷ Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, June 26, 2015.

⁸ Cyril M. Harris, *Noise Control in Buildings*, 1994.

⁹ M.J. Hayne, et al, *Prediction of Crowd Noise*, Acoustics, November 2006.

¹⁰ Ibid.

restaurant building. At the distance of 220 feet, crowd noise would be reduced to approximately 25 dBA, which would not exceed the City's Municipal Code noise standards of 55 dBA L_{eq} during daytime for single-family residences. In addition, the outdoor dining areas noise would be significantly lower than existing ambient noise levels and therefore would not be audible; refer to [Table 2](#). As such, the proposed outdoor dining areas would not generate noise levels that would exceed the City's noise standards at the closest sensitive receptors. Impacts would be less than significant in this regard.

Drive-Thru Operations

The project proposes a restaurant with a two-lane drive-thru. Noise levels from drive-thru operations would be primarily from the drive-thru speakerphone, located on the eastern portion of the project site, oriented towards the south. According to the Drive-Thru Sound Levels white paper prepared by HM Electronics, the typical noise level associated with active drive-thru operations is 54 dBA L_{eq} at a distance of 32 feet.¹¹ The closest sensitive receptor to the project site are mobile home residences adjoining the project site to the south, approximately 210 feet from the proposed drive-thru speakerphone. At a distance of 210 feet, noise level from drive-thru operations would be reduced to 38 dBA L_{eq} . Therefore, the proposed drive-thru operations would not exceed the City's Municipal Code noise standards of 55 dBA L_{eq} during daytime for single-family residences. In addition, the drive-thru operations noise would be significantly lower than existing ambient noise levels and therefore would not be audible; refer to [Table 2](#). Thus, the proposed project would not result in significant noise impacts from drive-thru operations to the nearest sensitive receptor. Impacts in this regard would be less than significant.

Mitigation Measures:

- NOI-1 To reduce noise levels during construction activities, the Applicant must demonstrate, to the satisfaction of the City of Escondido Community Development Department, that the project complies with the following:
- Construction contracts must specify that all construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers and other state-required noise attenuation devices.
 - A sign, legible at a distance of 50 feet, shall be posted at the project construction site providing a contact name and a telephone number where residents can inquire about the construction process and register complaints. This sign shall indicate the dates and duration of construction activities. In conjunction with this required posting, a noise disturbance coordinator shall be identified to address construction noise concerns received. The coordinator shall be responsible for responding to any local complaints about construction noise. When a complaint is received, the disturbance coordinator shall notify the City within 24 hours of the complaint and determine the cause of the noise complaint (starting too early, malfunctioning muffler, etc.) and shall implement reasonable measures to resolve the complaint, as deemed acceptable by the City. All signs posted at the construction site shall include the contact name and the telephone number for the noise disturbance coordinator.

¹¹ HM Electronics, Inc., *Drive-Thru Sound Levels*, <https://www.nhwnc.net/wp-content/uploads/2017/05/Drive-Through-Sound-Levels.pdf>, accessed June 22, 2023.

- During construction, stationary construction equipment shall be placed such that emitted noise is directed away from sensitive noise receivers.
- Per Section 17-234 and Section 17-238 of the Municipal Code, grading activities shall be limited to the hours between 7:00 a.m. and 6:00 p.m. Monday through Friday, and construction activities shall be limited to the hours between 7:00 a.m. and 6:00 p.m. Monday through Friday and between 9:00 a.m. and 5:00 p.m. on Saturday. All construction activities shall be prohibited on Sundays or holidays.
- In order to reduce construction noise, a temporary noise barrier or enclosure shall be used along the southern property line to break the line-of-sight between the construction equipment and the adjacent residences. The temporary noise barrier shall have a sound transmission class (STC) of at least 10 or greater in accordance with American Society for Testing and Materials Test Method E90, or at least 2 pounds per square foot to ensure adequate transmission loss characteristics. In order to achieve this, the barrier may consist of 3-inch steel tubular framing, welded joints, a layer of 18-ounce tarp, a 2-inch-thick fiberglass blanket, a half-inch-thick weatherwood asphalt sheathing, and 7/16-inch sturdy board siding with a heavy duct seal around the perimeter. The length, height, and location of noise control barrier walls shall be adequate to assure proper acoustical performance. In addition, to avoid objectionable noise reflections, the source side of the noise barrier shall be lined with an acoustic absorption material meeting a noise reduction coefficient rating of 0.70 or greater in accordance with American Society for Testing and Materials Test Method C423. All noise control barrier walls shall be designed to preclude structural failure due to such factors as winds, shear, shallow soil failure, earthquakes, and erosion.

NOI-2 Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Level of Significance: Less Than Significant Impact.

Project construction can generate varying degrees of groundborne vibration, depending on the construction procedure and the construction equipment used. Operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of the construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver building(s). The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, to slight damage at the highest levels. Groundborne vibrations from construction activities rarely reach levels that damage structures.

The Caltrans *Transportation and Construction Vibration Manual* identifies various vibration damage criteria for different building classes. This evaluation uses the Caltrans architectural damage criterion for continuous vibrations at residential buildings of 0.5 inch-per-second (inch/second) PPV. The types of construction vibration impacts include human annoyance and building damage. Annoyance is assessed based on levels of perception, with a PPV of 0.01 inch/second being considered “barely perceptible,” 0.04 inch/second as “distinctly perceptible,” 0.1 inch/second as “strongly perceptible,” and 0.4 inch/second as

“severe.” Human annoyance occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time.

Groundborne vibration levels associated with representative construction equipment are summarized in Table 7, *Typical Vibration Levels for Construction Equipment*.

Table 7
Typical Vibration Levels for Construction Equipment

Equipment	Reference peak particle velocity at 25 feet (inches-per-second)	Approximate peak particle velocity at 15 feet (inches-per-second) ¹
Vibratory roller	0.210	0.452
Large bulldozer	0.089	0.352
Loaded trucks	0.076	0.300
Small bulldozer	0.003	0.012
Notes: 1. Calculated using the following formula: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$ where: PPV (equip) = the peak particle velocity in inch-per-second of the equipment adjusted for the distance PPV (ref) = the reference vibration level in inch-per-second from Table 7-4 of the FTA <i>Transit Noise and Vibration Impact Assessment Manual</i> D = the distance from the equipment to the receiver Source: Federal Transit Administration, <i>Transit Noise and Vibration Impact Assessment Manual</i> , September 2018.		

The closest structures from the project site are mobile home residential buildings located approximately 5 feet to the south of the project boundary. However, the project would include a 10-foot setback along the southern site boundary. As indicated in Table 7, vibration velocities range between 0.012 inch/second and 0.452 inch/second at 15 feet, which would not cause vibration levels to exceed the 0.5 inch/second threshold at the closest residential structures. Therefore, impacts from vibration would be less than significant.

Mitigation Measures: No mitigation is required.

NOI-3 For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Level of Significance: Less Than Significant Impact.

The nearest public use airport to the project site is the Ramona Airport which lies approximately 10.7 miles to the southeast of the project site. This airport is open to the public for use and owned and operated by the County of San Diego. The project site is not in the vicinity of a private airstrip. Therefore, the impacts would be less than significant.

Mitigation Measures: No mitigation is required.

REFERENCES

Documents

1. California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013.
2. California Department of Transportation, *Transportation Related Earthborne Vibrations*, 2002.
3. City of Escondido, *Escondido General Plan Land Use and Community Form*, May 2012, <https://www.escondido.org/Data/Sites/1/media/PDFs/Planning/GPUpdate/GeneralPlanChapterII.pdf?v=2>, accessed June 15, 2023.
4. City of Escondido, *South Centre City Specific Plan, Chapter 4: Land Use*, August 2018, <https://www.escondido.org/Data/Sites/1/media/PDFs/Planning/SouthCentreCityAreaPlan/FinalPlan/new/January25/04-LandUse.pdf?v=5>, accessed June 15, 2023.
5. City of Escondido, *City of Escondido General Plan Chapter IV Community Protection, Section G Noise*, May 2012, <https://www.escondido.org/Data/Sites/1/media/PDFs/Planning/GPUpdate/GeneralPlanChapterVI.pdf>, accessed June 15, 2023.
6. City of Escondido, *Municipal Code Article 12, Noise Abatement and Control*.
7. Cyril M. Harris, *Noise Control in Buildings*, 1994.
8. Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, June 26, 2015.
9. Federal Highway Administration, *Roadway Construction Noise Model (FHWA-HEP-05-054)*, January 2006.
10. Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, September 2018.
11. Institute of Transportation Engineers, *Trip Generation Manual, 10th Edition*, 2017.
12. Kariel, H. G., *Noise in Rural Recreational Environments*, Canadian Acoustics 19(5), 3-10, 1991.
13. Linscot Law and Greenspan Engineers, *Local Mobility Analysis Chick-fil-A (#5524), 13th and Centre City*, dated July 26, 2024.

Websites / Programs

1. Google Earth, 2023.

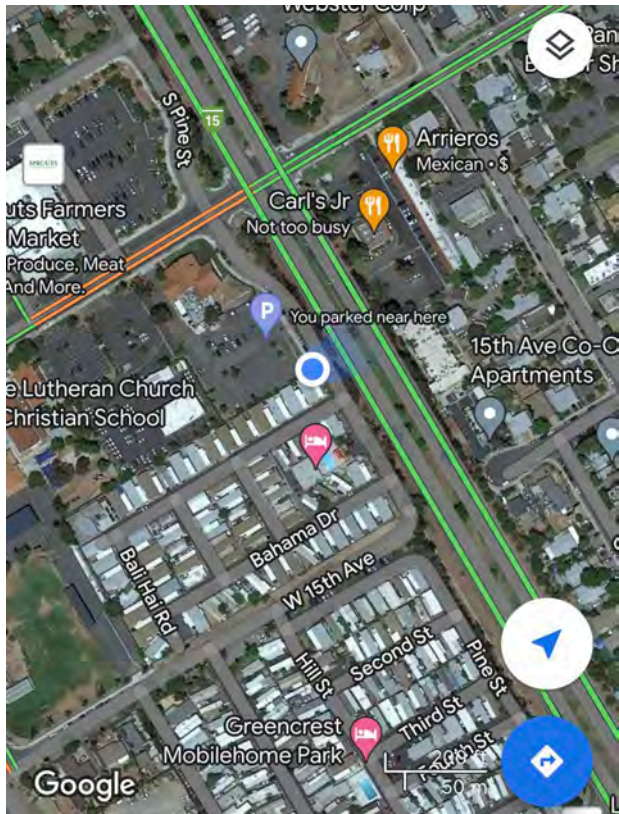
Appendix A

Noise Data

Site Number: NM-1		
Recorded By: Winnie Woo, Darshan Shivaiah		
Job Number: 196051 – Escondido 13th & Centre City CFA		
Date: 6/22/2023		
Time: 10:03 A.M.		
Location: Northwest corner of Westwinds Mobilehome Park		
Source of Ambient Noise: Traffic along Centre City Parkway		
Noise Data		
L _{eq} (dB)	L _{max} (dB)	L _{min} (dB)
62.5	78.9	43.9

Equipment						
Category	Type	Vendor	Model	Serial No.	Cert. Date	Note
Sound	Sound Level Meter	Brüel & Kjær	2250	3011133	06/04/2023	
	Microphone	Brüel & Kjær	4189	3086765	06/04/2023	
	Preamplifier	Brüel & Kjær	ZC 0032	25380	06/04/2023	
	Calibrator	Brüel & Kjær	4231	2545667	06/04/2023	
Weather Data						
Est.	Duration: 10 minutes			Sky: Clear, Sunny		
	Note: dBA Offset = -0.04			Sensor Height (ft): 5 ft		
	Wind Ave Speed (mph / m/s)		Temperature (degrees Fahrenheit)		Barometer Pressure (inches)	
	5 mph		64		29.97	

Photo of Measurement Location



2250

Instrument:		2250
Application:		BZ7225 Version 4.7.6
Start Time:		06/22/2023 10:03:55
End Time:		06/22/2023 10:13:55
Elapsed Time:		00:10:00
Bandwidth:		1/3-octave
Max Input Level:		142.15

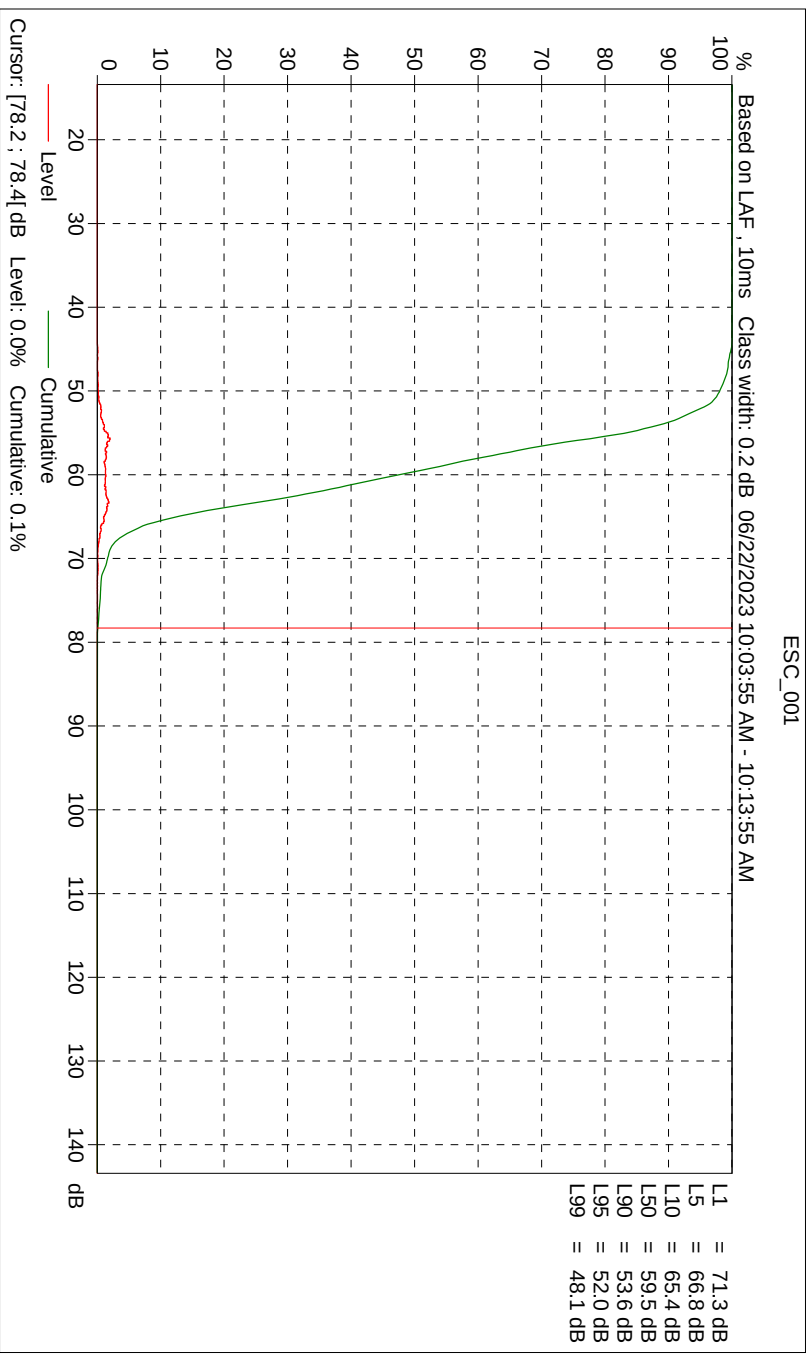
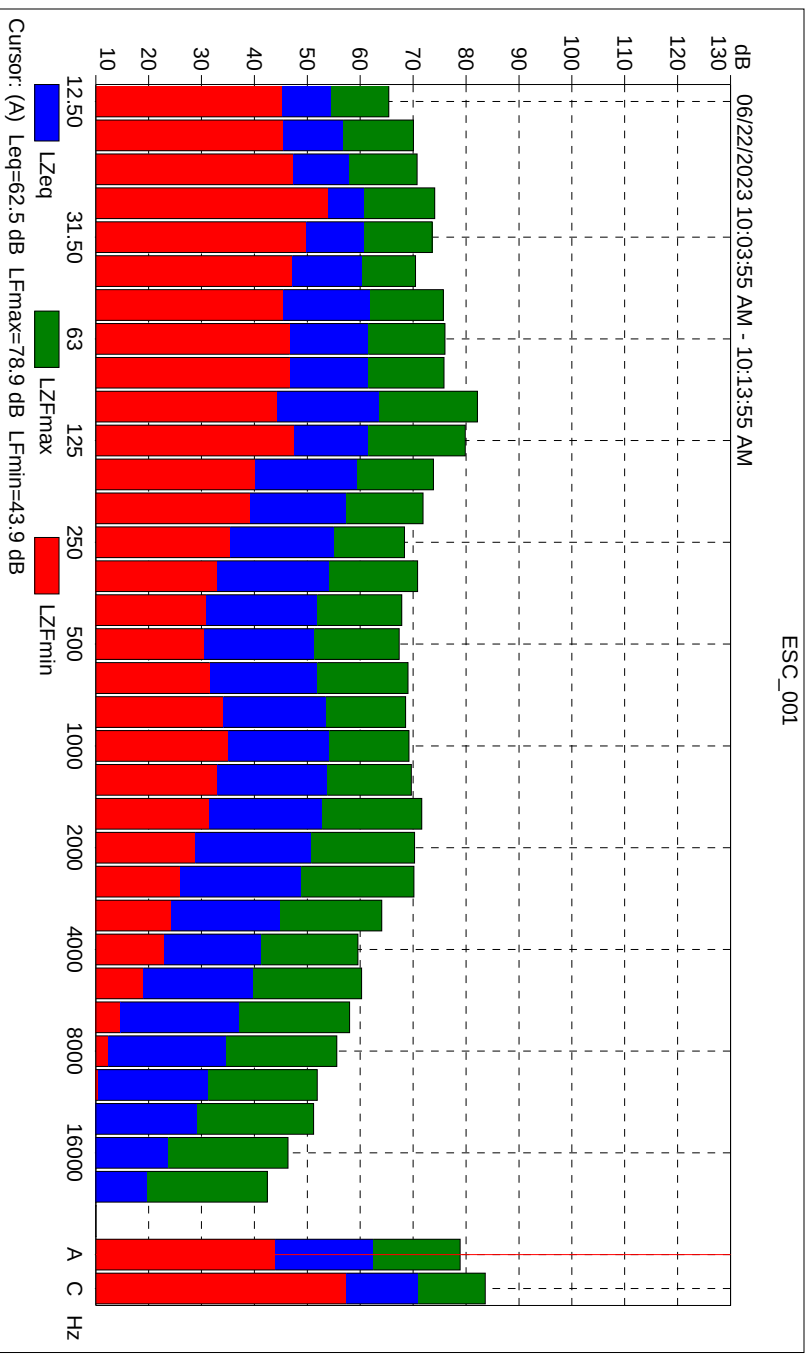
	Time	Frequency
Broadband (excl. Peak):	FSI	AC
Broadband Peak:		C
Spectrum:	FS	Z

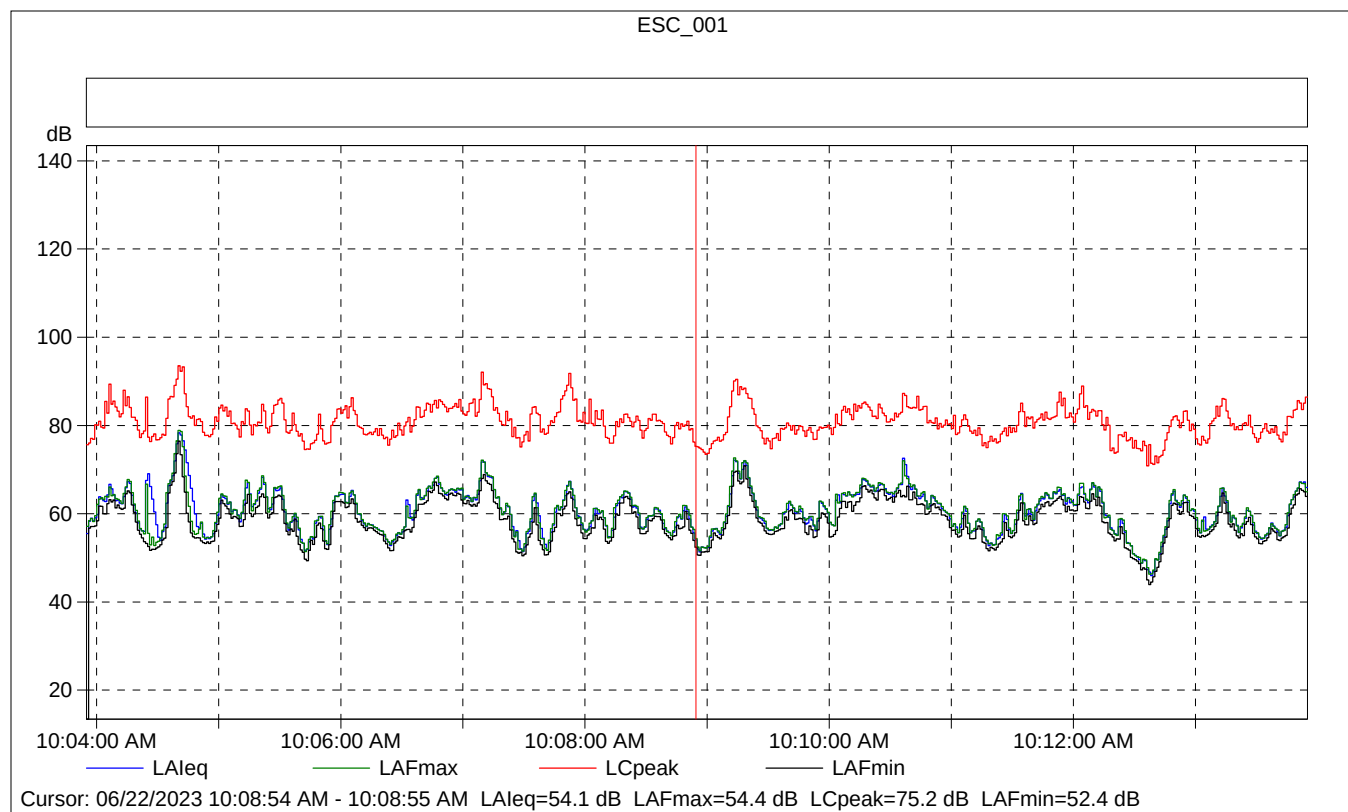
Instrument Serial Number:		3011133
Microphone Serial Number:		3086765
Input:		Top Socket
Windscreen Correction:		UA-1650
Sound Field Correction:		Free-field

Calibration Time:		06/22/2023 08:35:16
Calibration Type:		External reference
Sensitivity:		43.4550233185291 mV/Pa

ESC_001

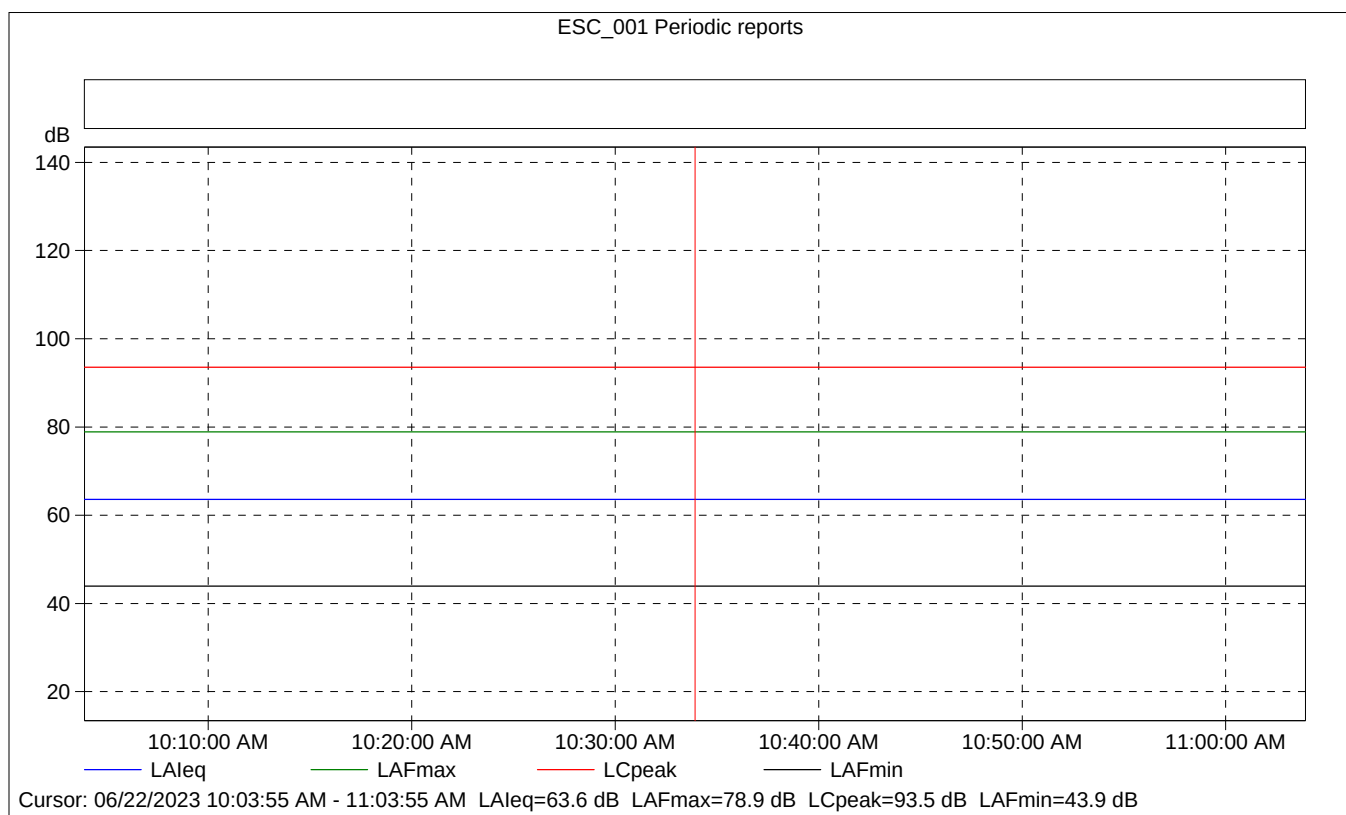
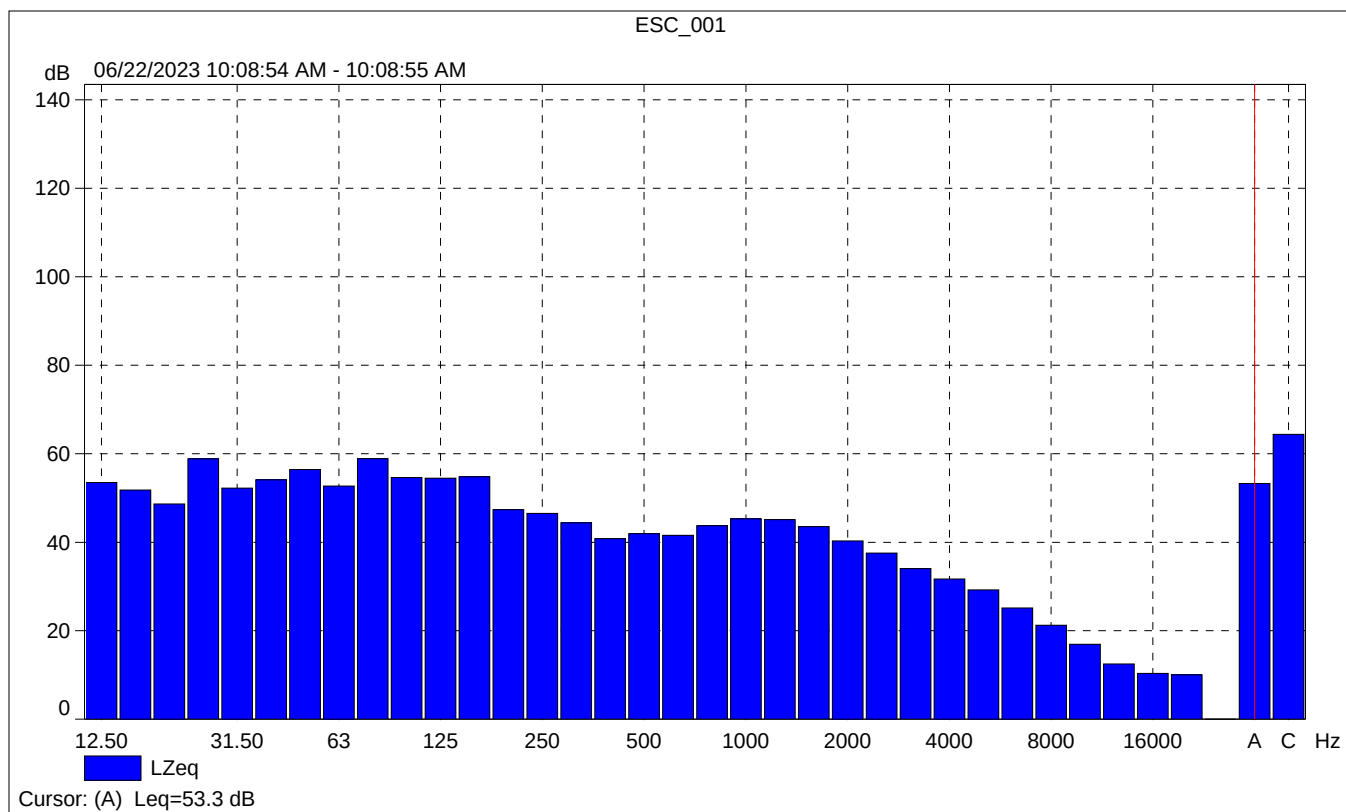
	Start time	End time	Elapsed time	Overload [%]	L _{Aeq} [dB]	L _A F _{max} [dB]	L _A F _{min} [dB]
Value				0.00	62.5	78.9	43.9
Time	10:03:55 AM	10:13:55 AM	0:10:00				
Date	06/22/2023	06/22/2023					





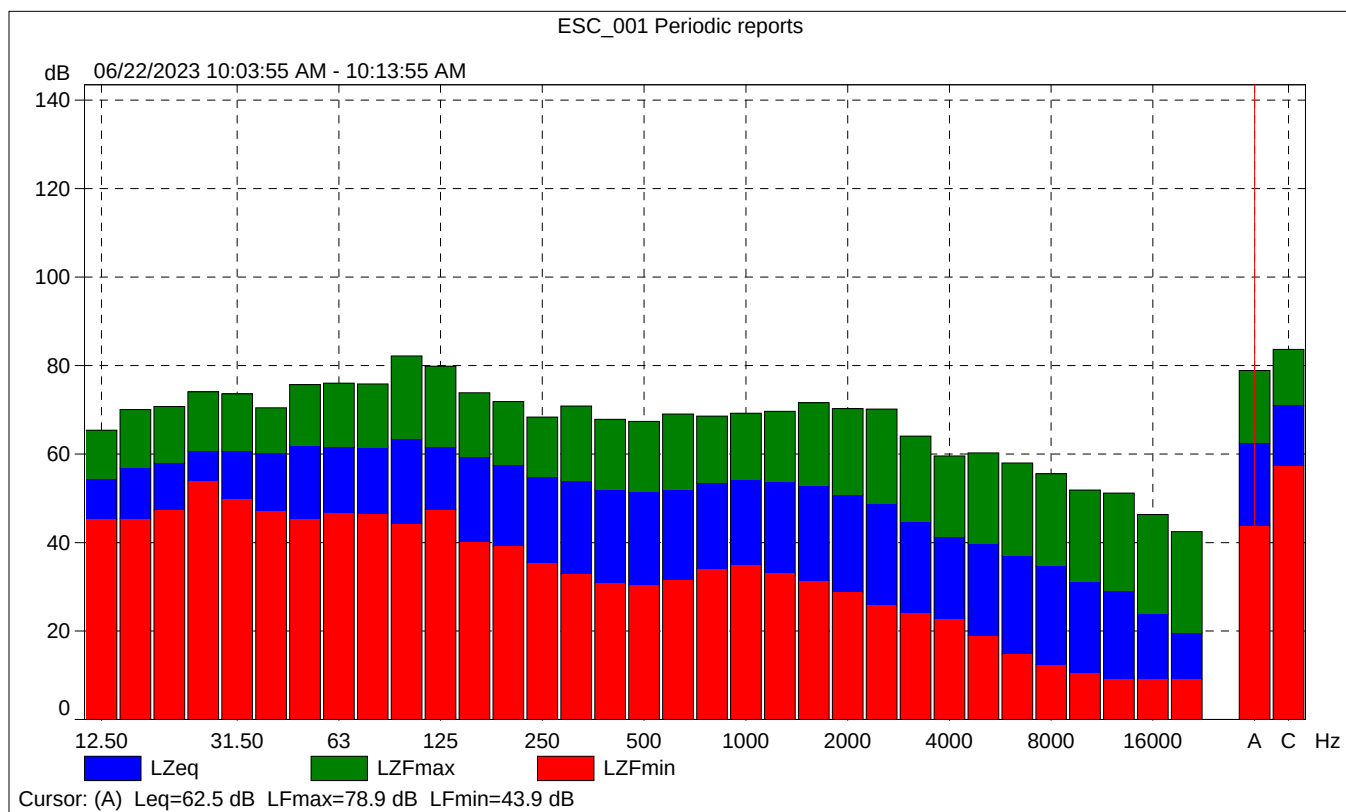
ESC_001

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Value			0.00	54.1	54.4	52.4
Time	10:08:54 AM	0:00:01				
Date	06/22/2023					

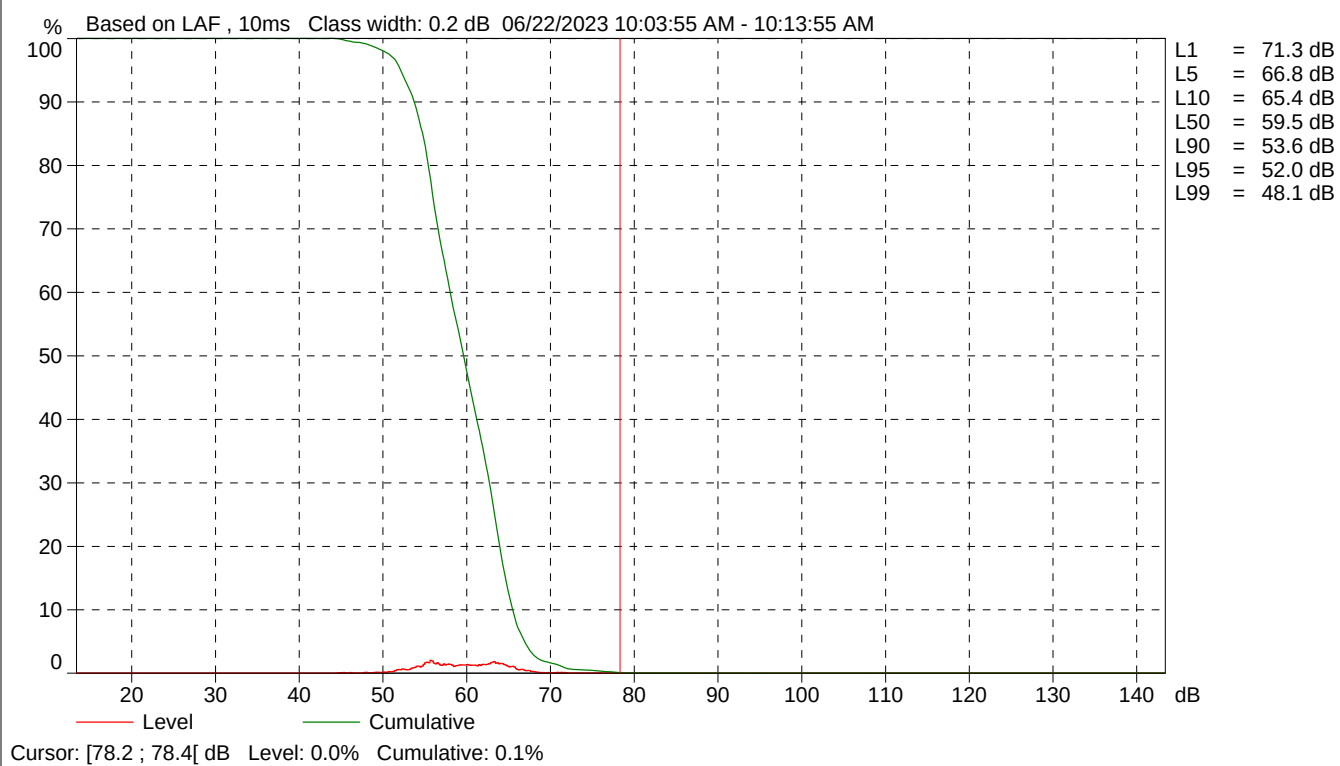


ESC_001 Periodic reports

	Start time	Elapsed time	Overload [%]	LAFeq [dB]	LAFmax [dB]	LAFmin [dB]
Value			0.00	63.6	78.9	43.9
Time	10:03:55 AM	0:10:00				
Date	06/22/2023					



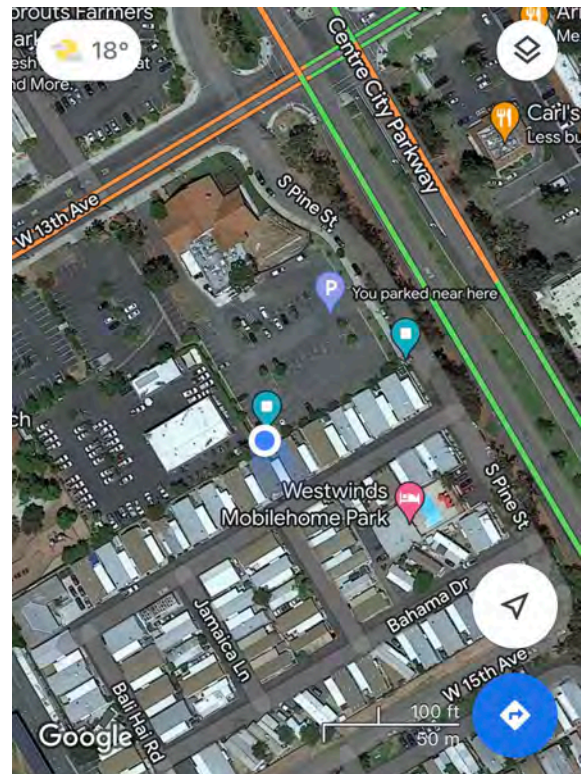
ESC_001 Periodic reports



Site Number: NM-2		
Recorded By: Winnie Woo, Darshan Shivaiah		
Job Number: 196051 – Escondido 13th & Centre City CFA		
Date: 6/22/2023		
Time: 10:17 A.M.		
Location: Southeast corner of existing surface parking lot within the project site; west of 555 West 13th Avenue		
Source of Ambient Noise: Traffic along Centre Point City Parkway and West 13th Avenue		
Noise Data		
L _{eq} (dB)	L _{max} (dB)	L _{min} (dB)
51.1	63.7	39.8

Equipment						
Category	Type	Vendor	Model	Serial No.	Cert. Date	Note
Sound	Sound Level Meter	Brüel & Kjær	2250	3011133	06/04/2023	
	Microphone	Brüel & Kjær	4189	3086765	06/04/2023	
	Preamplifier	Brüel & Kjær	ZC 0032	25380	06/04/2023	
	Calibrator	Brüel & Kjær	4231	2545667	06/04/2023	
Weather Data						
Est.	Duration: 10 minutes			Sky: Clear, Sunny		
	Note: dBA Offset = -0.04			Sensor Height (ft): 5 ft		
	Wind Ave Speed (mph / m/s)		Temperature (degrees Fahrenheit)		Barometer Pressure (inches)	
	5 mph		64		29.97	

Photo of Measurement Location



2250

Instrument:		2250
Application:		BZ7225 Version 4.7.6
Start Time:		06/22/2023 10:17:15
End Time:		06/22/2023 10:27:15
Elapsed Time:		00:10:00
Bandwidth:		1/3-octave
Max Input Level:		142.15

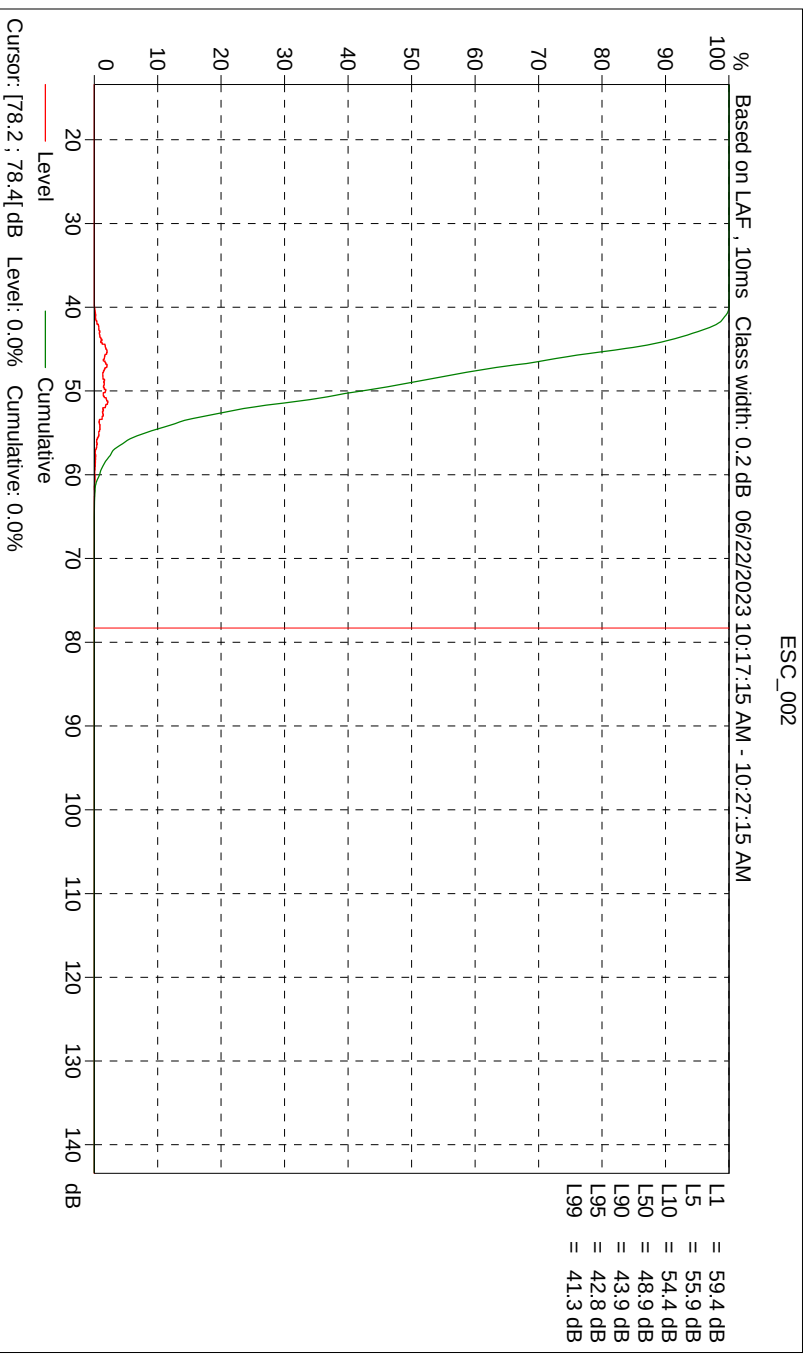
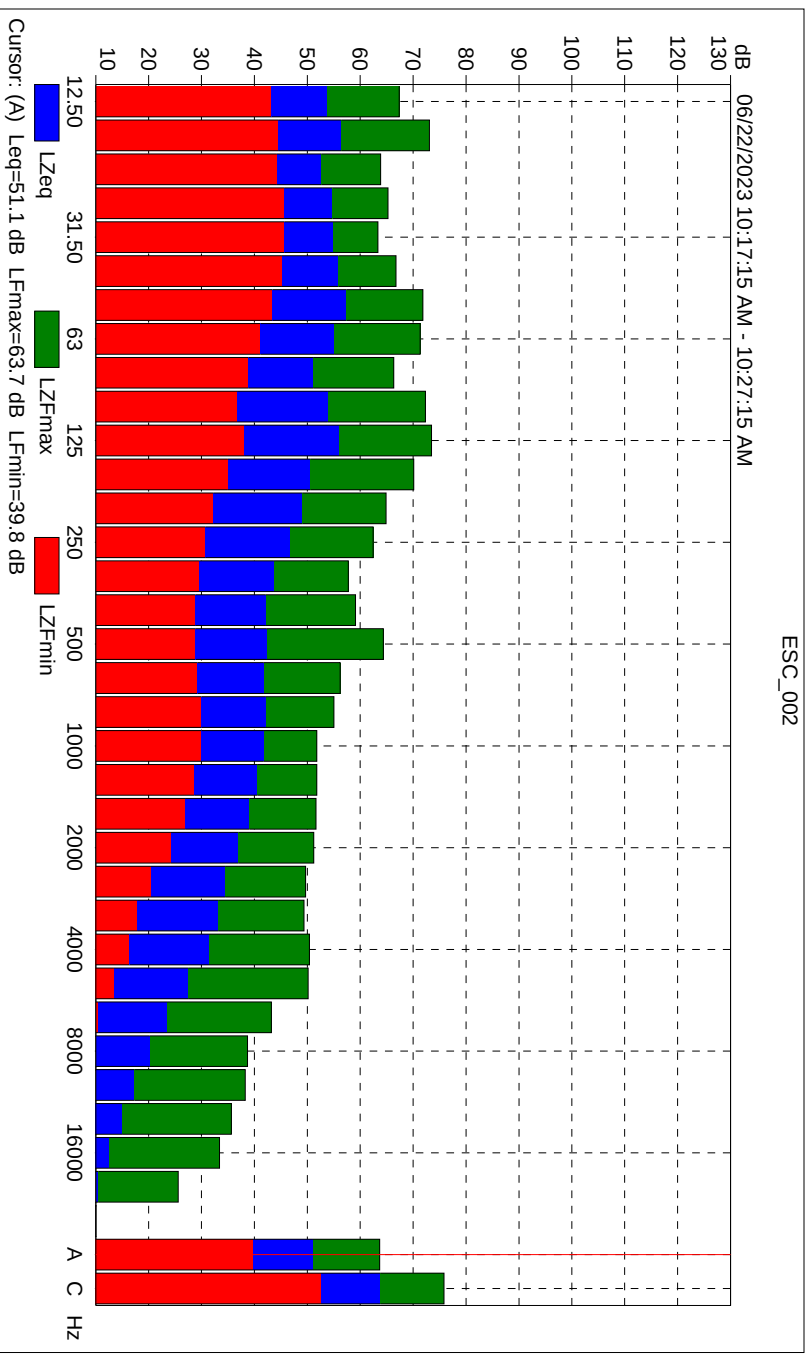
	Time	Frequency
Broadband (excl. Peak):	FSI	AC
Broadband Peak:		C
Spectrum:	FS	Z

Instrument Serial Number:		3011133
Microphone Serial Number:		3086765
Input:		Top Socket
Windscreen Correction:		UA-1650
Sound Field Correction:		Free-field

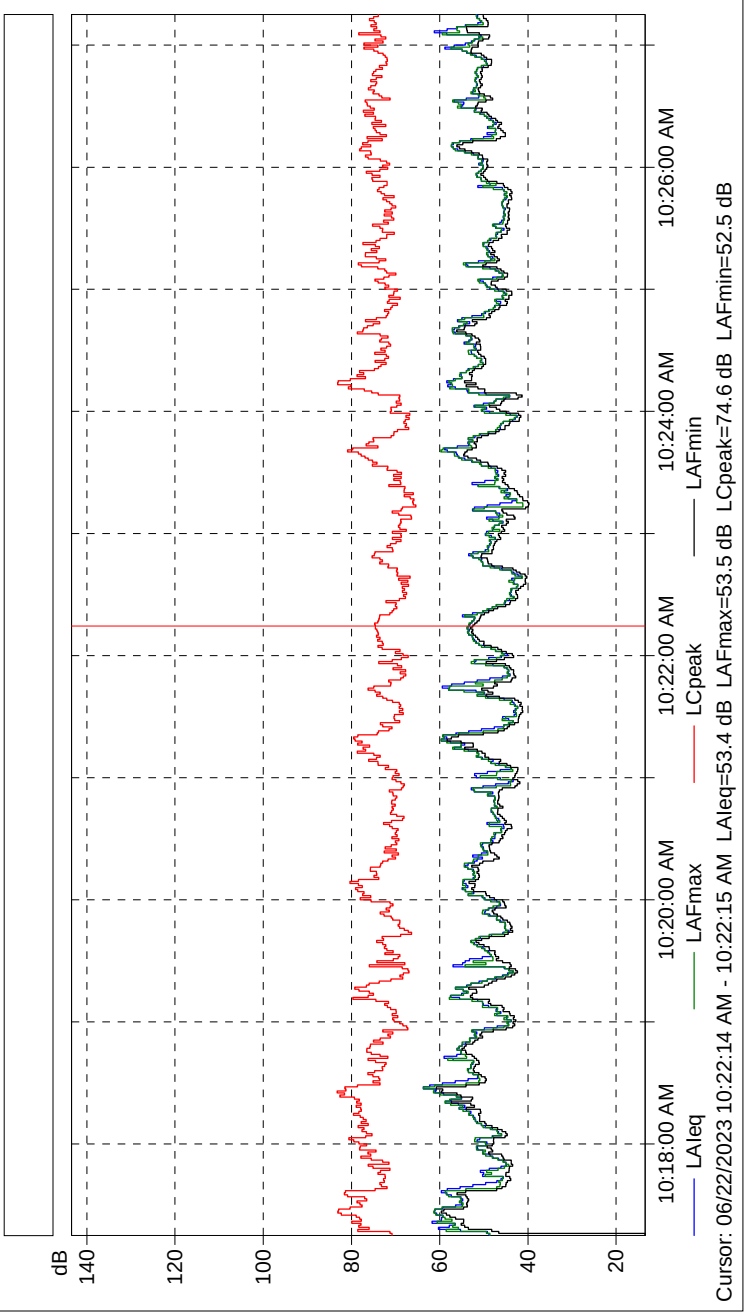
Calibration Time:		06/22/2023 08:35:16
Calibration Type:		External reference
Sensitivity:		43.4550233185291 mV/Pa

ESC_002

	Start time	End time	Elapsed time	Overload [%]	L _{Aeq} [dB]	L _A F _{max} [dB]	L _A F _{min} [dB]
Value				0.00	51.1	63.7	39.8
Time	10:17:15 AM	10:27:15 AM	0:10:00				
Date	06/22/2023	06/22/2023					

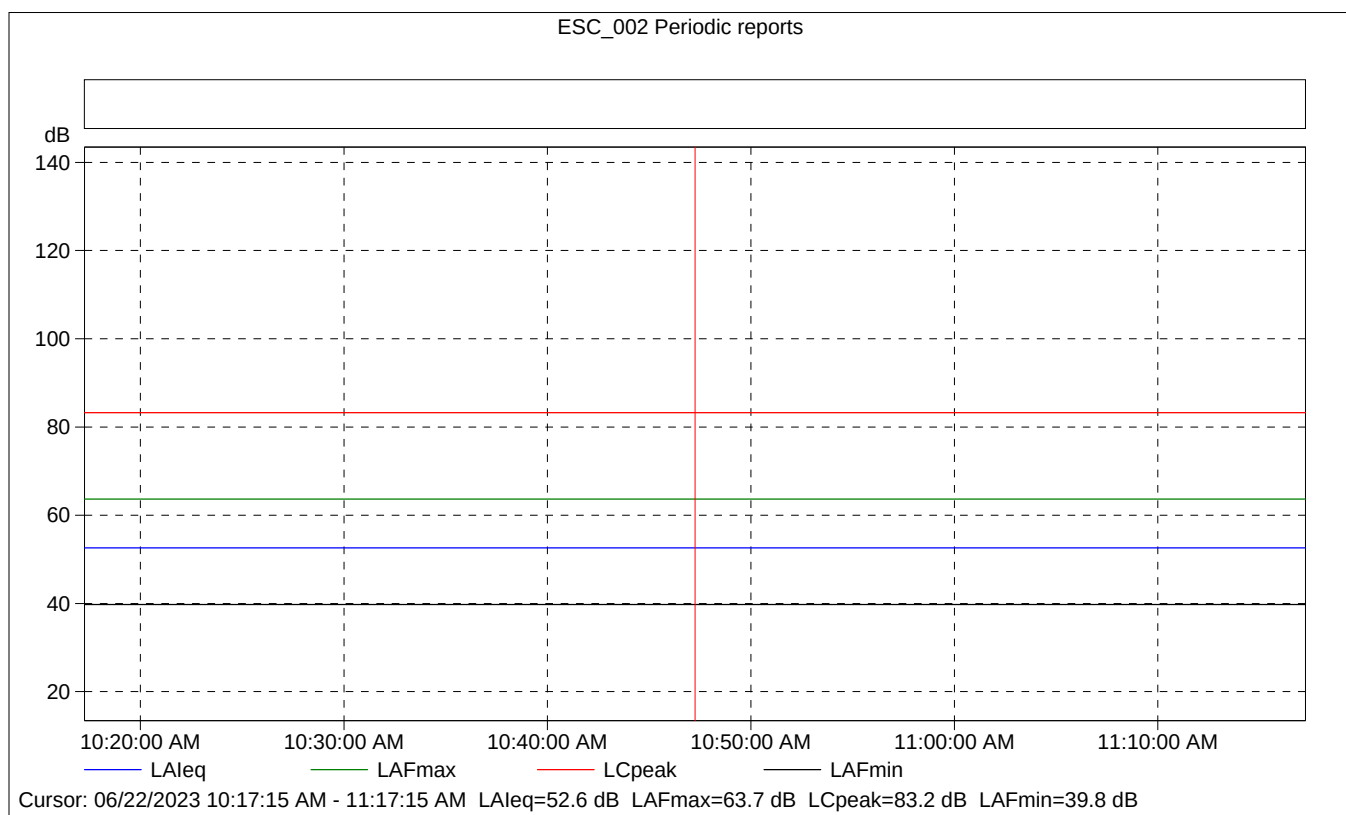
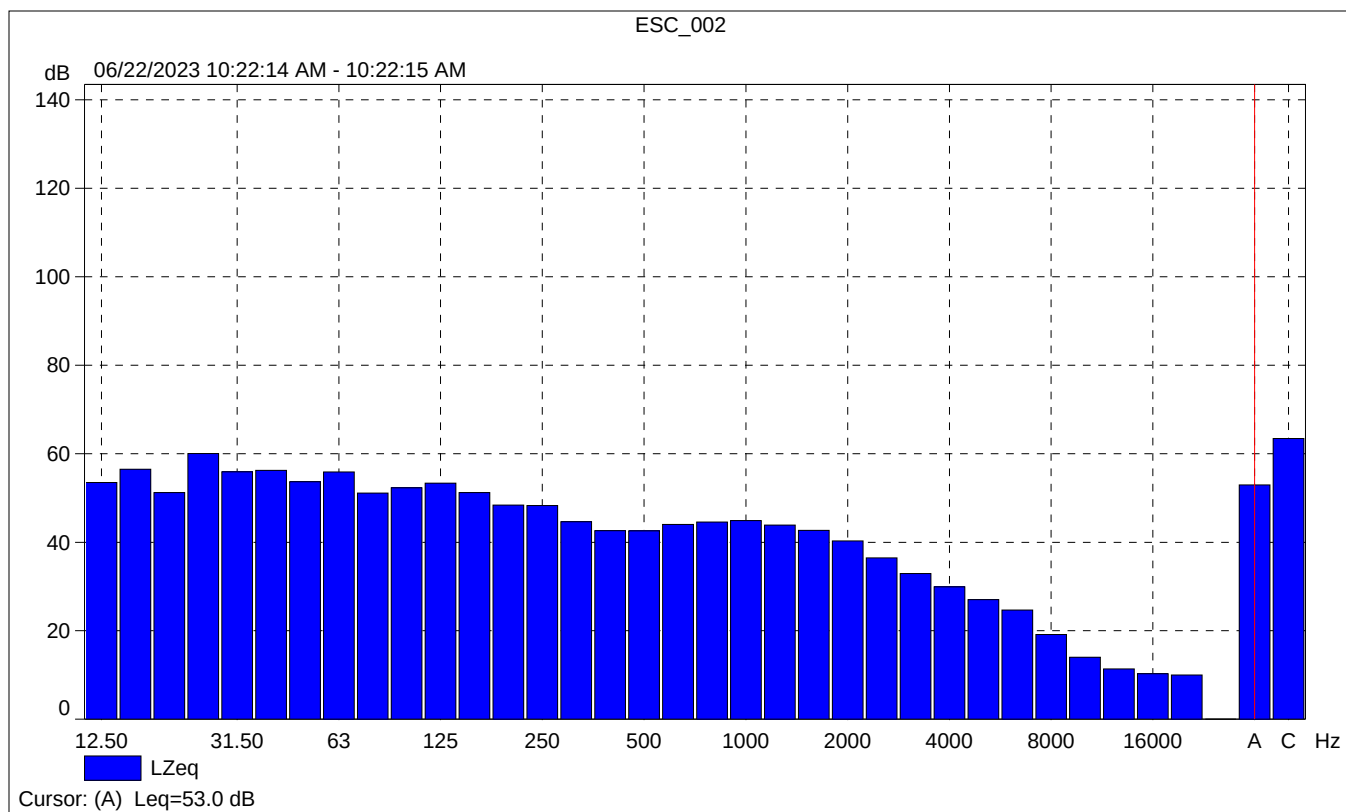


ESC_002



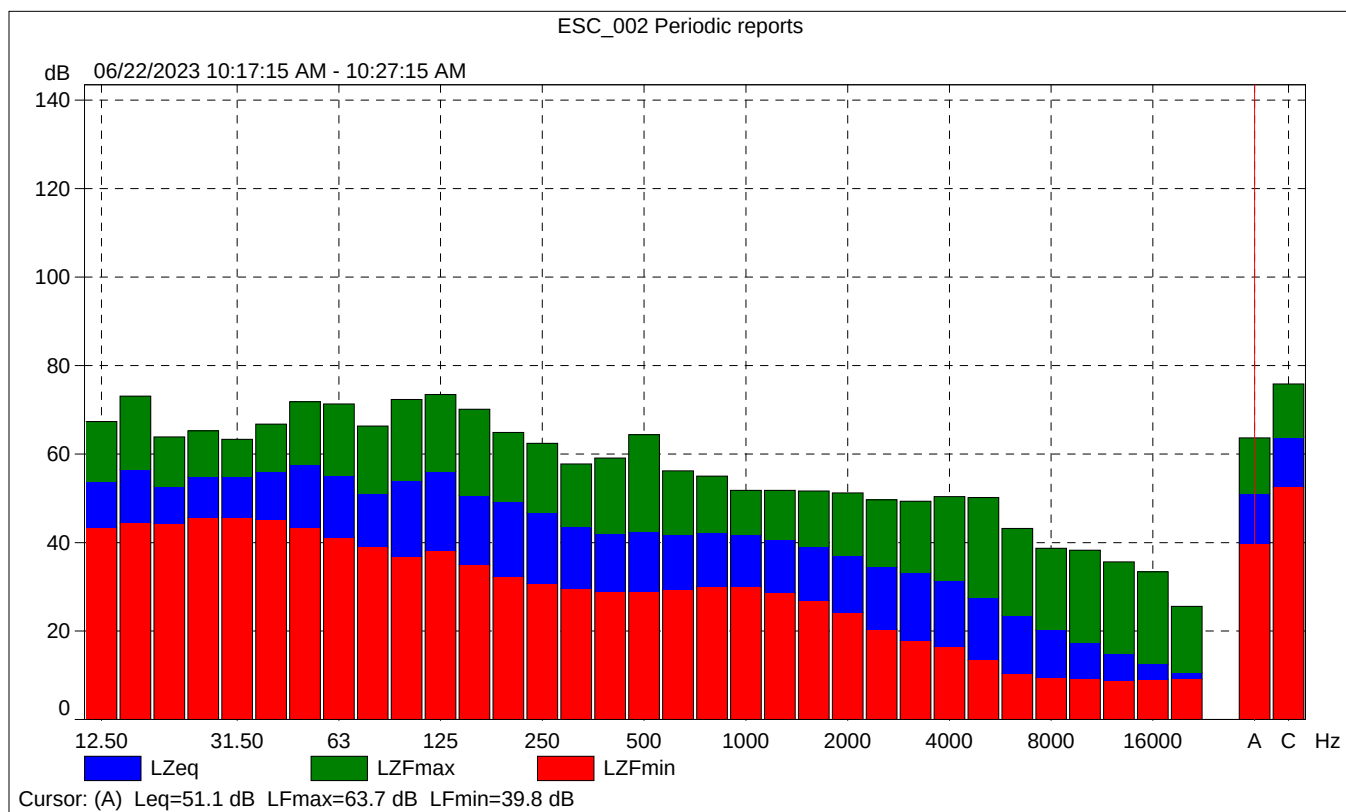
ESC_002

	Start time	Elapsed time	Overload [%]	LAeq [dB]	LAFmax [dB]	LAFmin [dB]
Value			0.00	53.4	53.5	52.5
Time	10:22:14 AM	0:00:01				
Date	06/22/2023					

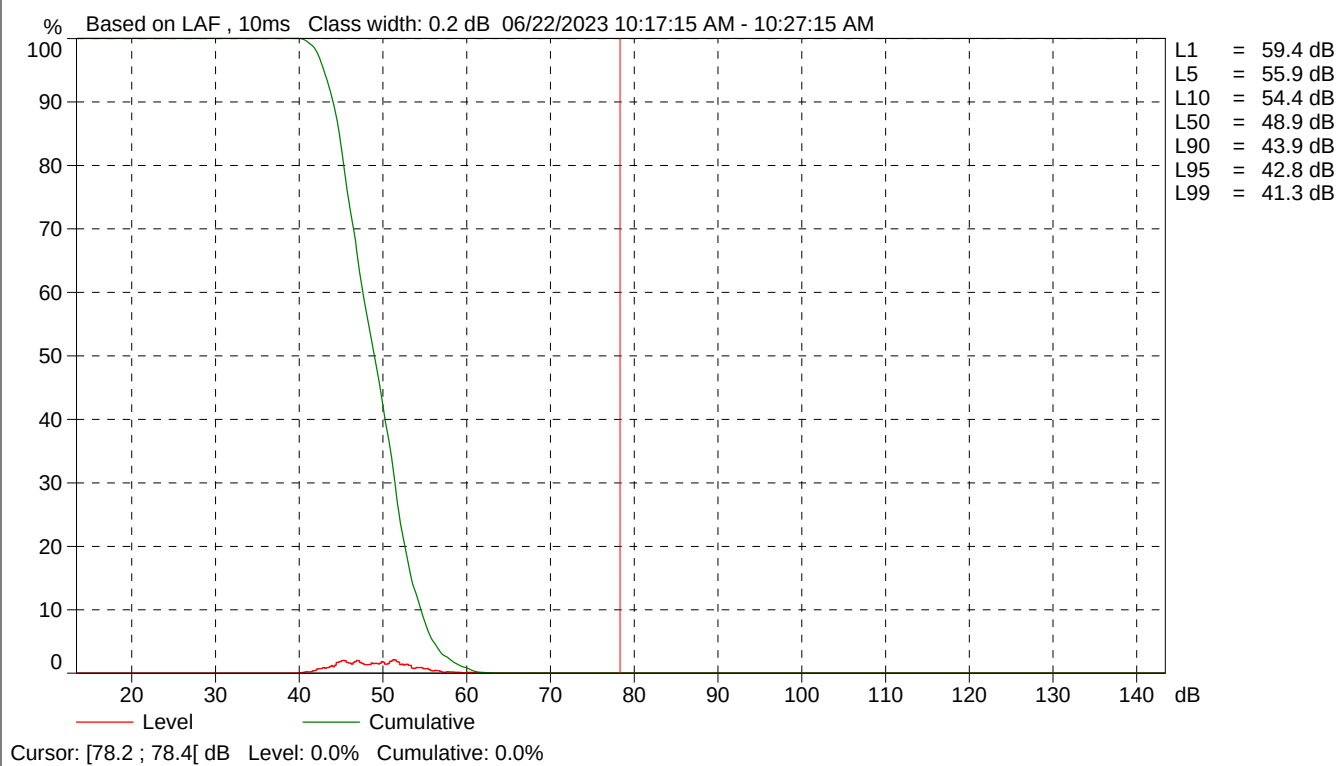


ESC_002 Periodic reports

	Start time	Elapsed time	Overload [%]	LAFeq [dB]	LAFmax [dB]	LAFmin [dB]
Value			0.00	52.6	63.7	39.8
Time	10:17:15 AM	0:10:00				
Date	06/22/2023					



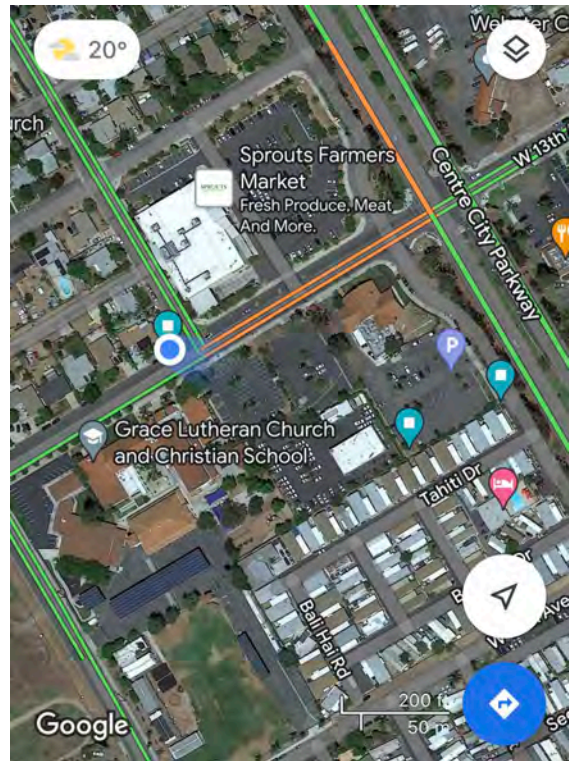
ESC_002 Periodic reports



Site Number: NM-3		
Recorded By: Winnie Woo, Darshan Shivaiah		
Job Number: 196051 – Escondido 13th & Centre City CFA		
Date: 6/22/2023		
Time: 10:31 A.M.		
Location: Northeast corner of South Quince Street and West 13th Avenue Intersection		
Source of Ambient Noise: Birds chirping; Traffic along West 13th Avenue and South Quince Street		
Noise Data		
L _{eq} (dB)	L _{max} (dB)	L _{min} (dB)
58.7	79.3	42.5

Equipment						
Category	Type	Vendor	Model	Serial No.	Cert. Date	Note
Sound	Sound Level Meter	Brüel & Kjær	2250	3011133	06/04/2023	
	Microphone	Brüel & Kjær	4189	3086765	06/04/2023	
	Preamp	Brüel & Kjær	ZC 0032	25380	06/04/2023	
	Calibrator	Brüel & Kjær	4231	2545667	06/04/2023	
Weather Data						
Est.	Duration: 10 minutes			Sky: Clear, Sunny		
	Note: dBA Offset = -0.04			Sensor Height (ft): 5 ft		
	Wind Ave Speed (mph / m/s)		Temperature (degrees Fahrenheit)		Barometer Pressure (inches)	
	5 mph		64		29.97	

Photo of Measurement Location



2250

Instrument:		2250
Application:		BZ7225 Version 4.7.6
Start Time:		06/22/2023 10:31:38
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Elapsed Time:		00:10:00
Bandwidth:		1/3-octave
Max Input Level:		142.15

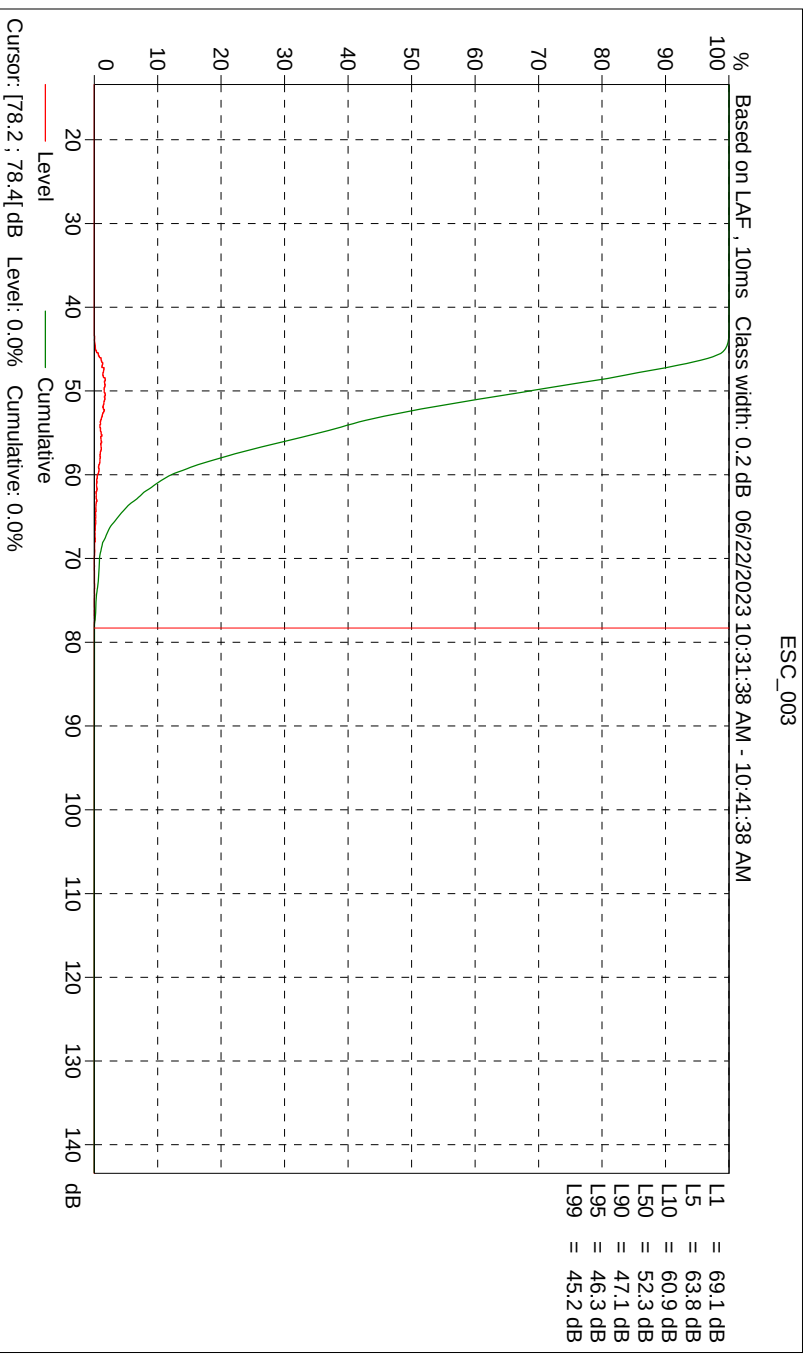
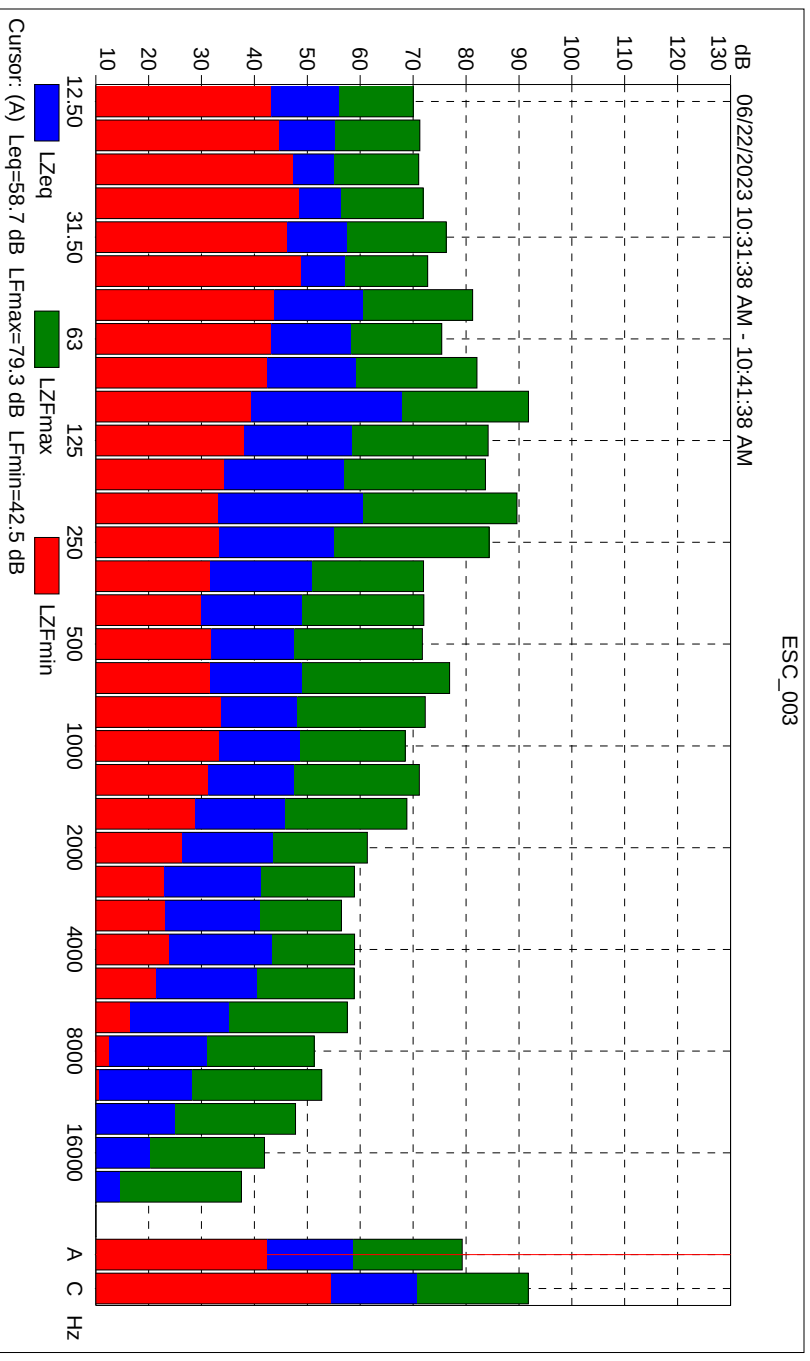
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Broadband (excl. Peak):	FSI	AC
Broadband Peak:		C
Spectrum:	FS	Z

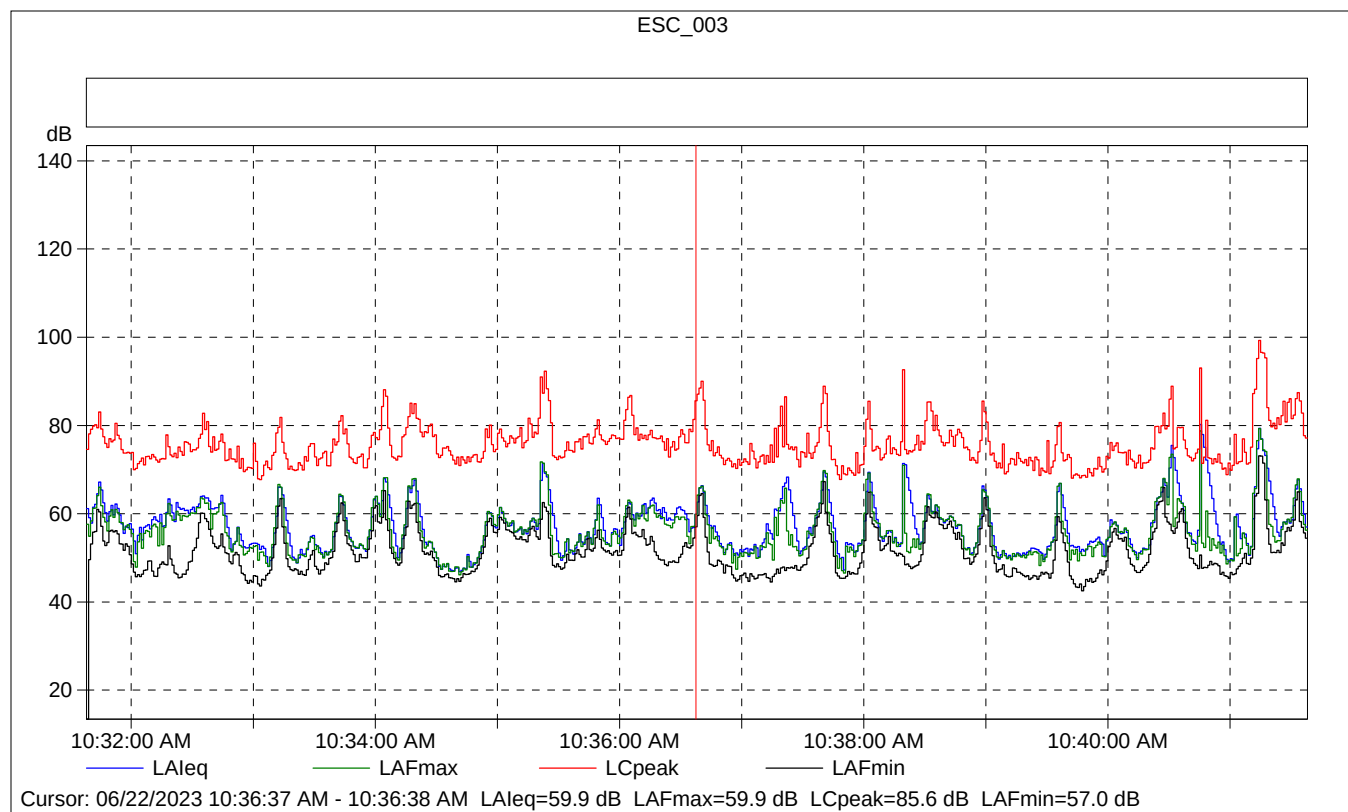
Instrument Serial Number:		3011133
Microphone Serial Number:		3086765
Input:		Top Socket
Windscreen Correction:		UA-1650
Sound Field Correction:		Free-field

Calibration Time:		06/22/2023 08:35:16
Calibration Type:		External reference
Sensitivity:		43.4550233185291 mV/Pa

ESC_003

	Start time	End time	Elapsed time	Overload [%]	L _{Aeq} [dB]	L _A F _{max} [dB]	L _A F _{min} [dB]
Value				0.00	58.7	79.3	42.5
Time	10:31:38 AM	10:41:38 AM	0:10:00				
Date	06/22/2023	06/22/2023					

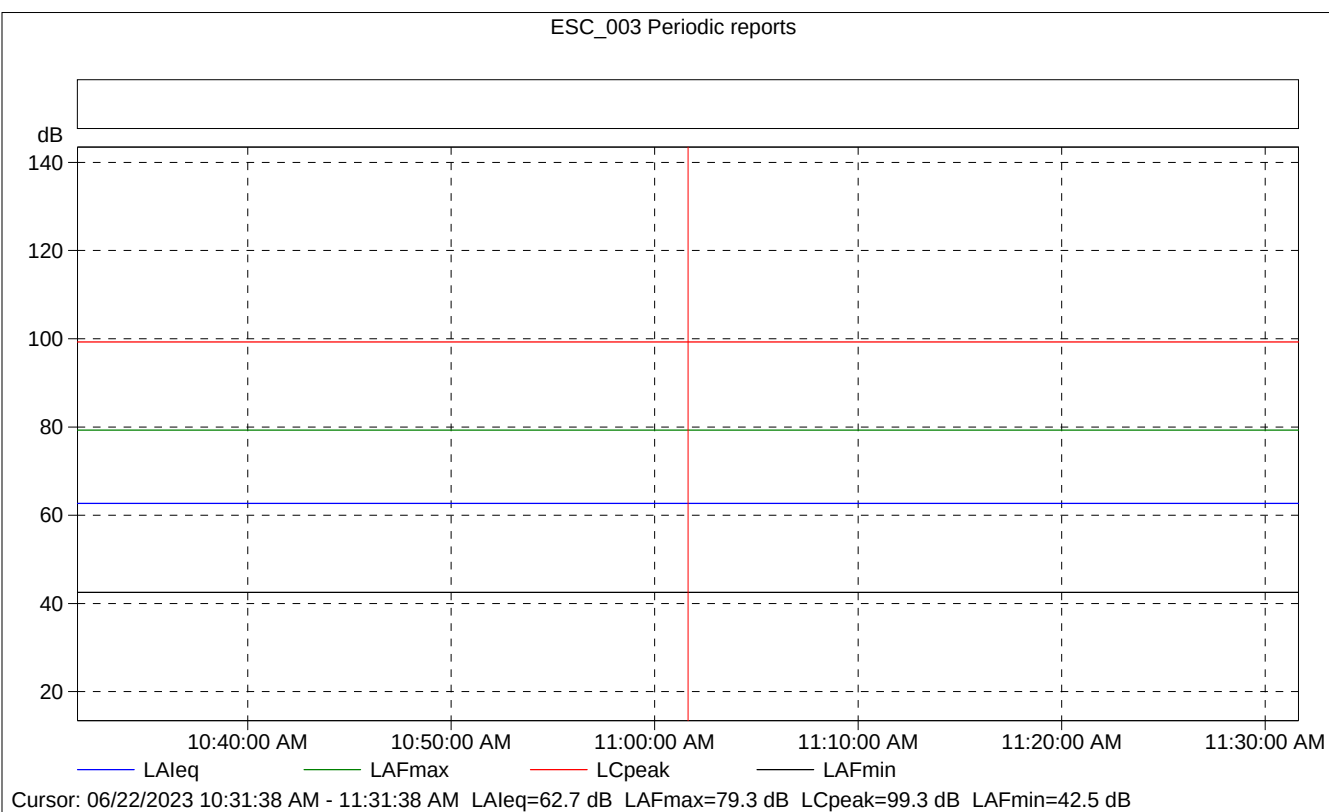
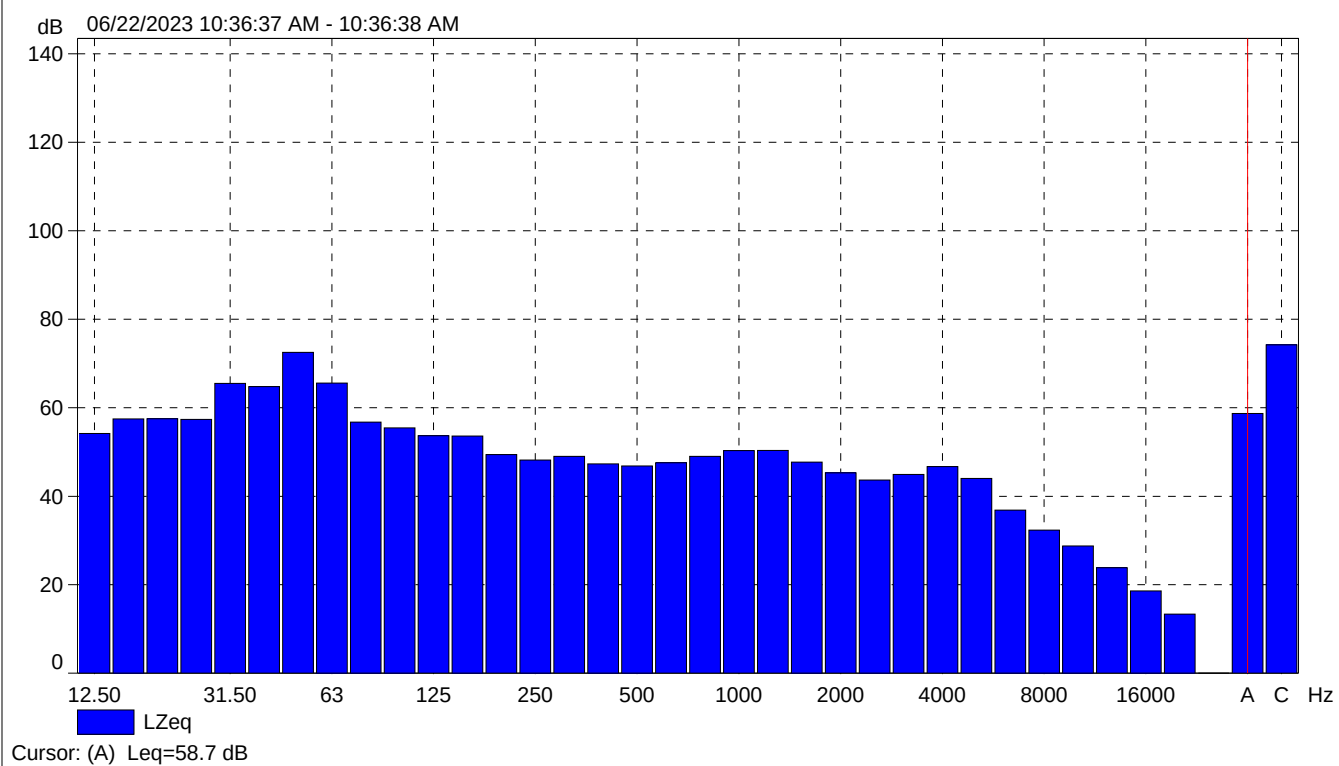




ESC_003

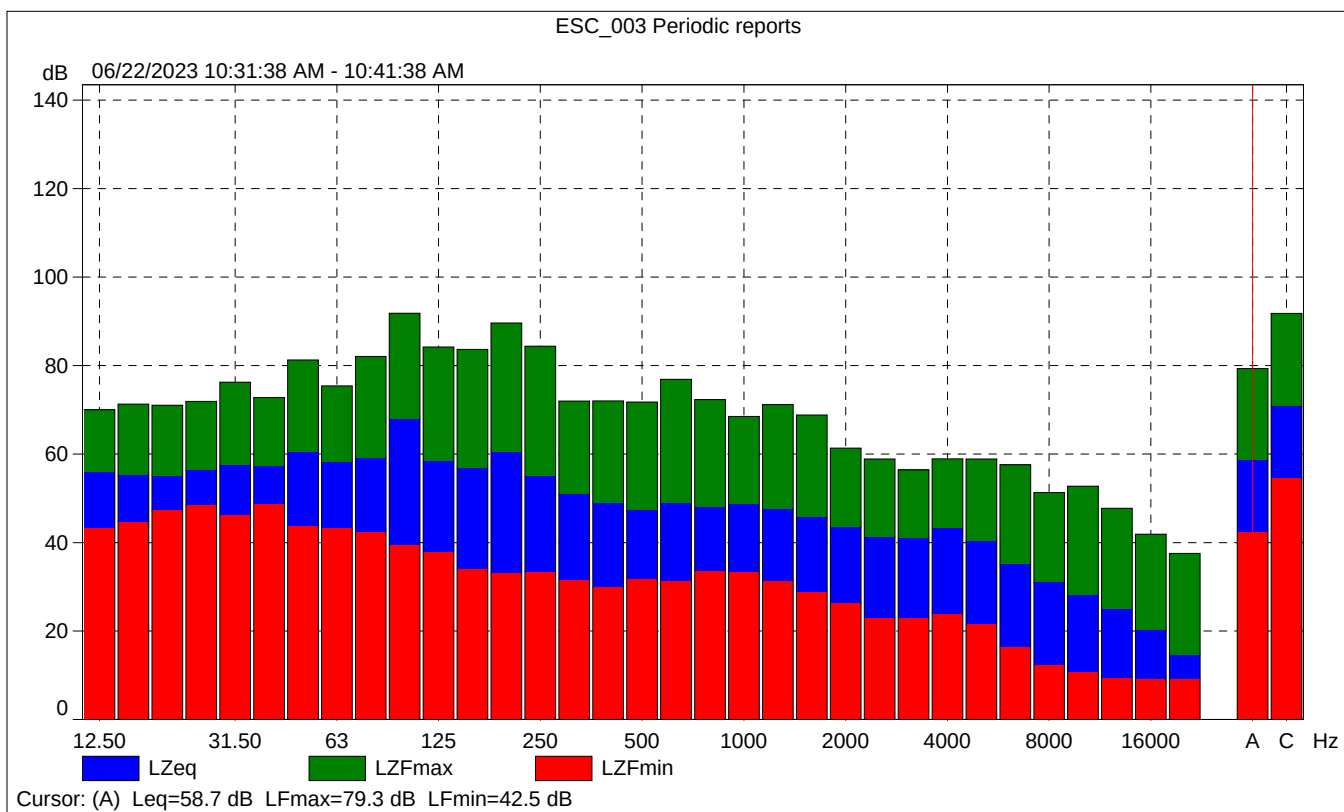
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Date	06/22/2023					

ESC_003

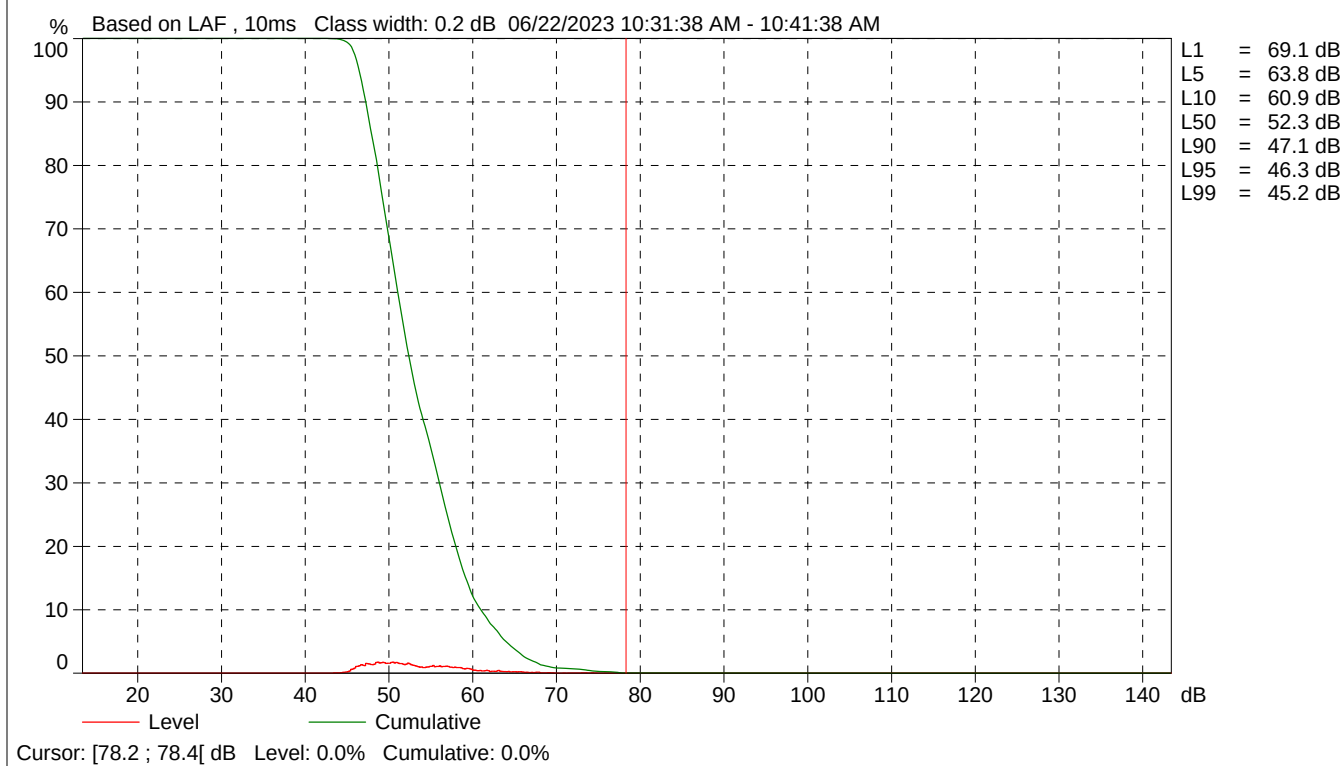


ESC_003 Periodic reports

	Start time	Elapsed time	Overload [%]	LAFeq [dB]	LAFmax [dB]	LAFmin [dB]
Value			0.00	62.7	79.3	42.5
Time	10:31:38 AM	0:10:00				
Date	06/22/2023					



ESC_003 Periodic reports



Roadway Construction Noise Model (RCNM),Version 1.1

Report dat #####

Case Descr Demolition

---- Receptor #1 ----

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
South Resi	Residential	50	50	50

Equipment

Description	Impact	Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No			20	89.6	185	0
Dozer	No			40	81.7	185	0
Front End Loader	No			40	79.1	185	0
Front End Loader	No			40	79.1	185	0
Front End Loader	No			40	79.1	185	0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
	*Lmax	Leq	Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq	Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq
Concrete Saw	78.2	71.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	70.3	66.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	67.7	63.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	67.7	63.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	67.7	63.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	78.2	73.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report dat #####

Case Descr Grading

---- Receptor #1 ----

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
South Resi	Residential	50	50	50

Equipment

Description	Impact	Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	No		40	85	10	0
Dozer	No	No		40	81.7	10	0
Front End Loader	No	No		40	79.1	10	0
Front End Loader	No	No		40	79.1	10	0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
	*Lmax	Leq	Day		Evening		Night		Day	Evening		Night		
Grader	99	95	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	95.6	91.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	93.1	89.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	93.1	89.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	99	98	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report dat #####

Case Descr Building Construction

---- Receptor #1 ----

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
South Resi	Residential	50	50	50

Equipment

Description	Impact Device	Usage(%)	Spec	Actual	Receptor	Estimated
			Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Crane	No		16	80.6	180	0
Man Lift	No		20	74.7	180	0
Generator	No		50	80.6	180	0
Front End Loader	No		40	79.1	180	0
Welder / Torch	No		40	74	180	0
Welder / Torch	No		40	74	180	0
Welder / Torch	No		40	74	180	0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
	*Lmax	Leq	Day	Evening		Night		Day	Evening		Night			
			Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq		
Crane	69.4	61.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Man Lift	63.6	56.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Generator	69.5	66.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Front End Loader	68	64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Welder / Torch	62.9	58.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Welder / Torch	62.9	58.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Welder / Torch	62.9	58.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Total	69.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report dat #####

Case Descr Paving

---- Receptor #1 ----

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
South Resi	Residential	50	50	50

Equipment

Description	Impact	Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Drum Mixer	No			50	80	10	0
Paver	No			50	77.2	10	0
Pavement Scarafier	No			20	89.5	10	0
Roller	No			20	80	10	0
Front End Loader	No			40	79.1	10	0

Results

Equipment	Calculated (dBA)			Noise Limits (dBA)					Noise Limit Exceedance (dBA)					
	*Lmax	Leq	Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq	Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq
Drum Mixer	94		91 N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	91.2	88.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	103.5	96.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	94	87	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	93.1	89.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	103.5	98.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report dat #####

Case Descr Architectural Coating

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
South Resi	Residential	50	50	50

		Equipment			
		Spec	Actual	Receptor	Estimated
Description	Impact	Lmax	Lmax	Distance	Shielding
Compressor (air)	No	Usage(%)	(dBA)	(feet)	(dBA)
		40	77.7	180	0

		Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		66.5	62.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total		66.5	62.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		*Calculated Lmax is the Loudest value.													

*Calculated Lmax is the Loudest value.