APPENDIX 9.8

ACOUSTICAL ASSESSMENT FOR THE MURRIETA HILLS SPECIFIC PLAN AMENDMENT

ACOUSTICAL ASSESSMENT

for the

Murrieta Hills Specific Plan Amendment

Murrieta, California

Consultant:

Michael Baker International
5 Hutton Centre Drive, Suite 500
Santa Ana, CA 92707
Contact: Mr. Eddie Torres
Environmental Sciences Manager
949.472.3505

October 4, 2018

JN 162805

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

TABLE OF CONTENTS

LIST OF EXHIBITS

LIST OF TABLES

DEFINITIONS OF COMMONLY USED TERMS IN NOISE CONTROL

The definitions that follow are in general agreement with those contained in publications of various professional organizations, including the American National Standards Institute (ANSI); the American Society for Testing and Materials (ASTM); the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE); the International Organization for Standardization (ISO); and the International Electrotechnical Commission (IEC).

TERMINOLOGY

acoustic; acoustical: *Acoustic* is usually used when the term being qualified designates something that has the properties, dimensions, or physical characteristics associated with sound waves (e.g., acoustic power); *acoustical* is usually used when the term which it modifies does not explicitly designate something that has the properties, dimensions, or physical characteristics of sound (e.g., acoustical material).

ambient noise: The all-encompassing noise associated with a given environment at a specified time, usually being a composite of sound from many sources arriving from many directions, near and far; no particular sound is dominant.

attenuation: The decrease in level of sound, usually from absorption, divergence, scattering, or the cancellation of the sound waves.

average sound level (L_{eq}): The level of a steady sound which, in a stated time period and at a stated location, has the same A-weighted sound energy as the time-varying sound. Unit: decibel.

A-weighted sound level (L_A): The sound level measured with a sound-level meter using A-weighting. *Unit*: decibel (dBA).

background noise: The total noise from all sources other than a particular sound that is of interest (e.g., other than the noise being measured or other than the speech or music being listened to).

decibel (dB): A unit of level which denotes the ratio between two quantities that are proportional to power; the number of decibels correspond to the logarithm (to the base 10) of this ratio. [In many sound fields, the sound pressure ratios are not proportional to the corresponding power ratios, but it is common practice to extend the use of the decibel to such cases. One decibel equals one-tenth of a *bel*.]

equivalent continuous sound level (average sound level) (L_{eq}): The level of a steady sound which, in a stated time period and at a stated location, has the same A-weighted sound energy as the time-varying sound. *Unit*: decibel (dBA).

frequency (f): Of a periodic function, the number of times that a quantity repeats itself in one second, i.e., the number of cycles per second. *Unit*: hertz (Hz).

noise: Any disagreeable or undesired sound, i.e., unwanted sound.

noise level: Same as sound level. Usually used to describe the sound level of an unwanted sound.

noise reduction (NR): The difference in sound pressure level between any two points along a path of sound propagation.

sound: (1) A change in air pressure that is capable of being detected by the human ear. (2) The hearing sensation excited by a change in air pressure.

sound level: Ten times the logarithm to the base 10 of the square of the ratio of the frequency-weighted (and time-averaged) sound pressure to the reference sound pressure of 20 micropascals. The frequency-weightings and time-weighting employed should be specified; if they are not specified, it is understood that A-frequency-weighting is used and that an averaging time of 0.125 is used. *Unit*: decibel (dBA).

SYMBOLS, ABBREVIATIONS, AND ACRONYMS

ADT	Average Daily Traffic
ANSI	American National Standards Institute
a.m.	Ante Meridiem
APN	Assessor's Parcel Number
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dB	decibel
dBA	A-weighted decibel
EPA	United States Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
INCE	Institute of Noise Control Engineering
HVAC	heating, ventilation, and air conditioning
in/sec	inches per second
Ldn	average day/night sound level
Leq	equivalent sound level
Lmax	maximum noise level
Lmin	minimum noise level
Ln	exceedance level
MPH	miles per hour
p.m.	Post Meridiem
PPV	peak particle velocity
STC	sound transmission class
VdB	velocity decibels

This page intentionally left blank.

EXECUTIVE SUMMARY

The purpose of this Acoustical Assessment is to evaluate potential short- and long-term noise impacts resulting from implementation of the proposed Murrieta Hills Specific Plan Amendment project ("project" or "proposed project"). The proposed project is located on approximately 972 acres lying west of I-215, south of Keller Road, and north of the Greer Ranch Development in the unincorporated area of Riverside County.

The project proposes to amend the original Murrieta Hills Specific Plan No. SPM-No. 4, approved in 1995. The proposed project would include annexation of the project site into the City of Murrieta (City), reducing the number dwelling units from 1,585 to 750. A zone change is also proposed to rezone the property to appropriate City of Murrieta zoning designations

Two different project alternatives are analyzed in this study. Each alternative would have a total of 750 residential units made up of different combinations of single-family and multi-family residential. Alternative 1 would include 578 single- family units and 172 multi-family units, with 346,302 square feet of commercial retail. Alternative 2 would have 557 single-family units, 193 multi-family units and 222,156 square feet of commercial retail space. Both project alternatives will be constructed in three phases.

Temporary Impacts. Based upon the results of the analysis, noise from construction activities would not exceed the noise standards of the City of Murrieta's Municipal Code at nearby residential uses. Vibration impacts due to construction equipment activities would be significant and unavoidable. Short-term blasting noise impacts from construction activities would also be significant and unavoidable. Vibration impacts resulting from blasting activities would be less than significant.

Long-Term Impacts. The analysis has concluded that implementation of the proposed project would result in significant impacts with regards to off-site mobile noise. On-site mobile and stationary noise impacts would be less than significant.

This page intentionally left blank.

1.0 INTRODUCTION

The purpose of this Acoustical Assessment is to evaluate potential short- and long-term noise impacts resulting from implementation of the proposed Murrieta Hills Specific Plan Amendment in unincorporated Riverside County.

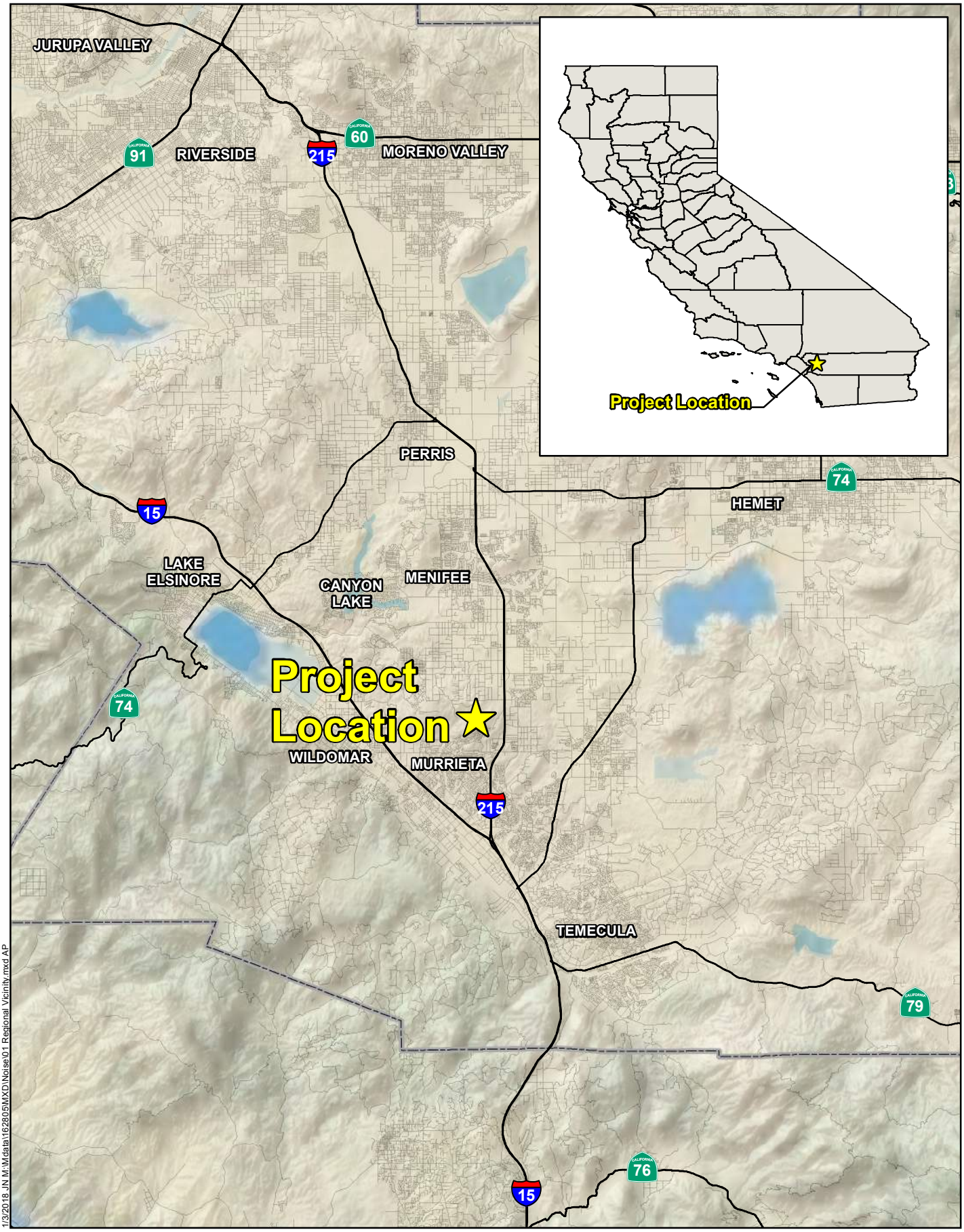
1.1 PROJECT LOCATION

The Murrieta Hills Specific Plan Amendment project site is located on approximately 972 acres lying west of I-215, south of Keller Road, and north of Greer Ranch Development in the unincorporated area of Riverside County. This County "island" is surrounded by the City of Menifee to the north, the City of Murrieta to the east and south, and the City of Wildomar to the west. Refer to Exhibit 1, *Regional Vicinity*, and Exhibit 2, *Project Location*.

1.2 PROJECT DESCRIPTION

The project proposes to amend the original Murrieta Hills Specific Plan No. SPM-No. 4, approved in 1995. The proposed project would reduce the number of dwelling units from 1,585 to 750 and would allow single-family residential, multi-family residential, and commercial uses. A zone change is also proposed to rezone the property to appropriate City of Murrieta Zoning designations.

This study is analyzing two project alternatives. Alternative 1 would include 578 single-family units and 172 multi-family units, with 346,302 square feet of commercial retail. Alternative 2 would have fewer single-family units, more multi-family units than Alternative 1. Table 1, Land Uses, lists the proposed uses with the approximate acreages. Refer to Exhibit 3, *Conceptual Site Plan: Alternative 2*, for Alternative 2 at buildout.



1/3/2018 JN M:\data\162805\MXD\Noise\01 Regional Vicinity.mxd AP

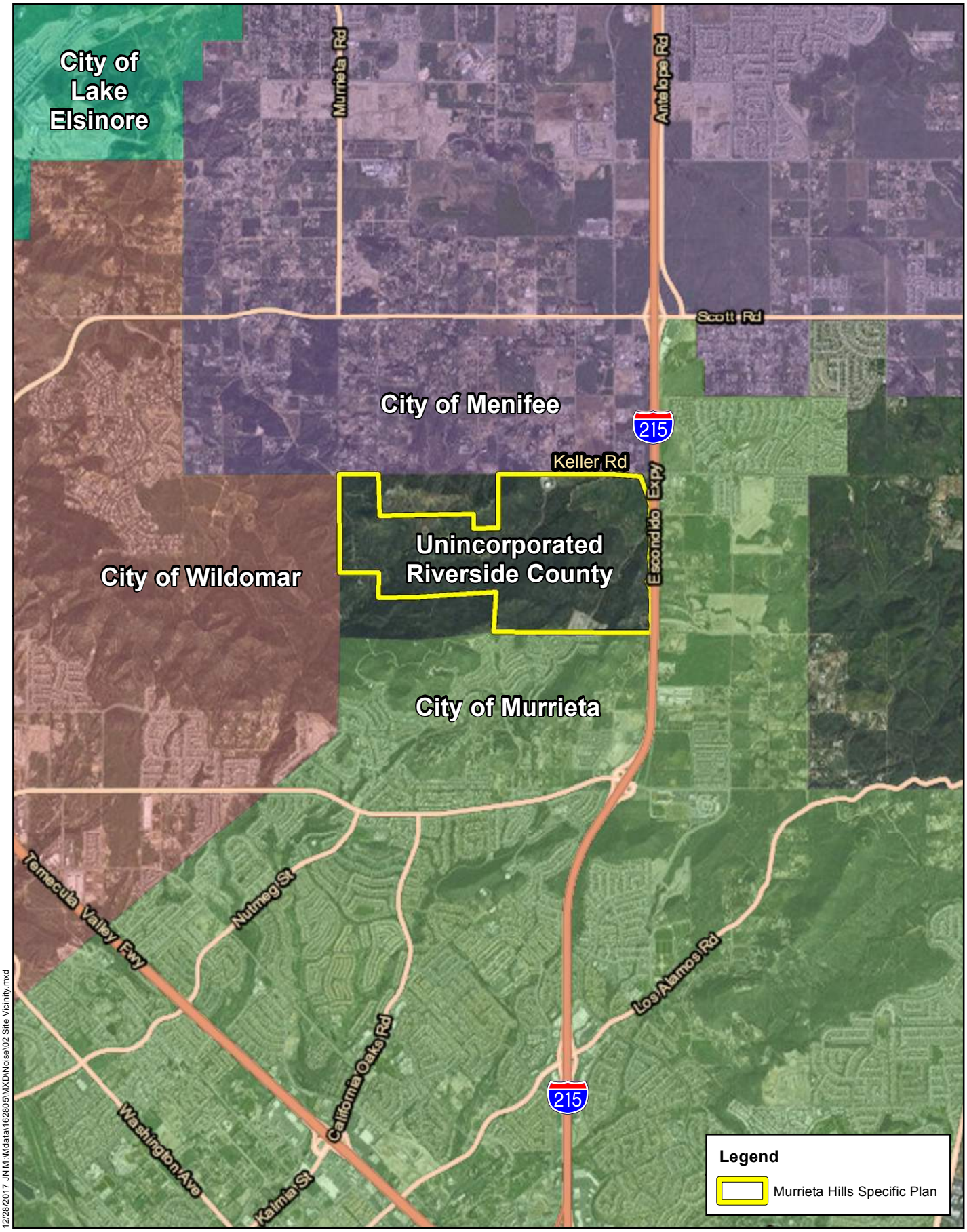
Source: ESRI Relief Map, US Census Tiger/Line, National Highway Planning Network

Michael Baker INTERNATIONAL

ACOUSTICAL ASSESSMENT
MURRIETA HILLS SPECIFIC PLAN AMENDMENT

Regional Vicinity

Exhibit 1



12/28/2017 JN M:\Mdata\162805\MXD\Noise\02 Site Vicinity.mxd

Michael Baker INTERNATIONAL

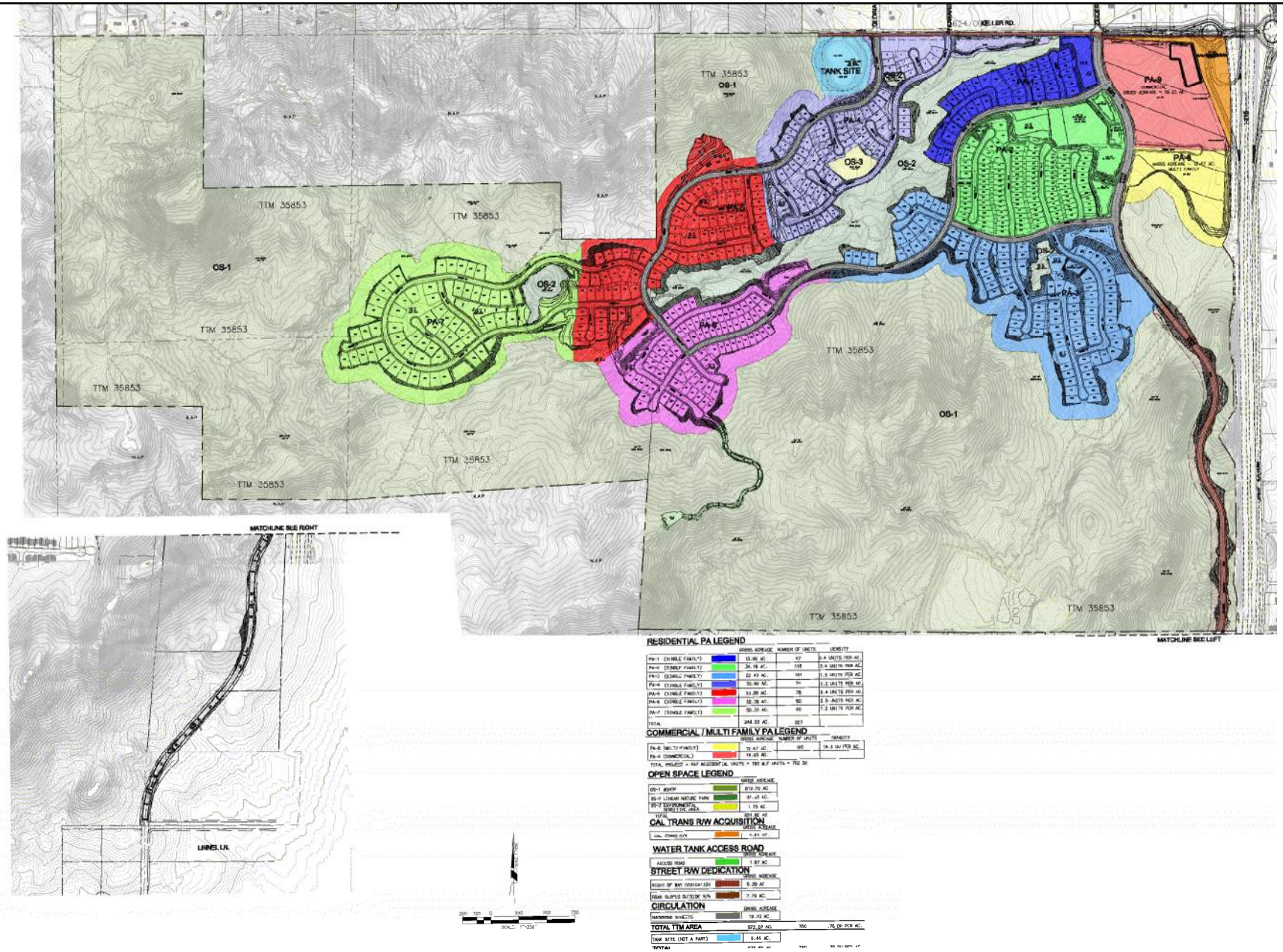
0 0.5 1 2 Miles

Source: Riverside County, ESRI World Imagery

ACOUSTICAL ASSESSMENT
MURRIETA HILLS SPECIFIC PLAN AMENDMENT

Site Vicinity

Exhibit 2



6/5/2018 JN M:\Mdata\162805\MXD\Noise\03 Site Plan.mxd

ACOUSTICAL ASSESSMENT
MURRIETA HILLS SPECIFIC PLAN AMENDMENT

Conceptual Site Plan: Alternative 2

Michael Baker INTERNATIONAL

Source: Michael Baker International

Exhibit 3

Table 1
Land Uses

Proposed Land Use	Approximate Acreage	Alternative 1 Originally Proposed Project	Alternative 2 Environmentally Preferred Alternative	
Single-Family Detached Residential 5,500 S.F. Average Min. Lot Size *(estimated)*	198	578 Units	497 Units	Total: 557 Units
Executive Homes (Future Phase) 10,000 S.F. Average Lot Size	50		60 Units	
Multi-Family Residential	13	172 Units	193 Units	
Community Commercial	18	346,302 square feet	222,156 square feet	
Natural Open Space (Excluding HANS) *(estimated)*	39	--	--	
Open Space: HANS MSHCP *(estimated)*	613	--	--	
Major Roadways *(estimated)*	41	--	--	
Total	**972**	**750 Units**	**750 Units**	

Source: Michael Baker International, 2018.

The phasing for Alternative 1 would be:

- Phase 1:
  - 300 single-family dwelling units
  - Construction of McElwain Road from Keller Road to "D" Street for public access
  - Construction of "C" Street and "A" Street connecting McElwain Road to Keller Road
  - Construction of McElwain Road extension from "D" Street to Linnel Lane

- Phase 2:
  - Additional 278 single-family dwelling units
  - 172 multi-family dwelling units
  - Construction of 173,151 square feet of retail
  - Install traffic signal at Keller Road / McElwain Road intersection

- Phase 3:
  - Construction of 173,151 square feet of retail

The phasing for Alternative 2 would be:

- Phase 1:
  - 300 single-family dwelling units
  - Construction of McElwain Road from Keller Road to "D" Street for public access
  - Construction of "C" Street and "A" Street connecting McElwain Road to Keller Road
  - Construction of McElwain Road extension from "D" Street to Linnel Lane as shown on the Tentative Tract Map

- Phase 2:
  - Additional 257 single-family dwelling units
  - 193 multi-family dwelling units
  - Construction of 111,078 square feet of retail
  - Install traffic signal at Keller Road / McElwain Road intersection

- Phase 3:
  - Construction of 111,078 square feet of retail

2.0 DESCRIPTION OF NOISE METRICS

2.1 STANDARD UNIT OF MEASUREMENT

Sound is described in terms of the loudness (amplitude) of the sound and frequency (pitch) of the sound. The standard unit of measurement of the loudness of sound is the decibel (dB). Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by differentiating among frequencies in a manner approximating the sensitivity of the human ear.

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). Examples of various sound levels in different environments are illustrated on Exhibit 4, *Common Environmental Noise Levels*.

Many methods have been developed for evaluating community noise to account for, among other things:

- The variation of noise levels over time;
- The influence of periodic individual loud events; and
- The community response to changes in the community noise environment.

Table 2, *Noise Descriptors*, provides a listing of methods to measure sound over a period of time.

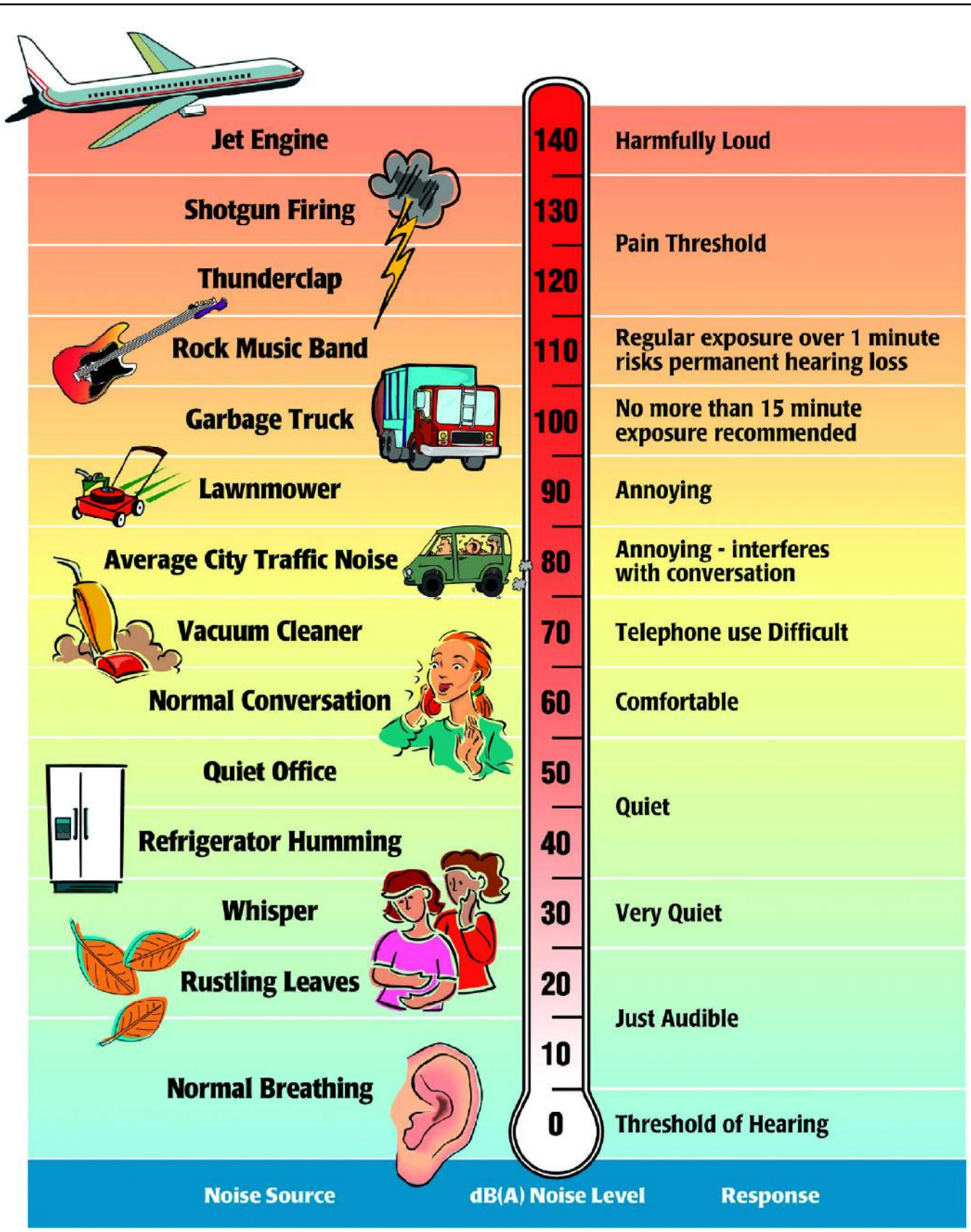
2.2 HEALTH EFFECTS OF NOISE

Human response to sound is highly individualized. Annoyance is the most common issue regarding community noise. The percentage of people claiming to be annoyed by noise generally increases with the environmental sound level. However, many factors also influence people's response to noise. The factors can include the character of the noise, the variability of the sound level, the presence of tones or impulses, and the time of day of the occurrence. Additionally, non-acoustical factors, such as the person's opinion of the noise source, the ability to adapt to the noise, the attitude towards the source and those associated with it, and the predictability of the noise, all influence people's response. As such, response to noise varies widely from one person to another and with any particular noise, individual responses would range from "not annoyed" to "highly annoyed."

Table 2
Noise Descriptors

Term	Definition
Decibel (dB)	The unit for measuring the volume of sound equal to 10 times the logarithm (base 10) of the ratio of the pressure of a measured sound to a reference pressure (20 micropascals).
A-Weighted Decibel (dBA)	A sound measurement scale that adjusts the pressure of individual frequencies according to human sensitivities. The scale accounts for the fact that the region of highest sensitivity for the human ear is between 2,000 and 4,000 cycles per second (hertz).
Equivalent Sound Level (L_{eq})	The sound level containing the same total energy as a time varying signal over a given time period. The L_{eq} is the value that expresses the time averaged total energy of a fluctuating sound level.
Maximum Sound Level (L_{max})	The highest individual sound level (dBA) occurring over a given time period.
Minimum Sound Level (L_{min})	The lowest individual sound level (dBA) occurring over a given time period.
Community Noise Equivalent Level (CNEL)	A rating of community noise exposure to all sources of sound that differentiates between daytime, evening, and nighttime noise exposure. These adjustments are +5 dBA for the evening, 7:00 p.m. to 10:00 p.m., and +10 dBA for the night, 10:00 p.m. to 7:00 a.m.
Day/Night Average (L_{dn})	The L_{dn} is a measure of the 24-hour average noise level at a given location. It was adopted by the U.S. Environmental Protection Agency for developing criteria for the evaluation of community noise exposure. It is based on a measure of the average noise level over a given time period called the L_{eq}. The L_{dn} is calculated by averaging the L_{eq}'s for each hour of the day at a given location after penalizing the "sleeping hours" (defined as 10:00 p.m. to 7:00 a.m.) by 10 dBA to account for the increased sensitivity of people to noises that occur at night.
Exceedance Level (L_n)	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% (L_{01}, L_{10}, L_{50}, L_{90}, respectively) of the time during the measurement period.

Source: Cyril M. Harris, *Handbook of Noise Control*, 1979.



12/26/2017 J:\M:\Mdata\162805\MXD\Noise\04 Noise Levels.mxd

ACOUSTICAL ASSESSMENT
MURRIETA HILLS SPECIFIC PLAN AMENDMENT

Michael Baker INTERNATIONAL

Common Environmental Noise Levels

Source: Environmental Protection Agency, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (EPA/ONAC 550/9-74-004), March 1974.

Exhibit 4

When the noise level of an activity rises above 70 dBA, the chance of receiving a complaint is possible, and as the noise level rises, dissatisfaction among the public steadily increases. However, an individual's reaction to a particular noise depends on many factors, such as the source of the sound, its loudness relative to the background noise, and the time of day. The reaction to noise can also be highly subjective; the perceived effect of a particular noise can vary widely among individuals in a community.

The effects of noise are often only transitory, but adverse effects can be cumulative with prolonged or repeated exposure. The effects of noise on the community can be organized into six broad categories:

- Noise-Induced Hearing Loss;
- Interference with Communication;
- Effects of Noise on Sleep;
- Effects on Performance and Behavior;
- Extra-Auditory Health Effects; and
- Annoyance.

Although it often causes discomfort and sometimes pain, noise-induced hearing loss usually takes years to develop. Noise-induced hearing loss can impair the quality of life through a reduction in the ability to hear important sounds and to communicate with family and friends. Hearing loss is one of the most obvious and easily quantified effects of excessive exposure to noise. While the loss may be temporary at first, it could become permanent after continued exposure. When combined with hearing loss associated with aging, the amount of hearing loss directly caused by the environment is difficult to quantify. Although the major cause of noise-induced hearing loss is occupational, substantial damage can be caused by non-occupational sources.

According to the United States Public Health Service, nearly ten million of the estimated 21 million Americans with hearing impairments owe their losses to noise exposure. Noise can mask important sounds and disrupt communication between individuals in a variety of settings. This process can cause anything from a slight irritation to a serious safety hazard, depending on the circumstance. Noise can disrupt face-to-face communication and telephone communication, and the enjoyment of music and television in the home. It can also disrupt effective communication between teachers and pupils in schools and can cause fatigue and vocal strain in those who need to communicate despite the noise.

Interference with communication has proven to be one of the most important components of noise-related annoyance. Noise-induced sleep interference is one of the critical components of community annoyance. Sound level, frequency distribution, duration, repetition, and variability can make it difficult to fall asleep and may cause momentary shifts in the natural sleep pattern, or level of sleep. It can produce short-term adverse effects on mood changes and job performance, with the possibility of more serious effects on health if it continues over long periods. Noise can cause adverse effects on task performance and behavior at work, and non-occupational and social

settings. These effects are the subject of some controversy, since the presence and degree of effects depends on a variety of intervening variables. Most research in this area has focused mainly on occupational settings, where noise levels must be sufficiently high and the task sufficiently complex for effects on performance to occur.

Recent research indicates that more moderate noise levels can produce disruptive after-effects, commonly manifested as a reduced tolerance for frustration, increased anxiety, decreased incidence of "helping" behavior, and increased incidence of "hostile" behavior. Noise has been implicated in the development or exacerbation of a variety of health problems, ranging from hypertension to psychosis. As with other categories, quantifying these effects is difficult due to the number of variables that need to be considered in each situation. As a biological stressor, noise can influence the entire physiological system. Most effects seem to be transitory, but with continued exposure some effects have been shown to be chronic in laboratory animals.

Annoyance can be viewed as the expression of negative feelings resulting from interference with activities, as well as the disruption of one's peace of mind and the enjoyment of one's environment. Field evaluations of community annoyance are useful for predicting the consequences of planned actions involving highways, airports, road traffic, railroads, or other noise sources. The consequences of noise-induced annoyance are privately held dissatisfaction, publicly expressed complaints to authorities, and potential adverse health effects, as discussed above. In a study conducted by the United States Department of Transportation, the relationship between the effects of annoyance and the community were quantified. In areas where exterior noise levels were consistently above 60 dBA CNEL, approximately nine percent of the community is highly annoyed. When levels exceed 65 dBA Community Noise Equivalent Level (CNEL), that percentage rises to 15 percent. Although evidence for the various effects of noise have differing levels of certainty, noise can affect human health. Most of the effects are, to a varying degree, stress related.

3.0 LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Land uses deemed sensitive by the State of California (State) within the vicinity of the project site include schools. Many jurisdictions also consider single- and multi-family residential uses particularly noise-sensitive because families and individuals expect to use time in the home for rest and relaxation, and noise can interfere with those activities. Some jurisdictions may also identify other noise-sensitive uses such as churches. Land uses that are relatively insensitive to noise include office, commercial, and retail developments. There is a range of insensitive noise receptors that include uses that generate significant noise levels and that typically have a low level of human occupancy.

This noise analysis was conducted in accordance with Federal, State, and local criteria described in the following sections.

3.1 U.S. ENVIRONMENTAL PROTECTION AGENCY

The U.S. Environmental Protection Agency (EPA) offers guidelines for community noise exposure in the publication *Noise Effects Handbook – A Desk Reference to Health and Welfare Effects of Noise*. These guidelines consider occupational noise exposure as well as noise exposure in homes. The EPA recognizes an exterior noise level of 55 decibels day-night level (dB L_{dn}) as a general goal to protect the public from hearing loss, activity interference, sleep disturbance, and annoyance. The EPA and other Federal agencies have adopted suggested land use compatibility guidelines that indicate that residential noise exposures of 55 to 65 dB L_{dn} are acceptable. However, the EPA notes that these levels are not regulatory goals, but are levels defined by a negotiated scientific consensus, without concern for economic and technological feasibility or the needs and desires of any particular community.

3.2 CALIFORNIA ENVIRONMENTAL QUALITY ACT

The State Office of Planning and Research Noise Element Guidelines include recommended exterior and interior noise level standards for local jurisdictions to identify and prevent the creation of incompatible land uses due to noise. The Noise Element Guidelines contain a land use compatibility table that describes the compatibility of various land uses with a range of environmental noise levels in terms of the CNEL. Table 3, *Land Use Compatibility for Community Noise Environments*, presents guidelines for determining acceptable and unacceptable community noise exposure limits for various land use categories. The guidelines also present adjustment factors that may be used to arrive at noise acceptability standards that reflect the noise control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution.

Table 3
Land Use Compatibility for Community Noise Environments

Land Use Category	Community Noise Exposure (CNEL)			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential – Low Density, Single-Family, Duplex, Mobile Homes	50 – 60	55 - 70	70-75	75-85
Residential – Multiple-Family	50 – 65	60 - 70	70 – 75	70 - 85
Transient Lodging – Motel, Hotels	50 – 65	60 - 70	70 – 80	80 - 85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 – 70	60 - 70	70 – 80	80 - 85
Auditoriums, Concert Halls, Amphitheaters	NA	50 - 70	NA	65 - 85
Sports Arenas, Outdoor Spectator Sports	NA	50 - 75	NA	70 - 85
Playgrounds, Neighborhood Parks	50 – 70	NA	67.5 – 75	72.5 - 85
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 – 70	NA	70 – 80	80 - 85
Office Buildings, Business Commercial and Professional	50 – 70	67.5 - 77.5	75 – 85	NA
Industrial, Manufacturing, Utilities, Agriculture	50 – 75	70 - 80	75 – 85	NA

NA: Not Applicable; Ldn: average day/night sound level; CNEL: Community Noise Equivalent Level

Notes:
Normally Acceptable – Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
Conditionally Acceptable – New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.
Normally Unacceptable – New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
Clearly Unacceptable – New construction or development should generally not be undertaken.

Source: Office of Planning and Research, California, *General Plan Guidelines*, October 2003.

3.3 LOCAL JURISDICTION

CITY OF MENIFEE GENERAL PLAN

The Menifee *General Plan* Noise Element (Menifee 2013) includes policies, standards, criteria, programs, and maps related to protecting public health and welfare from noise. The applicable goals and policies relate to noise limits in Menifee are listed below.

Goal N-1: Noise-sensitive land uses are protected from excessive noise and vibration exposure.

Policy N-1.7: Mitigate exterior and interior noises to the levels listed in Table 4 below to the extent feasible, for stationary sources adjacent to sensitive receptors.

Policy N-1.11: Discourage the siting of noise-sensitive uses in areas in excess of 65 dBA CNEL without appropriate mitigation.

Table 4
Stationary Source Noise Standards

Land Use (Residential)	Interior Standards	Exterior Standards
10:00 p.m. to 7:00 a.m.	40 L_{eq} (10 minutes)	45 L_{eq} (10 minutes)
7:00 a.m. to 10:00 p.m.	55 L_{eq} (10 minutes)	65 L_{eq} (10 minutes)
Source: Menifee General Plan Noise Element.		

Policy N-1.13: Require new development to minimize vibration impacts to adjacent uses during demolition and construction.

Policy N-1.17: Prevent the construction of new noise-sensitive land uses within airport noise impact zones. New residential land uses within the 65 dBA CNEL contours of public-use or military airports, as defined by the Riverside County Airport Land Use Commission, shall be prohibited.

CITY OF MENIFEE MUNICIPAL CODE

The following sections of the *Municipal Code* are applicable to the proposed project.

Section 9.09 of the Menifee Code of Ordinances contains the Menifee Noise Control Regulations:

Title 9: Planning and Zoning, Chapter 9.09 Noise Control Regulations

§ 9.09.030 Construction-Related Exemptions

A. Private construction projects, with or without a building permit, located one-quarter of mile or more from an inhabited dwelling.

B. Private construction projects, with or without a building permit, located within one-quarter of mile from an inhabited dwelling, provided that:

1. Construction does not occur between the hours of 6:00 p.m. and 6:00 a.m. the following morning during the months of June through September; and

2. Construction does not occur between the hours of 6:00 p.m. and 7:00 a.m. the following morning during the months of October through May.

§ 9.09.050 General Sound Level Standards

No person shall create any sound, or allow the creation of any sound, on any property that causes the exterior and interior sound level on any other occupied property to exceed the sound level standards set forth in Table 4 above.

CITY OF MURRIETA GENERAL PLAN[1]

The *General Plan* Noise Element identifies noise-sensitive land uses and noise sources, defines areas of noise impact, and establishes goals, policies, and programs to ensure that City residents are protected from excessive noise. The following lists applicable noise goals and policies obtained from the *General Plan:*

Goal N-1: Noise sensitive land uses are properly and effectively protected from excessive noise generators.

Policy N-1.1: Comply with the Land Use Compatibility for Community Noise Environments.

Policy N-1.2: Protect schools, hospitals, libraries, churches, convalescent homes, and other noise sensitive uses from excessive noise levels by incorporating site planning and project design techniques to minimize noise impacts. The use of noise barriers shall be considered after all practical design-related noise measures have been integrated into the project. In cases where sound walls are necessary, they should help create an attractive setting with features such as setbacks, changes in alignment, detail and texture, murals, pedestrian access (if appropriate), and landscaping.

Policy N-1.3: Discourage new residential development where the ambient noise level exceeds the noise level standards set forth in the Noise and Land Use Compatibility Guidelines and the City Noise Ordinance.

Policy N-1.4: Coordinate with the County of Riverside and adjacent jurisdictions to minimize noise conflicts between land uses along the City's boundaries.

Goal N-2: A comprehensive and effective land use planning and development review process that ensures noise impacts are adequately addressed.

Policy N-2.1: Review and update the Noise Ordinance to ensure that noise exposure information and specific policies and regulations are current.

Policy N-2.2: Integrate noise considerations into land use planning decisions to prevent new noise/land use conflicts.

Policy N-2.3: Consider the compatibility of proposed land uses with the noise environment when preparing, revising, or reviewing development proposals.

[1] The consistency analysis with the City's General Plan Goals and Polices can be found in Impact Statement NOI-4.

Policy N-2.4: Encourage proper site planning and architecture to reduce noise impacts.

Policy N-2.5: Permit only those new development or redevelopment projects that have incorporated mitigation measures, so that standards contained in the Noise Element and Noise Ordinance are met.

Policy N-2.6: Incorporate noise reduction features for items such as, but not limited to, parking and loading areas, ingress/egress point, HVAC units, and refuse collection areas, during site planning to mitigate anticipated noise impacts on affected noise sensitive land uses.

Policy N-2.7: Require that new mixed-use developments be designed to limit potential noise from loading areas, refuse collection, and other activities typically associated with commercial activity through strategic placement of these sources to minimize noise levels on-site.

Policy N-2.8: Encourage commercial uses in mixed-use developments that are not noise intensive.

Policy N-2.9: Orient mixed-use residential units, where possible, away from major noise sources.

Policy N-2.10: Locate balconies and operable windows of residential units in mixed-use projects away from the primary street and other major noise sources, where possible, or provide appropriate mitigation.

Goal N-3: Noise from mobile sources is minimized.

Policy N-3.1: Consider noise mitigation measures in the design of all future streets and highways and when improvements occur along existing freeway and highway segments.

Policy N-3.2: Work with Caltrans to achieve maximum noise abatement in the design of new highway projects or with improvements to interchanges along the I-15 and I-215 Freeways, and with widening of SR-79.

Policy N-3.3: Encourage the construction of noise barriers and maintenance of existing noise barriers for sensitive receptors located along the I-15 and I-215 Freeways.

Policy N-3.4: Enforce the use of truck routes to limit unnecessary truck traffic in residential and commercial areas. Consider requiring traffic plans for construction projects and new commercial and industrial uses.

Policy N-3.5: Consider the use of rubberized asphalt for new roadways or roadway rehabilitation projects.

Policy N-3.6: Coordinate with appropriate agencies in the siting, design, and construction of rail stations and track alignments to ensure that adjacent land uses are considered and noise attenuation measures are addressed.

Goal N-4: Reduced noise levels from construction activities.

Policy N-4.1: Regulate construction activities to ensure construction noise complies with the City's Noise Ordinance.

Policy N-4.2: Limit the hours of construction activity in residential areas to reduce intrusive noise in early morning and evening hours and on Sundays and holidays.

Policy N-4.3: Employ construction noise reduction methods to the maximum extent feasible. These measures may include, but not limited to, shutting off idling equipment, installing temporary acoustic barriers around stationary construction noise sources, maximizing the distance between construction equipment staging areas and occupied sensitive receptor areas, and use of electric air compressors and similar power tools, rather than diesel equipment.

Policy N-4.4: Encourage municipal vehicles and noise-generating mechanical equipment purchased or used by the City to comply with noise standards specified in the City's Municipal Code, or other applicable codes.

Policy N-4.5: Allow exceedance of noise standards on a case-by-case basis for special circumstances including emergency situations, special events, and expedited development projects.

Policy N-4.6: Ensure acceptable noise levels are maintained near schools, hospitals, convalescent homes, churches, and other noise-sensitive areas.

Table 5, *Exterior Noise Standards*, provides noise standards for designated land uses within the City and Table 6, *Interior Noise Standards*, provides the City's interior noise standards.

Table 5
Exterior Noise Standards

Noise Zone	Designated Noise Zone Land Use (Receptor Property)	Time Interval	Exterior Noise Level (dB)
I	Noise-sensitive area	Anytime	45
II	Residential properties	10:00 p.m. – 7:00 a.m. (Nighttime)	45
		7:00 a.m. – 10:00 p.m. (Daytime)	50
	Residential properties within 500 feet of a kennel(s)	7:00 a.m. – 10:00 p.m. (Daytime)	70
III	Commercial properties	10:00 p.m. – 7:00 a.m. (Nighttime)	55
		7:00 a.m. – 10:00 p.m. (Daytime)	60
IV	Industrial properties	Anytime	70

Source: City of Murrieta General Plan 2035 and Municipal Code Section 16.30.090.

Table 6
Interior Noise Standards

Noise Zone	Designated Noise Zone Land Use (Receptor Property)	Time Interval	Allowable Interior Noise Level (dB)
All	Multi-family Residential	10:00 p.m. – 7:00 a.m.	40
		7:00 a.m. – 10:00 p.m.	45

Source: City of Murrieta General Plan 2035 and Municipal Code Section 16.30.100.

CITY OF MURRIETA MUNICIPAL CODE

Although the City's noise standards are contained within the *General Plan,* the *Municipal Code* includes several references to noise control. The following sections of the *Municipal Code* are applicable to the proposed project.

Title XVI: Development Code

§ 16.30.60 Activities Exempt from Regulations

The following activities shall be exempt from the provisions of this chapter:

H. Motor Vehicles on Public Right-of-Way and Private Property. Except as provided in this chapter, all vehicles operating in a legal manner in compliance with local, state, and federal vehicle noise regulations within the right-of-way or on private property.

§ 16.30.130 Acts Deemed Violations

A. Construction Noise

1. *Operating or causing the operation of tools or equipment used in construction, drilling, repair, alteration, or demolition work between weekday hours of seven p.m. and seven a.m., or any time on Sundays or holidays, so that the noise creates a noise disturbance across a residential or commercial property line, except for emergency work of public service utilities.*

2. *Construction activities shall be conducted in a manner that the maximum noise levels at the affected structures will not exceed those listed in the following schedule:*

   a. *Residential Structures:*

      1) *Mobile Equipment. Maximum noise levels for nonscheduled, intermittent, short-term operation (less than ten days) of mobile equipment:*

Table 7
Maximum Permitted Noise Levels for Mobile Equipment

Time Interval	Single-Family Residential	Multi-Family Residential	Commercial
Daily. Except Sundays and legal holidays. 7:00 a.m. to 8:00 p.m.	75 dBA	80 dBA	85 dBA
Daily. 8:00 p.m. to 7:00 a.m. and all-day Sunday and legal holidays	60 dBA	64 dBA	70 dBA
Source: Murrieta Municipal Code Section 16.30.130.			

      2) *Stationary Equipment. Maximum noise level for repetitively scheduled and relatively long-term operation periods (three days or more):*

Table 8
Maximum Permitted Noise Levels for Stationary Equipment

Time Interval	Single-Family Residential	Multi-Family Residential	Commercial
Daily. Except Sundays and legal holidays 7:00 a.m. to 8:00 p.m.	60 dBA	65 dBA	70 dBA
Daily. 8:00 p.m. to 7:00 a.m. and all-day Sunday and legal holidays	50 dBA	55 dBA	60 dBA
Source: Murrieta Municipal Code Section 16.30.130.			

K. Vibration. Operating or permitting the operation of any device that creates vibration that is above the vibration perception threshold of an individual at or beyond the property boundary of the source if on private property, or at one hundred fifty (150) feet from the source if on a public space or public right-of-way is prohibited. The perception threshold shall be a motion velocity of 0.01 in/sec over the range of 1 to 100 Hertz.

4.0 EXISTING CONDITIONS

4.1 NOISE MEASUREMENTS

To quantify existing ambient noise levels in the project area, Michael Baker International conducted four noise measurements on March 20, 2018; refer to Table 9, *Noise Measurements*. The noise measurement sites were representative of typical existing noise exposure within and immediately adjacent to the project site. Fifteen-minute measurements were taken, between 7:30 a.m. and 3:45 p.m., at each site. Short-term (L_{eq}) measurements are considered representative of the noise levels in the project vicinity.

Table 9
Noise Measurements

Site No.	Location	L_{eq} (dBA)	L_{min} (dBA)	L_{max} (dBA)	Peak (dBA)	Time
1	North of the project site on Gloria Road.	47.4	40.6	66.4	89.2	7:38 a.m.
2	Eastern boundary of project site, adjacent to Scenic View Drive and parallel to I-215.	76.7	52.8	114.7	144.5	11:59 a.m.
3	Northeast section of project site along un-named dirt road adjacent to dirt agricultural fields. Proposed Planning Area 1.	52.0	30.3	71.1	84	2:57 p.m.
4	Northeast section of project site along un-named dirt road that leads to water tanks. Proposed Planning Area 4.	36.5	28.1	64.8	90.7	3:23 p.m.

Source: Michael Baker International, March 20, 2018.

Meteorological conditions were clear skies, warm temperatures, with light wind speeds (5 miles per hour), and low humidity. Measured noise levels during the daytime measurements ranged from 36.5 to 76.7 dBA L_{eq}. 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. The results of the field measurements are included in Appendix A, *Noise Measurement Data*. Refer to Exhibit 5, *Noise Measurement Locations*, for the noise measurement sites.

4.2 SENSITIVE RECEPTORS

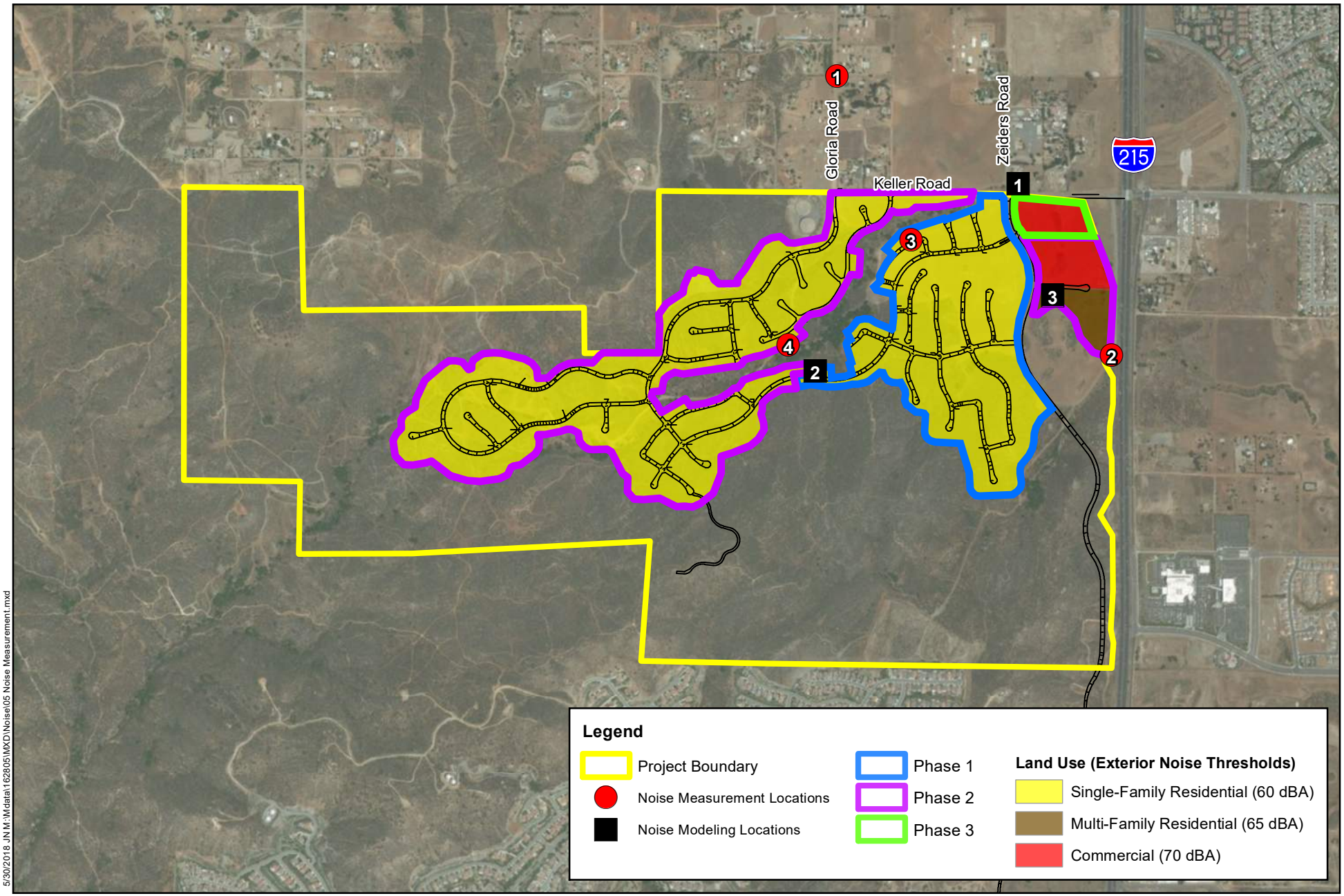
Certain land uses are particularly sensitive to noise, including schools, hospitals, rest homes, long-term medical and mental care facilities, and parks and recreation areas. Residential areas are also considered noise sensitive, especially during the nighttime hours. Existing sensitive receptors located in the project vicinity include residential uses, recreational uses, schools, and a church. Sensitive receptors are listed in Table 10, *Sensitive Receptors*.

Table 10
Sensitive Receptors

Type	Name	Distance from Project Site (feet)	Direction from Project Site	Location
Residential	Residential Uses	Adjacent	North	Along Keller Road
	Residential Uses	Adjacent	South	Along Bottle Brush Way
Schools	Oak Meadows Elementary School	2,789	Northeast	28600 Poinsettia Street, Murrieta, CA 92563
	Vista Murrieta High School	5,435	Southeast	28251 Clinton Keith Road, Murrieta, CA 92563
	Antelope Hills Elementary School	5,724	South	36105 Murrieta Oaks Avenue, Murrieta, CA 92562
	Tovashal Elementary School	6,650	South	23801 Raphael, Murrieta, CA 92562
Hospital	Loma Linda University Medical Center - Murrieta	350	East	28062 Baxter Rd, Murrieta, CA 92563
Places of Worship	Menifee Hills Bible Church	4,445	North	33220 Sweetwater Canyon Road, Menifee, CA 92584
Parks	Mapleton Park	2,730	Northeast	Poinsettia St & Daffodil Way, Murrieta, CA 92563
	Springbrook Park	2,665	East	Sevilla St & Albacete Avenue, Murrieta, CA 92563
	Antelope Hills Park	6,463	South	Carlton Oaks Street, Murrieta, CA 92562
	Blackmore Ranch Park	5,136	South	36012 Nutmeg Street, Murrieta, CA 92562
	Oak Mesa Park	5,150	South	23680 Clinton Keith Road, Murrieta, CA 92562

Note:
1. Distances are measured from the exterior project boundary only and not from individual construction areas within the interior of the project site.

Source: Google Earth, 2017.



5/30/2018 J:\N M:\Mdata\162805\MXD\Noise\05 Noise Measurement.mxd

Michael Baker INTERNATIONAL

0 750 1,500 3,000 Feet

Source: Riverside County, ESRI Word Imagery, MBI

ACOUSTICAL ASSESSMENT
MURRIETA HILLS SPECIFIC PLAN AMENDMENT

Noise Measurement Locations

Exhibit 5

4.3 EXISTING NOISE LEVELS

MOBILE SOURCES

To assess the potential for mobile source noise impacts, it is necessary to determine the noise currently generated by vehicles traveling through the project area. Most of the existing noise in the project area is generated from vehicle sources traveling along Antelope Road. As shown in Table 11, *Existing Traffic Noise Levels*, mobile noise sources in the vicinity of the project site range from 24.9 to 63.3 dBA.

Table 11
Existing Traffic Noise Levels

Roadway Segment	Existing Conditions				
	ADT	dBA @ 100 Feet from Roadway Centerline	Distance from Roadway Centerline to: (Feet)		
			60 CNEL Noise Contour	65 CNEL Noise Contour	70 CNEL Noise Contour
Keller Road					
Howard Way to Zeiders Rd.	290	44.6	-	-	-
Zeiders Road to I-215	1,100	50.4	-	-	-
I-215 to Mapleton Avenue.	3,160	24.9	-	-	-
Mapleton Avenue to Whitewood Road/Menifee Road	2,910	54.6	44	-	-
Antelope Road					
Keller Road to Mapleton Avenue	8,110	61.4	125	58	-
Keller Road to Scott Road	12,300	63.3	165	76	36
Zeiders Road					
North of Keller Road	920	52.0	-	-	-
McElwain Road					
Keller Road to Project Access	Does Not Exist				
Project Access to Linnel Lane	Does Not Exist				
Linnel Lane to Clinton Keith Road	15,020	60.5	108	50	-

Notes: ADT = average daily traffic; dBA = A-weighted decibels; CNEL = community noise equivalent level
Source: Noise modeling is based on traffic data within *Murrieta Hills Traffic Impact Analysis*, prepared by Michael Baker International (November 30, 2017).

Traffic noise associated with the I-215 freeway was modeled using the Federal Highway Administration (FHWA) Traffic Noise Model version 2.5 (TNM 2.5) and is discussed under the "On-Site Mobile Noise" section.

Mobile source noise was modeled using the Federal Highway Administration's Highway Noise Prediction Model (FHWA RD-77-108), which incorporates several roadway and site parameters. The model does not account for ambient noise levels. Noise projections are based on modeled vehicular traffic as derived from the *Murrieta Hills Traffic Impact Analysis* (*Traffic Study*) prepared by Michael Baker International (November 30, 2017). Existing modeled traffic noise levels are shown in Table 11.

STATIONARY SOURCES

The project site is undeveloped and does not contain any stationary noise sources. The primary source of stationary noise in the project vicinity would come from residential properties to the north and south. These noise sources would include mechanical equipment, such as air conditioners and swimming pool pumps.

This page intentionally left blank.

5.0 POTENTIAL ACOUSTICAL IMPACTS

CEQA THRESHOLDS

The environmental analysis in this section 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. As stated in Appendix G, a project would create a significant environmental impact if it would:

- Expose persons to, or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies (refer to Impact Statement NOI-1);

- Expose persons to or generate excessive ground borne vibration or ground borne noise levels (refer to Impact Statement NOI-2);

- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project (refer to Impact Statement NOI-1);

- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project (refer to Impact Statement NOI-1);

- For a project located within 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, expose people residing or working in the project area to excessive noise levels (refer to Impact Statement NOI-3); and

- For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels (refer to Impact Statement NOI-3).

Based on these standards and thresholds, the effects of the proposed project have been categorized as either a "less than significant impact" or a "potentially significant impact." Mitigation measures are provided for all potentially significant impacts.

SIGNIFICANCE OF CHANGES IN TRAFFIC NOISE LEVELS

An off-site traffic noise impact typically occurs when there is a discernable increase in traffic and the resulting noise level exceeds an established noise standard. In community noise considerations, changes in noise levels greater than 3 dB are often identified as substantial, while changes less than 1 dB will not be discernible to local residents. In the range of 1 to 3 dB, residents who are very sensitive to noise may perceive a slight change. In laboratory testing situations, humans are able to detect noise level changes of slightly less than 1 dB. However, this is based on a direct, immediate comparison of two sound levels. Community noise exposures occur over a long period of time and changes in noise levels occur over years (rather than the immediate

comparison made in a laboratory situation). Therefore, the level at which changes in community noise levels become discernible is likely to be some value greater than 1 dB, and 3 dB is the most commonly accepted discernable difference. A 5-dB change is generally recognized as a clearly discernable difference.

As traffic noise levels approach or exceed the normally acceptable compatibility guideline (refer to Table 3), a 3 dB increase as a result of the project is used as the increase threshold for the project. Thus, a project would result in a significant noise impact when a permanent increase in ambient noise levels of 3 dB occur upon project implementation and the resulting noise level exceeds the applicable exterior standard at a noise sensitive use.

IMPACT STATEMENT NOI-1

- **Expose persons to, or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?**

- **A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?**

- **A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?**

Short-Term Construction

Alternative 1: Originally Proposed Project

Construction for Alternative 1 would occur in three phases. Ground-borne noise and other types of construction-related noise impacts would typically occur during excavation activities of the grading phase. This phase of construction has the potential to create the highest levels of noise. Typical noise levels generated by construction equipment are shown in Table 12, *Maximum Noise Levels Generated by Construction Equipment*. It should be noted that the noise levels identified in Table 12 are maximum sound levels (L_{max}), which are the highest individual sound occurring at an individual time period. Operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four minutes at lower power settings. Other primary sources of acoustical disturbance would be due to random incidents, which would last less than one minute (such as dropping large pieces of equipment or the hydraulic movement of machinery lifts).

Table 12
Maximum Noise Levels Generated by Construction Equipment

Type of Equipment	Acoustical Use Factor[1]	L_{max} at 50 Feet (dBA)
Concrete Saw	20	90
Crane	16	81
Concrete Mixer Truck	40	79
Backhoe	40	78
Dozer	40	82
Excavator	40	81
Forklift	40	78
Paver	50	77
Roller	20	80
Tractor	40	84
Water Truck	40	80
Grader	40	85
General Industrial Equipment	50	85

Note:
1. Acoustical Use Factor (percent): Estimates the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation.

Source: Federal Highway Administration, *Roadway Construction Noise Model (FHWA-HEP-05-054)*, January 2006.

Pursuant to *Municipal Code* Section 16.30.130, construction activities are prohibited between the hours of 7:00 p.m. and 7:00 a.m. on weekdays, or anytime on Sundays or holidays; however, emergency work on public service utilities are exempt from these restrictions. Construction is permitted between the hours of 7:00 a.m. and 7:00 p.m., Monday through Saturday in recognition that construction activities undertaken during daytime hours are a typical part of living in an urban environment and do not cause a significant disruption. However, the City has placed numerical limits on construction noise from mobile and stationary equipment based on land use. If construction noise were measured from a surrounding single-family residential, multi-family residential, or commercial property and the levels exceeded the maximum noise limits identified in Table 7 and Table 8 a significant impact would occur.

The potential for construction-related noise to affect nearby residential receptors would depend on the location and proximity of construction activities to these receptors. Construction would be acoustically dispersed as it would occur throughout the project site and would not be concentrated or confined in the area directly adjacent to sensitive receptors. It should be noted that the noise levels depicted in Table 12 are maximum noise levels, which would occur sporadically when construction equipment is operated in proximity to sensitive receptors. Table 13, *Construction Average Leq (dBA) Noise Levels by Receptor Distance and Construction Activity*, identifies the nearest receptor to each phase of construction and the anticipated short-term construction noise levels generated during each construction activity. The distances were measured from the receptor property boundary to the center of each phase of construction. Refer to Exhibit 5, *Noise Measurement Locations*, for the location of each noise modeling site.

Table 13
Construction Average L_{eq} (dBA) Noise Levels by Receptor Distance and Construction Activity

Location Description	Noise Modeling Locations	Distance (ft.)	Construction Activities	Estimated Construction Noise Level	Threshold	Exceed Threshold
Phase 1						
Existing Single-Family Residence: North of Keller Road on Zeiders Road	1	1,800	Grading	52.3	60 dBA	No
			Construction	50.3		No
			Paving	43.5		No
			Painting	49.0		No
Phase 2						
Single-Family Residence: (Western most Phase 1 Residence	2	1,500	Grading	53.9	60 dBA	No
			Construction	51.9		No
			Paving	45.1		No
			Painting	50.6		No
Phase 3						
Multi-Family Residence (Phase 2 Construction)	3	850	Grading	58.8	65 dBA	No
			Construction	56.8		No
			Paving	50.1		No
			Painting	55.6		No
Existing Single-Family Residence: North of Keller Road on Zeiders Road	1	550	Grading	57.6	60 dBA	No
			Construction	55.2		No
			Paving	50.8		No
			Painting	56.3		No

Source: Roadway Construction Noise Model (RCNM).

Given the sporadic and variable nature of construction and the implementation of time limits and noise limits, specified in the *Municipal Code*, noise impacts would be less than significant. Additionally, Mitigation Measure NOI-1 requires best management practices during construction to further reduce the potential for short-term noise impacts. Thus, with mitigation, a less than significant noise impact would result from construction activities.

Blasting Construction

Project construction activities would require controlled blasting in areas where non-rippable rock using conventional excavation process using heavy earth moving equipment is not feasible. Specifically, blasting would be required in PA-3, PA-5, and PA-7 where and it is likely that cuts in these areas would require blasting where the most resistant rock is located.[2] Additionally, for the construction of McElwain Roadway, excavation of cut slopes in granodiorite deposits may require localized heavy ripping or local blasting.[3]

A typical blasting operation includes drilling a hole, filling the hole with explosive material, capping the hole, and detonating the material. Sound levels from a rock drill have been measured

[2] Leighton and Associates, Inc., *Update Geotechnical Report for Tentative Tract Map No. 35853, Murrieta Hills Specific Plan, Southwest of Keller Road and Interstate 215, Murrieta California*, March 21, 2014.

[3] Leighton and Associates, Inc., *Geotechnical/Geologic Review Portion of Tentative Tract Map No. 35853 Murrieta Hills Specific Plan, McElwain Roadway City of Murrieta, California*, October 24, 2014.

at 94 dBA at 50 feet.[4] Blasting is a short-term event, typically lasting no more than several seconds. The nearest existing noise-sensitive land uses to where blasting would occur are single-family residences north of Keller Road, single-family residences to the south of the project site at Greer Ranch, and the Loma Linda University Medical Center east of I-215. The single-family residences north of Keller Road would be located approximately 2,600 feet from the nearest blasting area within PA-5, the single-family residences at Greer Ranch would be located approximately 1,750 feet south of blasting activities at PA-7, and the medical center would be located approximately 2,000 feet from the nearest blasting area within PA-3. However, potential blasting activities for the construction of McElwain Roadway would potentially affect the Greer Ranch area.

Blasting would also have the potential to impact sensitive wildlife species in the Multiple Species Habitat Conservation Plan (MSHCP) Conservation Areas on the project site. Mitigation Measures NOI-2 and NOI-3 would be required to reduce noise impacts during blasting activities. Mitigation Measure NOI-2 requires implementation of a Blast Program to ensure that noise levels do not exceed the City's applicable thresholds during blasting activities. Mitigation Measure NOI-3 prohibits construction-related noise within 200 feet of the MSHCP Conservation Area during the typical breeding season of January 15 to September 15. Construction activities within and adjacent to any occupied sensitive habitat areas must not exceed 75 dBA L_{eq}, or ambient noise levels if higher than 75 dBA L_{eq}, during the breeding season. Mitigation Measure NOI-3 also requires an acoustical analysis to demonstrate that the 75 dBA noise level is not exceeded at any occupied sensitive habitat areas identified in biological pre-construction surveys. Implementation of Mitigation Measures NOI-2 and NOI-3 would reduce the impact of blasting activities; however, a significant and unavoidable impact would still occur in this regard.

Mitigation Measures: Mitigation Measures NOI-1 through NOI-3.

Level of Significance After Mitigation: Significant Impact.

Alternative 2: Environmentally Preferred Alternative

Alternative 2 would also be constructed in three phases. This alternative would include construction of fewer single-family homes, more multi-family homes, and less commercial retail. However, as the area disturbed by construction of Alternative 2 would be similar to Alternative 1, construction noise impacts would be the same. Therefore, with the implementation of Mitigation Measure NOI-1 construction noise impacts would be less than significant.

Blasting Construction

Noise levels from blasting activities would be the same for Alternative 2 as they were under Alternative 1. Although implementation of Mitigation Measures NOI-2 and NOI-3 would reduce blasting noise impacts, a significant impact would still occur.

[4] Federal Highway Administration, *Roadway Construction Model User's Guide,* January 2006.

Mitigation Measures: Mitigation Measures NOI-1 through NOI-3.

Level of Significance After Mitigation: Significant Impact.

LONG-TERM OPERATIONAL IMPACTS

Off-Site Mobile Noise

Alternative 1: Originally Proposed Project

Future development generated by Alternative 1 would result in additional traffic on adjacent roadways, thereby increasing vehicular noise in the vicinity of existing and proposed land uses. Based on the *Traffic Study*, the proposed project is projected to generate a total of approximately 17,109 daily trips, including 758 trips during the a.m. peak hour and 1,579 trips during the p.m. peak hour. The "Future Without Project" and "Future With Project" scenarios are compared in Table 14, *Alternative 1: Future Traffic Noise Levels*. As depicted in Table 14, under the "Future Without Project" scenario, noise levels at 100 feet from the center of the road would range from approximately 51.8 dBA to 65.6 dBA, with the highest noise levels occurring along Antelope Road. The "Future With Project" scenario noise levels would range from approximately 58.0 dBA to 65.8 dBA, with the highest noise levels also occurring along Antelope Road. Exhibit 6, *Roadway Segment Locations*, shows the locations of each analyzed roadway segment.

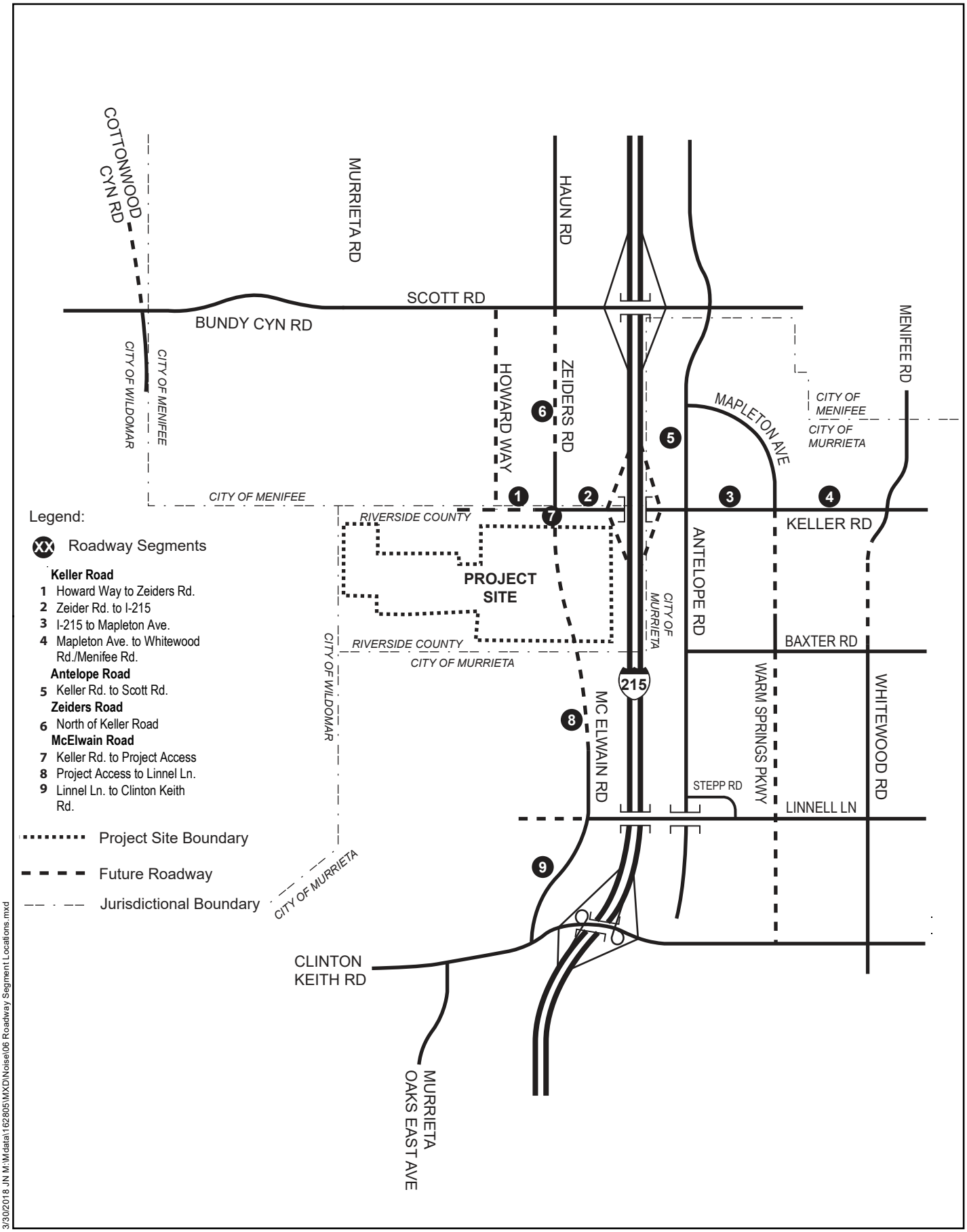
Table 14 also compares the "Future Without Project" scenario to the "Future With Project" scenario. The noise levels would result in a maximum increase of 12.1 dBA along McElwain Road (Keller Road to Project Access) as a result of the proposed project. The standard threshold of 3.0 dBA would be exceeded along this road segment and the associated noise level of approximately 64.0 dBA would exceed the normally acceptable guideline for residential properties of 60 dBA; refer to Table 3. However, 64.0 dBA is within the "conditionally acceptable" Community Noise Exposure standard range of 55 to 70 dBA for single-family residential land uses. Thus, Alternative 1 would significantly increase noise levels along the roadway segments analyzed (i.e., noise levels would exceed 60 dBA), a potentially significant impact would occur.

Table 14
Alternative 1: Future Traffic Noise Levels

Roadway Segment	Future Without Project					Future With Project					Difference In dBA @ 100 Feet from Roadway
	ADT	dBA @ 100 Feet from Roadway Centerline	Distance from Roadway Centerline to: (Feet) 60 CNEL Noise Contour	65 CNEL Noise Contour	70 CNEL Noise Contour	ADT	dBA @ 100 Feet from Roadway Centerline	Distance from Roadway Centerline to: (Feet) 60 CNEL Noise Contour	65 CNEL Noise Contour	70 CNEL Noise Contour	
Keller Road											
Howard Way to Zeiders Rd.	5,990	**57.8**	**71**	**33**	**-**	6,250	**58.0**	**73**	**34**	**-**	**0.2**
Zeider Rd. to I-215	14,000	**61.5**	**125**	**58**	**-**	20,330	**63.1**	**161**	**75**	**35**	**1.6**
I-215 to Mapleton Ave.	22,880	**63.8**	**182**	**84**	**-**	25,330	**64.3**	**194**	**90**	**-**	**0.5**
Mapleton Ave. to Whitewood Rd./Menifee Rd.	20,350	**63.2**	**163**	**76**	**-**	22,620	**63.6**	**175**	**81**	**-**	**0.4**
Antelope Road											
Keller Rd. to Scott Rd.	20,660	**65.6**	**236**	**110**	**51**	21,410	**65.8**	**242**	**112**	**52**	**0.2**
Zeiders Road											
North of Keller Rd.	9,300	**62.1**	**139**	**64**	**-**	14,170	**64.0**	**184**	**85**	**-**	**1.9**
McElwain Road											
Keller Rd. to Project Access	880	**51.9**	**-**	**-**	**-**	14,230	**64.0**	**184**	**86**	**-**	**12.1**
Project Access to Linnel Ln.	880	**51.8**	**-**	**-**	**-**	4,640	**59.0**	**86**	**40**	**-**	**7.2**
Linnel Ln. to Clinton Keith Rd.	22,170	**62.2**	**141**	**65**	**-**	22,790	**62.3**	**143**	**66**	**-**	**0.1**

Notes: ADT = average daily traffic; dBA = A-weighted decibels; CNEL = community noise equivalent level

Source: Noise modeling is based on traffic data within *Murrieta Hills Specific Plan Amendment Traffic Impact Analysis,* prepared by Michael Baker International, November 30, 2017.



3/30/2018 JN M:\Mdata\162805\MXD\Noise\06 Roadway Segment Locations.mxd

ACOUSTICAL ASSESSMENT
MURRIETA HILLS SPECIFIC PLAN AMENDMENT

Roadway Segment Locations

Michael Baker INTERNATIONAL

NOT TO SCALE

Source: Michael Baker International

Exhibit 6

Typically, feasible mitigation measures for off-site roadway noise impacts includes repairing the roads with rubberized asphalt and developing sound walls or attenuation barriers to minimize noise impacts. However, this mitigation can only be imposed on on-site roadways since the Applicant would not have authorization or control to make off-site improvements. As impacts would also occur on off-site roadways and properties, it is usually infeasible for the Applicant to implement these measures. Therefore, impacts to off-site uses from traffic noise would be considered significant since feasible mitigation measures would not be available to mitigate noise levels on all surrounding roadways to below thresholds.

Mitigation Measures: No feasible mitigation measures as the impact occurs at an off-site location.

Level of Significance After Mitigation: Significant Impact.

Alternative 2: Environmentally Preferred Alternative

Future development generated by Alternative 2 would also result in additional traffic on adjacent roadways. Based on analysis of Alternative 2, the project is projected to generate a total of approximately 663 trips during the a.m. peak hour and 1,239 trips during the p.m. peak hour. Alternative 2 "Future Without Project" and "Future With Project" scenarios are compared in Table 15, *Alternative 2: Future Traffic Noise Levels*. As depicted in Table 15, under the "Future With Project" scenario noise levels would range from approximately 58.0 dBA to 65.7 dBA, with the highest noise levels also occurring along Antelope Road. Refer to Exhibit 6 for the locations of each analyzed roadway segment.

Table 15 also compares the "Future Without Project" scenario to the "Future With Project" scenario. The noise levels would result in a maximum increase of 11.0 dBA along McElwain Road (Keller Road to Project Access) as a result of the proposed project. The standard threshold of 3.0 dBA would be exceeded along this road segment and the associated noise level of approximately 62.9 dBA would exceed the normally acceptable compatibility guideline of 60 dBA for residential properties; refer to Table 3. However, 62.9 dBA is within the "conditionally acceptable" Community Noise Exposure standard range of 55-70 dBA for single-family residential land uses, (refer to Table 3). Thus, Alternative 2 would significantly increase noise levels along the roadway segments analyzed (i.e., noise levels would exceed 60 dBA), a potentially significant impact would occur.

Mitigation Measures: No feasible mitigation measures as the impact occurs at an off-site location.

Level of Significance After Mitigation: Significant Impact.

Table 15
Alternative 2: Future Traffic Noise Levels

Roadway Segment	Future Without Project					Future With Project					Difference In dBA @ 100 Feet from Roadway
	ADT	dBA @ 100 Feet from Roadway Centerline	Distance from Roadway Centerline to: (Feet)			ADT	dBA @ 100 Feet from Roadway Centerline	Distance from Roadway Centerline to: (Feet)			
			60 CNEL Noise Contour	65 CNEL Noise Contour	70 CNEL Noise Contour			60 CNEL Noise Contour	65 CNEL Noise Contour	70 CNEL Noise Contour	
Keller Road											
Howard Way to Zeiders Rd.	5,990	57.8	71	33	-	6,250	58.0	73	34	-	0.2
Zeider Rd. to I-215	14,000	61.5	125	58	-	20,330	63.1	161	75	35	1.6
I-215 to Mapleton Ave.	22,880	63.8	182	84	-	25,330	64.3	195	90	-	0.5
Mapleton Ave. to Whitewood Rd./Menifee Rd.	20,350	63.2	163	76	-	22,070	63.5	172	80	-	0.3
Antelope Road											
Keller Rd. to Scott Rd.	20,660	65.6	236	110	51	21,250	65.7	241	112	52	0.1
Zeiders Road											
North of Keller Rd.	9,300	62.1	139	64	-	13,010	63.6	174	81	-	1.5
McElwain Road											
Keller Rd. to Project Access	880	51.9	-	-	-	11,180	62.9	157	73	-	11.0
Project Access to Linnel Ln.	880	51.8	-	-	-	3,790	58.1	75	35	-	6.3
Linnel Ln. to Clinton Keith Rd.	22,170	62.2	141	65	-	22,640	62.3	142	66	-	0.1

Notes: ADT = average daily traffic; dBA = A-weighted decibels; CNEL = community noise equivalent level
Source: Noise modeling is based on traffic data within *Murrieta Hills Specific Plan Amendment Traffic Impact Analysis,* prepared by Michael Baker International, November 30, 2017.

Cumulative Mobile Source Impacts

A project's contribution to a cumulative traffic noise increase would be considered significant when the combined effect exceeds perception level (i.e., auditory level increase) threshold. The combined effect compares the "cumulative with project" condition to "existing" conditions. This comparison accounts for the traffic noise increase generated by a project combined with the traffic noise increase generated by projects in the cumulative project list. The following criteria have been utilized to evaluate the combined effect of the cumulative noise increase.

Combined Effect. The cumulative with project noise level ("Future With Project") would cause a significant cumulative impact if a 3.0 dBA increase over existing conditions occurs and the resulting noise level exceeds the applicable exterior standard at a sensitive use.

Although there may be a significant noise increase due to the proposed project in combination with other related projects (combined effects), it must also be demonstrated that the project has an incremental effect. In other words, a significant portion of the noise increase must be due to the proposed project. The following criteria have been utilized to evaluate the incremental effect of the cumulative noise increase.

Incremental Effects. The "Future With Project" causes a 1.0 dBA increase in noise over the "Future Without Project" noise level.

A significant impact would result only if both the combined and incremental effects criteria have been exceeded. Noise by definition is a localized phenomenon and reduces as distance from the source increases. Consequently, only the proposed project and growth due to occur in the project site's general vicinity would contribute to cumulative noise impacts.

Alternative 1: Originally Proposed Project

Alternative 1 traffic noise effects along roadway segments in the project vicinity for "Existing," "Future Without Project," and "Future With Project," conditions, including incremental and net cumulative impacts are shown in Table 16, *Alternative 1: Cumulative Noise for the Worst Case Scenario*.

Table 16
Alternative 1: Cumulative Noise for the Worst Case Scenario

Roadway Segment	Existing	Future Without Project	Future With Project	Combined Effects	Incremental Effects	Cumulatively Significant Impact?
	dBA @ 100 Feet from Roadway Centerline	dBA @ 100 Feet from Roadway Centerline	dBA @ 100 Feet from Roadway Centerline	Difference In dBA Between Existing and Future With Project	Difference In dBA Between Future Without Project and Future With Project	
Keller Road						
Howard Way to Zeiders Rd.	44.6	57.8	58.0	13.4	0.2	No
Zeiders Rd. to I-215 Southbound Ramps	50.4	61.5	63.1	12.7	1.6	Yes
I-215 Northbound Ramps to Mapleton Ave.	24.9	63.8	64.3	39.4	0.5	No
Mapleton Ave. to Whitewood Rd./Menifee Rd.	54.6	63.2	63.6	9.0	0.4	No
Antelope Rd/Mapleton Ave						
Keller Rd. to Scott Rd.	63.3	65.6	65.8	2.5	0.2	No
Zeiders Road						
North of Keller Rd.	52.0	62.1	64.0	12.0	1.9	Yes
McElwain Road						
Keller Rd. to Project Access	Does Not Exist	51.9	64.0	NA	12.1	Yes
Project Access to Linnel Ln.	Does Not Exist	51.8	59.0	NA	7.2	Yes
Linnel Ln. to Clinton Keith Rd.	60.5	62.2	62.3	1.8	0.1	No

Notes: ADT = average daily traffic; dBA = A-weighted decibels; CNEL = community noise equivalent level

Source: Noise modeling is based on traffic data within *Murrieta Hills Specific Plan Traffic Impact Analysis*, prepared by Michael Baker International (November 30, 2017).

As indicated in Table 16, the Incremental Effects criterion of 1.0 dBA is exceeded along Keller Road (Zeiders Road to I-215 Southbound Ramp), Zeiders Road (north of Keller Road), and McElwain Road (Keller Road to Linnel Lane). In addition, the 3.0 dBA *Combined Effects* criterion is exceeded along Keller Road (Howard Way to Whitewood Road) and Zeiders Road (north of Keller Road). In order for increases in cumulative traffic noise levels to be significant, the respective noise levels must also exceed the normally acceptable standard of 60 dBA for residential properties (refer to Table 3). Thus, the roadway segments would experience a

significant cumulative noise increase on Keller Road, Zeiders Road, and McElwain Road. Therefore, the proposed project, in combination with cumulative background traffic noise levels, would result in a potentially significant impact.

Mitigation Measures: No feasible mitigation.

Level of Significance After Mitigation: Significant Impact.

Alternative 2: Environmentally Preferred Alternative

Alternative 2 traffic noise effects along roadway segments in the project vicinity for "Existing," "Future Without Project," and "Future With Project," conditions, including incremental and net cumulative impacts are shown in Table 17, *Alternative 2: Cumulative Noise for the Environmentally Preferred Alternative*. Impacts resulting from Alternative 2 would be similar to those generated by Alternative 1. Although the values for Alternative 2 are slightly less, the thresholds for both alternatives are exceeded for the same road segments. Therefore, like Alternative 1, the proposed project combined with the cumulative background traffic noise would result in a potential significant impact.

Table 17
Alternative 2: Cumulative Noise for the Environmentally Preferred Alternative

Roadway Segment	Existing	Future Without Project	Future With Project	Combined Effects	Incremental Effects	Cumulatively Significant Impact?
	dBA @ 100 Feet from Roadway Centerline	dBA @ 100 Feet from Roadway Centerline	dBA @ 100 Feet from Roadway Centerline	Difference In dBA Between Existing and Future With Project	Difference In dBA Between Future Without Project and Future With Project	
Keller Road						
Howard Way to Zeiders Rd.	44.6	57.8	58.0	13.4	0.2	No
Zeiders Rd. to I-215 Southbound Ramps	50.4	61.5	63.1	12.7	1.6	Yes
I-215 Northbound Ramps to Mapleton Ave.	24.9	63.8	64.3	39.4	0.5	No
Mapleton Ave. to Whitewood Rd./Menifee Rd.	54.6	63.2	63.5	8.9	0.3	No
Antelope Road/Mapleton Avenue						
Keller Rd. to Mapleton Ave.	61.4	Street Vacated	Street Vacated	NA	NA	No
Keller Rd. to Scott Rd.	63.3	65.6	65.7	2.4	0.1	No
Zeiders Road						
North of Keller Rd.	52.0	62.1	63.6	11.6	1.5	Yes
McElwain Road						
Keller Rd. to Project Access	Does Not Exist	51.9	62.9	NA	11	Yes
Project Access to Linnel Ln.	Does Not Exist	51.8	58.1	NA	6.3	No
Linnel Ln. to Clinton Keith Rd.	60.5	62.2	62.3	1.8	0.1	No

Notes: ADT = average daily traffic; dBA = A-weighted decibels; CNEL = community noise equivalent level

Source: Noise modeling is based on traffic data within *Murrieta Hills Specific Plan Traffic Impact Analysis,* prepared by Michael Baker International (November 30, 2017).

Mitigation Measures: No feasible mitigation.

Level of Significance After Mitigation: Significant Impact.

On-Site Mobile Noise

Alternative 1: Originally Proposed Project

The project proposes the development of 578 single-family residential units 172 multi-family residential units, and 346,302 square feet of community commercial property. The future residents of the proposed project could be exposed to elevated noise levels from traffic noise along the I-215 freeway. The Federal Highway Administration (FHWA) Traffic Noise Model version 2.5 (TNM 2.5) was used to evaluate the noise impacts from traffic along I-215 to the proposed on-site uses; refer to the TNM 2.5 outputs provided as part of Appendix B. Noise from typical daily traffic along I-215 was modeled at a total of 46 receptor locations on the project site. The TNM 2.5 noise modeling is based on the details and specifications as part of the proposed project (e.g., site plan, tentative tract map, etc.), and the existing acoustical conditions in the surrounding area (e.g., existing berms, buildings, topography, etc.).

The normally acceptable dBA CNEL/L_{dn} noise standard for single-family and multi-family residential uses are 60 dBA, and 65 dBA, respectively; refer to Table 3. Table 18, *Traffic Noise Modeling Results*, indicates the results of the modeling at the proposed receptors along I-215. It should be noted that the traffic noise levels depicted in Table 18 differ from the measured levels depicted in Table 9 because they represent noise levels at different locations on the project site and are also reported in different noise metrics (e.g., noise measurements are the L_{eq} values and traffic noise are reported in CNEL).

As indicated in Table 18, the City's normally compatible standards are exceeded at the single-family lots facing the freeway in PA-2 as well as the multi-family uses in PA-8. Construction of a 5-foot soundwall (Mitigation Measure NOI-4) as shown in Exhibit 7, *Soundwall Location*, would reduce the sound level of the single-family lots located in PA-2 below the 60 dB standard.

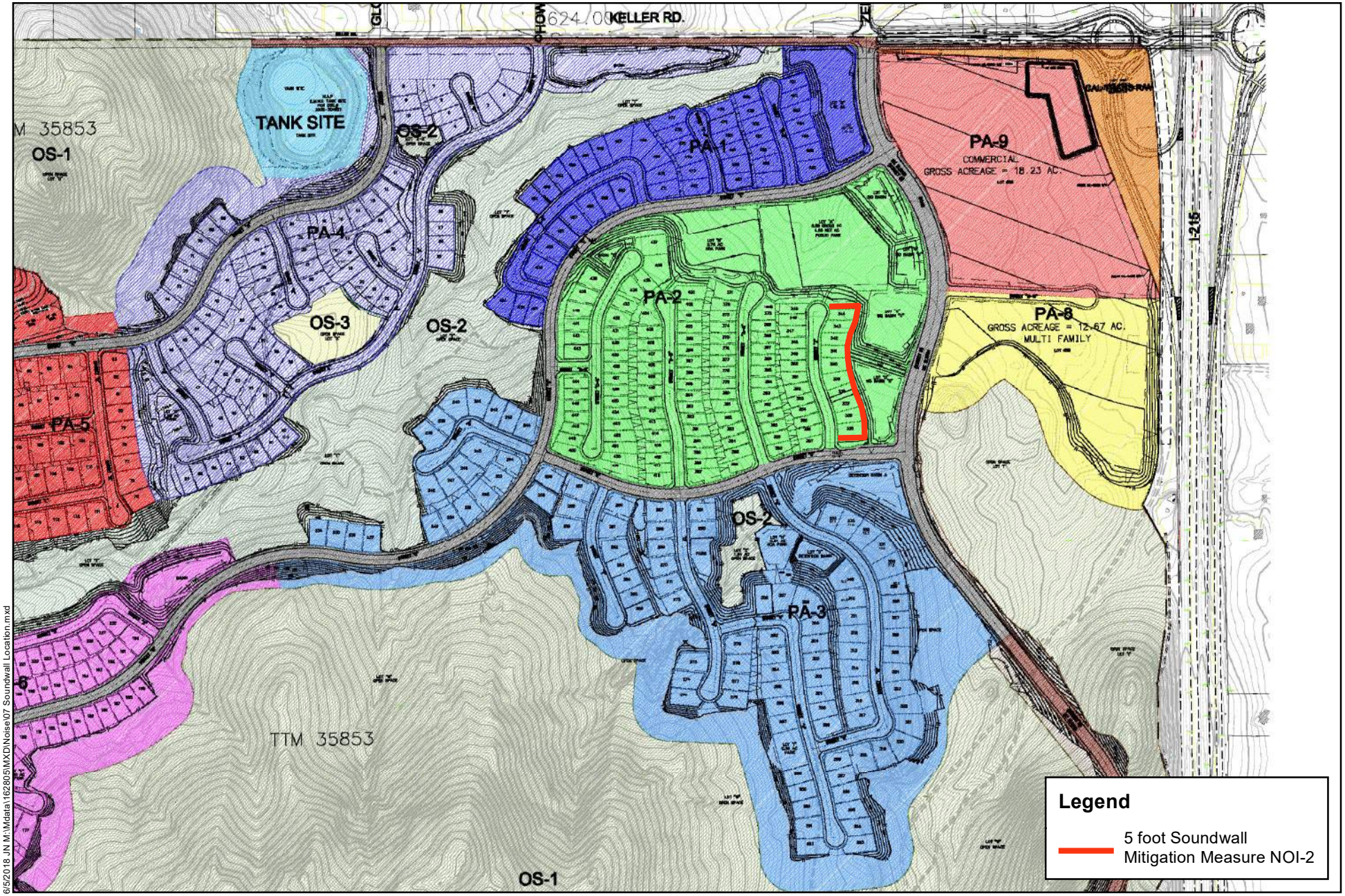
It is noted that due to the varying topography on the project site and receptor-to-roadway (I-215) distances, the single-family residential receptors located in PA-1 and PA-3 would not be exposed to traffic noise levels exceeding the City's land use compatibility standards. Therefore, a noise barrier analysis was only conducted for the receptors in PA-2 where I-215 traffic noise levels would exceed the City's normally compatible noise standards for single-family residential uses (60 dB).

Table 18
Traffic Noise Modeling Results

Receiver #	Location Description	Exterior Noise Level (dBA CNEL/L_{dn}) [1, 2]	Exterior Noise Level After Mitigation (dBA CNEL/L_{dn}) [1, 2]
1	PA-1, Single-Family Lots (First Row)	56.8	-
2		56.8	-
3		56.8	-
4		56.0	-
5	PA-2, Public Park	56.4	-
6	PA-2, Single-Family Lots (First Row)	59.7	56.5
7		**60.3**	57.1
8		**60.0**	56.7
9		**60.6**	56.8
10		**60.2**	56.6
11	PA-3, Single-Family Lots (First Row)	55.6	-
12		54.4	-
13		52.7	-
14		56.5	-
15		55.0	-
16		54.0	-
17		53.5	-
18		51.8	-
19		52.8	-
20		54.3	-
21		52.3	-
22	PA-3, Single-Family Lots (Second Row)	51.1	-
23		50.2	-
24		51.6	-
25		53.4	
26		55.3	-
27		52.9	-
28		53.6	-
29		54.0	-
30		53.8	-
31		54.1	-
32		56.6	-
33	PA-1, Single-Family Lots (Second Row)	54.6	-
34		54.1	-
35		53.9	-
36	PA-8, Multi-Family (First Row)	**73.8**	-
37		**73.8**	-
38		**73.8**	-
39		**69.6**	-
40		**69.2**	-
41		**68.9**	-
42	PA-8, Multi-Family (Second Row)	56.5	-
43		53.8	-
44		53.9	-
45		54.1	-
46		59.0	-

Bold text indicates noise levels exceeding the City's noise limits.

Notes:
1. Noise levels were modeled using FHWA TNM 2.5.
2. Refer to Appendix B, *Modeling Data*, for detailed modeling outputs.



6/5/2018 JN M:\Mdata\162805\MXD\Noise\07 Soundwall Location.mxd

Michael Baker INTERNATIONAL

Source: Michael Baker International

ACOUSTICAL ASSESSMENT
MURRIETA HILLS SPECIFIC PLAN AMENDMENT

Soundwall Location

Exhibit 7

Multi-family residential development in PA-8 would potentially be exposed to noise levels in excess of conditionally acceptable noise levels. According to the Murrieta Noise Compatibility Standards, new construction should only proceed in areas exposed to normally unacceptable noise levels if a detailed analysis of noise reduction requirements is completed and noise insulation features are included in the project design. Mitigation Measure NOI-5 requires subsequent site-specific noise studies (based on architectural plans) to verify that residences incorporate various architectural features to reduce noise. Because the design of buildings is currently unknown, this level of analysis cannot be completed at this time. However, according to Caltrans, typical building construction with closed windows reduces interior exposure to exterior noise levels by approximately 30 dBA. Exterior noise levels are not predicted to exceed 74 dBA in PA-8; therefore, it is reasonable to assume that an interior noise level of 45 dBA CNEL could be achieved and impacts would be reduced to a less than significant level.

Mitigation Measures: Mitigation Measures NOI-4 and NOI-5.

Level of Significance After Mitigation: Less Than Significant Impact.

Alternative 2: Environmentally Preferred Alternative

Onsite mobile noise impacts for Alternative 2 would be the same as those for Alternative 1. Alternative 2 proposes more multi-family units and less single-family units and commercial property, but the noise levels along the I-215 freeway would be the same. Alternative 2 would change the layout for the multi-family and single-family houses to accommodate the difference in the number of units but the noise levels would be similar to those shown in Table 18. Freeway noise would still exceed the 65 dBA standard for the multi-family units. With Mitigation Measure NOI-4, impacts to single-family residences located in PA-2 would be less than significant.

Alternative 2 would also require Mitigation Measure NOI-5, noise studies for proposed residences adjacent to I-215 to demonstrate that noise levels have been properly accounted for and attenuated in accordance with established City standards. With implementation of Mitigation Measure NOI-5, impacts would be reduced to a less than significant level.

Mitigation Measures: Mitigation Measures NOI-4 and NOI-5.

Level of Significance After Mitigation: Less Than Significant Impact.

STATIONARY NOISE IMPACTS

Implementation of the project would encourage development of a mix of uses including residential and commercial/retail uses within the project site. As the project site is currently vacant undeveloped land, new noise sources would be introduced as a result of the project. Although several noise sources would be introduced, many of them would operate for very brief time periods, such as delivery truck movements, trash compactors and parking lot sweepers. These types of sources usually do not operate concurrently in close proximity. Other noise

sources, such as air conditioning equipment, loading dock activities, and parking lot noise, operate for comparatively longer periods of time. Further, it is noted that the projected noise levels presented below do not account for any noise attenuation due to walls, berms, intervening structures or topography.

Alternative 1: Originally Proposed Project

Residential Areas

Noise that is typical of residential areas includes children playing, pet noise, amplified music, car repair, pool and spa equipment, woodworking, and home repair. Noise from residential stationary sources would primarily occur during the "daytime" activity hours of 7:00 a.m. to 10:00 p.m. Furthermore, the residences would be required to comply with the noise standards set forth in the City's General Plan and Municipal Code.

Mechanical Equipment

The primary stationary noise source associated with the proposed commercial development would be heating, ventilation, and air conditioning (HVAC) units. HVAC units would be located throughout the commercial uses in PA-9. HVAC systems typically result in noise levels that average between 40 and 50 dBA Leq at 50 feet from the source. HVAC units would adjoin the commercial uses or be roof mounted. The nearest off-site sensitive receptors (residential uses) would be located approximately 1,500 feet northwest of the proposed commercial area. At this distance, noise levels from HVAC units would be a maximum of 20 dBA, which is below the City's 50 dBA daytime standard and 45 dBA nighttime standard for residential land uses. As the project would not place mechanical equipment associated with the project near adjacent residential uses, noise from the HVAC units would not be perceptible from the adjacent residences on the eastern side of the project site. Impacts from mechanical equipment would be less than significant.

Slow-Moving Trucks (Deliveries) and Loading Docks

Noise sources at loading docks for the commercial uses may include maneuvering and idling trucks, truck refrigeration units, forklifts, banging and clanging of equipment (i.e., hand carts and roll-up doors), noise from public address systems and voices of truck drivers and employees. The maximum noise levels of slow-moving heavy and small trucks range between 70 and 73 dBA at 50 feet. Noise sources at loading areas may include maneuvering and idling trucks, truck refrigeration units, forklifts, banging and clanging of equipment (i.e., hand carts and roll-up doors), noise from public address systems, and voices of truck drivers and employees.

Final location of loading docks have not been determined. Loading docks would be designed per the final end users, and configurations may vary. To mitigate noise levels resulting from activities at loading docks, loading docks adjacent to residential uses shall be designed to have either a depressed (i.e., below grade) loading dock area; an internal bay; or a wall to break the line of sight

between residential land uses and other noise sensitive uses, and loading operations. Mitigation Measure NOI-6 requires the preparation of an acoustical analysis to demonstrate that loading dock operation would not result in noise levels that exceed City's noise standard at nearby residences or other sensitive uses. It should be noted that Municipal Code Section 16.30.130(B) prohibits loading and unloading operations between the hours of 10:00 p.m. and 6:00 a.m. It is anticipated that with the implementation of Mitigation Measure NOI-6, impacts would be less than significant.

Parking Areas

Traffic associated with parking lots is typically not of sufficient volume to exceed community noise standards, which are based on a time-averaged scale such as the CNEL scale. However, the instantaneous maximum sound levels generated by a car door slamming, engine starting up and car passbys may be an annoyance to adjacent noise-sensitive receptors. Estimates of the maximum noise levels associated with some parking lot activities are presented in Table 19, *Typical Noise Levels Generated by Parking Lots*. Conversations in parking areas may also be an annoyance to adjacent sensitive receptors. Sound levels of speech typically range from 33 dBA at 48 feet for normal speech to 50 dBA at 50 feet for very loud speech.

Table 19
Typical Noise Levels Generated by Parking Lots

Noise Source	Maximum Noise Levels at 50 Feet from Source
Car door slamming	63 dBA Leq
Car starting	60 dBA Leq
Car idling	61 dBA Leq

Impacts associated with parking would be considered minimal since the parking lots would be associated with the commercial uses and would be located along the I-215 freeway. It should be noted that parking lot noise are instantaneous noise levels compared to noise standards in the CNEL scale, which are averaged over time. As a result, actual noise levels over time resulting from parking lot activities would be far lower. As noted above, parking lot noise would also be masked by background noise from traffic along I-215. Therefore, the proposed parking would not result in substantially greater noise levels than currently exist at the project site. Noise associated with parking lot activities is not anticipated to exceed the City's Noise Standards or the California Land Use Compatibility Standards during operation. Therefore, noise impacts from parking lots would be less than significant.

Mitigation Measures: Mitigation Measure NOI-6.

Level of Significance After Mitigation: Less Than Significant Impact.

Alternative 2: Environmentally Preferred Alternative

Alternative 2 would experience similar stationary noise impacts as those analyzed in Alternative 1. Residential areas would experience the same typical neighborhood noises including children playing, pet noise, amplified music, car repair, woodworking, home repair, and mechanical equipment (e.g., landscape maintenance equipment). Mitigation Measure NOI-6 requires the preparation of an acoustical analysis to demonstrate that loading dock operation would not result in noise levels that exceed City's noise standard at nearby residences or other sensitive uses. The amount of community commercial property would decrease when compared with Alternative 1, therefore noise generating activities associated with commercial retail land uses would also decrease. Similar to Alternative 1, with the implementation of Mitigation Measure NOI-6 impacts would be less than significant.

Mitigation Measures: Mitigation Measure NOI-6.

Level of Significance After Mitigation: Less Than Significant Impact.

MITIGATION MEASURES:

NOI-1 For construction activities (other than blasting) within 200 feet of sensitive receptors, the construction contractor shall implement the following measures during construction:

- Construction activities that could generate high noise levels at residences shall be scheduled during times that would have the least impact on sensitive receptor locations. This could include restricting construction activities in the areas of potential impact to middle hours of the work day, such as from 10:00 a.m. to 4:00 p.m. Monday to Friday when residents would be least likely to be home.

- Stationary construction noise sources, such as temporary generators, shall be located as far from nearby noise-sensitive receptors as possible.

- Trucks shall be prohibited from idling along streets serving the construction site where noise-sensitive residences are located.

NOI-2 A qualified blast contractor shall be employed to ensure that charge size, shot timing, and cover material are sufficient to ensure that blasting noise at the nearby open space does not exceed applicable thresholds. The blast contractor shall perform test shots in order to determine the drill hole depth, charge size, and depth of burial (stemming) for the charges prior to finalizing the blasting program because of the proximity to sensitive receptors.

NOI-3 Construction-related noise shall be prohibited within 200 feet of the MSHCP Conservation Area during the typical breeding season of January 15 to September 15. Construction activity within and adjacent to any occupied sensitive habitat areas must not exceed 75 dBA L_{eq}, or ambient noise levels if higher than 75 dBA L_{eq}, during the breeding season. Prior to issuance of land development permits, including clearing or grubbing and grading and/or construction permits for areas within or adjacent to the MSHCP Conservation Area, the applicant shall prepare and submit to the satisfaction of the Development Services Director (or their designee), an acoustical analysis to demonstrate that the 75 dBA L_{eq} noise level is not exceeded at the location of any occupied sensitive habitat areas as determined based on the results the required biological pre-construction surveys. The acoustical analysis shall describe the methods by which construction noise shall not exceed 75 dBA L_{eq}. Noise abatement methods may include, but are not limited to, reoperation of specific construction activities, installation of noise abatement at the source, and/or installation of noise abatement at the receiving areas.

NOI-4 Prior to the issuance of building permits for the single-family residences in PA-2, the project Applicant shall demonstrate, to the satisfaction of the City of Murrieta Building Official, that a minimum 5-foot high soundwall shall be constructed in PA-2 as shown in Exhibit 7. The wall height shall be measured from the graded pad elevation of the residential lots shown in Exhibit 7. Acceptable materials for the construction of the barriers shall have a density of 3.5 pounds per square foot of surface area and maybe composed of the following: masonry block, stucco veneer over wood framing (or foam core), glass, Plexiglass, or Lexan 9¼ inch thick). The barrier may also be constructed out of a combination of the above listed materials.

NOI-5 Prior to issuance of building permits for the multi-family development in PA-8 (along I-215 frontage), the applicant shall prepare an acoustical analysis ensuring that interior noise levels due to exterior noise sources will be at or below 45 dBA CNEL. One or a combination of the following measures will be incorporated as necessary to ensure interior noise will be at or below 45 dBA CNEL:

- Use non-noise-sensitive structures such as garages to shield noise-sensitive areas;
- Orient bedrooms away from noise sources;
- Limit opening and penetrations on portions of buildings impacted by noise;
- Enclose patios or balconies using a clear material, such as Plexiglas;
- Install dual-paned windows; and/or
- Modifying elements of building construction (i.e., walls, roof, ceiling, windows, and other penetrations), as necessary to provide sound attenuation. This may include sealing windows, locating doors on the opposite side of a building from the noise source, or installing solid-core doors equipped with appropriate acoustical gaskets.

For some units, it may be necessary for the windows to be able to remain closed to ensure that interior noise levels meet the interior standard of 45 dBA CNEL. Consequently, a ventilation or air conditioning system would be required for these units to provide a habitable interior environment with the windows closed. In addition to interior noise reductions, outdoor usable areas such as common areas shall not be located within 150 feet of the eastern development boundary.

NOI-6 Prior to the issuance of any Building Permit for PA-9, a noise assessment shall be prepared. The noise assessment shall ensure that commercial property loading docks are shielded from existing and proposed residences so that the City's noise standards are not exceeded. The noise assessment shall identify any noise control measures (e.g., barriers, shielding, etc.) necessary to comply with the City's noise regulations. Individual future commercial users shall implement all noise control measures identified in the assessment.

IMPACT STATEMENT NOI-2

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

Short-Term Construction

Alternative 1: Originally Proposed Project

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 Federal Transit Administration (FTA) has published standard vibration velocities for construction equipment operations. In general, the FTA architectural damage criterion for continuous vibrations (i.e., 0.2 inch/second) appears to be conservative. The types of construction vibration impacts include human annoyance and building damage. Human annoyance occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time. Building damage can be cosmetic or structural. Ordinary buildings that are not particularly fragile would not experience any cosmetic damage (e.g., plaster cracks) at distances beyond 30 feet. This distance can vary substantially depending on the soil composition and underground geological layer between vibration source and receiver. In addition, not all buildings respond similarly to vibration generated by construction equipment.

The vibration produced by construction equipment, is illustrated in Table 20, *Typical Vibration Levels for Construction Equipment*.

Table 20
Typical Vibration Levels for Construction Equipment

Equipment	Approximate peak particle velocity at 25 feet (inches/second)2	Approximate peak particle velocity at 50 feet (inches/second)2	Approximate peak particle velocity at 100 feet (inches/second)2	Approximate peak particle velocity at 150 feet (inches/second)2
Large bulldozer	0.089	0.031	0.011	0.002
Loaded trucks	0.076	0.027	0.010	0.002
Small bulldozer	0.003	0.001	0.000	0.000
Jackhammer	0.035	0.012	0.004	0.001

Notes:
1. Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Guidelines*, May 2006. Table 12-2.
2. Calculated using the following formula:
   $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$
   where: PPV (equip) = the peak particle velocity in in/sec of the equipment adjusted for the distance
   PPV (ref) = the reference vibration level in in/sec from Table 12-2 of the FTA *Transit Noise and Vibration Impact Assessment Guidelines*
   D = the distance from the equipment to the receiver

Groundborne vibration decreases rapidly with distance. As indicated in Table 20, based on the FTA data, vibration velocities from typical heavy construction equipment operation that would be used during project construction range from 0.003 to 0.089 in/sec peak particle velocity (PPV) at 25 feet from the source of activity. The closest sensitive receptors (residential uses) would be located approximately 50 feet to the north of the property line of the project site. At this distance, vibration velocities from construction equipment would range from 0.001 to 0.031 in/sec PPV, which would exceed the City's 0.01 in/sec PPV vibration perception threshold. Implementation of Mitigation Measure NOI-7 would minimize temporary groundborne vibration impacts from construction activities at adjacent sensitive residential uses. Mitigation Measure NOI-7 requires written notification to vibration-sensitive uses within 200 feet of the project site at least three weeks prior to the start of construction activities informing them of the estimated start date and duration of daytime vibration-generating construction activities. This notification would include information warning about the potential for impacts related to vibration-sensitive equipment. Even with implementation of Mitigation Measure NOI-7, temporary construction groundborne vibration levels would exceed the City's 0.01 in/sec PPV perception threshold. Therefore, this impact would be significant and unavoidable.

It is noted that although the City's 0.01 in/sec PPV perception threshold would be exceeded at the nearest sensitive receptors during construction activities, the project's construction vibration levels (0.001 to 0.031 in/sec PPV at 50 feet) would be below the FTA's 0.20 in/sec PPV architectural damage threshold.

Blasting Vibration

Controlled blasting would be required in areas where non-rippable rock using conventional excavation process using heavy earth moving equipment is not feasible. Specifically, blasting would be required in PA-3, PA-5, and PA-7 where and it is likely that cuts in these areas would require blasting where the most resistant rock is located.[5] Additionally, for the construction of McElwain Roadway, excavation of cut slopes in granodiorite deposits may require localized heavy ripping or local blasting.[6]

Blasting typically includes drilling a hole, filling the hole with explosive material, capping the hole, and detonating the material. Blasting is a short-term event, typically lasting no more than several seconds. According to findings by the FTA, blasting typically results in a vibration velocity of approximately 100 velocity decibels (VdB) at 50 feet from the blast. This is equivalent to approximately 0.4 in/sec PPV.[7] The nearest existing vibration-sensitive land uses to where blasting would occur are single-family residences north of Keller Road, the Loma Linda University Medical Center east of I-215, and Greer Ranch to the south. The single-family residences would be located approximately 2,600 feet from the nearest blasting area within PA-5, and the medical center would be located approximately 2,000 feet from the nearest blasting area within PA-3. In addition, single-family residences at Greer Ranch would be located approximately 1,400 feet south of blasting activities at PA-7. At these distances, vibration levels from blasting would be approximately 0.001 in/sec PPV at the residences north of Keller Road, 0.002 in/sec PPV at the Loma Linda Medical Center, and 0.003 in/sec PPV at the Greer Ranch residences. As such, vibration levels from blasting would not exceed the City's vibration perception threshold of 0.01 in/sec PPV or the FTA's 0.20 in/sec PPV threshold at the residences and/or Loma Linda Medical Center.

Implementation of Mitigation Measure NOI-7 would further reduce blasting vibration impacts at sensitive receptors during project construction activities. Mitigation Measure NOI-7 requires written notification to vibration-sensitive uses within 200 feet of the project site at least three weeks prior to the start of construction activities informing them of the estimated start date and duration of daytime vibration-generating construction activities. This notification would include information warning about the potential for impacts related to vibration-sensitive equipment. Therefore, vibration impacts from blasting would be less than significant following compliance with Mitigation Measure NOI-7.

Mitigation Measures: Mitigation Measure NOI-7.

Level of Significance After Mitigation: Significant Impact for construction equipment activities. Less than significant for blasting vibration.

[5] Leighton and Associates, Inc., *Update Geotechnical Report for Tentative Tract Map No. 35853, Murrieta Hills Specific Plan, Southwest of Keller Road and Interstate 215, Murrieta California*. March 21, 2014.

[6] Leighton and Associates, Inc., *Geotechnical/Geologic Review Portion of Tentative Tract Map No. 35853 Murrieta Hills Specific Plan, McElwain Roadway City of Murrieta, California*, October 24, 2014.

[7] RMS velocity in decibels (VdB) are 1 micro-inch/second (Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Guidelines*, May 2006).

Alternative 2: Environmentally Preferred Alternative

Groundborne vibrations from construction activities would be the same for Alternative 2 as they were under Alternative 1. Under Alternative 2, the closest sensitive receptors would be located 50 feet to the north of the property line of the project site. At this conservative distance, vibration velocities from construction equipment would range from 0.001 to 0.031 in/sec PPV, which would exceed the City's 0.01 in/sec PPV vibration perception threshold. Implementation of Mitigation Measure NOI-7 would minimize temporary groundborne vibration impacts from construction activities at adjacent sensitive residential uses to the furthest extent feasible. However, construction vibration levels would still exceed the City's 0.01 in/sec PPV perception threshold under Alternative 2 with implementation of Mitigation Measure NOI-7. A significant and unavoidable impact would occur in this regard.

Blasting activities under Alternative 2 would be similar to Alternative 1. As such, vibration levels from blasting activities at the project site would be approximately 0.001 in/sec at the residences north of Keller Road, 0.002 in/sec at the Loma Linda Medical Center, and 0.003 in/sec Greer Ranch residences during Alternative 2 construction. Blasting vibration levels would not exceed the City's vibration perception threshold of 0.01 in/sec, or FTA's 0.20 in/sec PPV threshold at the nearest off-site sensitive receptors. Implementation of Mitigation Measure NOI-7 would further reduce blasting vibration impacts at sensitive receptors during project construction activities. Therefore, vibration impacts from blasting activities associated with Alternative 2 would be less than significant following compliance with Mitigation Measure NOI-7.

Mitigation Measures: Mitigation Measure NOI-7.

Level of Significance After Mitigation: Significant Impact for construction equipment activities. Less than significant for blasting vibration.

LONG-TERM OPERATIONAL IMPACTS

Both the Originally Proposed Project and Environmentally Preferred Alternative propose residential and commercial development that would not generate ground-borne vibration that could be felt at surrounding uses. Neither project scenario would include railroads or substantial heavy truck operations, and therefore would not result in vibration impacts at surrounding uses. No impact would occur in this regard.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

MITIGATION MEASURES:

NOI-7 The construction contractor shall provide written notification to residential uses within 200 feet of the project site at least three weeks prior to the start of construction activities informing them of the estimated start date and duration of daytime vibration-generating construction activities. This notification shall include information warning about the potential for impacts related to vibration-sensitive equipment. The city shall provide a phone number for the affected businesses to call if they have vibration-sensitive equipment on their sites. If additional business licenses are issued for businesses with vibration-sensitive operations within 200 feet of the project site prior to completion of construction, written notification shall also be provided to these businesses.

IMPACT STATEMENT NOI-3

- **For a project located within 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, expose people residing or working in the project area to excessive noise levels?**

- **For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels?**

The proposed project is not located within an airport land use plan. There is no public airport, public use airport, or private airstrip located within two miles of the project site. A heliport for the Loma Linda University Medical Center is located east of the I-215 Freeway, however no development would occur in this area of the project. The closest portion of the proposed developed project area would be approximately 2,000 feet west of the Loma Linda University Medical Center. The proposed project would not expose people residing or working in the area to excessive noise levels. Therefore, impacts in this regard would be less than significant.

***Mitigation Measures*:** No mitigation measures are required.

Level of Significance After Mitigation: No Impact.

IMPACT STATEMENT NOI-4

- **Would the proposed project be consistent with the noise policies within the *Murrieta General Plan Update Noise Element*?**

Alternative 1: Originally Proposed Project

The Murrieta General Plan Noise Element (Noise Element) contains several goals and policies to identify and assess the potential for noise conflicts and problems, and to identify ways to reduce existing and potential noise impacts in the City. The Noise Element addresses existing and future

noise from mobile and stationary sources, as well as the compatibility of land uses and sensitive receptors. The project would comply with applicable Noise Element goals and policies to avoid and/or reduce noise conflicts in the City. Table 21, *Alternatives 1 and 2 Noise Element Consistency*, discusses the project's consistency with the applicable Noise Element policies.

Table 21
Alternatives 1 and 2 Noise Element Consistency

Noise Element Goal/Policy	Project Consistency
Policy N-1.1: Comply with the Land Use Compatibility for Community Noise Environments.	**Inconsistent.** As discussed in Impact Statement NOI-1, Mitigation Measure NOI-4 requires the construction of 5-foot high (minimum) soundwall to reduce on-site mobile noise levels in PA-2 to "acceptable" levels in accordance with the Land Use Compatibility standards. In addition, Mitigation Measures NOI-5 and NOI-6 require acoustical assessments for the multi-family uses in PA-8 along I-215 frontage, and at the commercial area (PA-9) to ensure noise levels are within the Land Use Compatibility and applicable Noise Ordinance standards. However, off-site mobile noise impacts were determined to be significant and unavoidable under Future With Project conditions along McElwain Road from Keller Road to Project Access. Mitigation was determined to be infeasible to reduce mobile traffic noise to "acceptable" or "conditionally acceptable" levels in accordance with the Land Use Compatibility standards; refer to Impact Statement NOI-1, above.
Policy N-1.2: Protect schools, hospitals, libraries, churches, convalescent homes, and other noise sensitive uses from excessive noise levels by incorporating site planning and project design techniques to minimize noise impacts. The use of noise barriers shall be considered after all practical design-related noise measures have been integrated into the project. In cases where sound walls are necessary, they should help create an attractive setting with features such as setbacks, changes in alignment, detail and texture, murals, pedestrian access (if appropriate), and landscaping.	**Inconsistent.** As discussed in Impact Statement NOI-1, Mitigation Measure NOI-4 requires the construction of 5-foot high (minimum) soundwall to reduce on-site mobile noise levels in PA-2 to "acceptable" levels in accordance with the Land Use Compatibility standards. In addition, Mitigation Measures NOI-5 and NOI-6 require acoustical assessments for the multi-family uses in PA-8 along I-215 frontage, and at the commercial area (PA-9) to ensure noise levels are within the Land Use Compatibility and applicable Noise Ordinance standards. However, off-site mobile noise impacts were determined to be significant and unavoidable under Future With Project conditions along McElwain Road from Keller Road to Project Access. Mitigation was determined to be infeasible to reduce mobile traffic noise to "acceptable" or "conditionally acceptable" levels in accordance with the Land Use Compatibility standards; refer to Impact Statement NOI-1, above.
Policy N-1.3: Discourage new residential development where the ambient noise level exceeds the noise level standards set forth in the Noise and Land Use Compatibility Guidelines and the City Noise Ordinance.	**Consistent.** As shown in Table 9, the existing ambient noise level at noise measurement location 2 currently exceeds the Noise and Land Use Compatibility Guidelines and applicable Noise Ordinance standards for residential uses. This measurement was taken within 150 feet of the I-215 freeway; the closest planned residential uses to the I-215 freeway would be the multi-family residential uses in PA-8. As discussed in Impact Statement NOI-1 and required by Mitigation Measure NOI-5, an acoustical assessment would be required for PA-8 to ensure noise levels at the future multi-family residential uses in PA-8 are within the Land Use Compatibility and applicable Noise Ordinance standards.

Table 21 [continued]
Alternatives 1 and 2 Noise Element Consistency

Noise Element Goal/Policy	Project Consistency
Policy N-1.4: Coordinate with the County of Riverside and adjacent jurisdictions to minimize noise conflicts between land uses along the City's boundaries.	**Inconsistent.** Portions of the Murrieta Hills Specific Plan area are bordered to the north by Riverside County/City of Menifee; to the west by the City of Wildomar; and to the south by Riverside County. As discussed in Impact Statement NOI-1, the project would be required to comply with Mitigation Measures NOI-1 through NOI-6 to ensure noise levels at existing off-site uses (including neighboring jurisdictions), and future on-site uses are within the Land Use Compatibility and applicable Noise Ordinance standards. However, as noted above, off-site mobile noise impacts were determined to be significant and unavoidable along McElwain Road from Keller Road to Project Access. Mitigation was determined to be infeasible to reduce mobile traffic noise to "acceptable" or "conditionally acceptable" levels in accordance with the Land Use Compatibility standards; refer to Impact Statement NOI-1, above.
Policy N-2.1: Review and update the Noise Ordinance to ensure that noise exposure information and specific policies and regulations are current.	**Not applicable to the proposed project.** Implementation/enforcement of this Policy would be the responsibility of the City.
Policy N-2.2: Integrate noise considerations into land use planning decisions to prevent new noise/land use conflicts.	**Consistent.** The project proposes to amend the original Murrieta Hills Specific Plan No. SPM-No. 4, approved in 1995. The proposed project would include annexation of the project site into the City of Murrieta, reducing the number dwelling units from 1,585 to 750. A zone change is also proposed to rezone the property to appropriate City of Murrieta Zoning Districts. Future development as proposed would include development of single-family and multi-family residential uses, in combination with commercial retail space. This Acoustical Assessment was prepared to analyze the potential noise effects of the project as proposed. Mitigation measures would be implemented to ensure that noise levels are reduced to the extent feasible to prevent new noise/land use conflicts.
Policy N-2.3: Consider the compatibility of proposed land uses with the noise environment when preparing, revising, or reviewing development proposals.	**Consistent.** Refer to Policy N-2.2, above.
Policy N-2.4: Encourage proper site planning and architecture to reduce noise impacts.	**Consistent.** As discussed in Impact Statement NOI-1, Mitigation Measure NOI-4 requires the construction of 5-foot high (minimum) soundwall to reduce on-site mobile noise levels in PA-2 to "acceptable" levels in accordance with the Land Use Compatibility standards. In addition, Mitigation Measures NOI-5 and NOI-6 require acoustical assessments for the multi-family uses in PA-8 along I-215 frontage, and at the commercial area (PA-9) to ensure noise levels are within the Land Use Compatibility and applicable Noise Ordinance standards. A combination of noise-reduction measures (or architectural features) may be required as part of the future acoustical assessments to reduce noise levels to be within the "acceptable" Land Use Compatibility standards, and/or the applicable Noise Ordinance standards.
Policy N-2.5: Permit only those new development or redevelopment projects that have incorporated mitigation measures, so that standards contained in the Noise Element and Noise Ordinance are met.	**Consistent.** As discussed in Impact Statement NOI-1, Mitigation Measures NOI-1 through NOI-3 would ensure that short-term construction noise levels are below the applicable standards. Mitigation Measure NOI-4 requires the construction of 5-foot high (minimum) soundwall to reduce on-site mobile noise levels in PA-2 to "acceptable" levels in accordance with the Land Use Compatibility standards. Mitigation Measures NOI-5 and NOI-6 require acoustical assessments for the multi-family uses in PA-8 along I-215 frontage, and at the commercial area (PA-9) to ensure noise levels are within the Land Use Compatibility and applicable Noise Ordinance standards. To reduce short-term construction vibration impacts, Mitigation Measure NOI-7 requires written notification to vibration-sensitive uses within 200 feet of the project site at least three weeks prior to the start of construction activities informing them of the estimated start date and duration of daytime vibration-generating construction activities. This notification would include information warning about the potential for impacts related to vibration-sensitive equipment.

Table 21 [continued]
Alternatives 1 and 2 Noise Element Consistency

Noise Element Goal/Policy	Project Consistency
Policy N-2.6: Incorporate noise reduction features for items such as, but not limited to, parking and loading areas, ingress/egress point, HVAC units, and refuse collection areas, during site planning to mitigate anticipated noise impacts on affected noise sensitive land uses.	**Consistent.** As discussed in Impact Statement NOI-1, stationary noise impacts from residential areas, mechanical equipment (HVAC units), and parking areas would be less than significant. Noise impacts from truck deliveries at the proposed commercial area (PA-9) would be reduced to a less than significant level with implementation of Mitigation Measure NOI-6.
Policy N-2.7: Require that new mixed-use developments be designed to limit potential noise from loading areas, refuse collection, and other activities typically associated with commercial activity through strategic placement of these sources to minimize noise levels on-site.	**Not applicable to the proposed project.** Mixed-use development is not proposed as part of the Murrieta Hills Specific Plan.
Policy N-2.8: Encourage commercial uses in mixed-use developments that are not noise intensive.	**Not applicable to the proposed project.** Mixed-use development is not proposed as part of the Murrieta Hills Specific Plan.
Policy N-2.9: Orient mixed-use residential units, where possible, away from major noise sources.	**Not applicable to the proposed project.** Mixed-use development is not proposed as part of the Murrieta Hills Specific Plan.
Policy N-2.10: Locate balconies and operable windows of residential units in mixed-use projects away from the primary street and other major noise sources, where possible, or provide appropriate mitigation.	**Not applicable to the proposed project.** Mixed-use development is not proposed as part of the Murrieta Hills Specific Plan.
Policy N-3.1: Consider noise mitigation measures in the design of all future streets and highways and when improvements occur along existing freeway and highway segments.	**Consistent.** As discussed in Impact Statement NOI-1, Mitigation Measure NOI-4 requires the construction of 5-foot high (minimum) soundwall to reduce on-site mobile noise levels in PA-2 to "acceptable" levels in accordance with the Land Use Compatibility standards. In addition, Mitigation Measure NOI-5 requires a future acoustical assessment for the multi-family uses in PA-8 along I-215 frontage to ensure noise levels are within the Land Use Compatibility and applicable Noise Ordinance standards.
Policy N-3.2: Work with Caltrans to achieve maximum noise abatement in the design of new highway projects or with improvements to interchanges along the I-15 and I-215 Freeways, and with widening of SR-79.	**Not applicable to the proposed project.** Implementation/enforcement of this Policy would be the responsibility of the City. Improvements to I-215/Kellar Road would be completed prior to project construction. This project was considered as part of the TIA and taken into account through the mobile noise evaluation within this Acoustical Assessment.
Policy N-3.3: Encourage the construction of noise barriers and maintenance of existing noise barriers for sensitive receptors located along the I-15 and I-215 Freeways.	**Consistent.** As discussed in Impact Statement NOI-1, Mitigation Measure NOI-4 requires the construction of 5-foot high (minimum) soundwall to reduce on-site mobile noise levels in PA-2 to "acceptable" levels in accordance with the Land Use Compatibility standards. In addition, Mitigation Measure NOI-5 requires a future acoustical assessment for the multi-family uses in PA-8 along I-215 frontage to ensure noise levels are within the Land Use Compatibility and applicable Noise Ordinance standards.
Policy N-3.4: Enforce the use of truck routes to limit unnecessary truck traffic in residential and commercial areas. Consider requiring traffic plans for construction projects and new commercial and industrial uses.	**Consistent.** Trucks would use I-215, Keller Road, and the future extension of McElwain Road to access the proposed commercial area (PA-9) on the project site. The Circulation Plan (in the Murrieta Hills Specific Plan) describes the overall transportation network for the project and identifies the primary entry points into the project site Preparation of a traffic control plan may be required with future site-specific development of the site, at the direction of the City of Murrieta.

Table 21 [continued]
Alternatives 1 and 2 Noise Element Consistency

Noise Element Goal/Policy	Project Consistency
Policy N-3.5: Consider the use of rubberized asphalt for new roadways or roadway rehabilitation projects.	**Not applicable to the proposed project.** The use of rubberized asphalt for new roadways at the project site is not required. However, the City can request incorporation of this design feature during design review of the project.
Policy N-3.6: Coordinate with appropriate agencies in the siting, design, and construction of rail stations and track alignments to ensure that adjacent land uses are considered and noise attenuation measures are addressed.	**Not applicable to the proposed project.** Implementation/enforcement of this Policy would be the responsibility of the City. Rail stations and track alignment are not proposed as part of the project.
Policy N-4.1: Regulate construction activities to ensure construction noise complies with the City's Noise Ordinance.	**Consistent.** As discussed in Impact Statement NOI-1, the proposed project would be required to comply with the City's noise standards and allowable construction hours. Mitigation Measures NOI-1 through NOI-3 would be implemented to ensure that construction activities comply with the City's Noise Ordinance. To reduce short-term construction vibration impacts, Mitigation Measure NOI-7 requires written notification to vibration-sensitive uses within 200 feet of the project site at least three weeks prior to the start of construction activities informing them of the estimated start date and duration of daytime vibration-generating construction activities. This notification would include information warning about the potential for impacts related to vibration-sensitive equipment.
Policy N-4.2: Limit the hours of construction activity in residential areas to reduce intrusive noise in early morning and evening hours and on Sundays and holidays.	**Consistent.** As discussed in Impact Statement NOI-1, the proposed project would be required to comply with the City's allowable construction hours. In addition, Mitigation Measure NOI-1 would be implemented to ensure that construction activities with the potential to generate high noise levels at residences to be scheduled during times that would have the least impact on sensitive receptor locations. This could include restricting construction activities in the areas of potential impact to middle hours of the work day, such as from 10:00 a.m. to 4:00 p.m. Monday to Friday when residents would be least likely to be home.
Policy N-4.3: Employ construction noise reduction methods to the maximum extent feasible. These measures may include, but not limited to, shutting off idling equipment, installing temporary acoustic barriers around stationary construction noise sources, maximizing the distance between construction equipment staging areas and occupied sensitive receptor areas, and use of electric air compressors and similar power tools, rather than diesel equipment.	**Consistent.** Mitigation Measure NOI-1 provides measures to reduce potential short-term noise levels to the maximum extent feasible during project-related construction activities.
Policy N-4.4: Encourage municipal vehicles and noise-generating mechanical equipment purchased or used by the City to comply with noise standards specified in the City's Municipal Code, or other applicable codes.	**Not applicable to the proposed project.** Implementation/enforcement of this Policy would be the responsibility of the City.
Policy N-4.5: Allow exceedance of noise standards on a case-by-case basis for special circumstances including emergency situations, special events, and expedited development projects.	**Not applicable to the proposed project.** The project is not an expedited development project. Implementation/enforcement of this Policy relative to any future emergency situations or special events would be the responsibility of the City.
Policy N-4.6: Ensure acceptable noise levels are maintained near schools, hospitals, convalescent homes, churches, and other noise-sensitive areas.	**Consistent.** As shown in Table 10, the closest school, church, and convalescent homes are located approximately 2,789 feet, 4,445 feet, and 2,210 feet, respectively, from the project site. These uses would not be impacted by short- and/or long-term noise from project operations due to distance from the subject site. The closest hospital (Loma Linda University Medical Center) is located approximately 350 feet east of the project site; however, the I-215 freeway adjoins this use to the west and is exposed to high traffic noise levels under existing conditions. Thus, the project would not create noise impacts at the uses identified in Policy N-4.6. Mitigation Measures NOI-1, NOI-4, NOI-5, and NOI-7 would reduce noise to acceptable levels for the planned (noise sensitive) residential uses.

Source: City of Murrieta, *Murrieta General Plan 2035,* July 19, 2011.

As shown in Table 13, the proposed project would be consistent with all but three Noise Element policies (see Policies N-1.1, N-1.2, and N-1.4). Therefore, Alternative 1 would have a significant and unavoidable impact in this regard.

Alternative 2: Environmentally Preferred Alternative

Similar to Alternative 1, Alternative 2 would be consistent with the applicable Noise Element policies above, with exception of Policies N-1.1, N-1.2, and N-1.4. Therefore, Alternative 2 would result in a significant and unavoidable impact in this regard.

Mitigation Measures: Refer to Mitigation Measures NOI-1 through NOI-7.

Level of Significance After Mitigation. Significant Impact.

6.0 REFERENCES

6.1 LIST OF PREPARERS

MICHAEL BAKER INTERNATIONAL, INC.
5 Hutton Centre Drive, Suite 500
Santa Ana, California 92707
949/472-3505

Eddie Torres, INCE, Planning Manager
Ryan Chiene, Noise Specialist
Alex Pohlman, Environmental Associate

6.2 DOCUMENTS

1. City of Menifee, *Menifee General Plan Noise Element*, September 2013.

2. City of Murrieta, *Murrieta General Plan 2035*, July 19, 2011.

3. Federal Highway Administration, *Roadway Construction Noise Model (FHWA-HEP-05-054)*, January 2006.

4. Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Guidelines*, May 2006.

5. Harris, Cyril, *Handbook of Noise Control*, 1979.

6. Leighton and Associates, Inc., *Geotechnical/Geologic Review Portion of Tentative Tract Map No. 35853 Murrieta Hills Specific Plan, McElwain Roadway City of Murrieta, California*, October 24, 2014.

7. Leighton and Associates, Inc., *Update Geotechnical Report for Tentative Tract Map No. 35853, Murrieta Hills Specific Plan, Southwest of Keller Road and Interstate 215, Murrieta California*, March 21, 2014.

8. Michael Baker International, *Murrieta Hills Specific Plan Traffic Impact Analysis*, November 30, 2017.

9. State of California, Governor's Office of Planning and Research, *General Plan Guidelines*, October 2003.

10. U.S. Environmental Protection Agency, *Noise Effects Handbook – A Desk Reference to Health and Welfare Effects of Noise*, October 1979 (revised July 1981).

6.3 SOFTWARE/WEBSITES

City of Murrieta Municipal Codes, http://library.amlegal.com/nxt/gateway.dll/California/murrieta_ca/murrietacaliforniamunicipalcode?f=templates$fn=default.htm$3.0$vid=amlegal:murrieta_ca (accessed 12-28-2017).

Federal Highway Administration, Roadway Construction Noise Model Version 1.1.

Federal Highway Administration, Traffic Noise Model version 2.5.

Google Earth, 2017.

APPENDICES

APPENDIX A: NOISE MEASUREMENT DATA

Site Number: Murrieta Hills Specific Plan # 1			
Recorded By: Pierre Glaize			
Job Number: 162805			
Date: 3/20/18			
Time: 7:38 AM			
Location: North of the proposed project site on Gloria Road in existing residential neighborhood.			
Source of Peak Noise: birds, highway traffic, rooster, cars traveling on Gloria road.			
Noise Data			
Leq (dB)	Lmin (dB)	Lmax (dB)	Peak (dB)
47.4	40.6	66.4	89.2

Equipment						
Category	Type	Vendor	Model	Serial No.	Cert. Date	Note
Sound	Sound Level Meter	Brüel & Kjær	2250	3011133	3/27/2017	
	Microphone	Brüel & Kjær	4189	3086765	3/27/2017	
	Preamp	Brüel & Kjær	ZC 0032	25380	3/27/2017	
	Calibrator	Brüel & Kjær	4231	2545667	3/27/2017	

Weather Data			
Est.	Duration: 15 minutes		Sky: Partly Cloudy
	Note: dBA Offset = 0.01		Sensor Height (ft): 5 ft
	Wind Ave Speed (mph / m/s)	Temperature (degrees Fahrenheit)	Barometer Pressure (inches)
	<5	47°	30.01

Photo of Measurement Location

2250

Instrument:		2250
Application:		BZ7225 Version 4.7.2
Start Time:		03/20/2018 07:38:03
End Time:		03/20/2018 07:53:03
Elapsed Time:		00:15:00
Bandwidth:		1/3-octave
Max Input Level:		142.05

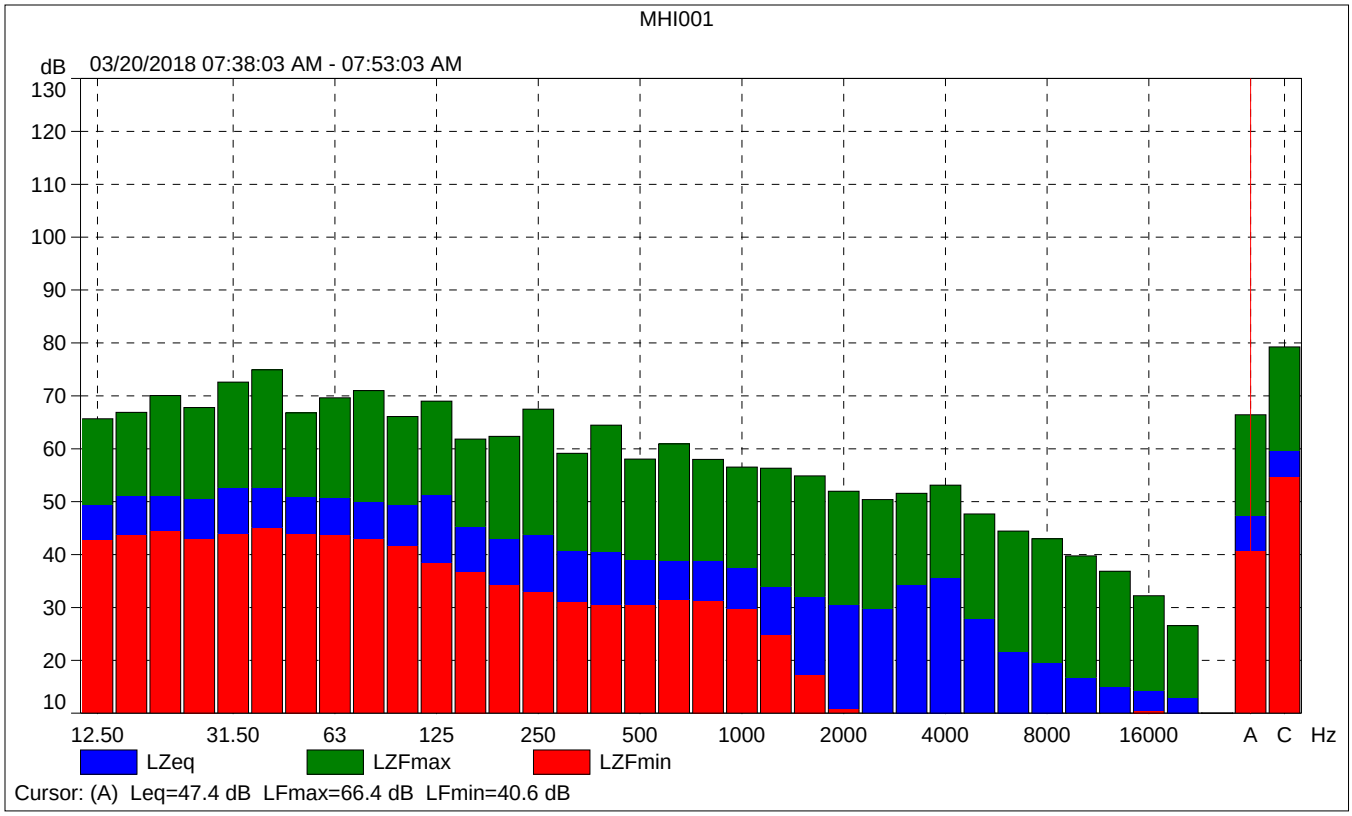
	Time	Frequency
Broadband (excl. Peak):	FSI	AC
Broadband Peak:		C
Spectrum:	FS	Z

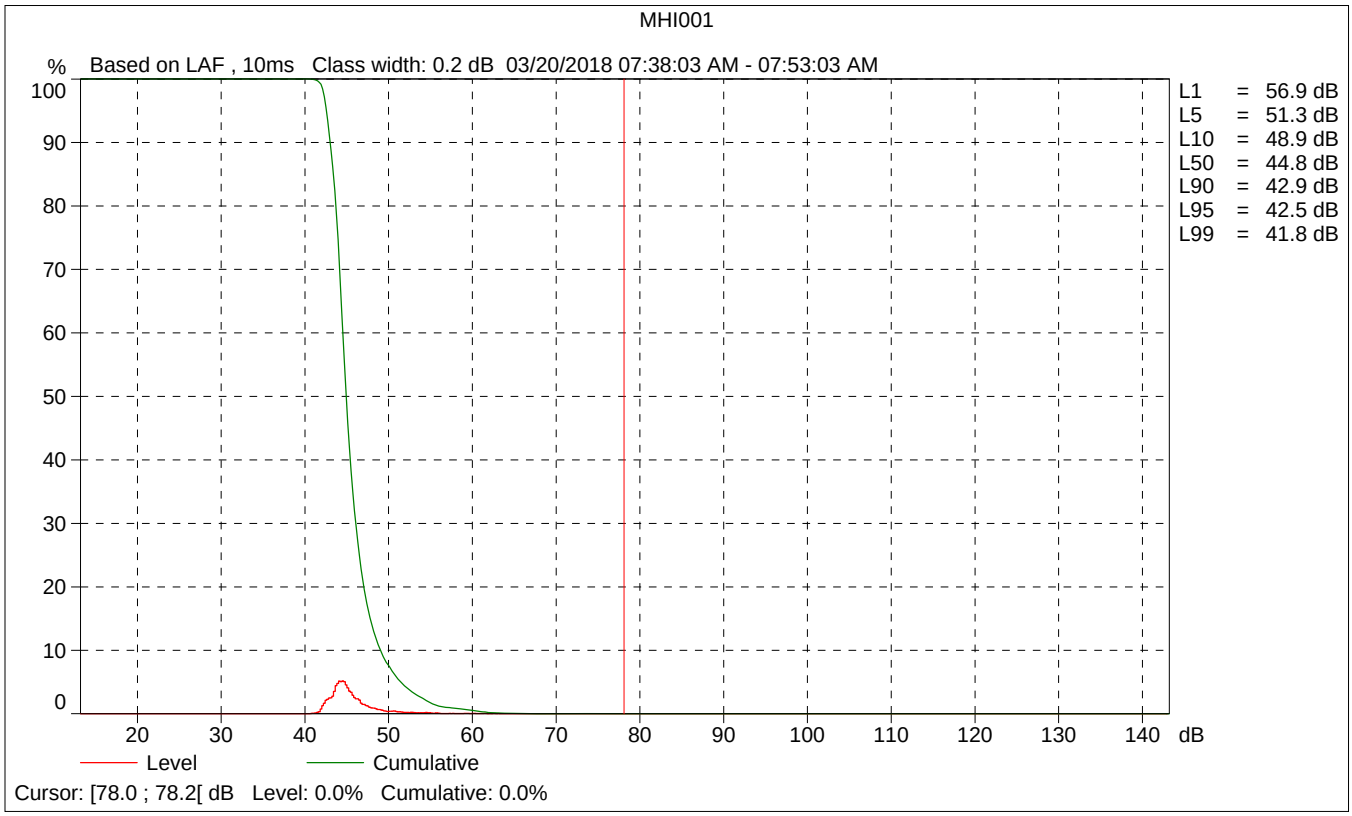
Instrument Serial Number:		3011133
Microphone Serial Number:		3086765
Input:		Top Socket
Windscreen Correction:		UA-1650
Sound Field Correction:		Free-field

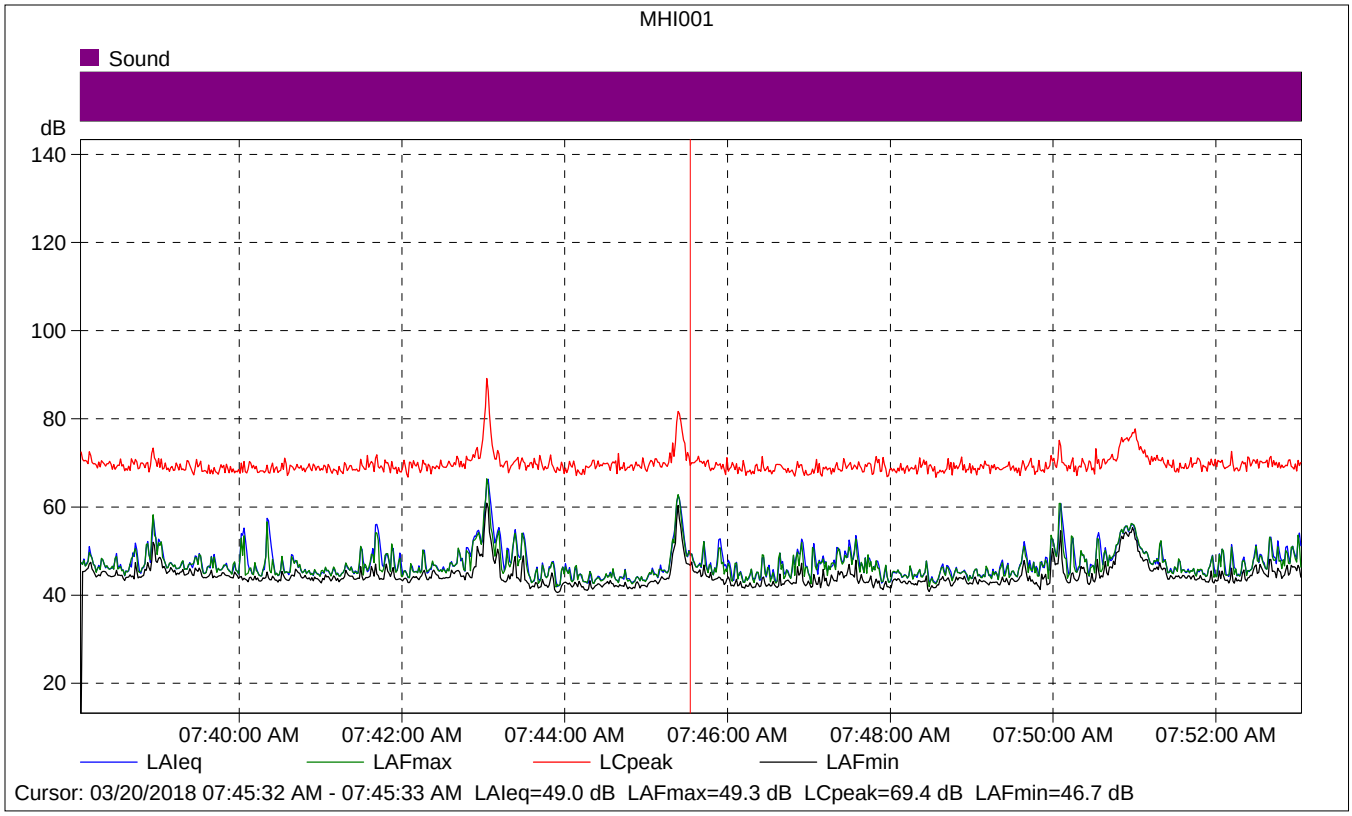
Calibration Time:		03/20/2018 06:15:19
Calibration Type:		External reference
Sensitivity:		43.9789667725563 mV/Pa

MHI001

	Start time	End time	Elapsed time	Overload [%]	LAeq [dB]	LAFmax [dB]	LAFmin [dB]
Value				0.00	47.4	66.4	40.6
Time	07:38:03 AM	07:53:03 AM	0:15:00				
Date	03/20/2018	03/20/2018					

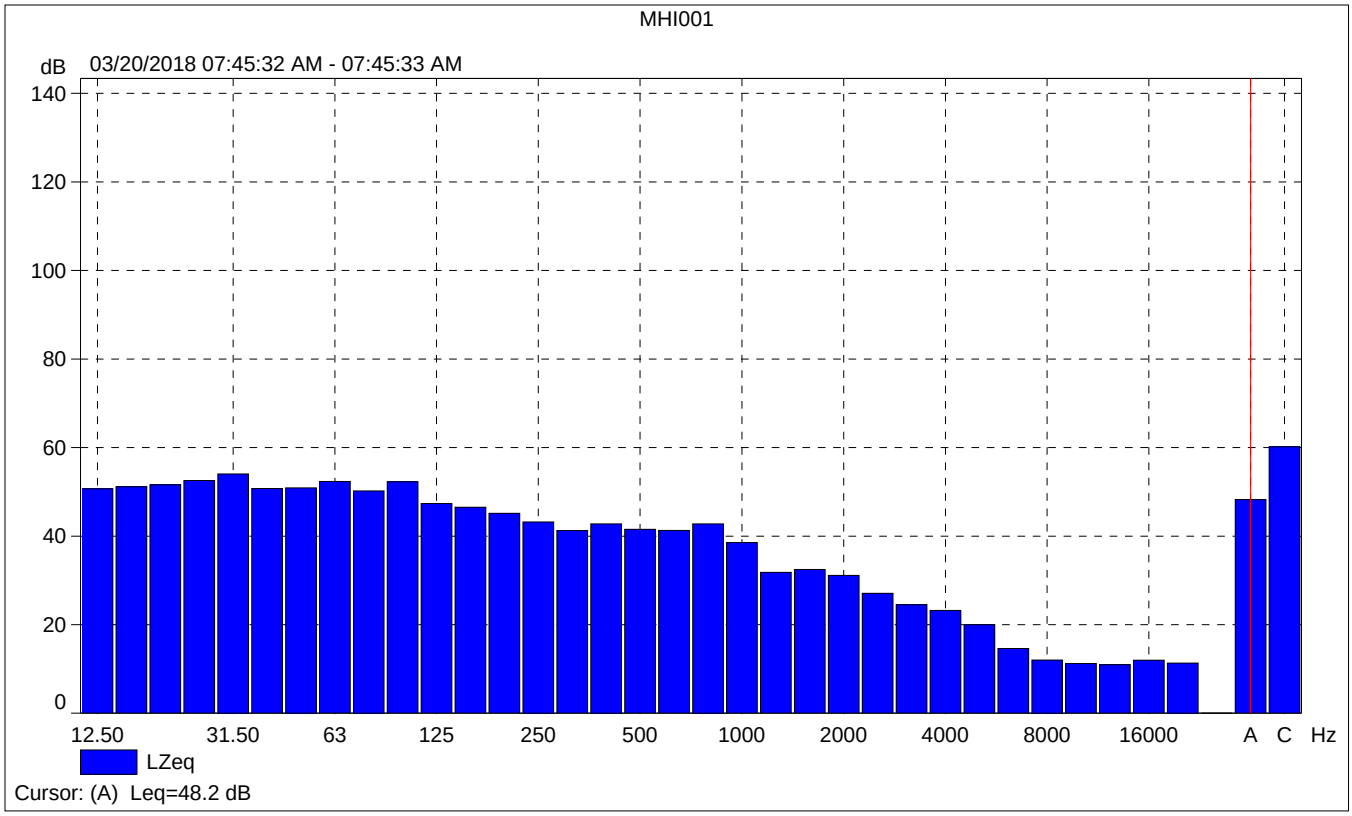

MHI001
dB
03/20/2018 07:38:03 AM - 07:53:03 AM
130
120
110
100
90
80
70
60
50
40
30
20
10
12.50
31.50
63
125
250
500
1000
2000
4000
8000
16000
A
C
Hz
LZeq
LZFmax
LZFmin
Cursor: (A) Leq=47.4 dB LFmax=66.4 dB LFmin=40.6 dB

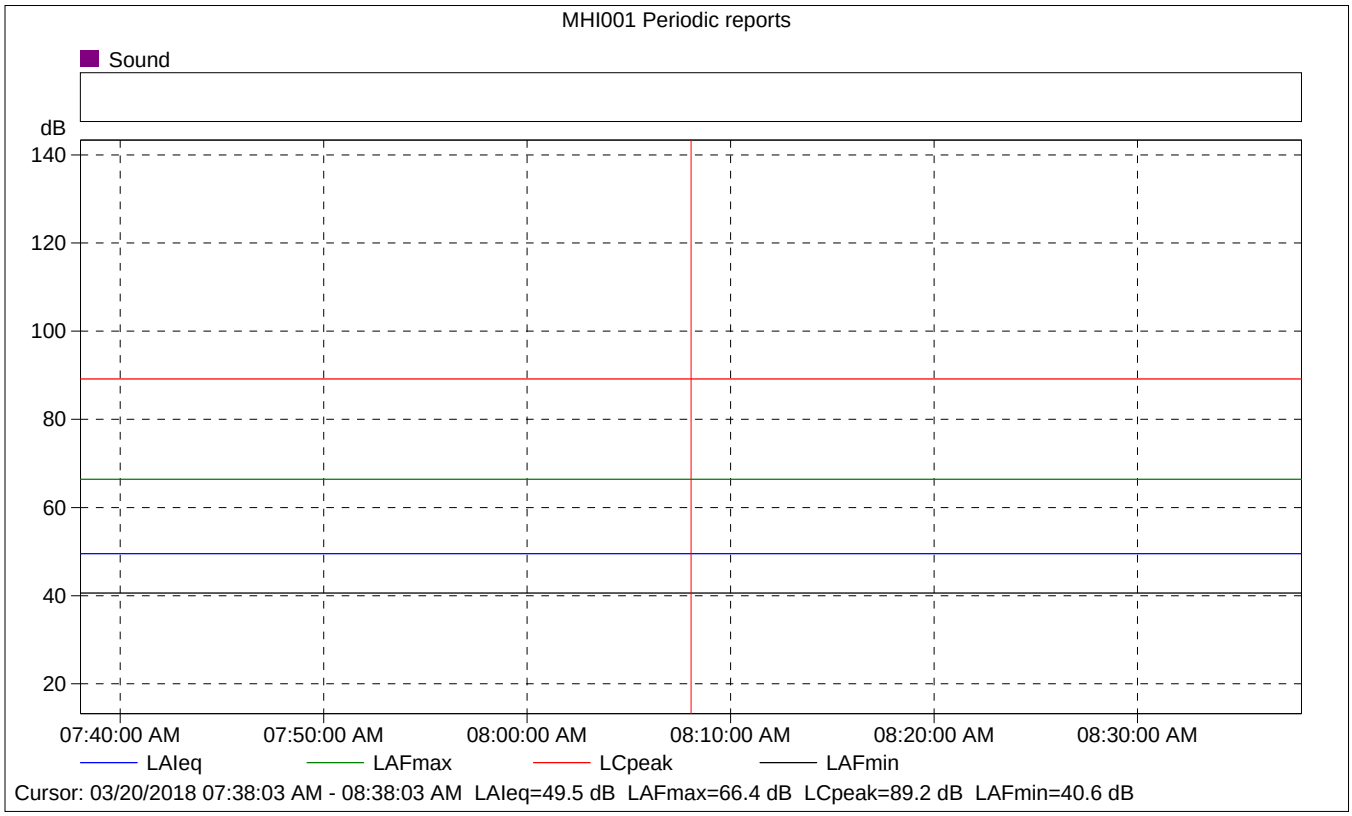

MHI001
%
Based on LAF , 10ms Class width: 0.2 dB 03/20/2018 07:38:03 AM - 07:53:03 AM
100
90
80
70
60
50
40
30
20
10
0
20
30
40
50
60
70
80
90
100
110
120
130
140
dB
L1 = 56.9 dB
L5 = 51.3 dB
L10 = 48.9 dB
L50 = 44.8 dB
L90 = 42.9 dB
L95 = 42.5 dB
L99 = 41.8 dB
Level
Cumulative
Cursor: [78.0 ; 78.2[dB Level: 0.0% Cumulative: 0.0%



MHI001

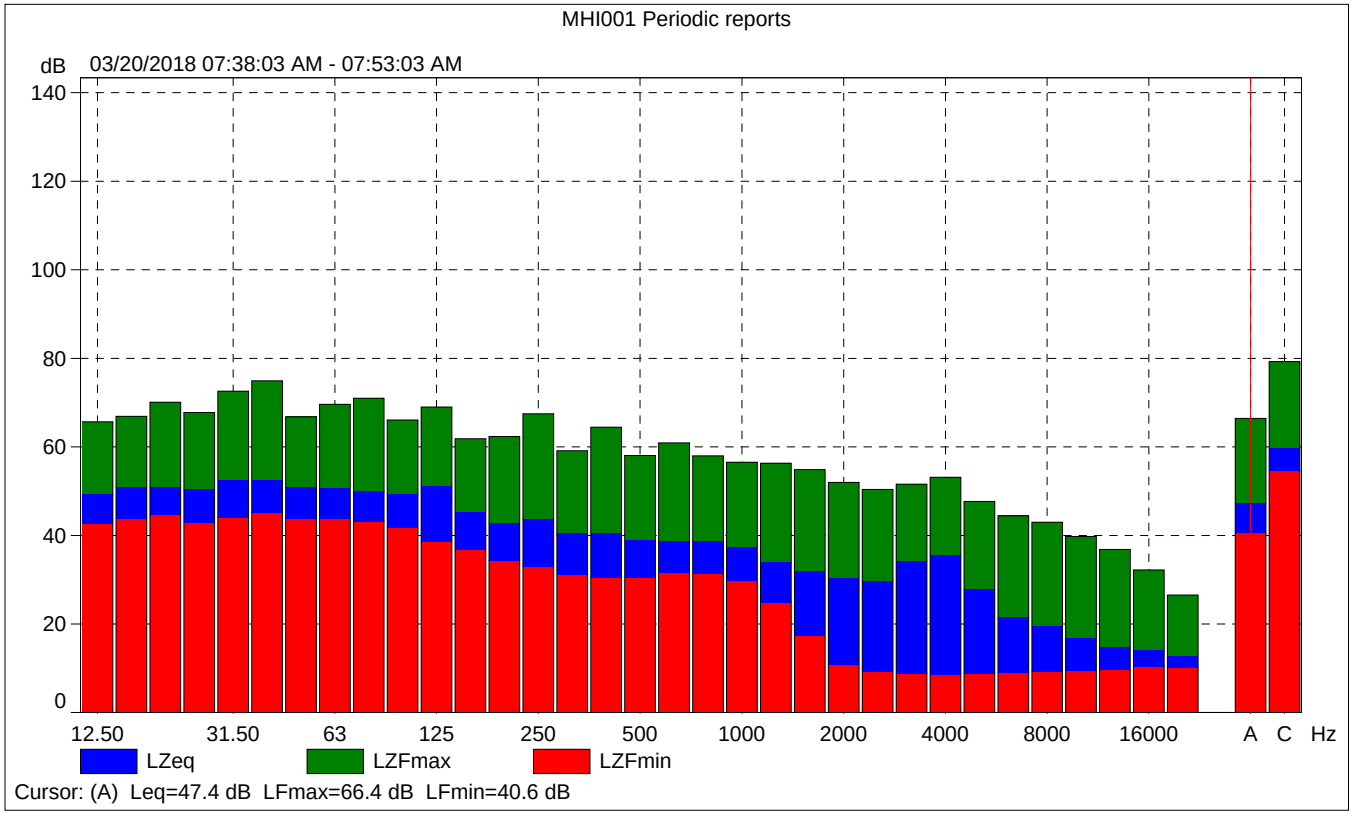
	Start time	Elapsed time	LAIeq [dB]	LAFmax [dB]	LAFmin [dB]
Value			49.0	49.3	46.7
Time	07:45:32 AM	0:00:01			
Date	03/20/2018				

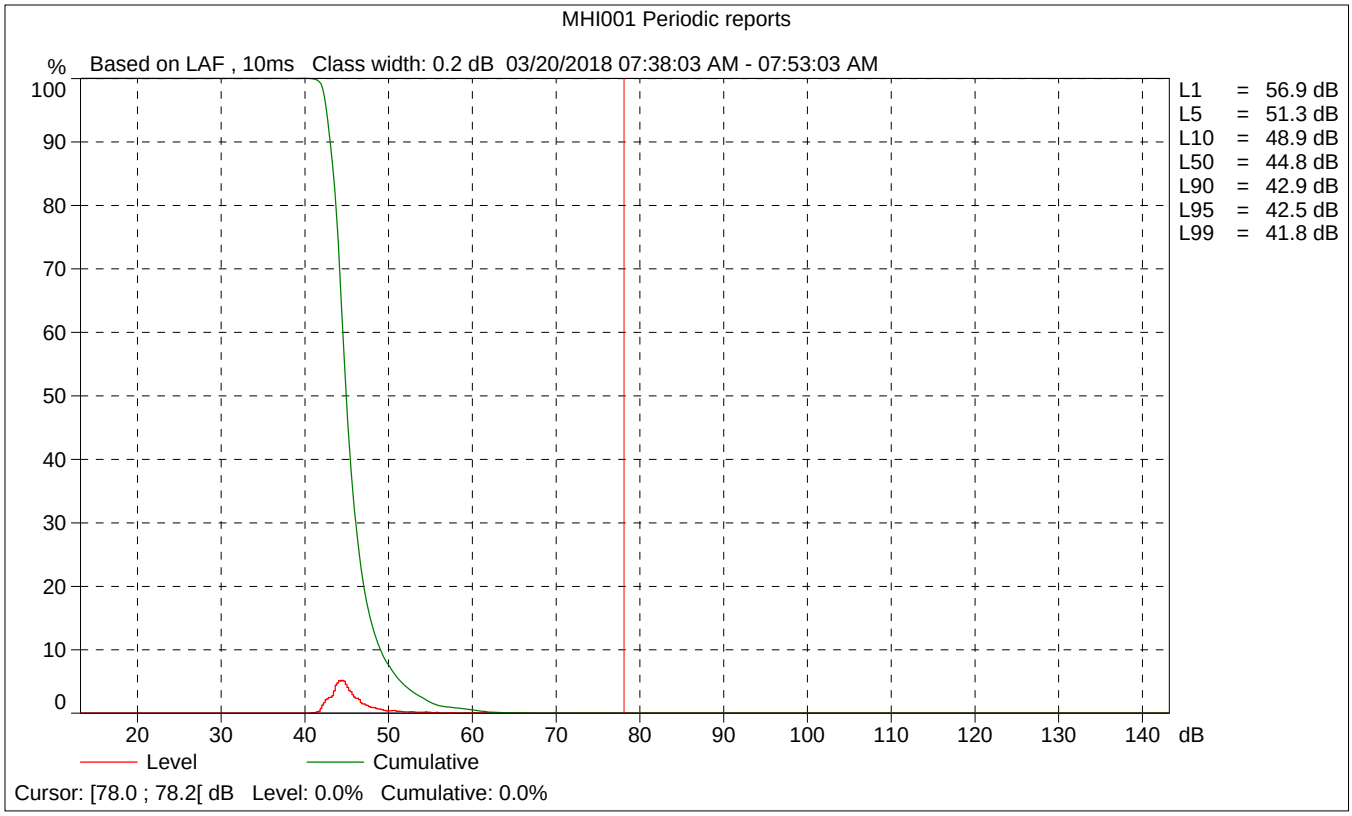

MHI001
dB
03/20/2018 07:45:32 AM - 07:45:33 AM
140
120
100
80
60
40
20
0
12.50
31.50
63
125
250
500
1000
2000
4000
8000
16000
A
C
Hz
LZeq
Cursor: (A) Leq=48.2 dB


MHI001 Periodic reports
Sound
dB
140
120
100
80
60
40
20
07:40:00 AM
07:50:00 AM
08:00:00 AM
08:10:00 AM
08:20:00 AM
08:30:00 AM
LAIeq
LAFmax
LCpeak
LAFmin
Cursor: 03/20/2018 07:38:03 AM - 08:38:03 AM LAIeq=49.5 dB LAFmax=66.4 dB LCpeak=89.2 dB LAFmin=40.6 dB

MHI001 Periodic reports

	Start time	Elapsed time	Overload [%]	LAIeq [dB]	LAFmax [dB]	LAFmin [dB]
Value			0.00	49.5	66.4	40.6
Time	07:38:03 AM	0:15:00				
Date	03/20/2018					




MHI001 Periodic reports
% Based on LAF , 10ms Class width: 0.2 dB 03/20/2018 07:38:03 AM - 07:53:03 AM
100
90
80
70
60
50
40
30
20
10
0
20 30 40 50 60 70 80 90 100 110 120 130 140 dB
L1 = 56.9 dB
L5 = 51.3 dB
L10 = 48.9 dB
L50 = 44.8 dB
L90 = 42.9 dB
L95 = 42.5 dB
L99 = 41.8 dB
Level
Cumulative
Cursor: [78.0 ; 78.2[dB Level: 0.0% Cumulative: 0.0%

Site Number: Murrieta Hills Specific Plan # 2
Recorded By: Pierre Glaize
Job Number: 162805
Date: 3/20/18
Time: 11:59 PM
Location: Eastern boundary of the proposed project site, adjacent to Scenic View Drive and parallel to I-215. Proposed site of McElwain Road in Open Space 1.
Source of Peak Noise: Interstate 215 and occasional car traffic on scenic view drive.

Noise Data			
Leq (dB)	Lmin (dB)	Lmax (dB)	Peak (dB)
76.7	52.8	114.7	144.5

Equipment						
Category	Type	Vendor	Model	Serial No.	Cert. Date	Note
Sound	Sound Level Meter	Brüel & Kjær	2250	3011133	3/27/2017	
	Microphone	Brüel & Kjær	4189	3086765	3/27/2017	
	Preamp	Brüel & Kjær	ZC 0032	25380	3/27/2017	
	Calibrator	Brüel & Kjær	4231	2545667	3/27/2017	

Weather Data			
Est.	Duration: 15 minutes		Sky: Partly Cloudy
	Note: dBA Offset = 0.01		Sensor Height (ft): 5 ft
	Wind Ave Speed (mph / m/s)	Temperature (degrees Fahrenheit)	Barometer Pressure (inches)
	<10	71°	30.00

Photo of Measurement Location

2250

Instrument:		2250
Application:		BZ7225 Version 4.7.2
Start Time:		03/20/2018 11:59:21
End Time:		03/20/2018 12:14:21
Elapsed Time:		00:15:00
Bandwidth:		1/3-octave
Max Input Level:		142.05

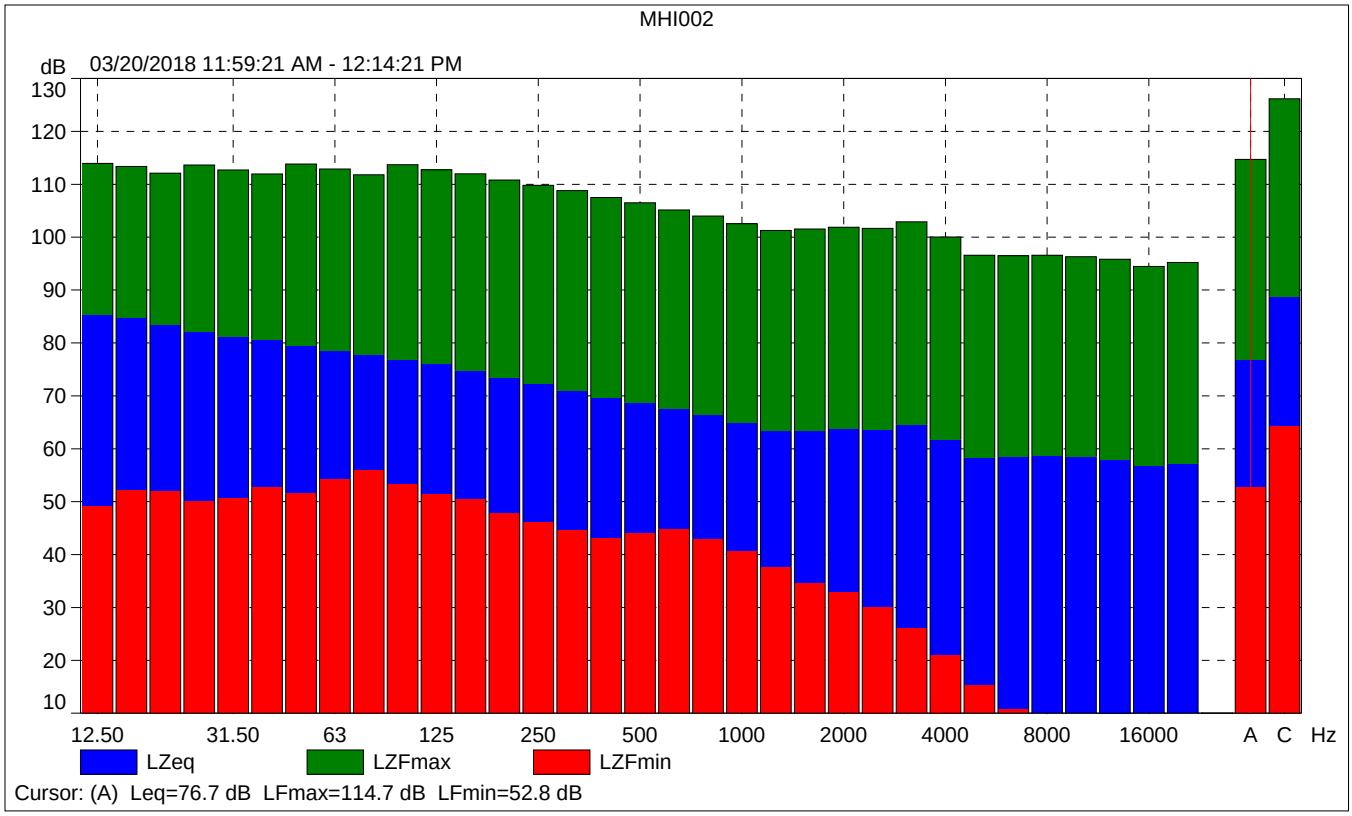
	Time	Frequency
Broadband (excl. Peak):	FSI	AC
Broadband Peak:		C
Spectrum:	FS	Z

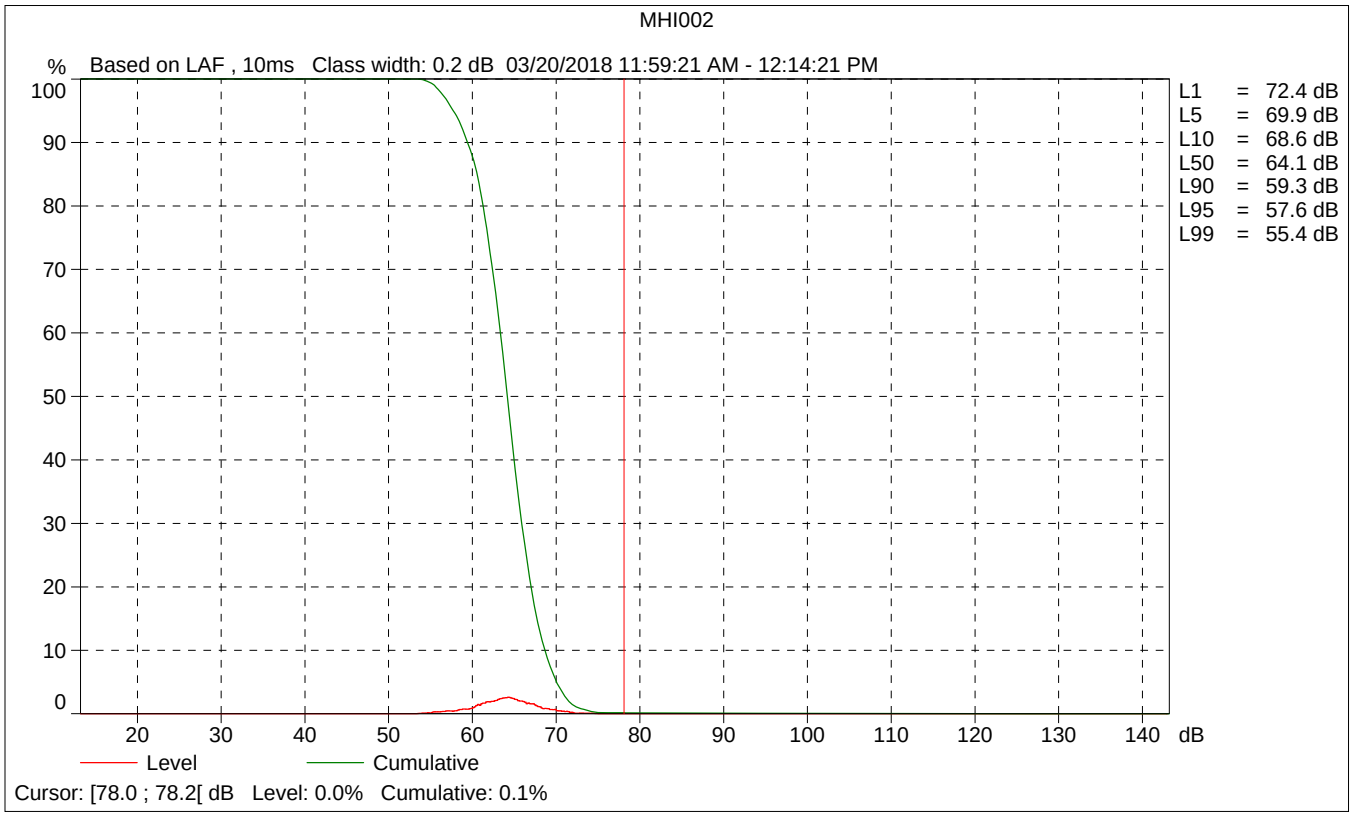
Instrument Serial Number:		3011133
Microphone Serial Number:		3086765
Input:		Top Socket
Windscreen Correction:		UA-1650
Sound Field Correction:		Free-field

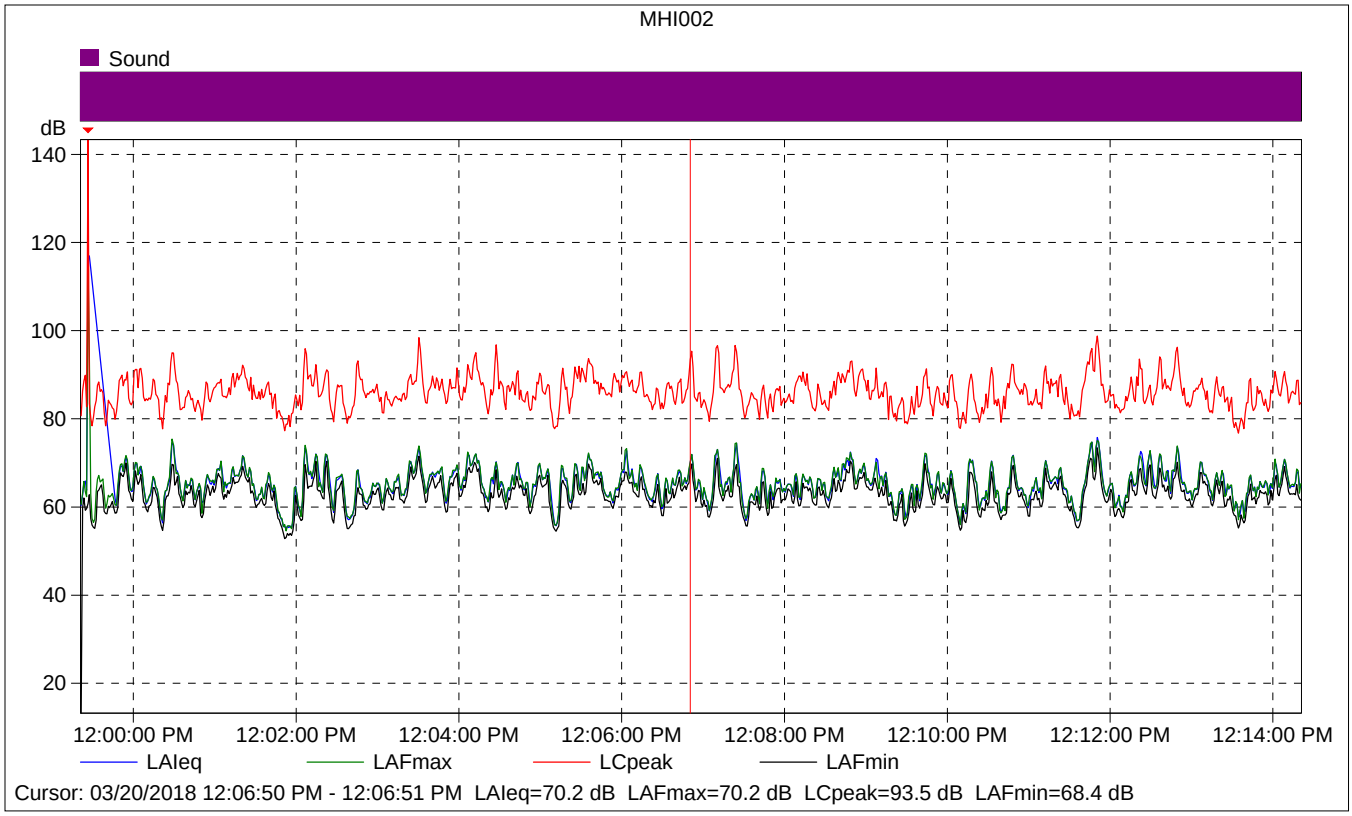
Calibration Time:		03/20/2018 06:15:19
Calibration Type:		External reference
Sensitivity:		43.9789667725563 mV/Pa

MHI002

	Start time	End time	Elapsed time	Overload [%]	LAeq [dB]	LAFmax [dB]	LAFmin [dB]
Value				0.00	76.7	114.7	52.8
Time	11:59:21 AM	12:14:21 PM	0:15:00				
Date	03/20/2018	03/20/2018					

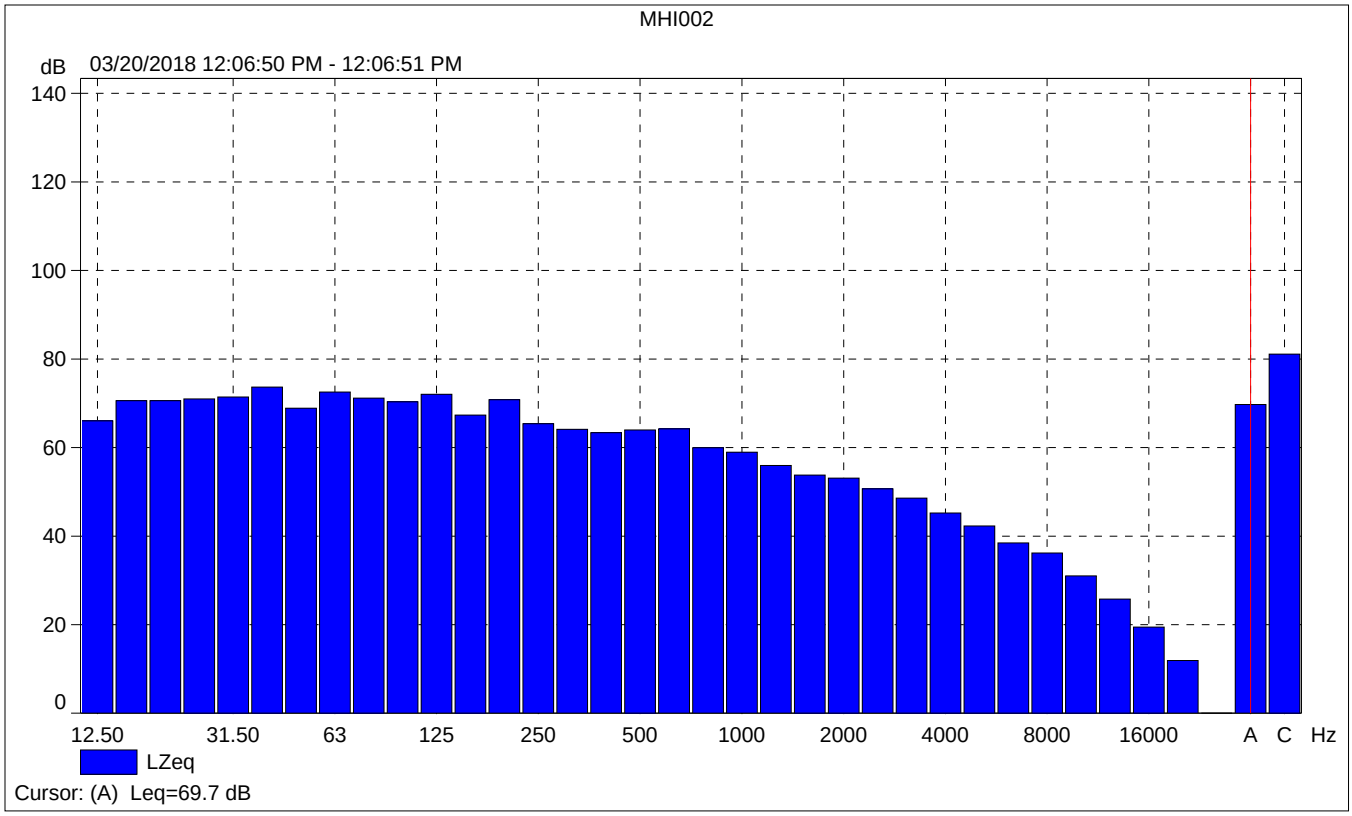

MHI002
dB
03/20/2018 11:59:21 AM - 12:14:21 PM
130
120
110
100
90
80
70
60
50
40
30
20
10
12.50
31.50
63
125
250
500
1000
2000
4000
8000
16000
A
C
Hz
LZeq
LZFmax
LZFmin
Cursor: (A) Leq=76.7 dB LFmax=114.7 dB LFmin=52.8 dB

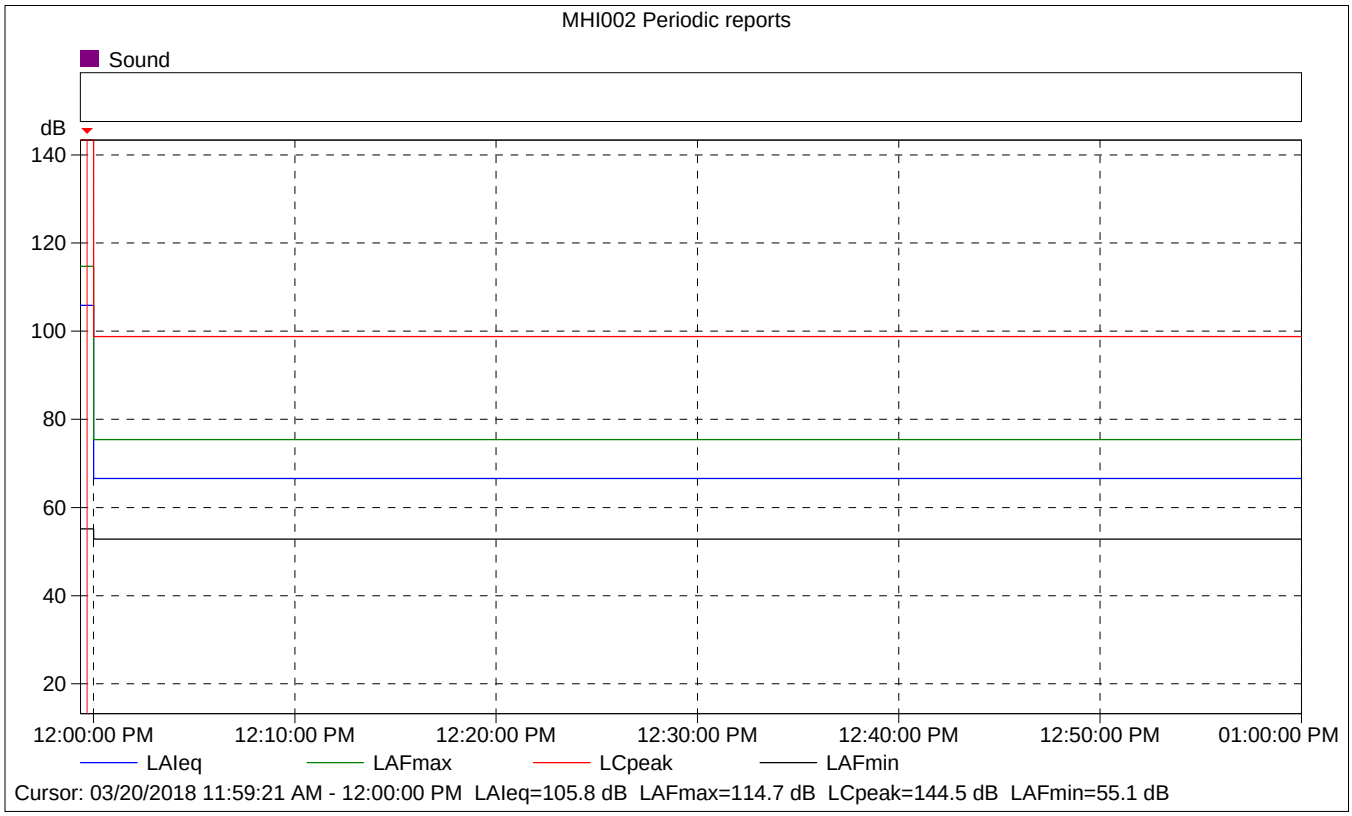

MHI002
%
Based on LAF , 10ms Class width: 0.2 dB 03/20/2018 11:59:21 AM - 12:14:21 PM
100
90
80
70
60
50
40
30
20
10
0
20
30
40
50
60
70
80
90
100
110
120
130
140
dB
L1 = 72.4 dB
L5 = 69.9 dB
L10 = 68.6 dB
L50 = 64.1 dB
L90 = 59.3 dB
L95 = 57.6 dB
L99 = 55.4 dB
Level
Cumulative
Cursor: [78.0 ; 78.2[dB Level: 0.0% Cumulative: 0.1%



MHI002

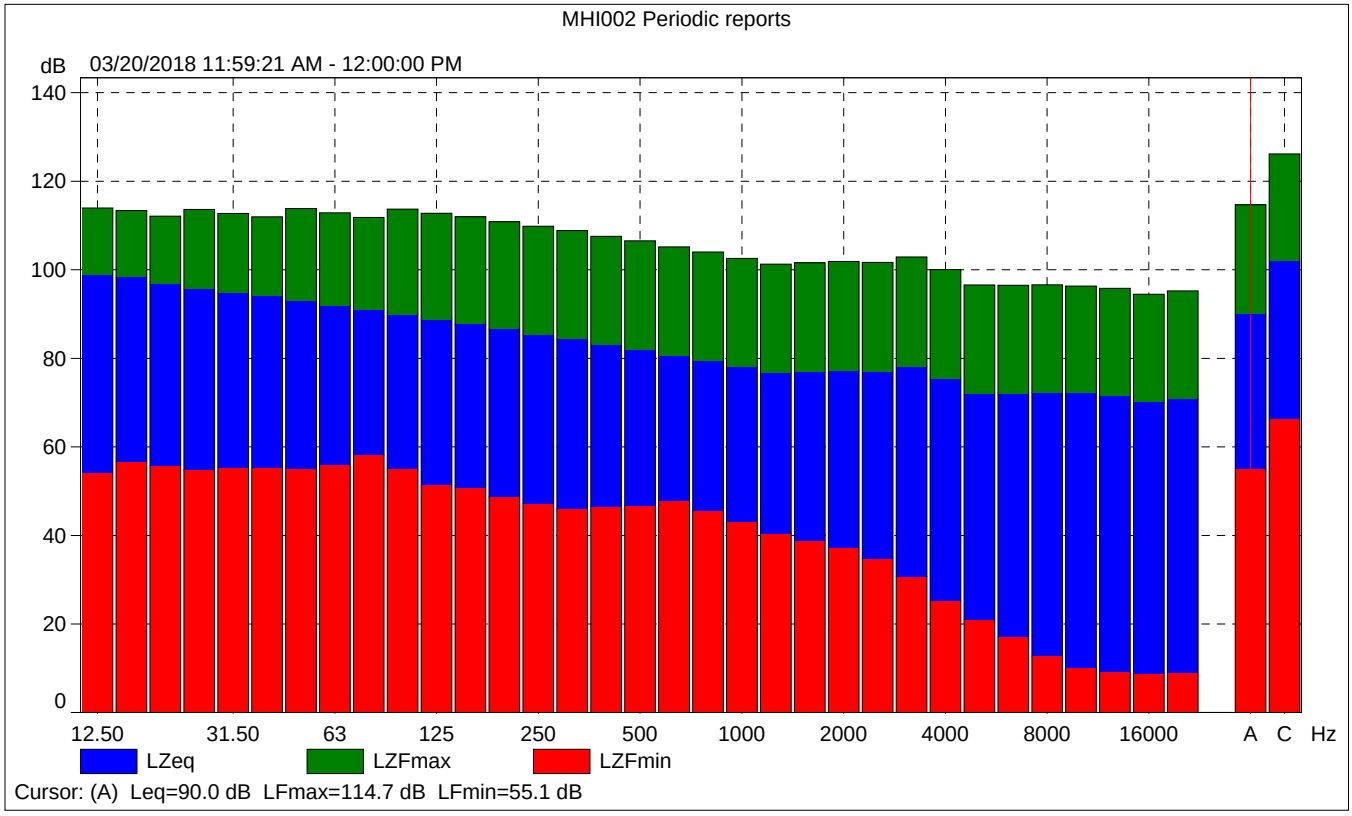
	Start time	Elapsed time	LAIeq [dB]	LAFmax [dB]	LAFmin [dB]
Value			70.2	70.2	68.4
Time	12:06:50 PM	0:00:01			
Date	03/20/2018				

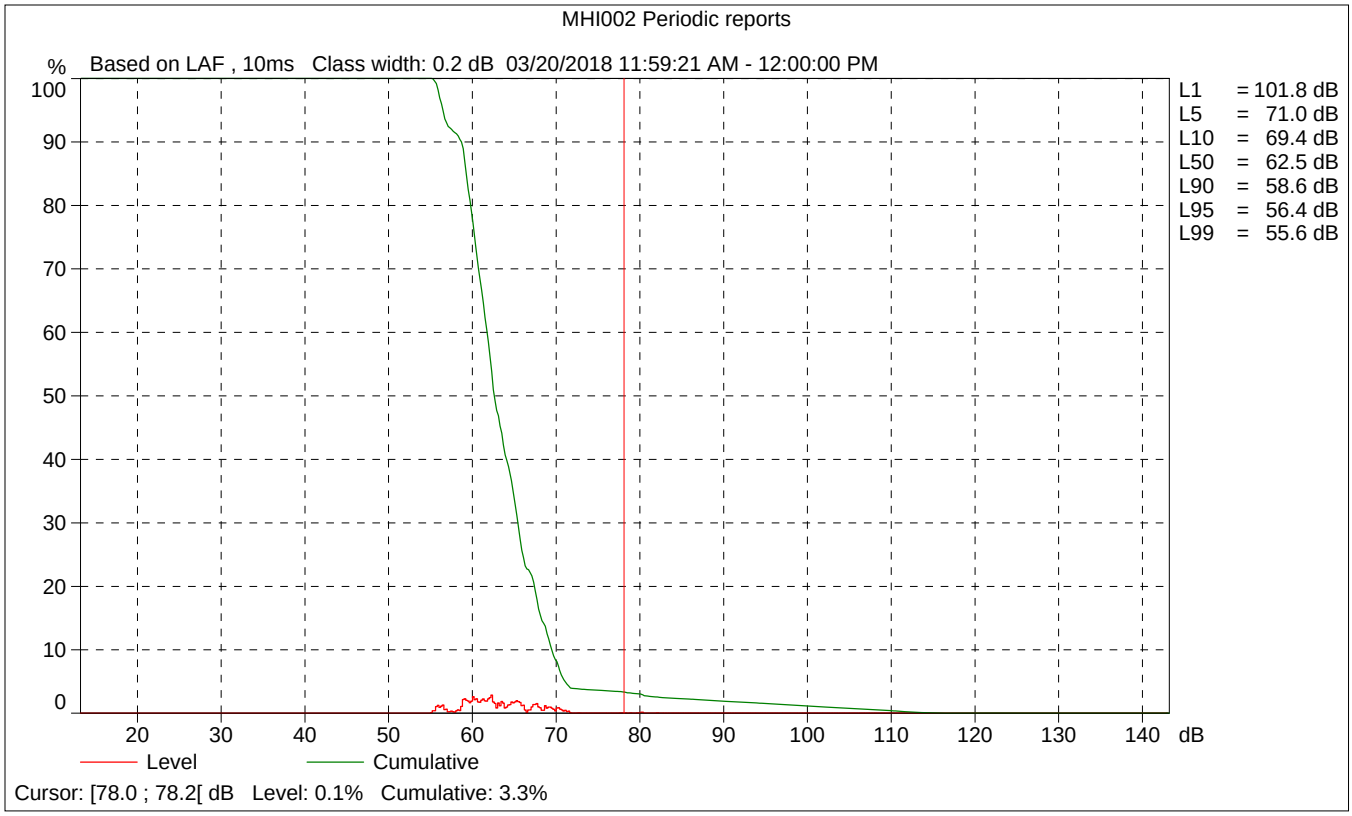

MHI002
dB
03/20/2018 12:06:50 PM - 12:06:51 PM
140
120
100
80
60
40
20
0
12.50
31.50
63
125
250
500
1000
2000
4000
8000
16000
A
C
Hz
LZeq
Cursor: (A) Leq=69.7 dB


MHI002 Periodic reports
Sound
dB
140
120
100
80
60
40
20
12:00:00 PM
12:10:00 PM
12:20:00 PM
12:30:00 PM
12:40:00 PM
12:50:00 PM
01:00:00 PM
LAIeq
LAFmax
LCpeak
LAFmin
Cursor: 03/20/2018 11:59:21 AM - 12:00:00 PM LAIeq=105.8 dB LAFmax=114.7 dB LCpeak=144.5 dB LAFmin=55.1 dB

MHI002 Periodic reports

	Start time	Elapsed time	Overload [%]	LAIeq [dB]	LAFmax [dB]	LAFmin [dB]
Value			0.08	105.8	114.7	55.1
Time	11:59:21 AM	0:00:39				
Date	03/20/2018					




MHI002 Periodic reports
% Based on LAF , 10ms Class width: 0.2 dB 03/20/2018 11:59:21 AM - 12:00:00 PM
100
90
80
70
60
50
40
30
20
10
0
20 30 40 50 60 70 80 90 100 110 120 130 140 dB
L1 = 101.8 dB
L5 = 71.0 dB
L10 = 69.4 dB
L50 = 62.5 dB
L90 = 58.6 dB
L95 = 56.4 dB
L99 = 55.6 dB
Level
Cumulative
Cursor: [78.0 ; 78.2[dB Level: 0.1% Cumulative: 3.3%

Site Number: Murrieta Hills Specific Plan #3
Recorded By: Pierre Glaize
Job Number: 162805
Date: 3/20/18
Time: 2:57 PM
Location: Northeast section of proposed project along an un-named dirt road adjacent to dirt agricultural fields. Proposed site of single-family development in Planning Area 1.
Source of Peak Noise: Trucks driving on dirt road adjacent to fields. Helicopter flying overhead.

Noise Data			
Leq (dB)	Lmin (dB)	Lmax (dB)	Peak (dB)
52.0	30.3	71.1	84

Equipment						
Category	Type	Vendor	Model	Serial No.	Cert. Date	Note
Sound	Sound Level Meter	Brüel & Kjær	2250	3011133	3/27/2017	
	Microphone	Brüel & Kjær	4189	3086765	3/27/2017	
	Preamp	Brüel & Kjær	ZC 0032	25380	3/27/2017	
	Calibrator	Brüel & Kjær	4231	2545667	3/27/2017	

Weather Data			
Est.	Duration: 15 minutes		Sky: Partly Cloudy
	Note: dBA Offset = 0.01		Sensor Height (ft): 5 ft
	Wind Ave Speed (mph / m/s)	Temperature (degrees Fahrenheit)	Barometer Pressure (inches)
	<10	76°	29.96

Photo of Measurement Location

2250

Instrument:		2250
Application:		BZ7225 Version 4.7.2
Start Time:		03/20/2018 14:57:52
End Time:		03/20/2018 15:12:52
Elapsed Time:		00:15:00
Bandwidth:		1/3-octave
Max Input Level:		142.05

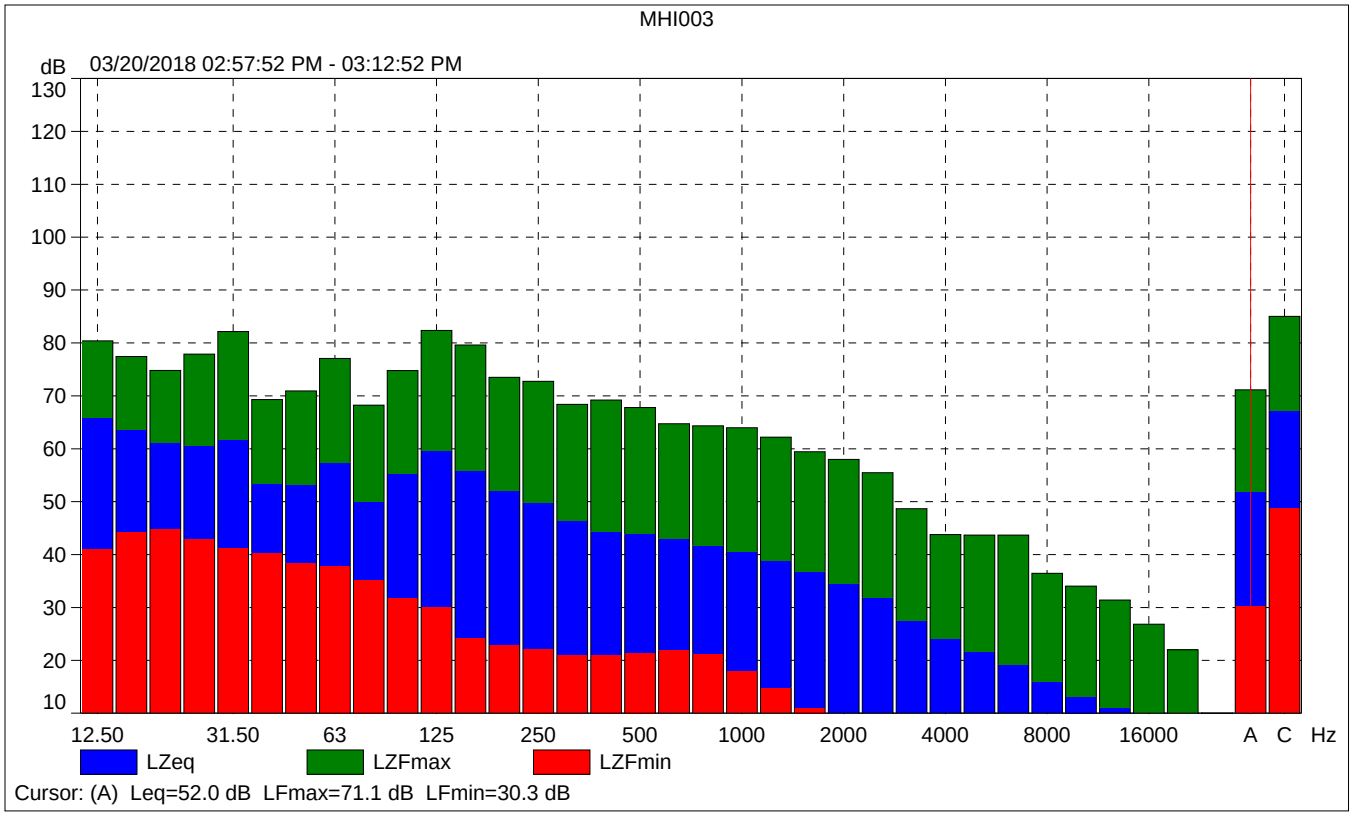
	Time	Frequency
Broadband (excl. Peak):	FSI	AC
Broadband Peak:		C
Spectrum:	FS	Z

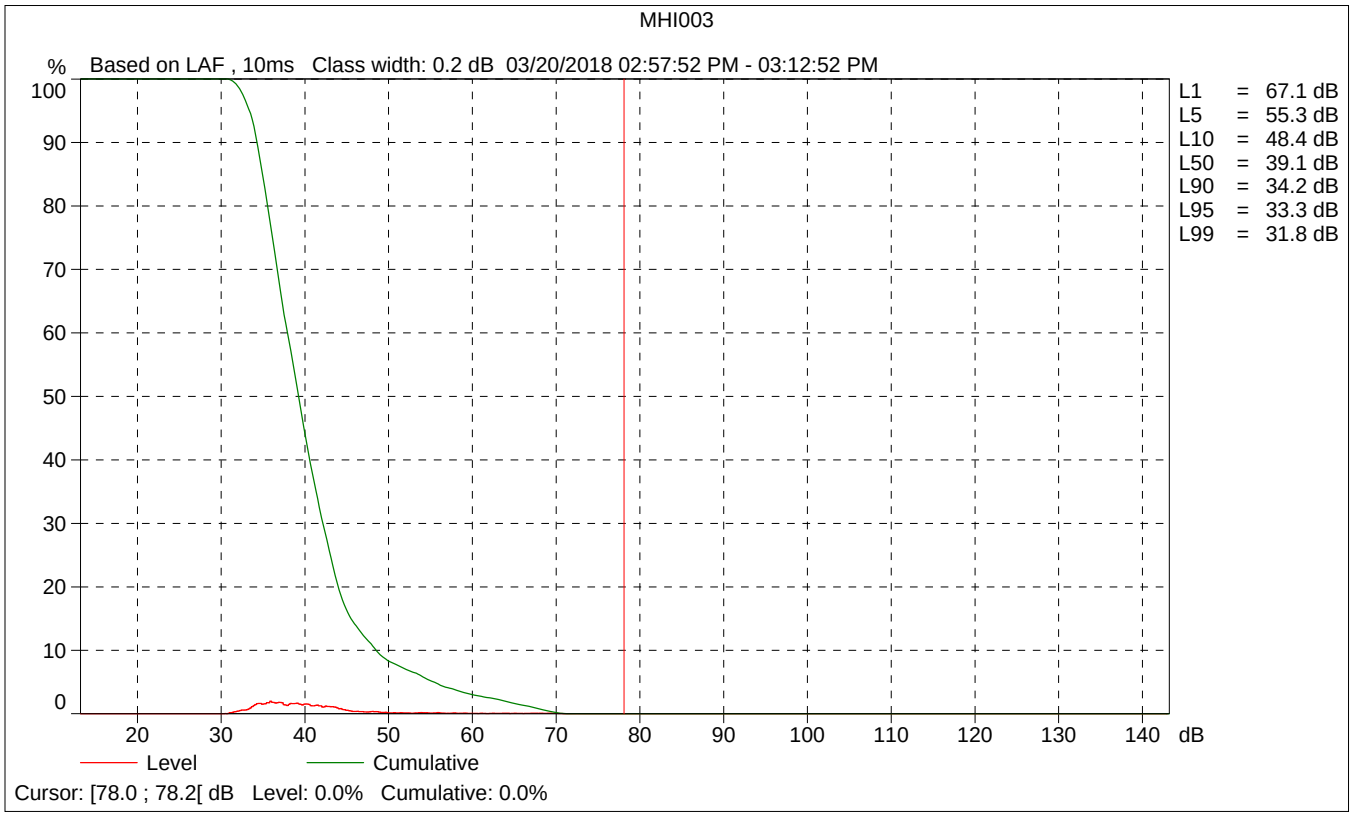
Instrument Serial Number:		3011133
Microphone Serial Number:		3086765
Input:		Top Socket
Windscreen Correction:		UA-1650
Sound Field Correction:		Free-field

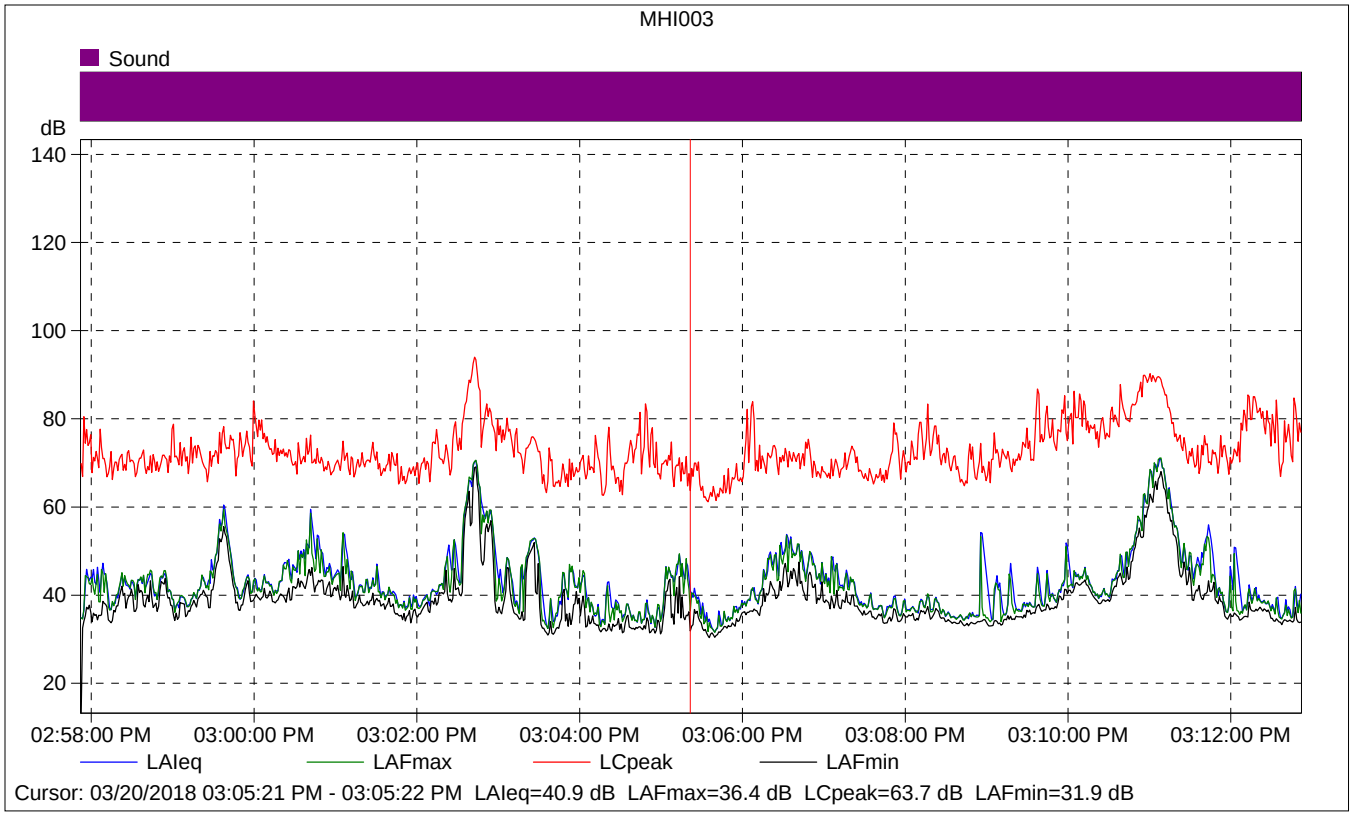
Calibration Time:		03/20/2018 06:15:19
Calibration Type:		External reference
Sensitivity:		43.9789667725563 mV/Pa

MHI003

	Start time	End time	Elapsed time	Overload [%]	LAeq [dB]	LAFmax [dB]	LAFmin [dB]
Value				0.00	52.0	71.1	30.3
Time	02:57:52 PM	03:12:52 PM	0:15:00				
Date	03/20/2018	03/20/2018					

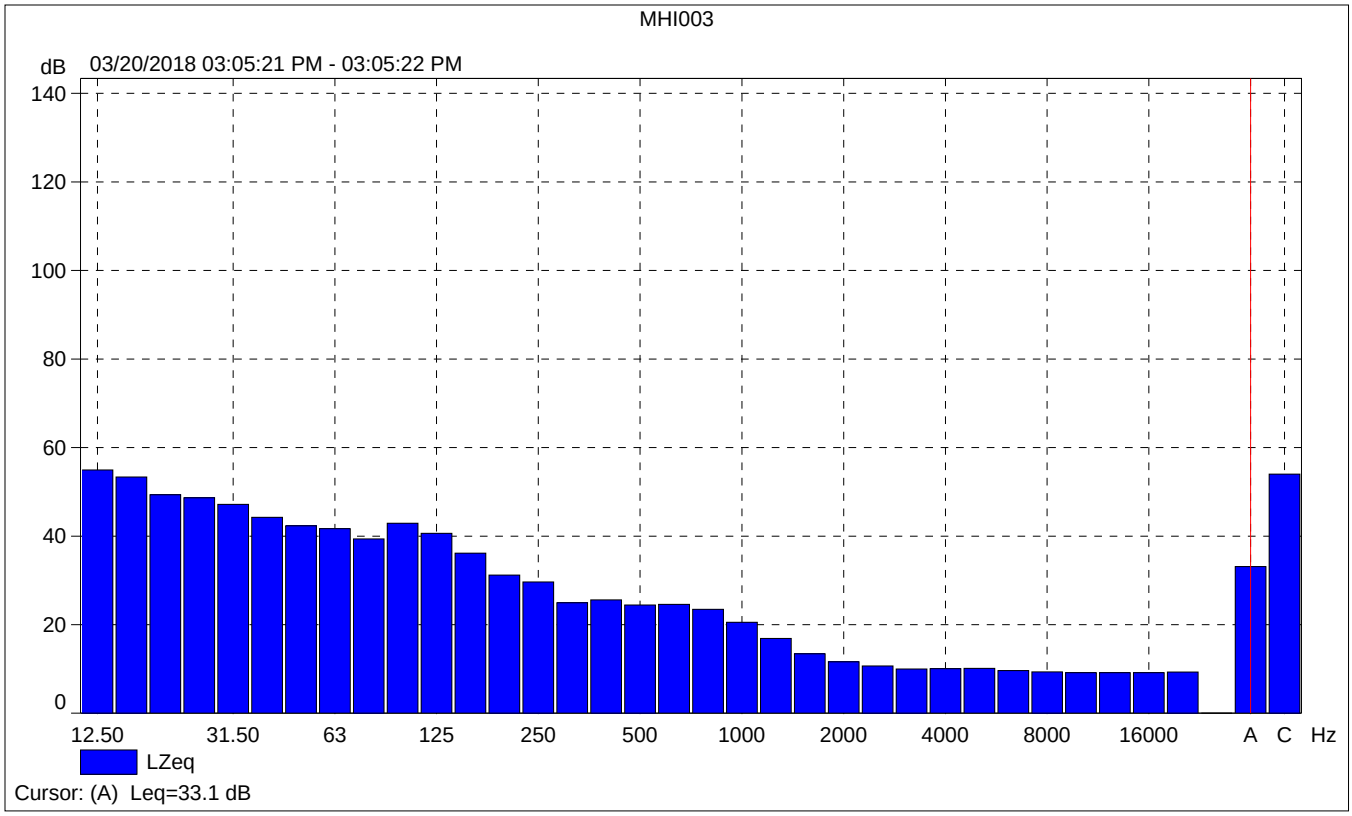

MHI003
dB
03/20/2018 02:57:52 PM - 03:12:52 PM
130
120
110
100
90
80
70
60
50
40
30
20
10
12.50
31.50
63
125
250
500
1000
2000
4000
8000
16000
A
C
Hz
LZeq
LZFmax
LZFmin
Cursor: (A) Leq=52.0 dB LFmax=71.1 dB LFmin=30.3 dB

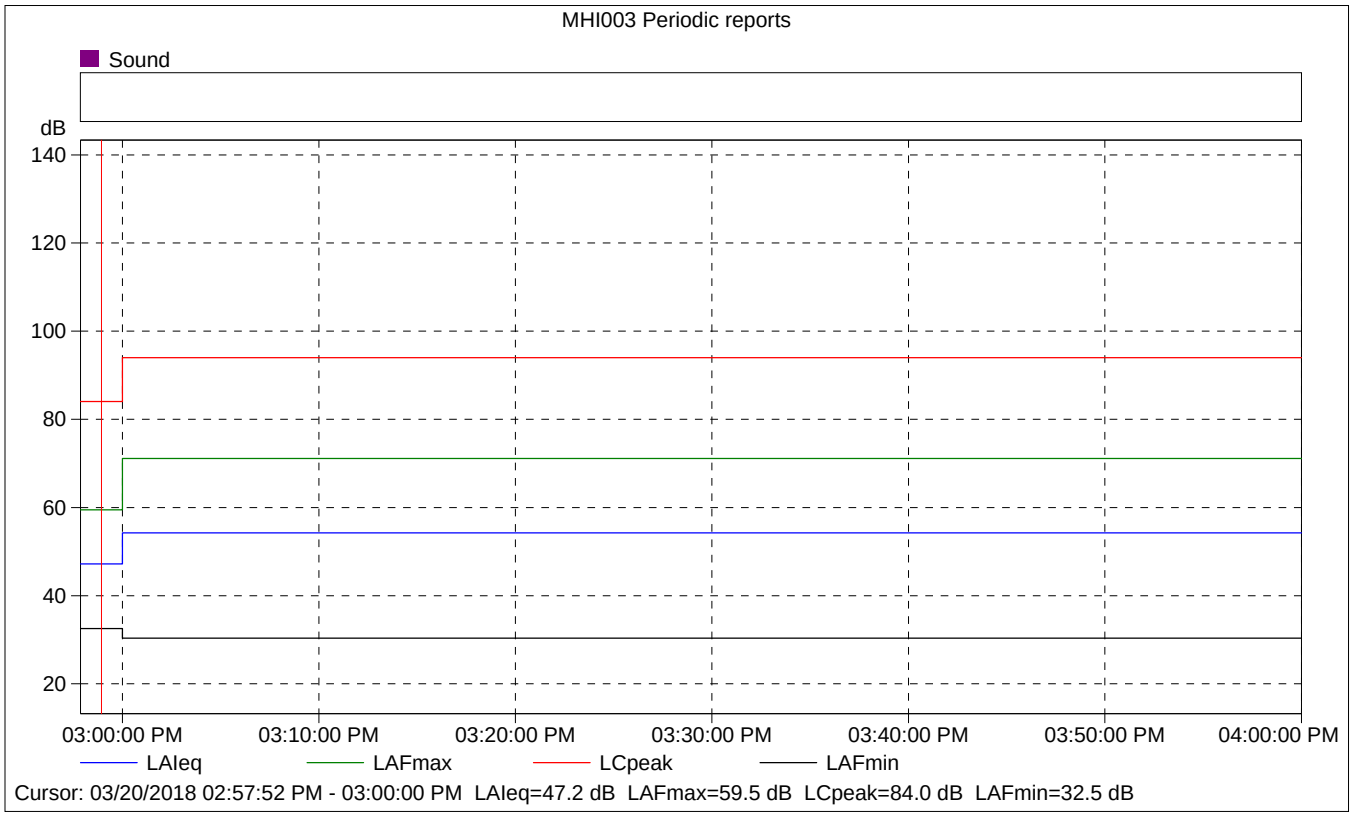

MHI003
%
Based on LAF , 10ms Class width: 0.2 dB 03/20/2018 02:57:52 PM - 03:12:52 PM
100
90
80
70
60
50
40
30
20
10
0
20
30
40
50
60
70
80
90
100
110
120
130
140
dB
L1 = 67.1 dB
L5 = 55.3 dB
L10 = 48.4 dB
L50 = 39.1 dB
L90 = 34.2 dB
L95 = 33.3 dB
L99 = 31.8 dB
Level
Cumulative
Cursor: [78.0 ; 78.2[dB Level: 0.0% Cumulative: 0.0%



MHI003

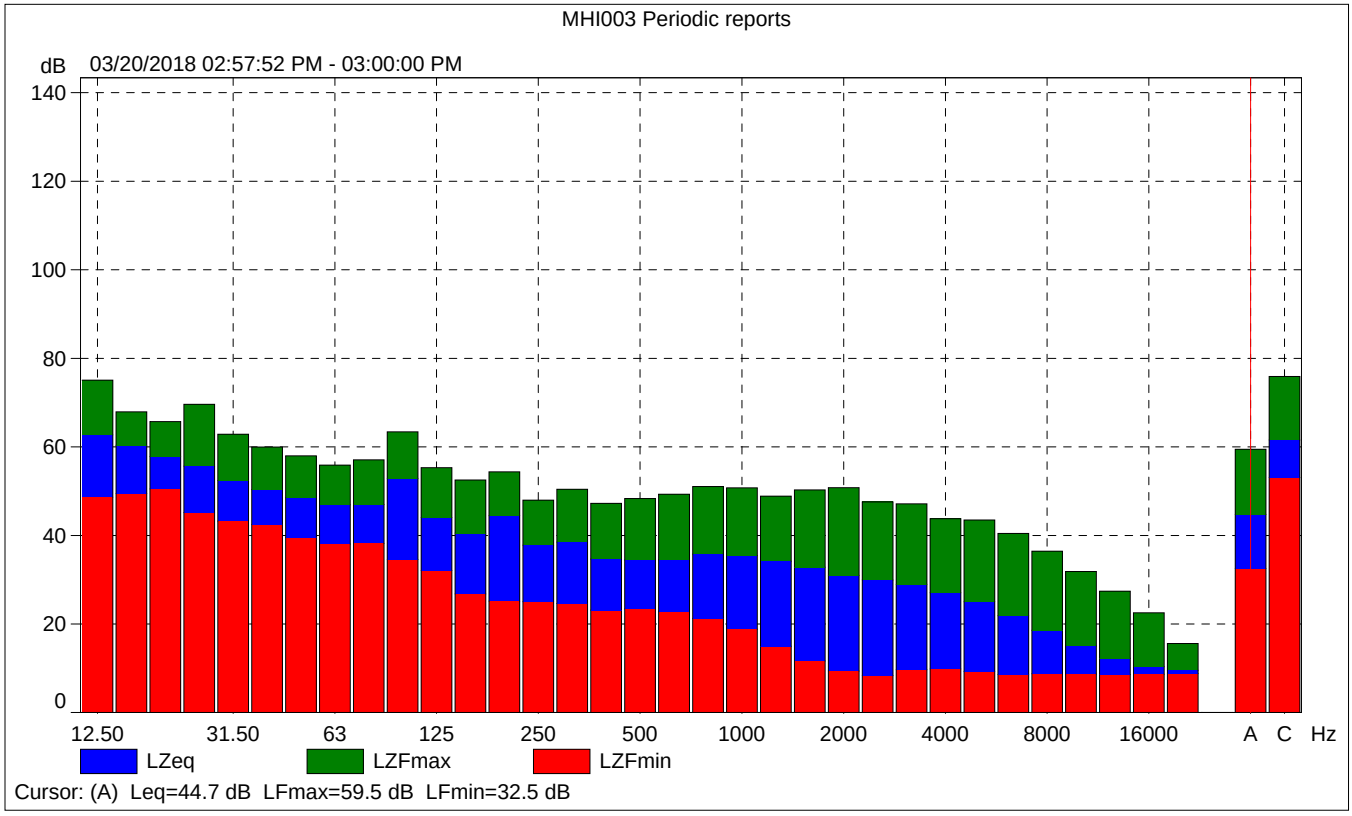
	Start time	Elapsed time	LAIeq [dB]	LAFmax [dB]	LAFmin [dB]
Value			40.9	36.4	31.9
Time	03:05:21 PM	0:00:01			
Date	03/20/2018				

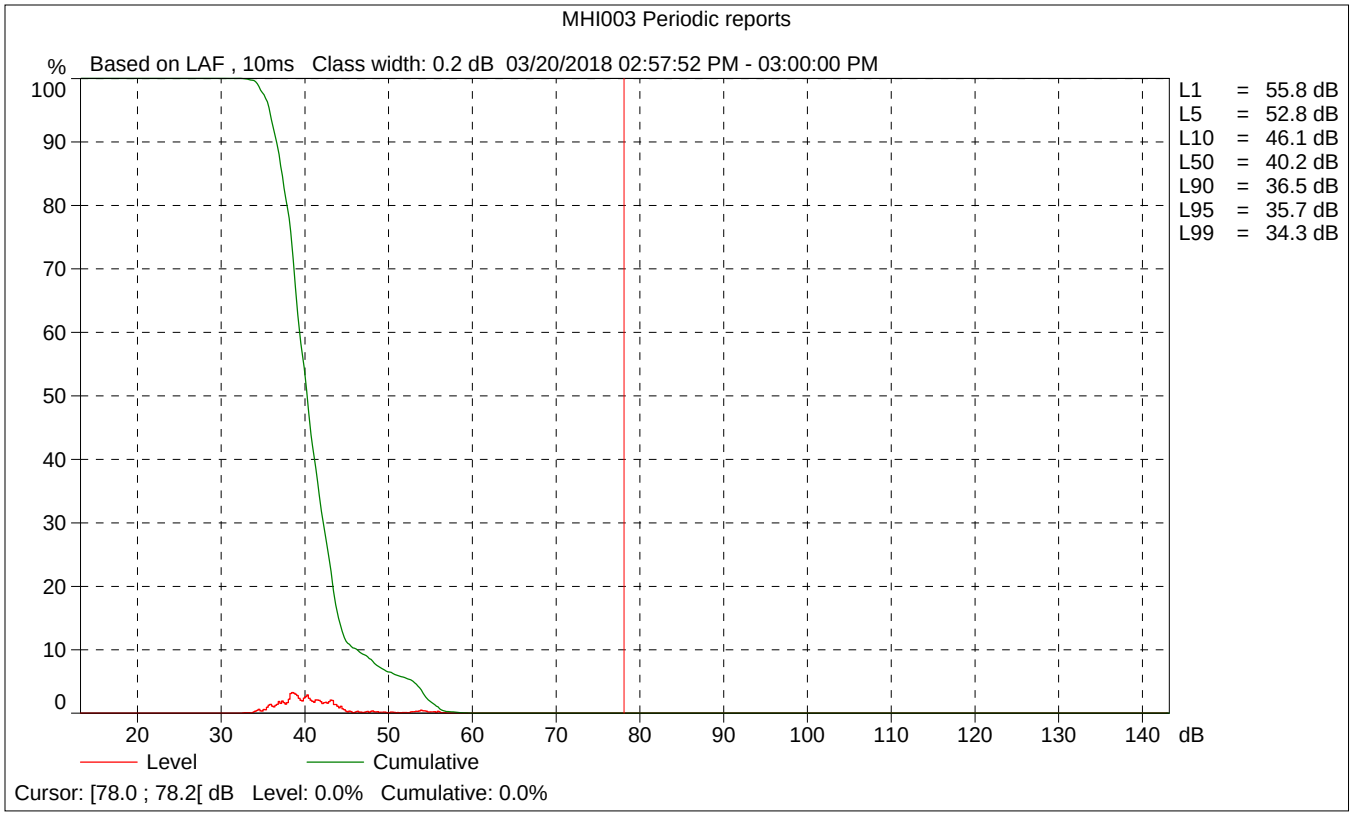

MHI003
dB
03/20/2018 03:05:21 PM - 03:05:22 PM
140
120
100
80
60
40
20
0
12.50
31.50
63
125
250
500
1000
2000
4000
8000
16000
A
C
Hz
LZeq
Cursor: (A) Leq=33.1 dB


MHI003 Periodic reports
Sound
dB
140
120
100
80
60
40
20
03:00:00 PM
03:10:00 PM
03:20:00 PM
03:30:00 PM
03:40:00 PM
03:50:00 PM
04:00:00 PM
LAIeq
LAFmax
LCpeak
LAFmin
Cursor: 03/20/2018 02:57:52 PM - 03:00:00 PM LAIeq=47.2 dB LAFmax=59.5 dB LCpeak=84.0 dB LAFmin=32.5 dB

MHI003 Periodic reports

	Start time	Elapsed time	Overload [%]	LAIeq [dB]	LAFmax [dB]	LAFmin [dB]
Value			0.00	47.2	59.5	32.5
Time	02:57:52 PM	0:02:08				
Date	03/20/2018					




MHI003 Periodic reports
% Based on LAF , 10ms Class width: 0.2 dB 03/20/2018 02:57:52 PM - 03:00:00 PM
100
90
80
70
60
50
40
30
20
10
0
20 30 40 50 60 70 80 90 100 110 120 130 140 dB
Level
Cumulative
L1 = 55.8 dB
L5 = 52.8 dB
L10 = 46.1 dB
L50 = 40.2 dB
L90 = 36.5 dB
L95 = 35.7 dB
L99 = 34.3 dB
Cursor: [78.0 ; 78.2[dB Level: 0.0% Cumulative: 0.0%

Site Number: Murrieta Hills Specific Plan #4			
Recorded By: Pierre Glaize			
Job Number: 162805			
Date: 3/20/18			
Time: 3:23 PM			
Location: Northeast section of proposed project along an un-named dirt road that leads to existing water tanks. Proposed site of single-family development in Planning Area 4.			
Source of Peak Noise: Walking away from monitor, birds and insects nearby.			
Noise Data			
Leq (dB)	Lmin (dB)	Lmax (dB)	Peak (dB)
36.5	28.1	64.8	90.7

Equipment						
Category	Type	Vendor	Model	Serial No.	Cert. Date	Note
Sound	Sound Level Meter	Brüel & Kjær	2250	3011133	3/27/2017	
	Microphone	Brüel & Kjær	4189	3086765	3/27/2017	
	Preamp	Brüel & Kjær	ZC 0032	25380	3/27/2017	
	Calibrator	Brüel & Kjær	4231	2545667	3/27/2017	

Weather Data			
Est.	Duration: 15 minutes		Sky: Partly Cloudy
	Note: dBA Offset = 0.01		Sensor Height (ft): 5 ft
	Wind Ave Speed (mph / m/s)	Temperature (degrees Fahrenheit)	Barometer Pressure (inches)
	<10	76°	29.96

Photo of Measurement Location

2250

Instrument:		2250
Application:		BZ7225 Version 4.7.2
Start Time:		03/20/2018 15:23:36
End Time:		03/20/2018 15:38:36
Elapsed Time:		00:15:00
Bandwidth:		1/3-octave
Max Input Level:		142.05

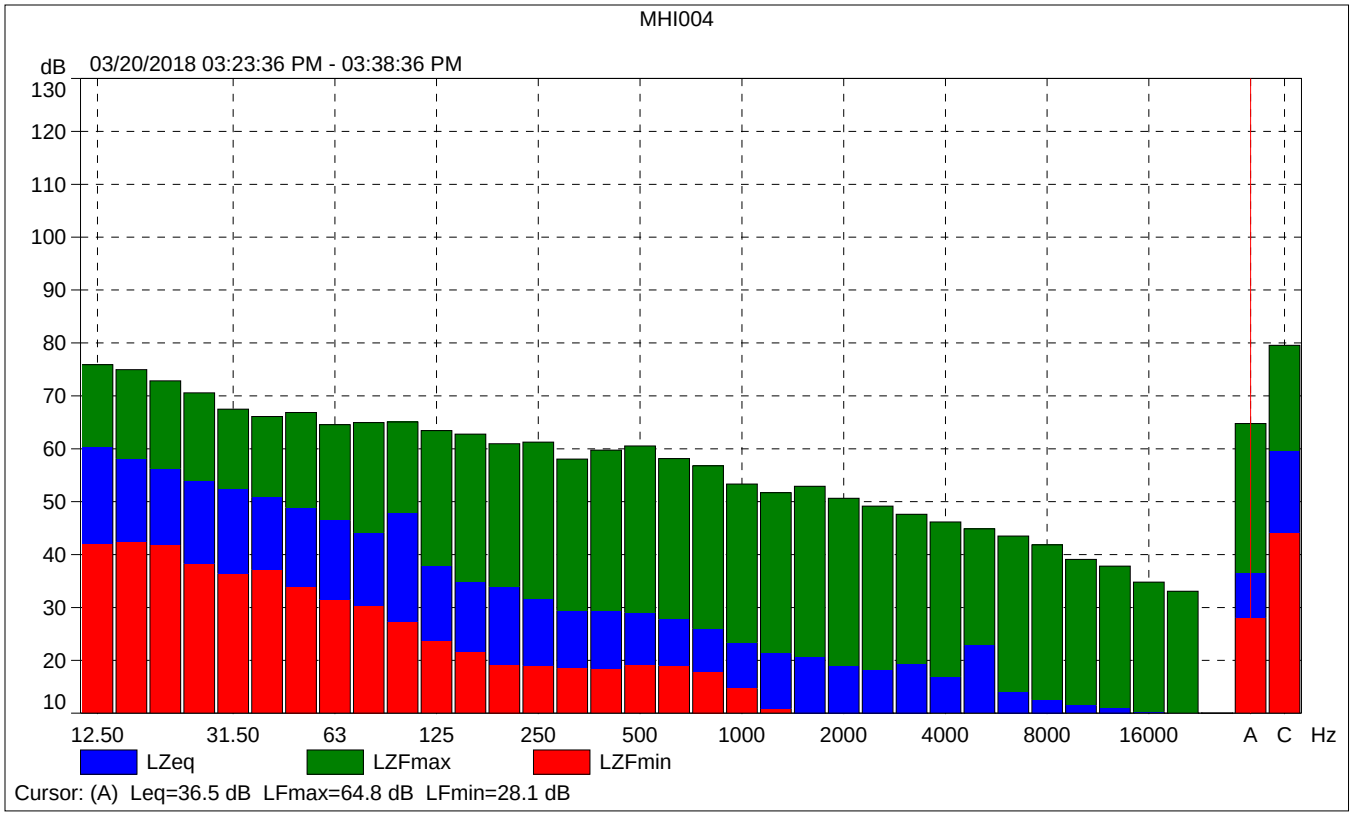
	Time	Frequency
Broadband (excl. Peak):	FSI	AC
Broadband Peak:		C
Spectrum:	FS	Z

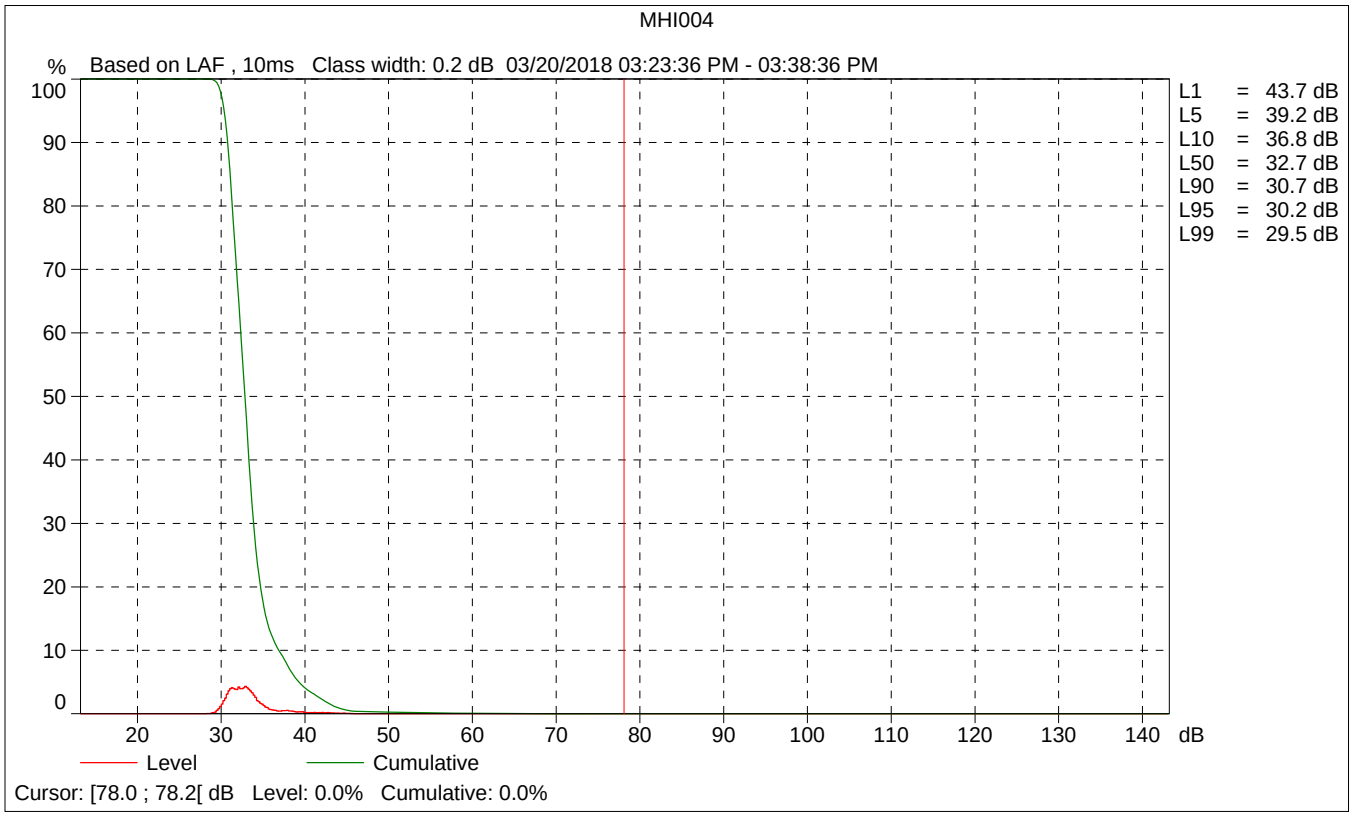
Instrument Serial Number:		3011133
Microphone Serial Number:		3086765
Input:		Top Socket
Windscreen Correction:		UA-1650
Sound Field Correction:		Free-field

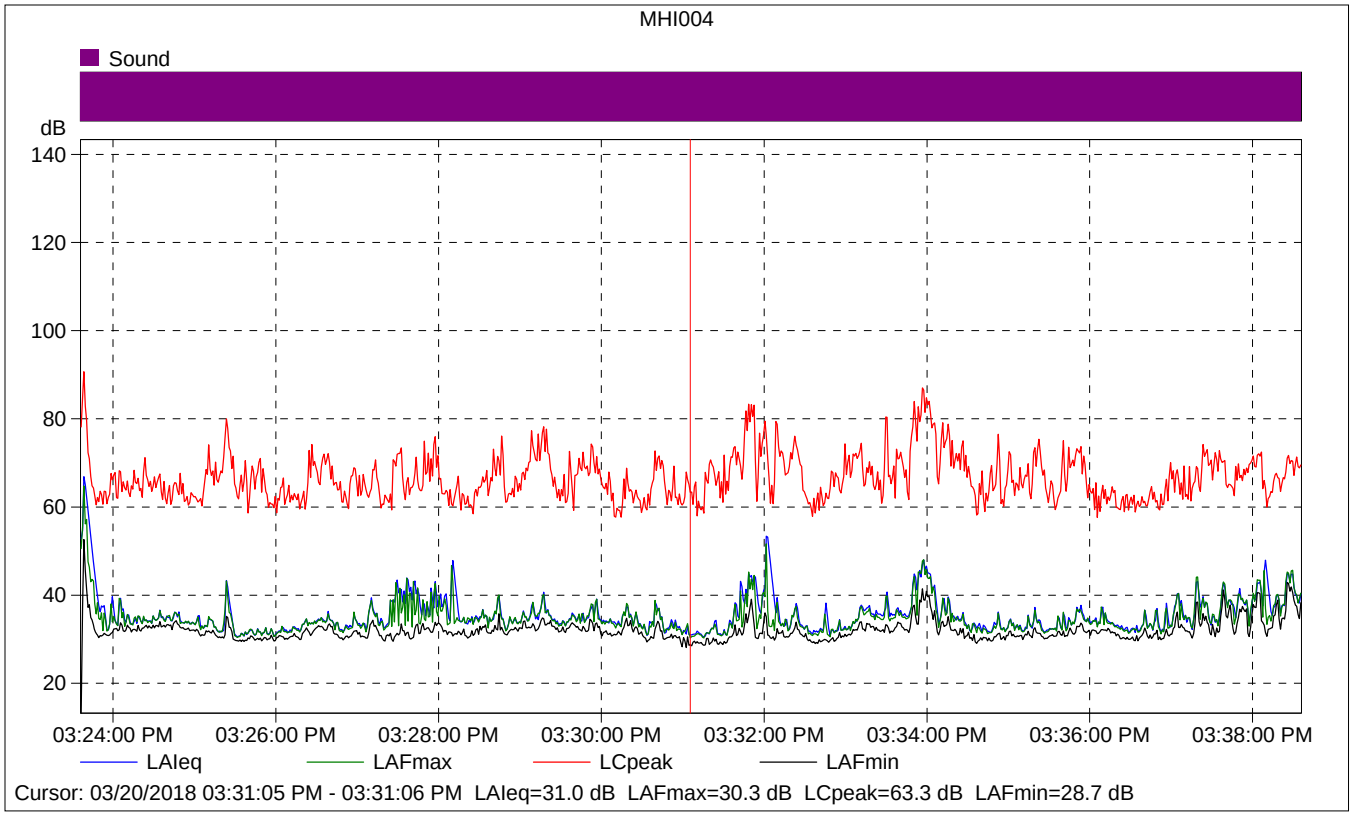
Calibration Time:		03/20/2018 06:15:19
Calibration Type:		External reference
Sensitivity:		43.9789667725563 mV/Pa

MHI004

	Start time	End time	Elapsed time	Overload [%]	LAeq [dB]	LAFmax [dB]	LAFmin [dB]
Value				0.00	36.5	64.8	28.1
Time	03:23:36 PM	03:38:36 PM	0:15:00				
Date	03/20/2018	03/20/2018					

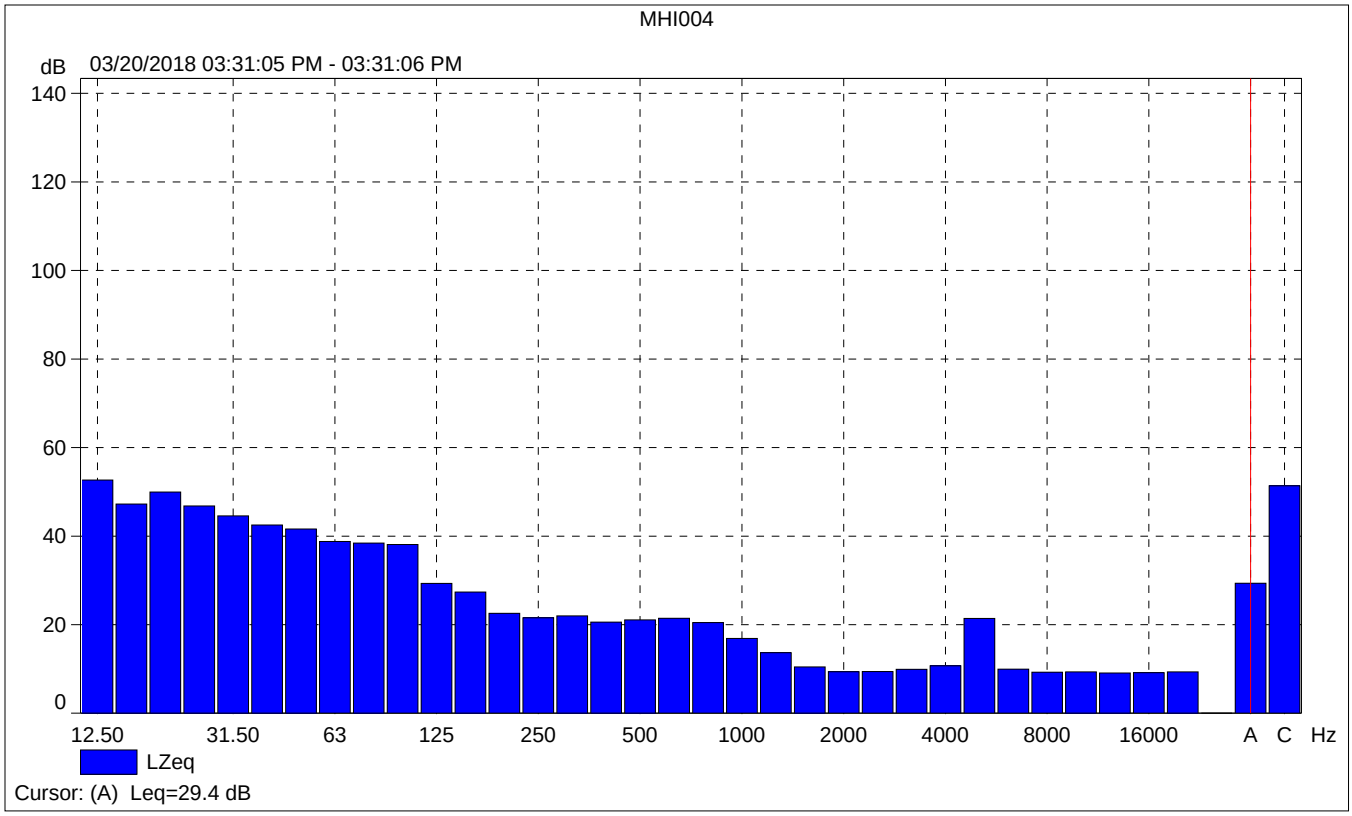

MHI004
dB
03/20/2018 03:23:36 PM - 03:38:36 PM
130
120
110
100
90
80
70
60
50
40
30
20
10
12.50
31.50
63
125
250
500
1000
2000
4000
8000
16000
A
C
Hz
LZeq
LZFmax
LZFmin
Cursor: (A) Leq=36.5 dB LFmax=64.8 dB LFmin=28.1 dB

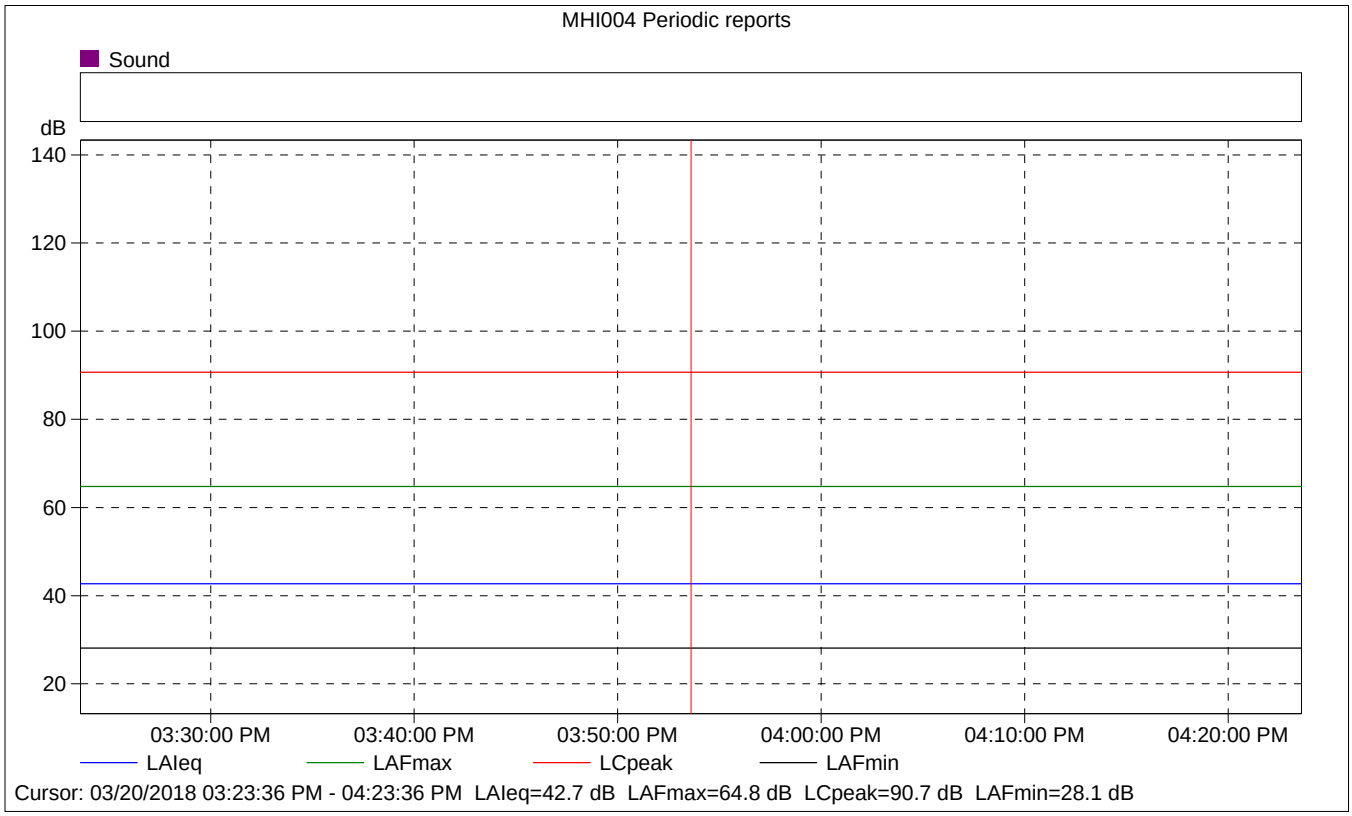

MHI004
%
Based on LAF , 10ms Class width: 0.2 dB 03/20/2018 03:23:36 PM - 03:38:36 PM
100
90
80
70
60
50
40
30
20
10
0
20
30
40
50
60
70
80
90
100
110
120
130
140
dB
L1 = 43.7 dB
L5 = 39.2 dB
L10 = 36.8 dB
L50 = 32.7 dB
L90 = 30.7 dB
L95 = 30.2 dB
L99 = 29.5 dB
Level
Cumulative
Cursor: [78.0 ; 78.2[dB Level: 0.0% Cumulative: 0.0%



MHI004

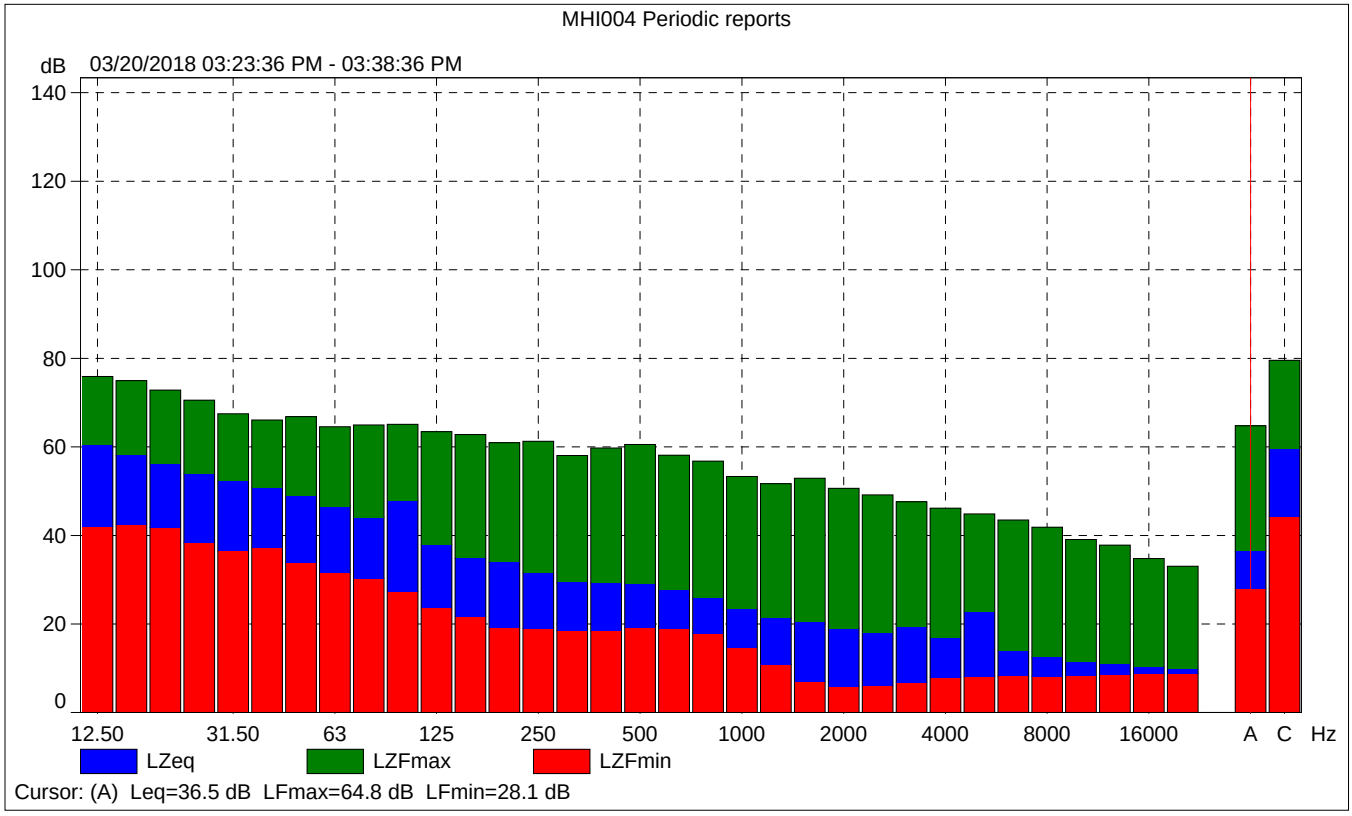
	Start time	Elapsed time	LAIeq [dB]	LAFmax [dB]	LAFmin [dB]
Value			31.0	30.3	28.7
Time	03:31:05 PM	0:00:01			
Date	03/20/2018				

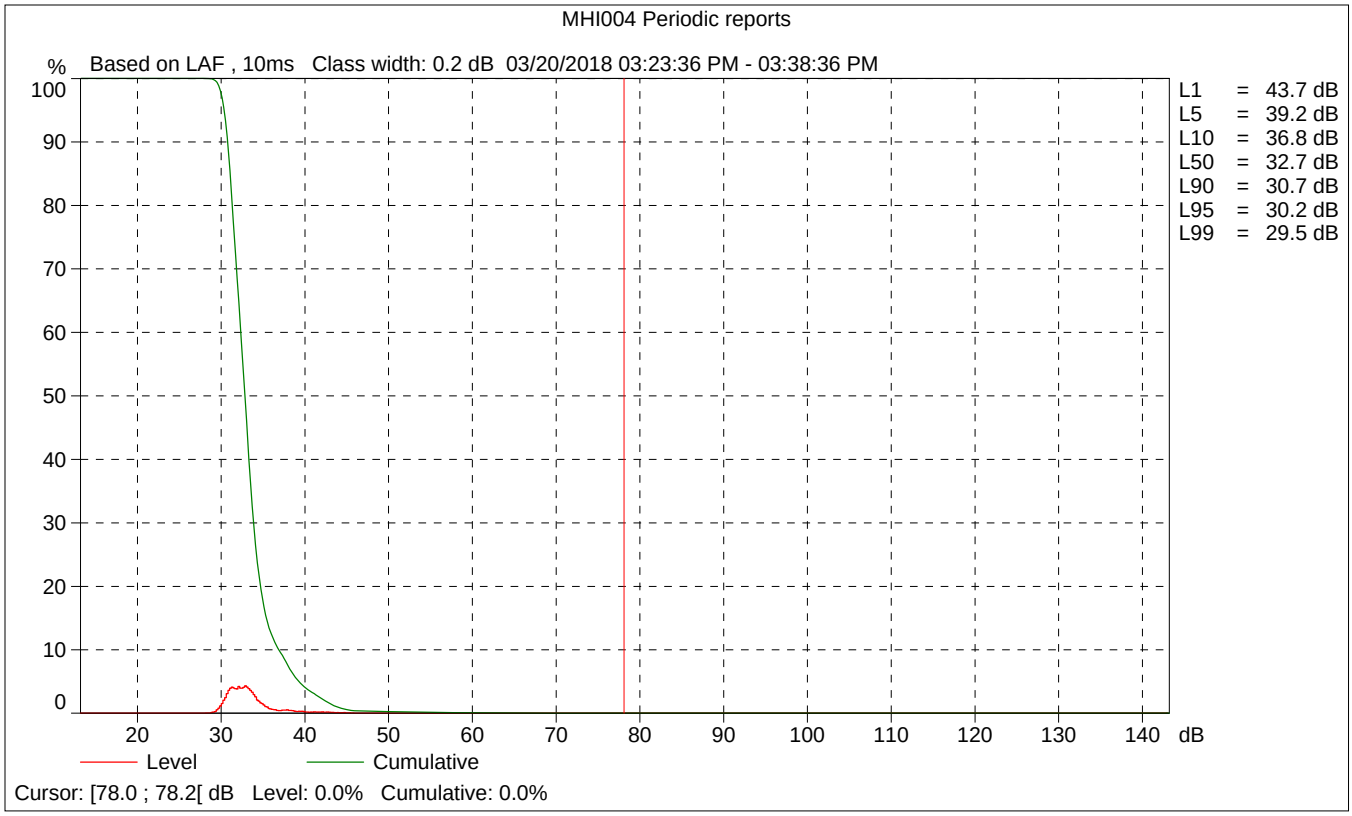

MHI004
dB
03/20/2018 03:31:05 PM - 03:31:06 PM
140
120
100
80
60
40
20
0
12.50
31.50
63
125
250
500
1000
2000
4000
8000
16000
A
C
Hz
LZeq
Cursor: (A) Leq=29.4 dB


MHI004 Periodic reports
Sound
dB
140
120
100
80
60
40
20
03:30:00 PM
03:40:00 PM
03:50:00 PM
04:00:00 PM
04:10:00 PM
04:20:00 PM
LAIeq
LAFmax
LCpeak
LAFmin
Cursor: 03/20/2018 03:23:36 PM - 04:23:36 PM LAIeq=42.7 dB LAFmax=64.8 dB LCpeak=90.7 dB LAFmin=28.1 dB

MHI004 Periodic reports

	Start time	Elapsed time	Overload [%]	LAIeq [dB]	LAFmax [dB]	LAFmin [dB]
Value			0.00	42.7	64.8	28.1
Time	03:23:36 PM	0:15:00				
Date	03/20/2018					




MHI004 Periodic reports
% Based on LAF , 10ms Class width: 0.2 dB 03/20/2018 03:23:36 PM - 03:38:36 PM
100
90
80
70
60
50
40
30
20
10
0
20 30 40 50 60 70 80 90 100 110 120 130 140 dB
L1 = 43.7 dB
L5 = 39.2 dB
L10 = 36.8 dB
L50 = 32.7 dB
L90 = 30.7 dB
L95 = 30.2 dB
L99 = 29.5 dB
Level
Cumulative
Cursor: [78.0 ; 78.2[dB Level: 0.0% Cumulative: 0.0%

APPENDIX B: MODELING DATA

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/27/2017
Case Description: Murrieta Hills Phase 1 - Grading

		Baselines (dBA)			---- Receptor #1 ----
Description	Land Use	Daytime	Evening	Night	
Home 1,800' from Phase 1	Residential	56.1	56.1	56.1	

			Equipment				
			Spec	Actual	Receptor	Estimated	
	Impact		Lmax	Lmax	Distance	Shielding	
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)	
Excavator	No	40		80.7	1800	5	
Grader	No	40	85		1800	5	
Dozer	No	40		81.7	1800	5	
Scraper	No	40		83.6	1800	5	
Backhoe	No	40		77.6	1800	5	

		Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Excavator		44.6	43.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		48.9	47.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		45.5	44.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper		47.5	46.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		41.4	40.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	48.9	52.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/27/2017
Case Description: Murrieta Hills Phase 1 - Construction

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Home 1,800' from Phase 1	Residential	56.1	56.1	56.1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	1800	5
Front End Loader	No	40		79.1	1800	5
Generator	No	50		80.6	1800	5
Tractor	No	40	84		1800	5
Welder / Torch	No	40		74	1800	5

Equipment	Calculated (dBA) *Lmax	L10	Results Day Lmax	Day L10	Evening Lmax	Evening L10	Night Lmax	Night L10	Noise Limits (dBA) Day Lmax	Day L10	Evening Lmax	Evening L10	Night Lmax	Night L10	Noise Limit Exceedance (dBA) Day Lmax	Day L10	Evening Lmax	Evening L10	Night Lmax	Night L10
Crane	44.4	39.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	43	42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	44.5	44.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	47.9	46.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	37.9	36.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	47.9	50.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	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 date: 12/27/2017
Case Description: Murrieta Hills Phase 1 - Paving

		---- Receptor #1 ----		
		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Home 1,800' from Phase 1	Residential	56.1	56.1	56.1

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Paver	No	50		77.2	1800	5
Roller	No	20		80	1800	5

		Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Paver		41.1	41.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller		43.9	39.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	43.9	43.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/27/2017
Case Description: Murrieta Hills Phase 1 - Painting

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Home 1,800' from Phase 1	Residential	56.1	56.1	56.1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Pneumatic Tools	No	50		85.2	1800	5

Results

Equipment		Calculated (dBA) *Lmax	L10	Day Lmax	Day L10	Evening Lmax	Evening L10	Night Lmax	Night L10	Day Lmax	Day L10	Evening Lmax	Evening L10	Night Lmax	Night L10
				Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
Pneumatic Tools		49.1	49	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	49.1	49	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 date: 12/27/2017
Case Description: Murrieta Hills Phase 1 - Grading

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Home 1,500' from Phase 2	Residential	49.1	49.1	49.1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	1500	5
Grader	No	40	85		1500	5
Dozer	No	40		81.7	1500	5
Scraper	No	40		83.6	1500	5
Backhoe	No	40		77.6	1500	5

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Excavator		46.2	45.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		50.5	49.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		47.1	46.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper		49	48.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		43	42	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	50.5	53.9	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 date: 12/27/2017
Case Description: Murrieta Hills Phase 2 - Construction

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Home 1,500' from Phas	Residential	49.1	49.1	49.1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	1500	5
Front End Loader	No	40		79.1	1500	5
Generator	No	50		80.6	1500	5
Tractor	No	40	84		1500	5
Welder / Torch	No	40		74	1500	5

Results

Equipment	Calculated (dBA) *Lmax	L10	Day Lmax	Day L10	Evening Lmax	Evening L10	Night Lmax	Night L10	Day Lmax	Day L10	Evening Lmax	Evening L10	Night Lmax	Night L10
			Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
Crane	46	41	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	44.6	43.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	46.1	46.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	49.5	48.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	39.5	38.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	49.5	51.9	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 date: 12/27/2017
Case Description: Murrieta Hills Phase 2 - Paving

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Home 1,500' from Phase 2	Residential	49.1	49.1	49.1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	1500	5
Roller	No	20		80	1500	5

Results

Equipment	Calculated (dBA) *Lmax	L10	Day Lmax	Day L10	Evening Lmax	Evening L10	Night Lmax	Night L10	Noise Limits (dBA) Day Lmax	Day L10	Evening Lmax	Evening L10	Night Lmax	Night L10	Noise Limit Exceedance (dBA) Day Lmax	Day L10	Evening Lmax	Evening L10	Night Lmax	Night L10
Paver	42.7	42.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	45.5	41.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	45.5	45.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	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 date: 12/27/2017
Case Description: Murrieta Hills Phase 2 - Painting

		---- Receptor #1 ----		
		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Home 1,500' from Phase 2	Residential	49.1	49.1	49.1

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Pneumatic Tools	No	50		85.2	1500	5

				Results												
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)						
				Day		Evening		Night		Day		Evening		Night		
Equipment		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	
Pneumatic Tools		50.6	50.6	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	50.6	50.6	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.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/27/2017
Case Description: Murrieta Hills Phase 3 - Grading

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Existing SMFR 550' from Phase 3	Residential	50	50	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	550	8
Grader	No	40	85		550	8
Dozer	No	40		81.7	550	8
Scraper	No	40		83.6	550	8
Backhoe	No	40		77.6	550	8

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Excavator	51.9	50.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	56.2	55.2	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	52.8	51.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	54.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	48.7	47.8	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	56.2	59.6	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.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Phase 2 MFR 850' from Phase 3	Residential	50	50	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	850	5
Grader	No	40	85		850	5
Dozer	No	40		81.7	850	5
Scraper	No	40		83.6	850	5
Backhoe	No	40		77.6	850	5

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Excavator	51.1	50.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	55.4	54.4	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	52.1	51.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	54	53	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	48	47	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	55.4	58.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/27/2017
Case Description: Murrieta Hills Phase 3 - Construction

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Existing House 550' from Phase 3	Residential	50	50	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	550	8
Front End Loader	No	40		79.1	550	8
Generator	No	50		80.6	550	8
Tractor	No	40	84		550	8
Welder / Torch	No	40		74	550	8

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Crane	51.7	46.8	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	50.3	49.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	51.8	51.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	55.2	54.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	45.2	44.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	55.2	57.6	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.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Phase 2 MFR 850' from Phase 3	Residential	50	50	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	850	5
Front End Loader	No	40		79.1	850	5
Generator	No	50		80.6	850	5
Tractor	No	40	84		850	5
Welder / Torch	No	40		74	850	5

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Crane	50.9	46	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	49.5	48.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	51	51	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	54.4	53.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	44.4	43.4	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	54.4	56.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/27/2017
Case Description: Murrieta Hills Phase 3 - Paving

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Existing House 550" from Phase 3	Residential	50	50	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	550	8
Roller	No	20		80	550	8

Results

Equipment	Calculated (dBA) *Lmax	L10	Day Lmax	Day L10	Evening Lmax	Evening L10	Night Lmax	Night L10	Noise Limit Exceedance (dBA) Day Lmax	Day L10	Evening Lmax	Evening L10	Night Lmax	Night L10
Paver	48.4	48.4	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	51.2	47.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	51.2	50.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Phase 2 MFR 850' from Phase 3	Residential	50	50	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	850	5
Roller	No	20		80	850	5

Results

Equipment	Calculated (dBA) *Lmax	L10	Day Lmax	Day L10	Evening Lmax	Evening L10	Night Lmax	Night L10	Noise Limit Exceedance (dBA) Day Lmax	Day L10	Evening Lmax	Evening L10	Night Lmax	Night L10
Paver	47.6	47.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	50.4	46.4	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	50.4	50.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/27/2017
Case Description: Murrieta Hills Phase 3 - Painting

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Existing House 550" from Phase 3	Residential	50	50	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Pneumatic Tools	No	50		85.2	550	8

Results

Equipment		Calculated (dBA) *Lmax	L10	Day Lmax	Day L10	Evening Lmax	Evening L10	Night Lmax	Night L10	Day Lmax	Day L10	Evening Lmax	Evening L10	Night Lmax	Night L10
				Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
Pneumatic Tools		56.4	56.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	56.4	56.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Phase 2 MFR 850' from Phase 3	Residential	50	50	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Pneumatic Tools	No	50		85.2	850	5

Results

Equipment		Calculated (dBA) *Lmax	L10	Day Lmax	Day L10	Evening Lmax	Evening L10	Night Lmax	Night L10	Day Lmax	Day L10	Evening Lmax	Evening L10	Night Lmax	Night L10
				Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
Pneumatic Tools		55.6	55.6	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	55.6	55.6	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.

TRAFFIC NOISE LEVELS AND NOISE CONTOURS

Project Number: 162805
Project Name: Murrieta Hills Specific Plan Amendment

Background Information

Model Description: FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels.
Source of Traffic Volumes: Murrieta Hills Traffic Analysis
Community Noise Descriptor: L_{dn}: _____ CNEL: x

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Roadway Segment	Lanes	Median Width	ADT Volume	Design Speed (mph)	Alpha Factor	Vehicle Mix: Medium Trucks	Vehicle Mix: Heavy Trucks	CNEL at 100 Feet	Distance from Centerline of Roadway to Contour: 70 CNEL	65 CNEL	60 CNEL	55 CNEL
Keller Road												
Howard Way to Zeiders Rd.	2	0	290	40	0.5	1.8%	0.7%	44.6	-	-	-	-
Zeiders Rd. to I-215	2	0	1,100	40	0.5	1.8%	0.7%	50.4	-	-	-	49
I-215 to Mapleton Ave.	2	0	3,160	0	0.5	1.8%	0.7%	24.9	-	-	-	-
Mapleton Ave. to Whitewood Rd/Menifee Rd	2	0	2,910	40	0.5	1.8%	0.7%	54.6	-	-	44	95
Antelope Road												
Keller Rd. to Mapleton Ave.	2	0	8,110	50	0.5	1.8%	0.7%	61.4	-	58	125	269
Mapleton Ave. to Scott Rd.	2	0	12,300	50	0.5	1.8%	0.7%	63.3	36	76	165	355
Zeiders Road												
North of Keller Road	2	0	920	50	0.5	1.8%	0.7%	52.0	-	-	-	63
McElwain Road												
Keller Rd. to Project Access	0						Does Not Exist					
Project Access to Linnel Ln.	0						Does Not Exist					
Linnel Ln. to Clinton Keith Rd.	4	0	15,020	35	0.5	1.8%	0.7%	60.5	-	50	108	234
Scott Road												
Murrieta Rd. to Haun Rd./Zeiders Rd.	2	0	14,920	55	0.5	1.8%	0.7%	65.1	47	102	220	474
Haun Rd./Zeiders Rd. to I-215 Southbound F	2	0	25,700	55	0.5	1.8%	0.7%	67.5	68	147	316	681
I-215 Northbound ramps to Antelope Rd.	4	0	40,030	55	0.5	1.8%	0.7%	69.5	93	200	431	928
Clinton Keith Road												
I-215 Northbound ramps to Whitewood Rd.	6	20	13,850	40	0.5	1.8%	0.7%	62.0	-	-	135	292

TRAFFIC NOISE LEVELS AND NOISE CONTOURS

Project Number: 162805
Project Name: Murrieta Hills Specific Plan Amendment

Background Information

Model Description: FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels.
Source of Traffic Volumes: Murrieta Hills Traffic Analysis
Community Noise Descriptor: L_{dn}: _____ CNEL: x

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Roadway Segment	Lanes	Median Width	ADT Volume	Design Speed (mph)	Alpha Factor	Vehicle Mix: Medium Trucks	Vehicle Mix: Heavy Trucks	CNEL at 100 Feet	Distance from Centerline of Roadway to Contour: 70 CNEL	65 CNEL	60 CNEL	55 CNEL
Keller Road												
Howard Way to Zeiders Rd.	2	0	5,990	40	0.5	1.8%	0.7%	57.8	-	33	71	153
Zeiders Rd. to I-215	2	0	14,000	40	0.5	1.8%	0.7%	61.5	-	58	125	270
I-215 to Mapleton Ave.	6	0	22,880	40	0.5	1.8%	0.7%	63.9	-	84	182	392
Mapleton Ave. to Whitewood Rd/Menifee R	4	0	20,350	40	0.5	1.8%	0.7%	63.2	-	76	163	351
Antelope Road												
Keller Rd. to Mapleton Ave.						Street Vacated						
Keller Rd. to Scott Rd.	4	0	20,660	50	0.5	1.8%	0.7%	65.6	51	110	236	509
Zeiders Road												
North of Keller Road	4	0	9,300	50	0.5	1.8%	0.7%	62.1	-	64	139	299
McElwain Road												
Keller Rd. to Project Access	4	0	880	50	0.5	1.8%	0.7%	51.9	-	-	-	62
Project Access to Linnel Ln.	2	0	880	50	0.5	1.8%	0.7%	51.8	-	-	-	61
Linnel Ln. to Clinton Keith Rd.	4	0	22,170	35	0.5	1.8%	0.7%	62.2	-	65	141	303
Scott Road												
Murrieta Rd. to Haun Rd./Zeiders Rd.	6	0	31,030	55	0.5	1.8%	0.7%	68.6	81	174	375	808
Haun Rd./Zeiders Rd. to I-215 Southbound	6	0	33,810	55	0.5	1.8%	0.7%	69.0	86	184	397	855
I-215 Northbound ramps to Antelope Rd.	8	0	42,110	55	0.5	1.8%	0.7%	70.3	104	224	483	1,041
Clinton Keith Road												
I-215 Northbound ramps to Whitewood Rd.	6	20	32,570	40	0.5	1.8%	0.7%	65.7	-	111	240	516

TRAFFIC NOISE LEVELS AND NOISE CONTOURS

Project Number: 162805
Project Name: Murrieta Hills Specific Plan Amendment

Background Information

Model Description: FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels.
Source of Traffic Volumes: Murrieta Hills Traffic Analysis
Community Noise Descriptor: L_{dn}: _____ CNEL: x

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Roadway Segment	Lanes	Median Width	ADT Volume	Design Speed (mph)	Alpha Factor	Vehicle Mix: Medium Trucks	Vehicle Mix: Heavy Trucks	CNEL at 100 Feet	Distance from Centerline of Roadway to Contour: 70 CNEL	65 CNEL	60 CNEL	55 CNEL
Keller Road												
Howard Way to Zeiders Rd.	2	0	6,250	40	0.5	1.8%	0.7%	58.0	-	34	73	158
Zeiders Rd. to I-215	2	0	20,330	40	0.5	1.8%	0.7%	63.1	35	75	161	346
I-215 to Mapleton Ave.	6	0	25,300	40	0.5	1.8%	0.7%	64.3	-	90	194	419
Mapleton Ave. to Whitewood Rd/Menifee R	4	0	22,620	40	0.5	1.8%	0.7%	63.6	-	81	175	377
Antelope Road												
Keller Rd. to Mapleton Ave.						Street Vacated						
Keller Rd. to Scott Rd.	4	0	21,410	50	0.5	1.8%	0.7%	65.8	52	112	242	521
Zeiders Road												
North of Keller Road	4	0	14,170	50	0.5	1.8%	0.7%	64.0	-	85	184	396
McElwain Road												
Keller Rd. to Project Access	4	0	14,230	50	0.5	1.8%	0.7%	64.0	-	86	184	397
Project Access to Linnel Ln.	2	0	4,640	50	0.5	1.8%	0.7%	59.0	-	40	86	185
Linnel Ln. to Clinton Keith Rd.	4	0	22,790	35	0.5	1.8%	0.7%	62.3	-	66	143	308
Scott Road												
Murrieta Rd. to Haun Rd./Zeiders Rd.	6	0	33,000	55	0.5	1.8%	0.7%	68.9	84	181	391	842
Haun Rd./Zeiders Rd. to I-215 Southbound	6	0	34,000	55	0.5	1.8%	0.7%	69.0	86	185	398	858
I-215 Northbound ramps to Antelope Rd.	8	0	42,300	55	0.5	1.8%	0.7%	70.3	104	225	485	1,044
Clinton Keith Road												
I-215 Northbound ramps to Whitewood Rd.	6	20	32,680	40	0.5	1.8%	0.7%	65.7	-	111	240	517

TRAFFIC NOISE LEVELS AND NOISE CONTOURS

Project Number: 162805
Project Name: Murrieta Hills Specific Plan Amendment

Background Information

Model Description: FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels.
Source of Traffic Volumes: Murrieta Hills Traffic Analysis
Community Noise Descriptor: L_{dn}: _____ CNEL: x

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Roadway Segment	Lanes	Median Width	ADT Volume	Design Speed (mph)	Alpha Factor	Vehicle Mix: Medium Trucks	Vehicle Mix: Heavy Trucks	CNEL at 100 Feet	Distance from Centerline of Roadway to Contour: 70 CNEL	65 CNEL	60 CNEL	55 CNEL
Keller Road												
Howard Way to Zeiders Rd.	2	0	290	40	0.5	1.8%	0.7%	44.6	-	-	-	-
Zeiders Rd. to I-215	2	0	1,100	40	0.5	1.8%	0.7%	50.4	-	-	-	49
I-215 to Mapleton Ave.	2	0	3,160	0	0.5	1.8%	0.7%	24.9	-	-	-	-
Mapleton Ave. to Whitewood Rd/Menifee Rd	2	0	2,910	40	0.5	1.8%	0.7%	54.6	-	-	44	95
Antelope Road												
Keller Rd. to Mapleton Ave.	2	0	8,110	50	0.5	1.8%	0.7%	61.4	-	58	125	269
Mapleton Ave. to Scott Rd.	2	0	12,300	50	0.5	1.8%	0.7%	63.3	36	76	165	355
Zeiders Road												
North of Keller Road	2	0	920	50	0.5	1.8%	0.7%	52.0	-	-	-	63
McElwain Road												
Keller Rd. to Project Access	0						Does Not Exist					
Project Access to Linnel Ln.	0						Does Not Exist					
Linnel Ln. to Clinton Keith Rd.	4	0	15,020	35	0.5	1.8%	0.7%	60.5	-	50	108	234
Scott Road												
Murrieta Rd. to Haun Rd./Zeiders Rd.	2	0	14,920	55	0.5	1.8%	0.7%	65.1	47	102	220	474
Haun Rd./Zeiders Rd. to I-215 Southbound F	2	0	25,700	55	0.5	1.8%	0.7%	67.5	68	147	316	681
I-215 Northbound ramps to Antelope Rd.	4	0	40,030	55	0.5	1.8%	0.7%	69.5	93	200	431	928
Clinton Keith Road												
I-215 Northbound ramps to Whitewood Rd.	6	20	13,850	40	0.5	1.8%	0.7%	62.0	-	-	135	292

TRAFFIC NOISE LEVELS AND NOISE CONTOURS

Project Number: 162805
Project Name: Murrieta Hills Specific Plan Amendment

Background Information

Model Description: FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels.
Source of Traffic Volumes: Murrieta Hills Traffic Analysis
Community Noise Descriptor: L_{dn}: _____ CNEL: x

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Roadway Segment	Lanes	Median Width	ADT Volume	Design Speed (mph)	Alpha Factor	Vehicle Mix: Medium Trucks	Vehicle Mix: Heavy Trucks	CNEL at 100 Feet	Distance from Centerline of Roadway to Contour: 70 CNEL	65 CNEL	60 CNEL	55 CNEL
Keller Road												
Howard Way to Zeiders Rd.	2	0	5,990	40	0.5	1.8%	0.7%	57.8	-	33	71	153
Zeiders Rd. to I-215	2	0	14,000	40	0.5	1.8%	0.7%	61.5	-	58	125	270
I-215 to Mapleton Ave.	6	0	22,880	40	0.5	1.8%	0.7%	63.9	-	84	182	392
Mapleton Ave. to Whitewood Rd/Menifee R	4	0	20,350	40	0.5	1.8%	0.7%	63.2	-	76	163	351
Antelope Road												
Keller Rd. to Mapleton Ave.						Street Vacated						
Keller Rd. to Scott Rd.	4	0	20,660	50	0.5	1.8%	0.7%	65.6	51	110	236	509
Zeiders Road												
North of Keller Road	4	0	9,300	50	0.5	1.8%	0.7%	62.1	-	64	139	299
McElwain Road												
Keller Rd. to Project Access	4	0	880	50	0.5	1.8%	0.7%	51.9	-	-	-	62
Project Access to Linnel Ln.	2	0	880	50	0.5	1.8%	0.7%	51.8	-	-	-	61
Linnel Ln. to Clinton Keith Rd.	4	0	22,170	35	0.5	1.8%	0.7%	62.2	-	65	141	303
Scott Road												
Murrieta Rd. to Haun Rd./Zeiders Rd.	6	0	31,030	55	0.5	1.8%	0.7%	68.6	81	174	375	808
Haun Rd./Zeiders Rd. to I-215 Southbound	6	0	33,810	55	0.5	1.8%	0.7%	69.0	86	184	397	855
I-215 Northbound ramps to Antelope Rd.	8	0	42,110	55	0.5	1.8%	0.7%	70.3	104	224	483	1,041
Clinton Keith Road												
I-215 Northbound ramps to Whitewood Rd.	6	20	32,570	40	0.5	1.8%	0.7%	65.7	-	111	240	516

TRAFFIC NOISE LEVELS AND NOISE CONTOURS

Project Number: 162805
Project Name: Murrieta Hills Specific Plan Amendment

Background Information

Model Description: FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels.
Source of Traffic Volumes: Murrieta Hills Traffic Analysis
Community Noise Descriptor: L_{dn}: _____ CNEL: x

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Roadway Segment	Lanes	Median Width	ADT Volume	Design Speed (mph)	Alpha Factor	Vehicle Mix: Medium Trucks	Vehicle Mix: Heavy Trucks	CNEL at 100 Feet	Distance from Centerline of Roadway to Contour: 70 CNEL	65 CNEL	60 CNEL	55 CNEL
Keller Road												
Howard Way to Zeiders Rd.	2	0	6,250	40	0.5	1.8%	0.7%	58.0	-	34	73	158
Zeiders Rd. to I-215	2	0	20,330	40	0.5	1.8%	0.7%	63.1	35	75	161	346
I-215 to Mapleton Ave.	6	0	25,330	40	0.5	1.8%	0.7%	64.3	-	90	195	419
Mapleton Ave. to Whitewood Rd/Menifee R	4	0	22,070	40	0.5	1.8%	0.7%	63.5	-	80	172	371
Antelope Road												
Keller Rd. to Mapleton Ave.						Street Vacated						
Keller Rd. to Scott Rd.	4	0	21,250	50	0.5	1.8%	0.7%	65.7	52	112	241	519
Zeiders Road												
North of Keller Road	4	0	13,010	50	0.5	1.8%	0.7%	63.6	-	81	174	374
McElwain Road												
Keller Rd. to Project Access	4	0	11,180	50	0.5	1.8%	0.7%	62.9	-	73	157	338
Project Access to Linnel Ln.	2	0	3,790	50	0.5	1.8%	0.7%	58.1	-	35	75	162
Linnel Ln. to Clinton Keith Rd.	4	0	22,640	35	0.5	1.8%	0.7%	62.3	-	66	142	307
Scott Road												
Murrieta Rd. to Haun Rd./Zeiders Rd.	6	0	33,000	55	0.5	1.8%	0.7%	68.9	84	181	391	842
Haun Rd./Zeiders Rd. to I-215 Southbound	6	0	34,000	55	0.5	1.8%	0.7%	69.0	86	185	398	858
I-215 Northbound ramps to Antelope Rd.	8	0	42,300	55	0.5	1.8%	0.7%	70.3	104	225	485	1,044
Clinton Keith Road												
I-215 Northbound ramps to Whitewood Rd.	6	20	32,640	40	0.5	1.8%	0.7%	65.7	-	111	240	517

Michael Baker
Ryan Chiene

2 April 2018
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Murrieta Hills
RUN: Fwy Noise
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing Lden	No Barrier Lden		Increase over existing		Type Impact	With Barrier Calculated Lden	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc			Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
1	1	1	0.0	56.8	66	56.8	10	----	53.4	3.4	8	-4.6
2	4	1	0.0	56.8	66	56.8	10	----	53.7	3.1	8	-4.9
3	6	1	0.0	56.8	66	56.8	10	----	54.0	2.8	8	-5.2
4	8	1	0.0	56.0	66	56.0	10	----	54.7	1.3	8	-6.7
5	9	1	0.0	56.4	66	56.4	10	----	56.4	0.0	8	-8.0
6	10	1	0.0	59.7	66	59.7	10	----	56.5	3.2	8	-4.8
7	12	1	0.0	60.3	66	60.3	10	----	57.1	3.2	8	-4.8
8	14	1	0.0	60.0	66	60.0	10	----	56.7	3.3	8	-4.7
9	16	1	0.0	60.6	66	60.6	10	----	56.8	3.8	8	-4.2
10	18	1	0.0	60.2	66	60.2	10	----	56.6	3.6	8	-4.4
11	20	1	0.0	55.6	66	55.6	10	----	52.5	3.1	8	-4.9
12	22	1	0.0	54.4	66	54.4	10	----	52.6	1.8	8	-6.2
13	24	1	0.0	52.7	66	52.7	10	----	52.0	0.7	8	-7.3
14	26	1	0.0	56.5	66	56.5	10	----	53.7	2.8	8	-5.2
15	28	1	0.0	55.0	66	55.0	10	----	52.3	2.7	8	-5.3
16	30	1	0.0	54.0	66	54.0	10	----	51.4	2.6	8	-5.4
17	33	1	0.0	53.5	66	53.5	10	----	51.0	2.5	8	-5.5
18	35	1	0.0	51.8	66	51.8	10	----	50.5	1.3	8	-6.7
19	37	1	0.0	52.8	66	52.8	10	----	50.9	1.9	8	-6.1
20	39	1	0.0	54.3	66	54.3	10	----	50.6	3.7	8	-4.3
21	41	1	0.0	52.3	66	52.3	10	----	50.3	2.0	8	-6.0
22	42	1	0.0	51.1	66	51.1	10	----	50.3	0.8	8	-7.2
23	43	1	0.0	50.2	66	50.2	10	----	50.0	0.2	8	-7.8
24	44	1	0.0	51.6	66	51.6	10	----	50.7	0.9	8	-7.1
25	45	1	0.0	53.4	66	53.4	10	----	52.7	0.7	8	-7.3

26	46	1	0.0	55.3	66	55.3	10	----	55.3	0.0	8	-8.0
27	47	1	0.0	52.9	66	52.9	10	----	52.8	0.1	8	-7.9
28	48	1	0.0	53.6	66	53.6	10	----	53.6	0.0	8	-8.0
29	49	1	0.0	54.0	66	54.0	10	----	53.9	0.1	8	-7.9
30	50	1	0.0	53.8	66	53.8	10	----	53.7	0.1	8	-7.9
31	51	1	0.0	54.1	66	54.1	10	----	54.4	-0.3	8	-8.3
32	52	1	0.0	56.6	66	56.6	10	----	56.6	0.0	8	-8.0
33	53	1	0.0	54.6	66	54.6	10	----	54.2	0.4	8	-7.6
34	54	1	0.0	54.1	66	54.1	10	----	53.7	0.4	8	-7.6
35	55	1	0.0	53.9	66	53.9	10	----	53.3	0.6	8	-7.4
36	57	1	0.0	73.8	66	73.8	10	Snd Lvl	73.8	0.0	8	-8.0
37	59	1	0.0	73.8	66	73.8	10	Snd Lvl	73.8	0.0	8	-8.0
38	60	1	0.0	73.8	66	73.8	10	Snd Lvl	73.8	0.0	8	-8.0
39	61	1	0.0	69.6	66	69.6	10	Snd Lvl	69.6	0.0	8	-8.0
40	62	1	0.0	69.2	66	69.2	10	Snd Lvl	69.2	0.0	8	-8.0
41	63	1	0.0	68.9	66	68.9	10	Snd Lvl	68.9	0.0	8	-8.0
42	64	1	0.0	56.5	66	56.5	10	----	56.5	0.0	8	-8.0
43	65	1	0.0	53.8	66	53.8	10	----	53.8	0.0	8	-8.0
44	66	1	0.0	53.9	66	53.9	10	----	53.9	0.0	8	-8.0
45	67	1	0.0	54.1	66	54.1	10	----	54.1	0.0	8	-8.0
46	69	1	0.0	59.0	66	59.0	10	----	59.0	0.0	8	-8.0

Dwelling Units	**# DUs**	**Noise Reduction**		
		Min	**Avg**	**Max**
		dB	**dB**	**dB**
All Selected	46	-0.3	1.2	3.8
All Impacted	6	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0