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Noise Impact Analysis Report
Beaumont Commercial Development Mixed Use Project
City of Beaumont, Riverside County, California

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ACRONYMS AND ABBREVIATIONS

ADT	average daily traffic
CNEL	Community Noise Equivalent Level
dB	decibel
dBA	A-weighted decibel
FCS	FirstCarbon Solutions
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
L_{dn}	Day-Night Average Sound Level
L_{eq}	Equivalent Sound Level
PPV	peak particle velocity
VdB	Vibration in decibels

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SECTION 1: INTRODUCTION

1.1 - Purpose of Analysis and Study Objectives

This Noise Impact Analysis has been prepared by FirstCarbon Solutions (FCS) to determine the off-site and on-site noise impacts associated with the proposed Beaumont Commercial project. The following is provided in this report:

- A description of the study area, project site, and proposed project
- Information regarding the fundamentals of noise and vibration
- A description of the local noise guidelines and standards
- A description of the existing noise environment
- An analysis of the potential short-term, construction-related noise and vibration impacts from the proposed project
- An analysis of long-term, operations-related noise and vibration impacts from the proposed project

1.2 - Project Summary

1.2.1 - Site Location

The proposed project is located in the City of Beaumont, Riverside County, California (Exhibit 1 and Exhibit 2). The project site is approximately 2.3-acres of undeveloped land, Assessor Parcel Numbers (APNs) 400-530-006 and 400-530-007.

Regional access to the site is provided via Interstate 10 (I-10) via the Oak Valley Parkway interchange that runs along the southern boundary of the site. Local vehicular access to the site is provided via one point on Oak Valley Parkway on the southern boundary of the site, and one point on Oak Valley Village Circle on the northern boundary of the site.

1.2.2 - Project Description

The proposed Project would develop a gas station with eight (8) fuel pumps (16 fueling stations), a 3,500 square foot convenience store (including 1,000 square foot quick serve restaurant) with an attached 1,700 square foot drive-thru restaurant, 6,250 square foot retail building, and 2,000 square foot restaurant (with drive-thru), on 2.3-acres in the City of Beaumont east of Interstate 10 (I-10) and north of Oak Valley Parkway (Exhibit 3).

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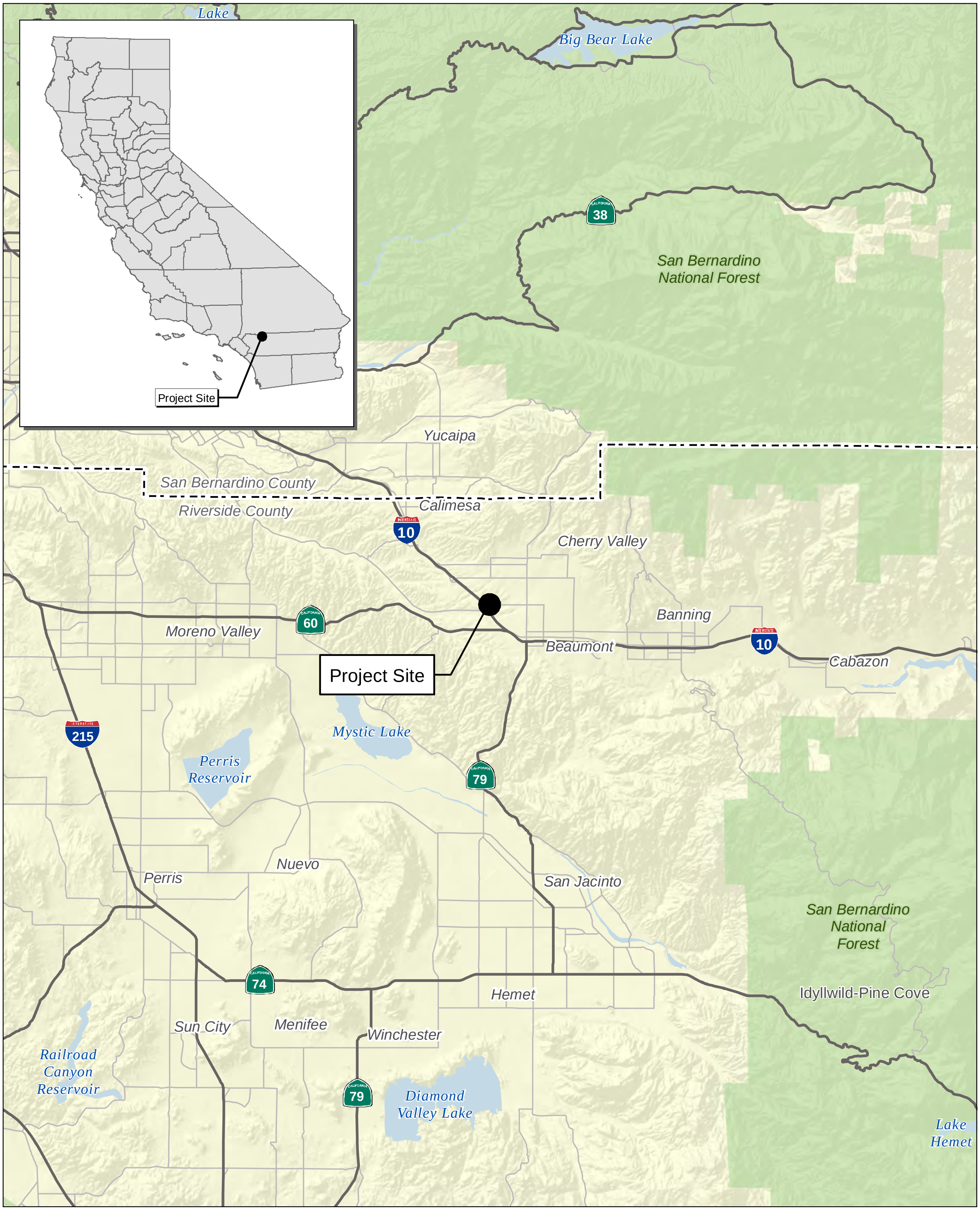

Source: Census 2000 Data, The CaSIL

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5 2.5 0 5
Miles

Exhibit 1
Regional Location Map

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OAK VALLEY EXPRESS INC.
BEAUMONT COMMERCIAL DEVELOPMENT MIXED USE PROJECT
NOISE IMPACT ANALYSIS

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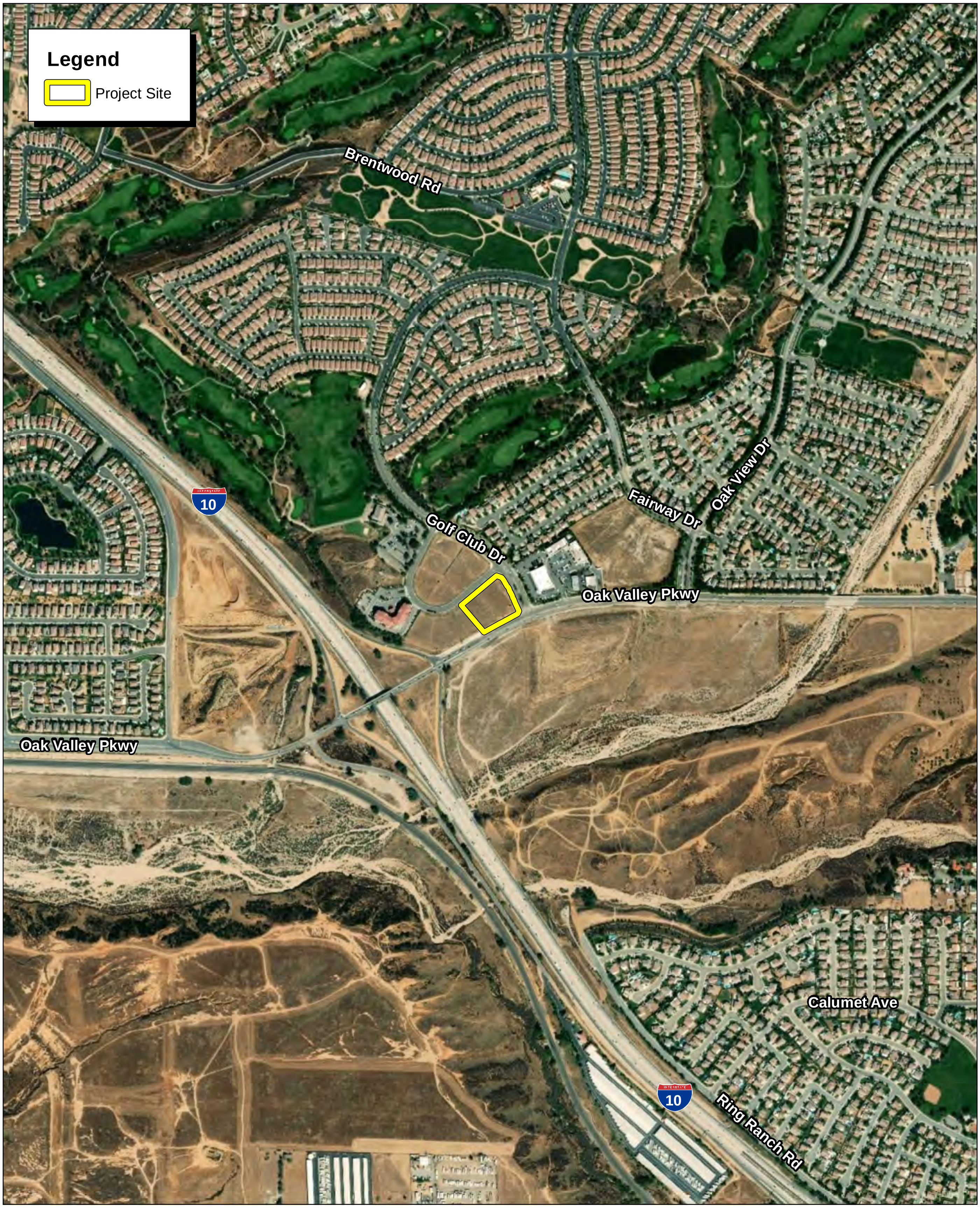

Source: ESRI Aerial Imagery.

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1,000 500 0 1,000
Feet

Exhibit 2
Local Vicinity Map
Aerial Base

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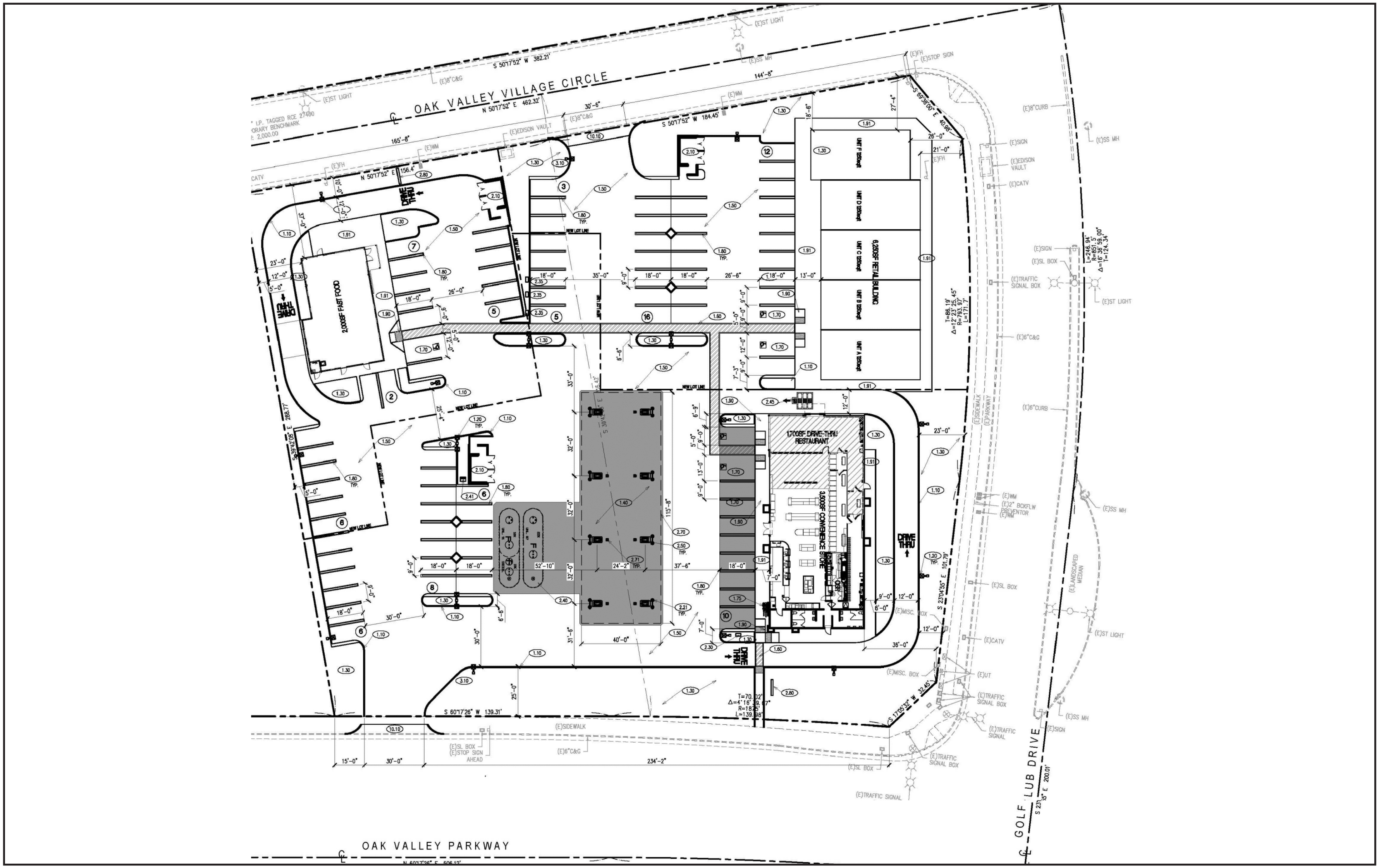

Source: CJC Design, Inc., December 2018.

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Exhibit 3
Site Plan

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SECTION 2: NOISE AND VIBRATION FUNDAMENTALS

2.1 - Characteristics of Noise

Noise is generally defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, and sleep.

Several noise measurement scales exist that are used to describe noise in a particular location. A *decibel* (dB) is a unit of measurement that indicates the relative intensity of a sound. The 0 point on the dB scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Changes of 3.0 dB or less are only perceptible in laboratory environments. Audible increases in noise levels generally refer to a change of 3.0 dB or more, as this level has been found to be barely perceptible to the human ear in outdoor environments. Sound levels in dB are calculated on a logarithmic basis. An increase of 10 dB represents a 10-fold increase in acoustic energy, while 20 dB is 100 times more intense, and 30 dB is 1,000 times more intense. Each 10-dB increase in sound level is perceived as approximately a doubling of loudness. Sound intensity is normally measured through the A-weighted sound level (dBA). This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive.

Noise impacts can be described in three categories; audible impacts, potentially audible, and changes in noise level of less than 1.0 dB. (1) Audible impacts refers to increases in noise levels noticeable to humans. An audible increase in noise levels generally refers to a change of 3.0 dB or greater, since this level has been found to be barely perceptible in exterior environments; (2) potentially audible refers to a change in the noise level between 1.0 and 3.0 dB. This range of noise levels has been found to be noticeable only in laboratory environments; and (3) changes in noise level of less than 1.0 dB are inaudible to the human ear. Only audible changes in existing ambient or background noise levels are considered potentially significant.

As noise spreads from a source, it loses energy so that the farther away the noise receiver is from the noise source, the lower the perceived noise level would be. Geometric spreading causes the sound level to attenuate or be reduced, resulting in a 6-dB reduction in the noise level for each doubling of distance from a single point source of noise to the noise-sensitive receptor of concern. A long, closely spaced continuous line of vehicles along a roadway becomes a line source and produces a 3 dBA decrease in sound level for each doubling of distance. However, experimental evidence has shown that where sound from a highway propagates close to "soft" ground (e.g., plowed farmland, grass, crops, etc.), the most suitable drop-off rate to use is not 3 dBA but rather 4.5 dBA per distance doubling. There are many ways to rate noise for various intervals, but an appropriate rating of ambient noise affecting humans also accounts for the annoying effects of sound. The predominant rating scales for human communities in the State of California are the equivalent sound level (L_{eq}) and community noise equivalent level (CNEL), or the day-night average level (L_{dn}) based on dBA. Equivalent continuous sound level (L_{eq}) is the total sound energy of time-varying noise over a sample period. CNEL is the time-varying noise over a 24-hour period, with a 5-dBA weighting factor applied to the hourly L_{eq} for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and a 10-dBA weighting factor applied to noise occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours). L_{dn} is similar to the CNEL scale but without the adjustment for events occurring during the evening hours. CNEL and L_{dn} are within one dBA of each other and are normally exchangeable. The noise adjustments are added to the noise events occurring during the more sensitive hours.

Other noise rating scales of importance when assessing the annoyance factor include the maximum noise level (L_{max}), which is the highest exponential time-averaged sound level that occurs during a stated time period. The noise environments discussed in this analysis are specified in terms of maximum levels denoted by L_{max} for short-term noise impacts. L_{max} reflects peak operating conditions and addresses the annoying aspects of intermittent noise.

Common sources of noise in urban environments include mobile sources, such as traffic, and stationary sources, such as mechanical equipment or construction operations.

Construction is performed in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated on each construction site and, therefore, would change the noise levels as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. Table 1 shows typical noise levels of construction equipment as measured at a distance of 50 feet from the operating equipment. Construction-period noise levels are higher than background ambient noise levels, but eventually cease once construction is complete.

Table 1: Typical Construction Equipment Maximum Noise Levels, L_{max}

Type of Equipment	Specification Maximum Sound Levels for Analysis (dBA at 50 feet)
Pickup Truck	55
Pumps	77
Air Compressors	80
Backhoe	80
Front-End Loaders	80
Portable Generators	82
Dump Truck	84
Tractors	84
Auger Drill Rig	85
Concrete Mixer Truck	85
Cranes	85
Excavators	85

Table 1 (cont.): Typical Construction Equipment Maximum Noise Levels, L_{max}

Type of Equipment	Specification Maximum Sound Levels for Analysis (dBA at 50 feet)
Graders	85
Jackhammers	85
Man Lift	85
Paver	85
Pneumatic Tools	85
Rollers	85
Scrapers	85
Concrete/Industrial Saws	90
Impact Pile Driver	95
Vibratory Pile Driver	95
Source: FHWA 2006. Highway Construction Noise Handbook, August.	

2.2 - Characteristics of Groundborne Vibration

Groundborne vibrations consist of rapidly fluctuating motions within the ground that have an average motion of zero. Vibrating objects in contact with the ground radiate vibration waves through various soil and rock strata to the foundations of nearby buildings.

Although groundborne vibration can be felt outdoors, it is typically only an annoyance to people indoors where the associated effects of the shaking of a building can be notable. When assessing annoyance from groundborne vibration, vibration is typically expressed as root mean square (rms) velocity in units of decibels of 1 micro-inch per second. To distinguish these vibration levels referenced in decibels from noise levels referenced in decibels, the unit is written as VdB.

In extreme cases, excessive groundborne vibration has the potential to cause structural damage to buildings. Common sources of groundborne vibration include construction activities such as blasting, pile driving and operating heavy earthmoving equipment. However, construction vibration impacts to building structures are generally assessed in terms of peak particle velocity (PPV). For purposes of this analysis, project related impacts are expressed in terms of PPV. Typical vibration source levels from construction equipment are shown in Table 2.

Table 2: Vibration Levels of Construction Equipment

Construction Equipment	PPV at 25 Feet (inches/second)	RMS Velocity in Decibels (VdB) at 25 Feet
Water Trucks	0.001	57
Scraper	0.002	58
Bulldozer—small	0.003	58
Jackhammer	0.035	79
Concrete Mixer	0.046	81
Concrete Pump	0.046	81
Paver	0.046	81
Pickup Truck	0.046	81
Auger Drill Rig	0.051	82
Backhoe	0.051	82
Crane (Mobile)	0.051	82
Excavator	0.051	82
Grader	0.051	82
Loader	0.051	82
Loaded Trucks	0.076	86
Bulldozer—Large	0.089	87
Caisson drilling	0.089	87
Vibratory Roller (small)	0.101	88
Compactor	0.138	90
Clam shovel drop	0.202	94
Vibratory Roller (large)	0.210	94
Pile Driver (impact-typical)	0.644	104
Pile Driver (impact-upper range)	1.518	112
Source: Compilation of scientific and academic literature, generated by FTA and FHWA.		

Propagation of vibration through soil can be calculated using the vibration reference equation:

PPV= PPV ref * (25/D)^n (in/sec)

Where:

PPV = reference measurement at 25 feet from vibration source
D = distance from equipment to property line
n = vibration attenuation rate through ground

According to Chapter 12 of the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment manual (FTA 2018), an “n” value of 1.5 is recommended to calculate vibration propagation through typical soil conditions.

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SECTION 3: REGULATORY SETTING

3.1 - Federal Regulations

3.1.1 - United States Environmental Protection Agency

In 1972, Congress enacted the Noise Control Act. This act authorized the United States Environmental Protection Agency (EPA) to publish descriptive data on the effects of noise and establish levels of sound "requisite to protect the public welfare with an adequate margin of safety." These levels are separated into health (hearing loss levels) and welfare (annoyance levels) categories, as shown in Table 3. The EPA cautions that these identified levels are not standards because they do not take into account the cost or feasibility of the levels.

For protection against hearing loss, 96 percent of the population would be protected if sound levels are less than or equal to an $L_{eq(24)}$ of 70 dBA. The EPA activity and interference guidelines are designed to ensure reliable speech communication at about 5 feet in the outdoor environment. For outdoor and indoor environments, interference with activity and annoyance should not occur if levels are below 55 dBA and 45 dBA, respectively.

Table 3: Summary of EPA Recommended Noise Levels to Protect Public Welfare

Effect	Level	Area
Hearing loss	$L_{eq}(24) \leq 70$ dB	All areas
Outdoor activity interference and annoyance	$L_{dn} \leq 55$ dB	Outdoors in residential areas, farms, and other outdoor areas where people spend widely varying amounts of time, and other places in which quiet is a basis for use.
	$L_{eq}(24) \leq 55$ dB	Outdoor areas where people spend limited amounts of time, such as school yards, playgrounds, etc.
Indoor activity interference and annoyance	$L_{eq} \leq 45$ dB	Indoor residential areas.
	$L_{eq}(24) \leq 45$ dB	Other indoor areas with human activities such as schools, etc.
Note: (24) = L_{eq} duration of 24 hours Source: EPA, 1974.		

3.1.2 - Federal Transit Administration

The FTA has established industry accepted standards for vibration impact criteria and impact assessment. These guidelines are published in the FTA 2018 Manual. The FTA guidelines include thresholds for construction vibration impacts for various structural categories as shown in Table 4.

Table 4: Federal Transit Administration Construction Vibration Impact Criteria

Building Category	PPV (in/sec)	Approximate VdB
I. Reinforced—Concrete, Steel or Timber (no plaster)	0.5	102
II. Engineered Concrete and Masonry (no plaster)	0.3	98
III. Non Engineered Timber and Masonry Buildings	0.2	94
IV. Buildings Extremely Susceptible to Vibration Damage	0.12	90

Note:
VdB = velocity in decibels
Source: FTA, 2018.

3.2 - State Regulations

The State of California has established regulations that help prevent adverse impacts to occupants of buildings located near noise sources. Referred to as the "State Noise Insulation Standard," it requires buildings to meet performance standards through design and/or building materials that would offset any noise source in the vicinity of the receptor. State regulations include requirements for the construction of new hotels, motels, apartment houses, and dwellings other than detached single-family dwellings that are intended to limit the extent of noise transmitted into habitable spaces. These requirements are found in the California Code of Regulations, Title 24 (known as the Building Standards Administrative Code), Part 2 (known as the California Building Code), Appendix Chapters 12 and 12A.

The proposed project does not involve the construction or alteration of any new hotels, motels, apartment houses, or dwellings other than detached single-family dwellings. Therefore, these State standards are not applicable to the project.

The State has also established land use compatibility guidelines for determining acceptable noise levels for specified land uses, which the City of Beaumont has adopted as described below.

3.3 - Local Regulations

The project site is located within the City of Beaumont, in the County of Riverside. The City of Beaumont addresses noise in the Safety Element of its General Plan (City of Beaumont General Plan 2007) and in the Noise Control Chapter of its Code of Ordinances (City of Beaumont, 2018).

3.3.1 - City of Beaumont General Plan

The City of Beaumont General Plan is dated March, 2007. The objective of the noise section of the General Plan Safety Element is to minimize the exposure of new residential development, schools, hospitals and similar noise-sensitive uses to excessive or unhealthy noise levels to the greatest extent possible. To assist with meeting its objective, the City of Beaumont General Plan establishes Noise and Land Use Compatibility Standards for noise (shown in Table 5). The land use category listed in the City's Noise and Land Use Compatibility Standards that most closely applies to the proposed project is "All Commercial & Mixed-Use." Under this designation, 65 dBA CNEL is the "desirable maximum"; while 75 dBA CNEL is considered to be the "maximum acceptable" noise level for this type of new land use development.

Table 5: Noise and Land Use Compatibility Standards (Ambient Exterior Noise Exposure)

Land Use	Desirable Maximum	Maximum Acceptable
Single-family Residential	55 dBA	65 dBA
Multiple-family Residential	60 dBA	65 dBA
Sixth Street Corridor Overlay	65 dBA	70 dBA
Public Facilities (including Schools)	60 dBA	70 dBA
All Commercial and Mixed-Use	65 dBA	75 dBA
Industrial	70 dBA	75 dBA
Source: City of Beaumont General Plan, Safety Element, March 2007.		

3.3.2 - City of Beaumont Municipal Code

The Noise Control chapter of the Beaumont Code of Ordinances establishes regulations for noise in the City of Beaumont. These ordinances establish performance standards for community noise sources and construction activities. Ordinances applicable to the proposed project are summarized below.

Maximum Residential Noise Levels (Section 9.02.070)

According to this ordinance, the City has established that no noise level shall exceed an increase above the base ambient noise level for each maximum duration period as listed below:

- 5 dBA above base ambient noise level for 15 minutes any hour
- 10 dBA above base ambient noise level for 5 minutes any hour
- 15 dBA above base ambient noise level for 1 minute any hour
- 20 dBA above base ambient noise level is never permitted

Special Provisions (Section 9.02.110)

This ordinance establishes the City's standards for construction noise. Construction activities are exempt from the above maximum residential noise levels provided that they occur between the hours of 7:00 a.m. and 6:00 p.m. Outside of these hours, construction activities are permitted to generate noise levels that exceed the above-mentioned maximum residential noise levels, but never in excess of 55 dBA for intervals of more than 15 minutes per hour as measured in the interior of the nearest occupied residence. In addition, any construction activity within one-quarter of a mile of an occupied residence shall be prohibited between the hours of 6:00 p.m. and 6:00 a.m. during the months of June through September, or between the hours of 6:00 p.m. and 7:00 a.m. during the months of October through May.

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SECTION 4: EXISTING NOISE CONDITIONS

The following section describes the existing ambient noise environment of the project vicinity.

4.1 - Existing Noise Sources

The proposed project site is located within the City of Beaumont, in the County of Riverside, California. The site is adjacent to Oak Valley Village Circle to the north, undeveloped land to the west, Oak Valley Parkway to the south, and single-family residential homes to the northeast. Adjacent to the east side of the project site is Golf Club Drive, and commercial buildings beyond. Across Oak Valley Parkway to the south is more undeveloped land. The I-10, which represents the dominant noise source in the area, runs parallel to, and approximately 850 feet away from the western border of the project site.

4.2 - Existing Traffic Noise Levels

Existing traffic noise levels along selected roadway segments in the project vicinity were modeled using the Federal Highway Administration (FHWA) Traffic Noise Prediction Model (FHWA-RD-77-108). Site-specific information is entered, such as roadway traffic volumes, roadway active width, source-to-receiver distances, travel speed, noise source and receiver heights, and the percentages of automobiles, medium trucks, and heavy trucks that the traffic is made up of throughout the day, amongst other variables. The daily traffic volumes were obtained from the traffic analysis prepared for the project by David Evans and Associates Inc. (2018). The traffic volumes described here correspond to the existing conditions traffic scenario as described in the transportation analysis. The model inputs and outputs—including the 60 dBA, 65 dBA, and 70 dBA CNEL noise contour distances—are provided in the Appendix of this document. A summary of the modeling results is shown in Table 6.

Table 6: Existing Traffic Noise Levels

Roadway Segment	Approximate Average Daily Traffic (ADT)	Center-line to 70 CNEL (feet)	Center-line to 65 CNEL (feet)	Center-line to 60 CNEL (feet)	CNEL (dBA) 50 feet from Centerline of Outermost Lane
Oak Valley Parkway—Project Driveway A to Golf Club Drive	13,100	< 50	91	192	67.0
Golf Club Drive—Oak Valley Parkway to Oak Valley Village Circle	2,800	< 50	< 50	< 50	54.6
Golf Club Drive—north of Oak Valley Village Circle	1,800	< 50	< 50	< 50	52.7
I-10—San Timoteo Canyon Road to Junction Route 60 West	102,000	345	740	1,593	79.6

Notes:
[1] Modeling results do not take into account mitigating features such as topography, vegetative screening, fencing, building design, or structure screening. Rather it assumes a worst case of having a direct line of site on flat terrain.
Source: FirstCarbon Solutions, 2018.

The façade of the proposed building closest to Oak Valley Parkway would be located approximately 110 feet from the centerline of the roadway. At this distance, traffic noise levels from Oak Valley Parkway would range up to approximately 60 dBA CNEL at this building's nearest façade.

The façade of the proposed building closest to I-10 would be located approximately 920 feet from the centerline of the roadway. At this distance, traffic noise levels from I-10 would range up to approximately 54 dBA CNEL at this building's nearest façade.

Combined traffic noise levels at the project site from these two roadways would range up to approximately 61 dBA CNEL.

The baseline ambient noise levels at the nearest residential land use is dominated by traffic noise. The nearest noise-sensitive receptor to the proposed commercial development would be a single-family residence located on the corner of St. Andrews Way and Augusta Street. Traffic noise from Golf Club Drive is the primary source of base ambient noise at this property. Traffic noise levels on the adjacent roadway segment of Golf Club Drive range up to approximately 53 dBA CNEL as measured at 50 feet from the centerline of the outermost travel lane. Therefore, 53 dBA CNEL represents the base ambient noise level at the property line of the nearest residential receptor.

4.3 - Existing Stationary Source Noise Levels

Some of the surrounding land uses generate noise associated with mechanical ventilation systems and parking lot activities. Noise levels from typical mechanical ventilation equipment are anticipated to range up to approximately 60 dBA L_{eq} at a distance of 25 feet. Typical parking lot activities, such as people conversing or closing doors, can generate noise levels of approximately 60 dBA to 70 dBA L_{max} at 50 feet. These activities are potential point sources of noise that contribute to the existing ambient noise environment in the project vicinity.

SECTION 5: THRESHOLDS OF SIGNIFICANCE AND IMPACT ANALYSIS

5.1 - Thresholds of Significance

This report analyzes potential project impacts according to the following criteria of significance. The proposed project would result in a significant impact if the project would result in:

a) Exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

b) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;

c) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project; or

d) Exposure of persons to, or generation of, excessive groundborne vibration or groundborne noise levels.

e) Exposure of people residing or working in the project area to excessive noise levels if the project is located within an area covered by an airport land use plan, or where such plan has not been adopted within 2 miles of a public airport or public use airport?

f) Exposure of people residing or working in the project area to excessive noise levels if the project is located in the vicinity of a private airstrip?

5.2 - Exceedance of Noise Standards Impacts

5.2.1 - Construction Noise Impacts

A significant impact would occur if construction activity nose levels resulted in an exceedance of the City's applicable noise ordinance standards. The City's noise control ordinance establishes that construction activities are exempt from the above maximum residential noise protection levels provided that they occur between the hours of 7:00 a.m. and 6:00 p.m. Outside of these hours, construction activities are permitted to generate noise levels that exceed the above-mentioned maximum residential noise levels, but never in excess of 55 dBA for intervals of more than 15 minutes per hour as measured in the interior of the nearest occupied residence. In addition, because this project site is within one-quarter of a mile of an occupied residence, construction is prohibited between the hours of 6:00 p.m. and 6 a.m. during the months of June through September, and between the hours of 6:00 p.m. and 7:00 a.m. during the months of October through May.

Construction-related traffic noise

Noise impacts from construction activities associated with the project would be a function of the noise generated by construction equipment, equipment location, sensitivity of nearby land uses, and the timing and duration of the construction activities. One type of short-term noise impacts that could occur during project construction would result from the increase in traffic flow on local streets, associated with the transport of workers, equipment, and materials to and from the project site. The transport of workers and construction equipment and materials to the project site would incrementally increase noise levels on access roads leading to the site. Because workers and construction equipment would use existing routes, noise from passing trucks would be similar to existing vehicle-generated noise on these local roadways. In addition, these trips would not result in a doubling of daily traffic volumes on any of the local roadways in the project vicinity. For this reason, short-term intermittent noise from construction trips would be minor when averaged over a longer time-period and would not be expected to result in a perceptible increase in hourly- or daily-average traffic noise levels in the project vicinity. Therefore, short-term construction-related impacts associated with worker commute and equipment transport to the project site would be less than significant.

Construction equipment operational noise

The second type of short-term noise impact is related to noise generated during construction on the project site. Construction is completed in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated on the site and, therefore, the noise levels surrounding the site as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction related noise ranges to be categorized by work phase. Table 1 lists typical construction equipment noise levels, based on a distance of 50 feet between the equipment and a noise receptor. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full-power operation followed by 3 or 4 minutes at lower power settings. Impact equipment such as pile drivers are not expected to be used during construction of this project.

The site preparation phase, which includes excavation and grading of the site, tends to generate the highest noise levels because the noisiest construction equipment is earthmoving equipment. Earthmoving equipment includes excavating machinery and compacting equipment, such as bulldozers, draglines, backhoes, front loaders, roller compactors, scrapers, and graders. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full power operation followed by 3 or 4 minutes at lower power settings.

Construction of the project is expected to require the use of scrapers, bulldozers, water trucks, haul trucks, and pickup trucks. Based on the information provided in Table 1, the maximum noise level generated by each scraper is assumed to be 85 dBA L_{max} at 50 feet from this equipment. Each bulldozer would also generate 85 dBA L_{max} at 50 feet. The maximum noise level generated by graders is approximately 85 dBA L_{max} at 50 feet. A characteristic of sound is that each doubling of sound sources with equal strength increases a sound level by 3 dBA. Assuming that each piece of construction equipment operates at some distance from the other equipment, a reasonable worst-case combined noise level during this phase of construction would be 90 dBA L_{max} at a distance of 50 feet from the acoustic center of a construction area. This would result in a reasonable worst-case hourly average of 86 dBA L_{eq}.

Construction noise impacts to nearest sensitive receptors

The closest noise-sensitive receptor to the project site is the single-family residential home located near the northeastern corner of the project site. The façade of the closest home would be located approximately 200 feet from the acoustic center of construction activity where multiple pieces of heavy construction equipment would operate simultaneously during construction of the proposed commercial buildings and paved drive-through areas. A 6-foot sound wall along the edge of the adjacent residential properties would further reduce noise levels. At this distance, and taking into account the shielding effects of the sound wall, construction noise levels could range up to approximately 72 dBA L_{max}, with a relative worst-case hourly average of 68 dBA L_{eq} at this receptor.

Based on the U.S. EPA's Protective Noise Levels, with a combination of walls, doors, and windows, standard construction in accordance with California building code requirements for residential and office building developments would provide 25 dBA in exterior-to-interior noise reduction with windows closed. Therefore, construction activities could result in interior noise levels at the closest noise-sensitive receptor ranging up to 43 dBA L_{eq} (68 dBA–25 dBA = 43 dBA). Therefore, construction activities with worst-case hourly average noise levels would not exceed the City's interior noise threshold of 55 dBA as measured at the nearest residential receptor.

This analyzes the potential impacts from the reasonable worst-case loudest phase of construction, the site preparation phase. All other phases would result in lower construction noise levels. Therefore, noise impacts from all other phases of construction would be less than what is analyzed above.

Conclusion of construction noise impacts

Although there could be a relatively high single event noise exposure potential causing an intermittent noise nuisance, the effect of project-related construction noise levels on longer-term (hourly or daily) ambient noise levels would be small but could result in annoyance or sleep disturbances at nearby sensitive receptors if construction activities are not limited to the permissible construction hours established by the City. Therefore, noise producing construction activities shall be prohibited between the hours of 6:00 p.m. and 6:00 a.m. during the months of June through September, and between the hours of 6:00 p.m. and 7:00 a.m. during the months of October through May. Restricting construction activities to these stated time-periods, as well as implementing the best management noise reduction techniques and practices outlined in Mitigation Measure (MM) NOI-1, would ensure that construction noise would not result in sleep disturbances at nearby off-site sensitive receptors or in a substantial temporary increase in noise levels in the project vicinity above levels existing without the project. Therefore, the potential short-term construction noise impacts to sensitive receptors in the vicinity of the project site would be reduced to a less than significant level.

Mitigation Measures

MM NOI-1 Implementation of the following multi-part mitigation measure is required to reduce potential construction period noise impacts:

- The construction contractor shall ensure that all equipment driven by internal combustion engines shall be equipped with mufflers, which are in good condition and appropriate for the equipment.
- The construction contractor shall ensure that unnecessary idling of internal combustion engines (i.e., idling in excess of 5 minutes) is prohibited.
- The construction contractor shall utilize "quiet" models of air compressors and other stationary noise sources where technology exists.
- At all times during project grading and construction, the construction contractor shall ensure that stationary noise-generating equipment shall be located as far as practicable from sensitive receptors and placed so that emitted noise is directed away from adjacent residences.
- The construction contractor shall ensure that the construction staging areas shall be located to create the greatest feasible distance between the staging area and noise-sensitive receptors nearest the project site.
- The construction contractor shall ensure that all on-site construction activities, including the operation of any tools or equipment used in construction, drilling, repair, alteration, grading or demolition work, do not occur between the hours of 6:00 p.m. and 6:00 a.m. during the months of June through September, or between the hours of 6:00 p.m. and 7:00 a.m. during the months of October through May.

5.2.2 - Mobile Source Operational Noise Impacts

A significant impact would occur if persons working or visiting at the proposed project site would be exposed to traffic noise levels exceeding the City's "maximum acceptable" land use compatibility threshold of 75 dBA CNEL for commercial and mixed-use land use developments.

The FHWA highway traffic noise prediction model (FHWA RD-77-108) was used to evaluate existing and future traffic noise conditions in the vicinity of the project site. The projected future traffic noise levels adjacent to the project site were analyzed to determine compliance with the City's noise and land use compatibility standards. The daily traffic volumes were obtained from the traffic analysis prepared for the project by David Evans and Associates Inc. (2018). The resultant noise levels were weighed and summed over a 24-hour period in order to determine the CNEL values. The traffic noise modeling input and output files are included in Appendix A of this document. Table 7 shows a summary of the traffic noise levels for existing, existing plus project, future, and future plus project conditions as measured at 50 feet from the centerline of the outermost travel lane.

Table 7: Traffic Noise Model Results Summary

Roadway Segment	Existing (dBA) CNEL	Existing + Project (dBA) CNEL	Increase over Existing (dBA)	Future (dBA) CNEL	Future + Project (dBA) CNEL	Increase over Future (dBA)
Oak Valley Parkway—Project Driveway A to Golf Club Drive	67.0	67.2	0.2	68.6	68.7	0.1
Golf Club Drive—Oak Valley Parkway to Oak Valley Village Circle	54.6	56.5	1.9	56.2	57.5	1.3
Golf Club Drive—north of Oak Valley Village Circle	52.7	53.2	0.5	54.5	54.8	0.3
I-10—San Timoteo Canyon Road to Junction Route 60 West	79.6	79.6	0.0	79.6	79.6	0.0
Source: FirstCarbon Solutions, 2018.						

As shown in Table 7, projected traffic noise levels along Oak Valley Parkway adjacent to the project site would range up to 68.7 dBA CNEL as measured at 50 feet from the centerline of the outermost travel lane under future plus project conditions.

The nearest proposed structure to the Oak Valley Parkway roadway segment is the convenience store located in the southeast corner of the project site. The nearest façade of this building would be located approximately 110 feet from the centerline of Central Avenue. At this distance, traffic noise levels from Oak Valley Parkway would range up to approximately 62 dBA CNEL at this building's nearest façade.

Projected traffic noise levels along I-10 near the project site would range up to 79.6 dBA CNEL as measured at 50 feet from the centerline of the outermost travel lane. The nearest proposed structure to the I-10 roadway segment is the quick service restaurant located in the northwest corner of the project site. The nearest façade of this building would be located approximately 925 feet from the centerline of I-10. At this distance, traffic noise levels from I-10 would range up to approximately 54 dBA CNEL at this building's nearest façade.

These traffic noise levels are below the City's "Maximum Acceptable" threshold of 75 dBA CNEL for commercial and mixed-use land use developments. Therefore, traffic noise levels would have less than significant impact.

5.2.3 - Stationary Source Operational Noise Impacts

A significant impact would occur if operational noise levels generated by stationary noise sources at the project site would exceed the City's base ambient noise levels measured at residential land uses, as shown below:

- 45 dBA during the nighttime hours between 10:00 p.m. and 7:00 a.m.

- 55 dBA during the daytime hours between 7:00 a.m. and 10:00 p.m.

Implementation of the project would include new stationary operational noise sources from mechanical ventilation equipment, parking lot activity, and drive through speakers. Noise sources such as gas pumps and tire air compressor operations would produce noise levels more than 10 dBA below these other stationary noise sources, and would therefore not contribute any perceptible increase to the ambient noise environment. These loudest stationary operational noise sources are analyzed below, with the calculated results summarized in Table 8.

Mechanical Ventilation Systems

At the time that this analysis was prepared, details were not available pertaining to proposed rooftop mechanical ventilation systems to be included at the project site; therefore, a reference noise level for typical commercial rooftop mechanical ventilation systems was used. Noise levels from typical rooftop mechanical ventilation equipment are anticipated to range up to approximately 60 dBA L_{eq} at a distance of 25 feet.

Proposed rooftop mechanical ventilation systems at the project site could be located as close as 150 feet from the property line of the nearest residence, which is the single-family residential home located northeast of the project site. A 6-foot sound wall along the edge of the adjacent residential properties would further reduce noise levels. At this distance, and with the addition of the shielding provided by the sound wall, noise levels generated by rooftop mechanical ventilation equipment would attenuate to approximately 39 dBA L_{eq} at the property line of the nearest existing residential receptor. Therefore, noise levels from mechanical ventilation equipment would not exceed base ambient noise levels, and would have a less than significant impact to the nearest residential receptors in the project vicinity.

Parking Lot Activities

Typical parking lot activities include people conversing, doors shutting, and vehicles idling which generate noise levels ranging from approximately 60 dBA to 70 dBA L_{max} at a distance of 50 feet. These activities are expected to occur sporadically throughout the day, as patrons and staff arrive and leave parking lot areas at the project site.

The nearest residential receptor, on the corner of St. Andrews Way and Augusta Street, on the east side of Golf Club Drive, would be located approximately 240 feet from the acoustic center of the project's nearest proposed parking areas. The proposed buildings would provide additional shielding from the proposed parking areas and the nearest residential receptor. At this distance, and accounting for shielding from the proposed buildings, and for the existing sound wall along this residential area, noise levels from parking lot activities would attenuate to below 40 dBA L_{max} at the outdoor space of this nearest residential receptor.

When averaged over daytime or nighttime hours or over a 24-hour period, operational noise levels resulting from parking lot activities would not exceed base ambient noise levels. Therefore, noise levels generated by parking lot activities would have a less than significant impact to the nearest residential receptors in the project vicinity.

Drive-Through Speakers

Based on field noise measurements conducted for previous FCS studies, typical drive-through speakers generate noise levels ranging up to approximately 74 dBA L_{max} at a distance of 10 feet. Noise from drive-through speakers is expected to occur sporadically throughout the day, as patrons visit the drive-through restaurant at the project site.

The nearest residential receptor, on the corner of St. Andrews Way and Augusta Street, on the east side of Golf Club Drive, would be located approximately 230 feet from the nearest possible location where the drive-through speakers could be located. At this distance, and accounting for the sound wall along this residential area, noise levels from drive-through speakers would attenuate to below 41 dBA L_{max} at the outdoor space of this nearest residential receptor.

When averaged over daytime or nighttime hours or over a 24-hour period, operational noise levels resulting from drive-through speakers would not exceed base ambient noise levels. Therefore, noise levels generated by drive-through speakers would have a less than significant impact to the nearest residential receptors in the project vicinity.

Noise levels generated by stationary project-related noise sources would not result in operational noise levels exceeding the City's base ambient noise level exceedance criteria. Therefore, the impact would be less than significant.

Table 8: Impact Summary of Stationary Operational Noise Sources

	Reference Noise Measurement		Nearest Sensitive Receptor		Exceedance of Standard	
Stationary Operational Noise Source	Reference Distance to Source (feet)	Noise Level (dBA) L_{max}	Distance to Source (feet)	Noise Level (dBA) L_{max}	Noise Performance Standard (dBA) (day/night)	Exceeds Standard (day/night)
Mechanical Ventilation Systems	25	60	150	39	55/45	No/no
Parking Lot Activities	50	70	240	40	55/45	No/no
Drive-through Speakers	10	74	230	41	55/45	No/no
Source: FirstCarbon Solutions, 2019.						

5.3 - Substantial Permanent Increase Impacts

A significant impact would occur if the proposed project would result in a substantial increase in ambient noise levels compared with those that would exist without the project. As noted in the characteristics of noise discussion, audible increases in noise levels generally refer to a change of 3 dBA or more, as this level has been found to be barely perceptible to the human ear in outdoor environments. A change of 5 dBA is considered the minimum readily perceptible change to the human ear in outdoor environments. Therefore, for purposes of this analysis, an increase of 5 dBA or greater would be considered a substantial permanent increase in ambient noise levels.

The highest traffic noise level increase with implementation of the project would occur along Golf Club Drive between Oak Valley Parkway and Oak Valley Village Circle, under existing plus project conditions. Along this roadway segment, the project would result in an increase of 1.9 dBA under plus project conditions compared to conditions that would exist without the project. This increase is well below the 5 dBA increase that would be considered a substantial permanent increase in noise levels compared with noise levels that would exist without the project. Therefore, this impact would be less than significant.

The analysis in Section 5.2.3, Stationary Source Operational Noise Impacts, concluded that project-related parking activities would not result in an increase above existing base ambient noise levels at the nearest residential receptor property line. Therefore, project-related parking lot activities would not result in a substantial permanent increase in ambient noise levels. This impact would be less than significant.

Therefore, project-related noise sources would not result in a substantial permanent increase of (5 dBA or greater) compared with noise levels existing without the project, and noise impacts to off-site sensitive receptors would be less than significant.

5.4 - Substantial Temporary or Periodic Increase Impacts

A significant impact would occur if the project would result in substantial temporary or periodic increases in ambient noise levels above the Municipal Code Section 9.04.100 or outside of accepted construction hours.

Construction noise impacts were previously analyzed in the Section 5.2.1 discussion above. As shown in this discussion, the façade of the closest off-site receptor would be located approximately 200 feet from the acoustic center of construction activity where multiple pieces of heavy construction equipment would operate simultaneously during construction of the proposed commercial buildings and paved drive-through areas. A 6-foot sound wall along the edge of the adjacent residential properties would further reduce noise levels. At this distance, and taking into account the shielding effects of the sound wall, construction noise levels could range up to approximately 72 dBA L_{max}, with a relative worst-case hourly average of 68 dBA L_{eq} at this receptor.

Although there would be a relatively high single-event noise exposure potential causing intermittent noise nuisance, the effect on longer-term (hourly or daily) ambient noise levels would be small. The project would be required to comply with Municipal Code requirements, including the permissible hours of construction. Therefore, implementation of MM NOI-1, which outlines standard construction noise reduction measures and requires compliance with the City’s permissible hours of construction, would ensure that construction noise would not result in a substantial temporary increase in ambient noise levels. Therefore, project-related construction noise levels would not result in a substantial temporary or periodic increase in ambient noise levels compared with noise levels existing without the project, and noise impacts to off-site sensitive receptors would be less than significant.

5.5 - Excessive Groundborne Vibration Impacts

This section analyzes both construction and operational groundborne vibration impacts. Groundborne vibrations consist of rapidly fluctuating motions within the ground that have an average motion of zero. Vibrating objects in contact with the ground radiate vibration waves through various soil and rock strata to the foundations of nearby buildings.

In extreme cases, excessive groundborne vibration has the potential to cause structural damage to buildings. Common sources of groundborne vibration include construction activities such as blasting, pile driving, and operating heavy earthmoving equipment.

The City of Beaumont has not adopted a provision addressing the impacts of groundborne vibration levels. Therefore, for purposes of this analysis, the FTA vibration impact criteria are utilized. The FTA has established industry accepted standards for vibration impact assessment in its Transit Noise and Vibration Impact Assessment document (FTA 2006). These guidelines are summarized in Table 4.

5.5.1 - Short-term Construction Vibration Impacts

A significant impact would occur if existing structures at the project site or in the project vicinity would be exposed to groundborne vibration levels in excess of levels established by the FTA's Construction Vibration Impact Criteria for the listed type of structure, as shown in Table 4.

Of the variety of equipment used during construction, the small vibratory rollers that are anticipated to be used in the site preparation phase of construction would produce the greatest groundborne vibration levels. Small vibratory rollers produce groundborne vibration levels ranging up to 0.101 inch per second (in/sec) PPV at 25 feet from the operating equipment.

The nearest off-site structure to the project site construction footprint is the residential structure located northeast of the project site, on the east side of Golf Club Drive. This nearest off-site structure would be located approximately 180 feet from the nearest construction footprint where the heaviest construction equipment would potentially operate. At this distance, groundborne vibration levels would range up to 0.005 in/sec PPV from operation of the types of equipment that would produce the highest vibration levels. This is below the FTA Construction Vibration Impact Criteria of 0.2 in/sec PPV for buildings of non-engineered timber and masonry. Therefore, the impact of groundborne vibration levels on off-site receptors would be less than significant.

5.5.2 - Operational Vibration Impacts

Implementation of the project would not include any permanent sources that would expose persons in the project vicinity to groundborne vibration levels that could be perceptible without instruments at any existing sensitive land use in the project vicinity. In addition, there are no existing significant permanent sources of groundborne vibration in the project vicinity to which the proposed project would be exposed. Therefore, project operational groundborne vibration level impacts would be considered less than significant.

5.6 - Airport Noise Impact

5.6.1 - Public Airport Noise Impacts

The nearest public airport to the project site is the Banning Municipal Airport, located approximately 8.3 miles east of the project site. Because of the distance of the project site from the airport runways, the project site is located well outside of the 55 dBA CNEL airport noise contours. While aircraft noise is occasionally audible on the project site from aircraft flyovers, aircraft noise associated with nearby airport activity would not expose people residing or working near the project site to excessive noise levels. Therefore, implementation of the project would not expose persons residing or working in the project vicinity to noise levels from airport activity that would be in excess of normally acceptable standards for the proposed land use development. There would be no impact.

5.6.2 - Private Airstrips Noise Impacts

There are no private airstrips in the vicinity of the project site. Therefore, there would be no impact.

SECTION 6: REFERENCES

City of Beaumont. 2007. City of Beaumont General Plan. Noise Element. March.

City of Beaumont. 2018. City of Beaumont Code of Ordinances. Website: https://library.municode.com/ca/beaumont/codes/code_of_ordinances. Accessed on November 2, 2018.

Federal Highway Administration (FHWA). 2006. Highway Construction Noise Handbook. August.

Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment. May.

United States Environmental Protection Agency. 1978. Protective Noise Levels, EPA 550/9-79-100. November.

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Appendix A:
Traffic Noise Modeling Data

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TABLE Existing-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 11/14/2018
ROADWAY SEGMENT: Oak Valley Parkway - Project Driveway A to Golf Club Drive
NOTES: Beaumont Commercial - Existing

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 13100   SPEED (MPH): 45   GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18   SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 66.98

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	90.7	192.3	412.8

TABLE Existing-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 11/14/2018
ROADWAY SEGMENT: Golf Club Drive - Oak Valley Parkway to Oak Valley Village Circle
NOTES: Beaumont Commercial - Existing

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 2800 SPEED (MPH): 25 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 12 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 54.62

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	58.6

TABLE Existing-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 11/14/2018
ROADWAY SEGMENT: Golf Club Drive - north of Oak Valley Village Circle
NOTES: Beaumont Commercial - Existing

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1800   SPEED (MPH): 25   GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 12   SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 52.70

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	0.0

TABLE Existing-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 11/14/2018
ROADWAY SEGMENT: Interstate 10 - San Timoteo Canyon Road to Junction Route 60 West
NOTES: Beaumont Commercial - Existing

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 102000   SPEED (MPH): 70   GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 36   SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 79.64

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
345.1	740.1	1592.6	3429.8

TABLE Existing + Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 11/14/2018
ROADWAY SEGMENT: Oak Valley Parkway - Project Driveway A to Golf Club Drive
NOTES: Beaumont Commercial - Existing + Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 13700   SPEED (MPH): 45   GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18   SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 67.18

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	93.3	198.1	425.2

TABLE Existing + Project-02

FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 11/14/2018
ROADWAY SEGMENT: Golf Club Drive - Oak Valley Parkway to Oak Valley Village Circle
NOTES: Beaumont Commercial - Existing + Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 4300   SPEED (MPH): 25   GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 12   SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 56.48

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	77.3

TABLE Existing + Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 11/14/2018
ROADWAY SEGMENT: Golf Club Drive - north of Oak Valley Village Circle
NOTES: Beaumont Commercial - Existing + Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 2000   SPEED (MPH): 25   GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 12   SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 53.16

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	0.0

TABLE Existing + Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 11/14/2018
ROADWAY SEGMENT: Interstate 10 - San Timoteo Canyon Road to Junction Route 60 West
NOTES: Beaumont Commercial - Existing + Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 102000   SPEED (MPH): 70   GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 36   SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 79.64

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
345.1	740.1	1592.6	3429.8

TABLE Future-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 11/14/2018
ROADWAY SEGMENT: Oak Valley Parkway - Project Driveway A to Golf Club Drive
NOTES: Beaumont Commercial - Future

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 18900   SPEED (MPH): 45   GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18   SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.57

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
55.7	114.9	245.0	526.7

TABLE Future-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 11/14/2018
ROADWAY SEGMENT: Golf Club Drive - Oak Valley Parkway to Oak Valley Village Circle
NOTES: Beaumont Commercial - Future

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 4000   SPEED (MPH): 25   GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 12   SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 56.17

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	73.7

TABLE Future-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 11/14/2018
ROADWAY SEGMENT: Golf Club Drive - north of Oak Valley Village Circle
NOTES: Beaumont Commercial - Future

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 2700   SPEED (MPH): 25   GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 12   SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 54.46

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	57.2

TABLE Future-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 11/14/2018
ROADWAY SEGMENT: Interstate 10 - San Timoteo Canyon Road to Junction Route 60 West
NOTES: Beaumont Commercial - Future

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 102000   SPEED (MPH): 70   GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 36   SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 79.64

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
345.1	740.1	1592.6	3429.8

TABLE Future + Project-01

FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 11/14/2018
ROADWAY SEGMENT: Oak Valley Parkway - Project Driveway A to Golf Club Drive
NOTES: Beaumont Commercial - Future + Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 19500   SPEED (MPH): 45   GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18   SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.71

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
56.7	117.2	250.2	537.8

TABLE Future + Project-02

FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 11/14/2018
ROADWAY SEGMENT: Golf Club Drive - Oak Valley Parkway to Oak Valley Village Circle
NOTES: Beaumont Commercial - Future + Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 5500   SPEED (MPH): 25   GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 12   SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 57.55

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	90.7

TABLE Future + Project-03

FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 11/14/2018

ROADWAY SEGMENT: Golf Club Drive - north of Oak Valley Village Circle

NOTES: Beaumont Commercial - Future + Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 2900   SPEED (MPH): 25   GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 12   SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 54.77

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	59.9

TABLE Future + Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 11/14/2018
ROADWAY SEGMENT: Interstate 10 - San Timoteo Canyon Road to Junction Route 60 West
NOTES: Beaumont Commercial - Future + Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 102000   SPEED (MPH): 70   GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 36   SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 79.64

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
345.1	740.1	1592.6	3429.8
